T.C.

ALTINBAS UNIVERSITY

Institute of Graduate Studies

Information Technologies

CLOUD-STREAMING DATA STORAGE AND ANALYSIS USING BIG DATA TECHNOLOGIES

Waleed Challoob Khudhair AL-MALIKI

Master of Science

Supervisor

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Istanbul, 2021

CLOUD-STREAMING DATA STORAGE AND ANALYSIS USING BIG DATA TECHNOLOGIES

by

Waleed Challoob Khudhair AL-MALIKI

Information Technologies

Submitted to the Graduate School of Science and Engineering

in partial fulfillment of the requirements for the degree of

Master of Science

ALTINBAŞ UNIVERSITY

2021

The thesis titled “CLOUD-STREAMING DATA STORAGE AND ANALYSIS USING BIG DATA TECHNOLOGIES ” prepared and presented by Waleed Challoob Khudhair AL-MALIKI was accepted as a Select Degree Thesis in Information Technologies.

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Supervisor

Thesis Defense Jury Members:

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM	School of engineering and natural science, Altinbas University	_____
Asst. Prof. Dr. Muhammad ILYAS	School of engineering and natural science, Altinbas University	_____
Asst. Prof. Dr. Izzet Parug DURU	Vocational School, Istanbul Gedik Univeristy	_____

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

Approval Date of Institute of Graduate Studies: ____/____/____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Weleed Challoob Khudhair AL-MALIKI

DEDICATION

To my mother, who left me with her body, but her soul is still with me fluttering, to my father, the ideal person who helped me with all his strength and money, to my family members, my brothers and sisters, to my dear wife and children, and to everyone who called for me with good, even if with a word to all my friends, I dedicate to you this humble work.

ACKNOWLEDGEMENTS

Praise be to God who taught with the pen, taught man what he did not know, Praise be to God Almighty, the Holy King Peace, who managed the nights and days, the vent of months and years, as much as matters So pay it in the best manner,May God is pleased with him and did not wish, it was not. Praise be to God for the bounty that He has bestowed upon me And he helped me to accomplish this work, which he considered an act of worship that God made pure For his generous face.After praising God Almighty and thanking Him for completing this message, I offer my sincere and great thanks Gratitude to the distinguished professor Asst. Prof. Dr Abdullahi Abdu IBRAHIM for his knowledge Beneficial, distinguished giving and continuous guidance, and on the continuous effort, advice and guidance from the beginning The research stage until the completion of this thesis, and whatever phrases and sentences you write, the words of thanks remain I am unable to fulfil his rights, so God rewarded him for me with the best part and made that in the balance of his good deeds.

ABSTRACT

CLOUD-STREAMING DATA STORAGE AND ANALYSIS USING BIG DATA TECHNOLOGIES

AL-MALIKI, Weleed Challoob Khudhair,

M.Sc., Information Technologies, Altınbaş University,

Supervisor: Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Date: 04/2021

Pages: 104

In this study a system was designed to register, admit and distribute students of vocational high schools in Iraq in the technical institutes of the Southern Technical University (STU) of the Iraqi Ministry of Higher Education, which contains five technical colleges in addition to five technical institutes distributed over three cities (Basra, Dhi Qar, Maysan) designed the system in (PHP) and (CSS) language and queries in the language (MySQL) and designed a database for the system using cloud storage techniques via the (PHPMyAdmin) interface, which was booked from the specialized companies, the system was from three sites and the first site was designed specifically for the flow of Student data, the second site was for the system administration for processing and sorting data, and the third site was reviewing the results of the accepted students. The student registration process went through four stages and the first phase was the flow of data through the data flow site and stored in the designed cloud database. The next step was processing and sorting the data of accepted and unaccepted students. The third was data analysis using big data techniques to analyze the data and distribute them to the institutes of the university according to the conditions The system developed by the Iraqi Ministry of Higher Education and the fourth step is to announce the results of students through the results announcement site designed for students. The system has been tried on approximately (1500) students so that the results of the accepted and unaccepted

students appeared and the mechanism for their distribution and comparison with the previous method as we explained in the fourth chapter of this study, as the results obtained showed that they had reached the desired goal through this study.

Keywords: System, STU, PHP, CSS, MySQL, PHPMyAdmin, Cloud, Big Data

ÖZET

BÜYÜK VERİ TEKNOLOJİLERİNİ KULLANARAK BULUT YAYINLI VERİ DEPOLAMA VE ANALİZİ

AL-MALIKI, Weleed Challoob Khudhair,

M.Sc., Information Technologies, Altınbaş University,

Supervisor: Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Date: 04/2021

Pages: 104

Bu çalışmada, Irak'taki meslek liselerinin öğrencilerini Irak Yüksek Öğretim Bakanlığı Güney Teknik Üniversitesi (STU) teknik enstitülerine kaydettirmek, kabul etmek ve dağıtmak için bir sistem tasarlanmıştır. üç şehre dağıtılan enstitüler (Basra, Dhi Qar, Maysan) sistemi (PHP) ve (CSS) dilinde ve dilde (MySQL) sorgular tasarladılar ve sistem için (PHPMyAdmin) arayüzü üzerinden bulut depolama tekniklerini kullanarak bir veritabanı tasarladılar. uzman şirketlerden rezerve edilen, sistem üç siteden alınmış ve ilk site özellikle Öğrenci verilerinin akışı için tasarlanmış, ikinci site verilerin işlenmesi ve sınıflandırılması için sistem yönetimi içindi ve üçüncü site kabul edilen öğrencilerin sonuçları. Öğrenci kayıt süreci dört aşamadan geçti ve ilk aşama, veri akışı sitesinden veri akışı ve tasarlanan bulut veritabanında saklandı. Bir sonraki adım, kabul edilen ve kabul edilmeyen öğrencilerin verilerini işlemek ve sıralamaktı. Üçüncüsü, verileri analiz etmek ve koşullara göre üniversitenin enstitülerine dağıtmak için büyük veri tekniklerini kullanarak veri analiziydi.Irak Yüksek Öğretim Bakanlığı tarafından geliştirilen sistem ve dördüncü adım, sonuçlarla öğrencilerin sonuçlarını duyurmaktır. öğrenciler için tasarlanmış duyuru sitesi. Bu araştırmanın dördüncü bölümünde açıkladığımız gibi, sistem, kabul edilen ve edilmeyen öğrencilerin sonuçlarının ortaya çıkması ve bunların dağılımı ve önceki yöntemle

karşılaştırılması için yaklaşık (1500) öğrenci üzerinde denenmiştir. bu çalışma ile istenilen hedefe ulaştıklarını belirtmiştir.

Anahtar kelimeler: Sistemi, STU, PHP, CSS, MySQL, PHPMyAdmin, Bulut, Büyük veri

TABLE OF CONTENTS

ABSTRACT ..... **vii**

ÖZET ..... **ix**

LIST OF TABLES ..... **xiii**

LIST OF FIGURES ..... **xvi**

LIST OF ABBREVIATIONS ..... **xviii**

1. INTRODUCTION **1**

1.1 CLOUD STORAGE 2

1.2 BIG DATA 3

1.3 AIM OF THE STUDY 3

1.4 WHAT IS THE STUDY PROBLEM? 4

2. Literature review and theory **6**

2.1 DESIGN A WEBSITE TO REGISTER NEW STUDENTS 6

2.2 USING CLOUD STORAGE TECHNOLOGIES TO STORE AND SECURE DATA 9

2.3 CONDITIONS FOR ADMISSION TO UNIVERSITIES 11

2.3.1 Big data in developing the education sector 13

2.3.2 The importance of big data analysis in decision-making 14

3. Materials and methods of work **17**

3.1 STUDENT REGISTRATION SYSTEM 17

3.2 RECEIVING STUDENT INFORMATION 17

3.2.1 Database design 18

3.2.2 Create a database for the project 18

3.2.3 Choosing a suitable technology for storing information 18

3.2.4 Design database 19

3.2.5 Design organizational and logical structures for database 20

3.2.6 Website design 27
3.2.7 Designing the student data flow site for admission to STU 29
3.2.8 Login page 30
3.2.9 Student information entry page 31
3.2.10 Data transmission confirmation page 33
3.2.11 The student data display page after entering the ID number 34
3.3 WEBSITE DESIGN DATA PROCESSING 35
3.3.1 The applicant must be less than 25 years old 36
3.3.2 Total of marks by the student is 480 37
3.4 ANALYZING DATA USING BIG DATA TECHNOLOGIES 48
3.4.1 Distributing the accepted students to the technical institutes using the Excel 49
3.5 THE SITE FOR DISPLAYING STUDENTS ADMITTED TO THE UNIVERSITY'S TECHNICAL INSTITUTES 55
3.5.1 Designing website pages and how they work 56
.4 Results and Discussion 61
4.1 COMPARE PREVIOUS INFORMATION AND INFORMATION OBTAINED FROM THE DESIGNED WEBSITE 61
4.2 COMPARISON BETWEEN SORTING DATA USING EXCEL AND THE DESIGNED DATA PROCESSING WEBSITE 65
4.2.1 Discuss the results of the two methods 72
4.3 COMPARISON OF THE DISTRIBUTION ACCORDING TO ONE PARAMETER AND THE ADOPTED METHOD USING THREE PARAMETERS 72
4.3.1 Distribution according to one parameter 73
4.3.2 The adopted method using three parameters 80
4.3.3 Discuss the results of the two methods 85
5. conclusions and future visions 87
5.1 CONCLUSIONS 87
5.2 FUTURE VISION 88
REFERENCES 89

LIST OF TABLES

Pages

Table 3.1: The logical structure of student login information 21

Table 3.2: The logical structure of the administrator login information..... 22

Table 3.3: Logical chart for the student information table 24

Table 3.4: Professional specializations available in Basra city and the villages near the Basra Technical Institute..... 50

Table 3.5:Professional specializations available in Basra city and the villages near the Al-Qurna Technical Institute..... 51

Table 3.6: Professional specialties available in Dhi Qar and the villages near the Dhi Qar Technical Institute..... 52

Table 3.7: Professional specialties available in Dhi Qar and the villages near the Technical Institute in Shatrah 53

Table 3.8: Professional specializations available in the city of Maysan and the villages near the Technical Institute of Maysan..... 54

Table 4.1: Technical institutes located in cities and villages near each institute..... 62

Table 4.2: Codes for technical institutes..... 63

Table 4.3: A form of information sent by the Ministry of Education..... 63

Table 4.4: A sample of the information received from the data flow platform 65

Table 4.5: The sample to be sorted 66

Table 4.6: Students rejected because of age 67

Table 4.7: Sorting data for non-Muslim students 68

Table 4.8: Accepted and unaccepted from other religions 68

Table 4.9 : Students rejected because of total scores 69

Table 4.10: Accepted students from all attempts 69

Table 4.11: Accepted from other religions 70

Table 4.12: Data of students rejected because of total scores 71

Table 4.13: accepted students from the first attempt 71

Table 4.14: accepted students from the second attempt 71

Table 4.15: accepted students from the third attempt 72

Table 4.16: Classification of students 73

Table 4.17:Student distribution 74

Table 4.18: The number of students in each city 75

Table 4.19: Professional specializations available in the city of Maysan 77

Table 4.20: Professional specializations available in Basra city 77

Table 4.21: Professional specializations available in Basra city and..... 79

Table 4.22: Professional specialties available in Dhi Qar and Technical Institute in Shatrah 79

Table 4.23: Professional specialties available in Dhi Qar and Dhi Qar Technical Institute..... 80

Table 4.24: Student distribution..... 81

Table 4.25: The number of students in each city..... 82

LIST OF FIGURES

Pages

Figure 3.1: Database schema 19

Figure 3.2: . User's table diagram 20

Figure 3.3: Admins table diagram 21

Figure 3.4: The organization chart for the student information table 23

Figure 3.5: The related tables in the Student table..... 26

Figure 3.6: Student login page 30

Figure 3.7: Student information entry page 32

Figure 3.8: Data transmission confirmation page 34

Figure 3.9: The student data display page after entering the ID number..... 35

Figure 3.10: Admin login page 39

Figure 3.11: Page sorting data for students rejected because of age 40

Figure 3.12: Page sorting data for students admitted from other religions..... 41

Figure 3.13: Page sorting data for students rejected because of the total 43

Figure 3.14: Page sorting data for accepted students from the first attempt..... 44

Figure 3.15: Page sorting data for accepted students from the second attempt 45

Figure 3.16: Page sorting data for accepted students from the third attempt 46

Figure 3.17: Reports download page 48

Figure 3.18: Home page of the designed website 56

Figure 3.19: The page for displaying information for students who passed the first attempt 57

Figure 3.20: The page for displaying information for students who passed the second attempt.. 58

Figure 3.21: The page for displaying information for students who passed the third attempt 59

Figure 3.22: Information page for students admitted from other religions..... 60

Figure 4.1: Classification of students..... 73

Figure 42: Student distribution 74

Figure 4.3: The number of students in each city..... 75

Figure 4.4: Distribution depending on one parameter (f_choic)..... 76

Figure 4.5: Distribution of students at the Technical Institute in Maysan..... 77

Figure 4.6: Distribution of students at the Qurna Technical Institute..... 78

Figure 4.7: The function used in the distribution of students 80

Figure 4.8: Student distribution 81

Figure 4.9: The number of students in each city..... 82

Figure 4.10: They live in the city of Dhi Qar and are accepted into the Basra Institute 83

Figure 4.11: Distribution of students depending on the designed function 84

LIST OF ABBREVIATIONS

STU	:	Southern Technical University
PHP	:	Hypertext Processor
CSS	:	Cascading Style Sheet
TVET	:	Technical and vocational education and training
DBMS	:	Database management systems
SRSU	:	Student Registration System University
ID	:	Identification
HTML	:	Hyper Text Markup Language
SIMS	:	Student Information Management System
SQL	:	Student Information Management System
SIS	:	Student Information System
SU	:	Salem University
FAT	:	File Allocation Table
SDLC	:	System Development Life Cycle
CUA	:	Chinese universities System
CCA	:	Chinese Colleges Admission
FDD	:	Feature Driven Development
RDBMS	:	Relational Data Base Management System

1. INTRODUCTION

The Iraqi government has adopted several national policies to encourage the TVET sector to provide appropriate technical skills.

The National Strategy for Education and Higher Education in Iraq for the year (2012-2022) in addition to separating human and social development from the new national development plan (2013-2017) defines several goals related to the TVET sector, such as: Increasing the enrollment rate of students in vocational education and training institutes And technical education and reallocation of funds to increase the chances of acceptance for technical education graduates and design curricula according to the prevailing economic activities.

All this contributed to a remarkable increase in previous years in the increase in the outputs of the Iraqi Ministry of Education for all professional specialties graduates of professional preparations and this increase is matched by an increase in the numbers of admissions to technical institutes, which are among the formations of technical universities in Iraq, which are affiliated with the Iraqi Ministry of Higher Education and from Within the technical universities of the Southern Technical University, which contains five colleges, including administrative, engineering, and medical, and five technical institutes, which are considered as inputs for graduates of professional preparations in Iraq for almost all professional specializations.

Concerning the admission mechanism used to accept students in technical institutes, the central admission mechanism is managed by the Iraqi Ministry of Higher Education through algorithms designed to collect student data during the research and then send it to technical universities to take appropriate decisions in distributing students to the institutes of each technical university. The positive side In the central admission mechanism, it relies on an algorithm that is executed automatically according to rate considerations, thus ensuring fairness in distribution away from other considerations, and the error rate is often limited or falls on the responsibility of the student in his method of selection, while the negative side is the acceptance of the student in a university far from the place of residence and slowness. In the acceptance process, many other problems will be presented later.

After that, the Ministry of Higher Education decided to internationalize technical universities with the issue of accepting students who are graduates of professional high schools, so it is necessary to find an appropriate method for accepting students using a mechanism that is compatible with the number of students that are considered large compared to the rest of the universities in which the number of students admitted from vocational prep schools may only reach (1500 -2000) male and female students distributed over five institutes of the Southern Technical University, which are complex about a large number of disciplines and their convergence in some cases, which causes complication in the distribution of students.

All this requires an innovative point of view, a different approach, architecture or infrastructure if any. High-performance analytics is one of them that requires the adoption of new technologies to process, discover and analyze these large or complex data sets that cannot be dealt with using traditional databases and structures due to the lack of capacity resources in terms of computation and storage.

It has become clear now that we need cloud storage and big data technologies that represent high-performance analytics, which is one of the innovative approaches that can be applied to the increasing volumes, complexity, speed and diversity of data.

1.1 CLOUD STORAGE

Today, and with educational technology in particular and the world of technology in general, we refer to the emergence of new technical terms in recent times, such as cloud storage services, cloud music, cloud applications, and even cloud operating systems. Whether on computers, tablets or smartphones, the term “cloud” seems to be catching up with you everywhere. What is the cloud (in the technical term) and what is cloud computing (cloud storage) that everyone is talking about these days, and cloud storage can be defined as huge computers that contain a huge storage space that users upload their files to be stored[1] ,as companies do Create programs on it, which is termed as cloud computing, which has a close relationship with storing big data [2].

1.2 BIG DATA

It is a comprehensive term for any group of data, whether large or complex, that it becomes difficult to treat in terms of storage, search, representation, or analysis using traditional data management techniques (DBMS).

Therefore, dealing with big data in educational institutions or elsewhere represents a real problematic process in terms of its rapidly increasing size, and in terms of the need for huge storage spaces that may exceed the ability of the organizations that own this data, as well as the lack of return from this data and not to exploit it. In the useful form, and for this, companies specializing in information management and its technologies, computer software companies, ontology systems and knowledge management have realized the importance of dealing in ways that are more able to control this data [3].

By using big data technologies, which can be defined as[4] "a software tool designed to analyze process and extract information from a complex and very large data set that a traditional data processing program can never handle."

We need big data processing techniques to analyze this massive amount of data in the present and draw conclusions and predictions to reduce risks in the future[3].

1.3 AIM OF THE STUDY

Building a private website based on modern technologies capable of controlling the flow of data and storing it with cloud computing technology, analyzing the flowing data using big data technologies, and showing the relationship between cloud storage and big data and how to use this relationship to reduce the time, effort and cost in submitting an application for a seat at the university from Through the Internet pages, so that each one of them has a username and password, enabling them to pass to the page for submitting the application and empowering officials in the matter of making decisions and accurate and fast solutions in accepting students, taking into account the scientific specializations of students and distributing them to the technical institutes of the Southern Technical University near the regions Their housing is to reduce expenses in housing

students and take into account the student's economic matters in moving from the place of residence to the institute in which the student is accepted and vice versa despite the fact that the data is complex and intertwined with regard to scientific disciplines and the large number of students seeking a seat.

1.4 WHAT IS THE STUDY PROBLEM?

The Southern Technical University realized the importance of knowledge industry and big data analysis and therefore it has established many units that contribute to the investment of knowledge and work on analyzing big data to achieve an added value and support the decision-maker with the important information it produces, and because storing, processing and analyzing big data is a real challenge for the university. In making appropriate decisions, and among these decisions is the acceptance of students of professional preparations in their technical institutes, but this challenge is not free of some problems represented by the loss and distortion of important and necessary data used in data analysis to make appropriate and accurate decisions in accepting students in institutes near their areas of residence.

In addition to the enormity in the volume of data represented in the large numbers of applicants and their complexity due to a large number of scientific disciplines and their convergence with each other and their availability in an institute without other institutes. But in the technical institutes, there is no such specialization and it is found only in the Basra Technical Institute, which is located in the city center of Basra.

Difficulty in sorting the data represented in the accepted and unaccepted students due to the large differences in the total admission, so that each category has an acceptance score that differs from another category, where the category of accepted students consisted of three categories, which is the category of students accepted from other religions, which also consisted of two classes, namely (surviving students From the first attempt, successful students from the second and third attempt). In addition, the category of students who survived the first attempt and successful students from the second and third attempt, in addition to the category of rejected students, which was divided into two, parts (those who were rejected because of starvation, and those who were rejected because of age).

In addition to the delay in publicizing the acceptance results, due to the increased link in obtaining data from the source represented by the Iraqi Ministry of Higher Education, which causes the delay in obtaining the required data for the purpose of analyzing it and showing the results.

2. LITERATURE REVIEW AND THEORY

A comprehensive literary study was conducted, and the theorems were compiled accordingly. The results of the literature study were presented and discussed, which consisted of five sections according to the study. Previous studies were presented for each section separately, and the first section was the stage of recording new students 'data through the student data flow site, and the second section referred to the use of Cloud storage techniques in securing and storing streaming data, the third section was for admission requirements to universities, to find an appropriate technology for data processing, which was divided into two subsections. The first branch spoke about big data in the development of the education sector to demonstrate the relationship of big data technologies and the education sector, and the second branch of The department referred to the importance of big data analysis in decision-making, and that was in the use of big data techniques in analyzing students 'flowing data to announce admission results.

2.1 DESIGN A WEBSITE TO REGISTER NEW STUDENTS

The world has witnessed rapid and successive changes in the business environment with the spread of the Internet, which increased the possibility of conducting correspondence between various parties and distant regions, and this is no longer limited to companies, large institutions, and universities, but also became accessible to individuals, especially in light of the low prices of these electronic means Its small size and ease of use, and with the advent of the information revolution, has become imperative for universities to restructure their public institutions in line with the requirements of the digital revolution in order to prepare for integration towards e-government in order to change the traditional methods of government work performance to turn into possible methods that use modern technologies that are always developing in Under the information and communication technology revolution, so that government service is provided in the fastest time and at the lowest possible cost, and to move away from the old traditional methods that used paper submission and direct review of the university to the student, which causes confusion in the admission process.

In 2012, Ying Liu, Fuxiang Gao, Yaqin Liu[5], a survey on the new student registration system in universities and was part of an integrated system using related information systems technology to solve the problem of manual registration using the SRSU system using (ID) for each student. He would like to obtain a study seat at the university that is used only once using the (ASP.SCRIPT) codes by verifying the database designed for the system to enter the system through dynamic web pages designed in HTML and recording the information of the applicant students. The results confirmed by the users of the system in the university administration were that the system works well as long queues for students were ended and the confusion caused by working for the administration was ended and administrative errors in the process of collecting students' information were eliminated.

In 2013 SRBharamagoudar, Geeta RB, SGTotad[6], the establishment of a student information management system on the Internet: which was the student registration system of the system, through which students can access the new student registration interface via the login page that can be passed To the registration information page for new student registration without losing any of the important information that may affect the admission process according to the student's specialization, and the target group for the registration page were new students who intend to complete their academic studies at the university using the university's (SIMS), which can be entered A mechanism through a unique username and password provided by the college's site manager to enter through the registration page through SQL queries to inquire about the username and password of each student. Pages are designed using the sites 'programming languages (HTML, CSS, JAVASCRIPT, PHP) the results showed ease and good flow of data into the database designed for the system and without duplication of student records, as required.

In 2014 Marlindawati[7], the design of an online information system of a new student using web engineering method: Despite the technological development taking place at the global level, especially in scientific institutions, new students are still in some scientific institutions and schools, the system in which student registration is used. The new ones are the manual system, i.e. the student attending the school or educational institution directly, so the researcher suggested creating

and designing a special website for registering new students through a specially designed website that can be applied to all high schools using web engineering technology to get rid of long registration queues and the target group in this study Secondary schools in Palembang city and in order to obtain sufficient information and due to the convergence in terms of admission requirements in these schools, the researcher gathered the required information that the researcher needed and which the secondary schools needed to receive new students and to solve the problem by researching a special website was created using the language (PHP) and (MYSQL) database using web engineering technology, and after applying the system, acceptable results were obtained by analogy with the method The recedent followed in terms of speed in the registration process and sufficient accuracy in obtaining data.

In 2015 Efosa Alohan[8], Building a Student Information: The researcher in this study developed appropriate solutions of creating a special site to manage student data from the beginning of registration at the university until graduation from the university to get rid of the traditional processes of manual work in student registration and management Their files, which had many problems, including the loss or loss of some students 'paper records, which confuses the administration's work. The solution to such a problem was to create and design (SIS), a website capable of receiving and registering students and managing data electronically until students graduate. From the university, this site was created for Salem University (SU) in Lokoja, Nigeria. The new student registration system is part of this system, which is considered one of the necessary tasks in the system designed in the flow of data to the database that was created in the system. The web (HTML, CSS, JAVASCRIPT) and the results were good compared to the manual system, but it did not use the site's security algorithms, so this site was not a public site for everyone. Some specific students are only allowed access to the system

In 2016 Esmael Seid Ali[9], Alkan University, the administrative system information: The administrative system followed in this university is the manual system, that is, paperwork about students in universities, which causes many problems, including duplication of data and delay in completing student transactions And university employees, the difficulty of searching for files and other problems, which causes a waste of time spent in completing transactions and high costs in the large number of administrators working at the university without any benefit. At Alcan

University, the researcher designed a special administrative system instead of the previous manual system, and one of its important parts was the student admission registration system through special interfaces prepared for registration of new students. The site was designed in the programming languages for creating sites (HTML, CSS, JAVASCRIPT, PHP) and using a database (MYSQL SERVER) to collect data flowing through the website's login interfaces specially prepared for this. Among the advantages of the system is the termination of the aforementioned problems, in addition to the high flow of data, ease of maintenance of the site and the low cost of establishing it. Moreover, the design of the site depends on the principle of dynamism in its design and the safety that depends on the server used for the project.

2.2 USING CLOUD STORAGE TECHNOLOGIES TO STORE AND SECURE DATA

In 2011 Yashaswi Singh, Farah Kandah, Weiyi Zhang[10], A Secured Cost-effective Multi-Cloud Storage in Cloud Computing : In this paper, the researchers referred to the possibility of storing data on the servers of the cloud service providers instead of the servers of the website designers. The researchers pointed out to the most important features of the provided cloud service, in terms of storage capacity, in addition to providing the security provided by service providers to customers and also provides the advantage of paying for the amount of data in the treasury for a period determined by the customer according to his need. The results in the paper are about the ability to reserve storage space and security that is acceptable to customers and according to their reasonable budget.

In 2013 Te-Shun Chou[11], security threats on cloud computing vulnerabilities: In this paper, the researcher referred to servers, stores and applications as services for users by cloud computing providers. Users access cloud services on demand through cloud service providers. In addition, who in turn provide cloud-computing services, specific cloud services and guarantee the quality of services, in terms of security, storage capacity, and so on. Which led to a remarkable increase in the demand for the cloud service, and this increase is offset by an increase in the number of security violations that the attackers use to break the security of cloud computing. The researcher: The attacks that took place on (Data Lois DB) in 2012 were (1074) a breach incident despite the presence of cloud security, and (Stratfor) was exposed to an incident of data leakage from

databases. The researcher also reviewed some successful solutions to limit these attacks, represented by using the structure of the table system (FAT) by identifying the code or application that will be compared to previous instances, which are already executed from the client device to get rid of the attacks of injecting programs, which is a method used by attackers And the results were good compared to the previous ones in reducing or permanently reducing the attacks.

In 2017 Gururaj Ramachandra, Mohsin Iftikhar, Farrukh Aslam Khan [12], A Comprehensive Survey on Security in Cloud Computing: In this study, the researcher reviewed how safety was provided in the handling of the pathway, with opportunities being found regularly in the past where scenes could be visualized. The treatment imparted in light of its troublesome nature, complex plan, and resources used speaks of a new and unusual threat to all of the performers. All accomplices and performers need to understand the risks and reduce appropriately. Security at each layer must work in a rolling account stage by adhering to best practices and creating pathways to practically mitigate the threat. In cloud storage, the customer, the provider, the expert, the carrier, the assessor, and everyone needs to avoid all risks against risks to truly ensure about the handling arrangement relocated or present to a vital and sometimes necessary business threat. According to Progress Chart, the company believes that security planning gives the best practices, systems and techniques for making structures and organizations that work for security, practicality and quality. It is essential to proceed with this assessment to give such recognized systems more applications and use cases. Furthermore, it is essential to coordinate more research in the systems improvement cycle (SDLC) life for cloud customers to join the development and movement of various unpredictable fictional models and systems compartment, for example, Docker to improve security at the most basic level. Besides, there the investigation is limited to planning and people's influence on security. The work should be conceptualized to assess the challenges, necessities and fruitful impact of security preparedness for clients and various service providers.

In 2019 Aaqib Rashid, Amit Chaturvedi [13], Cloud Computing Characteristics and Services: A Brief Review: In this paper, the researchers reviewed how to make the most of the services provided by the private companies providing the cloud service from the beneficiaries in terms of

cost, the security provided and reliability. The researchers reviewed some service provider companies such as (GOOGLE, MICROSOFT, AMAZON in these companies that allow the user or beneficiary of the service to It uses it dynamically, that is, according to the customer's request in terms of storage capacity, duration and cost. Services in the coming years, but the issue of safety from attacks on that service remains the main concern of researchers in finding ways to solve this problem, and the risks of attacks have greatly affected the use of this technology in many fields, especially scientific practices.

2.3 CONDITIONS FOR ADMISSION TO UNIVERSITIES

University and higher education institutions are witnessing a qualitative shift like their practices towards the development of university admission policy to achieve competitiveness in light of global experiences That is universities are the most important information and knowledge centers of all kinds, and it is the top of the hierarchy of educational and educational institutions all over the world, and at the university, the thinking of learners crystallizes and their production is employed according to their different specializations and from the product of this institution the rest of the other educational and non-educational edifices are affected and therefore the reform of the university education system begins with selection The best for her input and she is the students enrolled in it The issue of students 'admission to university education is one of the vital issues in this educational sector, as this issue is not limited to the physical dimensions of it in terms of absorption of university education institutions and the problem of addressing the growing social demand for it, but it goes beyond that to the philosophical and political dimensions of this issue, and this is only through systems And admission policies in light of university competition in this regard, as the researchers indicated in their study on the subject of admission requirements, for example in

In 2009 Haibo Zhang [14], The Chinese College Admission System An Analysis of The researcher discussed in this study the problems of admission in Chinese universities in the (CUA) system, which specializes in the field of admission in Chinese universities, which is used as an admission system for students applying for Study places in Chinese universities and for all segments of the Chinese people, and the researcher pointed out that the system did not give importance to the

economic aspect of the currency, which is one of the important and vital aspects of accepting students in universities The researcher also discussed issues arising in that system in which he described the admission mechanism used in Chinese colleges (CCA), which explored its main characteristics, which were compared with other mechanisms used in other countries, and the researcher focused on two perspectives The first is the corruption process that may occur in the admission process and the second is the abolition of admission requirements in universities in terms of screening or the easy admission policy, with a focus on the use of strict mechanisms In the student's graduation from the scientific aspects, the Chinese admission system was compared to the French system in the admission mechanism for new students in universities, where the French system relied on a mechanism Paul without any requirements and the results were a large number of requests and admission to colleges according to the students' desire and not the other, and this would be a positive matter for the students by giving them the freedom to choose in the field in which they wish to continue their studies.

In 2010 Sebastian Braun, Nadja Dwengery Dorothea Kublerz ,[15], telling the Truth May Not Pay Off: An Empirical Study of Centralized University Admissions in Germany: In this study, the researchers presented an empirical analysis of admission in German universities, especially medical colleges, among them. The researchers indicated that the admission mechanism is divided into three stages, which were used by the clearinghouse to reveal the results of admission, which was a complex mechanism in which many participate. This mechanism was used not only in Germany, but it is followed and implemented in the United Kingdom, France, the Netherlands and Turkey. The researchers also added that this mechanism is applied using two algorithms, the first is the (BOSTAN) algorithm, this algorithm is responsible for matching the application requests with the college's requirements, and this algorithm is applicable in the United States of America. As for the second algorithm, known as (Gale-Shapay), which is used in the clearing room and is responsible for showing the results of admission to the college desired by the student Their status is for the better if we used a different method for the applicable matching process, and they were among the outstanding students and the percentage of few From other students, and as the researchers emphasized that most of the mistakes were caused by the students themselves for not clearly understanding the mechanism of presentation, the researchers added in the study that the currently used mechanism must be addressed and some simple changes made to the algorithm and some testable hypotheses have been developed for the admission system.

In 2013 PÉTER BIRÓ, SOFYA KISELGOF[16] ,college admissions with stable score-limits : In this study, the two researchers addressed the main problem in the process of accepting new students in universities affiliated with Hankari higher education in conformity with the admission mechanism in universities, Irish and Spanish, especially students who have similar admission qualifications in the total after they pass the secondary stage, where the researchers indicated the mechanisms followed in these countries, for example In Ireland, the matter is settled by lottery as a game of chance. In Spain, all students who have similar admission qualifications are accepted or rejected according to the number of applicants. In Hungary, the grading limits method is followed by using the algorithm (Gale-shapley). The researchers developed the algorithm so that Each college has a minimum and upper limits in the admission process for students applying for a seat and depending on the student's desire and according to the numbers received by each college affiliated to a particular university. The algorithm can be manipulated according to the need and the preparation of students, thus ensuring that everyone will have a seat distributed fairly among universities according to the results. Those who have obtained it in high school.

In 2019 Hanifa Fissalma, Hamidillah Ajie [17], Design and Development of Student Admission System in the State University of Jakarta : In this paper, the two researchers reviewed the admission system for the University of Jakarta in Indonesia, which was designed in 2015, which developed and added new functions to the system, and among the most important parts is the part related to the distribution of new students for admission to the university and according to the conditions set by the university, which are different from one academic year to another. The addition of a new feature driven by development (FDD), which is a type of technology that does not contain a fixed base, and its specifications are also its ability to know the number of applicants according to their types and its ability to distribute students according to the conditions, which led to an increase in the number of newly admitted students who have good quality.

2.3.1 Big data in developing the education sector

The use of big data has radically changed most areas, and education is one of the most prominent areas affected by this change, in recent years; Educational institutions - from primary and secondary schools to universities, and online educational service providers - collect, use and share data more easily and quickly than ever before.

The term big data refers to vast amounts of different information, which are difficult to collect and evaluate with traditional technologies. In addition, it is characterized by the need for rapid processing, by which it is possible to display common points, trends, and patterns in the behavior of the target group[18]. And in the education sector Data analysis can have a significant impact on all workers, from teachers, students, and even coaches in educational leadership and management.[19] In addition to that any educational institution receives a large amount of information daily, as it gets details about applying for admission and registration at the university, attendance and participation, and test results, and students also evaluate professors, provide details about their social and economic situation, and share their level of satisfaction with the education they have They receive it, and through practical methods of data collection and analysis using big data techniques in analysis.

2.3.2 The importance of big data analysis in decision-making

The teacher or supervisor can analyze the data to create a performance report, and if this student is found to be a talented artist, the report will recommend a career in the field. This is exactly what career counsellors do, but they are accustomed to concluding several interviews and class assessments. And now they have access to big data that will show that the student is talented, in addition to being good at mathematics and physics as well, and according to this example the field of architecture will be the best fit for him, and thus the recommendation will be more specific, and for this the researchers focused on the importance of analyzing big data for what it contains It is important to make an appropriate decision in all industrial, medical and educational fields, using special techniques in the field of big data analysis.

In 2016, Manju Jose, Preethy Sinu Kurian, Biju V[20], Progression analysis of students in a higher education institution using big data open source predictive modeling tool:In this research, the researchers presented a methodology for analyzing data for students of the Middle East College in the Sultanate of Oman, which is considered one of the largest universities in the Sultanate that receives a large number of undergraduate and postgraduate students and the main goal of the research is to analyze and classify students into different age groups to suit the nature of study at the university as the university It works on two systems for the attendance of students to the university, total ban for students who are not working, partial ban for students who have work, a

comparison of the scientific and academic level and according to ages, and it also aims to divide the bachelor's students into three levels from the lowest to the highest according to their scientific levels. Researchers have designed a predictive system capable of providing an analysis. Systematically to find the relationship between age and academic performance. The results indicated the existence of a negative condition concerning age groups and academic performance, and there is a positive relationship between the lower and higher levels of academic performance for undergraduate students at the university.

In 2016 Abubakar Musa, Deepak Sharma,[21] analyzing data using Excel: In this paper, the two researchers presented the possibility of using the Excel program in analyzing the data represented and extracting the results for a large group of data represented by the information of the students because the program possesses high capabilities represented by the structure and wide structure and complex mathematical formulas which are used to analyze the data regardless of its size. Useless data into valuable data, and thus it is possible to dispense with the paper system used in universities through the use of the Excel program, and the results in this paper showed that the program used confirmed the success in storing and analyzing to make appropriate decisions and processing the data with high efficiency despite its large size according to the suggested forms on the paper.

In 2017 Yu-Sheng Su, Ting-Jou Ding, Jiann-Hwa Lue, Chin-Feng Lai, Chiu-Nan Su5[22],
Applying Big Data Analysis Technique to Students' Learning Behavior and Learning Resource Recommendation in a MOOCs Course: In this paper, the researchers suggested using big data analysis techniques to find out the relationship between students learning on the MOOCS platform and social media platforms and how to use and benefit from them in communicating with professors and their students, and given a large number of FACEBOOK users, the researchers focused on finding the relationship between these two technologies. This thinking makes competencies aide assist teachers who furthermore examine the understanding of learners' interaction as well as perform analyzes of one time MOOCs as well as online networks with taking exercises on the spot thus confirming their teaching support methodologies. Moreover, it may save our thinking when social learners sit tightly to direct different parts, including careful discussions,

and more. Appropriate data towards these trainers are immediately identified, which may support that authority from the first group aggregation claim.

In 2019 Zhaohao Sun [23], Managerial Perspectives on Intelligent Big Data Analytics: In this part of the study, the researcher deals with a look at how to exceed expectations that can be used in conjunction with programming and other explanatory strategies in big data analysis. This study also deals with the place that is the most entry point to using a spreadsheet product with large and direct information. The central disagreement about this single section will be that those who get behind the massive data-based scan may be purification information on top of that little data-driven bulky investigation. The methodology recommended in this part of the study can encourage innovative work around big information analytics using Excel. In addition to business discrimination procedures, the researchers 'firm idea is that a humble spreadsheet needs a large portion that assumes that the examination of the huge information that has been settled reachable . These information engineers all over the world (like G.Google, Amazon) will be the players at the moment. However, a little investigation into the information about expectations that Excel will provide a welcome to the huge information gathered by people. In addition to business (Non-global information giants).

3. MATERIALS AND METHODS OF WORK

3.1 STUDENT REGISTRATION SYSTEM

In this chapter we will refer to how to build a new student registration system in the institutes of the Southern Technical University for students of vocational high schools in Iraq, where the student registration process consisted of four stages, the data flow phase, using the site (receiving student data), the data processing phase using the data processing site and the phase Analyzing data using big data technologies (Excel program) and a data display site. The first site was for receiving student information, which is the first stage of registration, which consisted of two parts. The first section was devoted to designing a database to store student's flow data and system's data, which was designed with cloud storage techniques and the department The second was to design a special site for the flow of data for new students, while the second site was designed specifically to process the flow of data, which is the second stage of the system linked to the designed database and the third phase was It is data analysis using big data techniques to make appropriate decisions to distribute new students to technical institutes, and the fourth and final stage is to design a special site to announce admission results for advanced students. Websites are designed using (PHP) language and (MySQL) queries and installing the AppServ8.5.0 program on Windows 10, the program was installed to work on it to complete the sites experimentally on the computer before the process of uploading to the reserved hosting from a specialized company to avoid the problems that may occur in the design.

3.2 RECEIVING STUDENT INFORMATION

To achieve the desired goal of accepting new students who are graduates of professional secondary schools in Iraq in technical universities, there was an urgent need to create and design a website for the flow of data into a database of students' information, so those appropriate decisions could be taken to accept them or not because each university has its laws, by the Iraqi Ministry of Education in the admission of students in terms of the total student, age and the like. In this particular section, the focus will be on how to build a special database to store student information, which is received from the special website designed according to the requirements of the Southern Technical University, and we will talk in detail about How to build the designed website in our

research and about the data obtained from the designed website and the website design is divided into two main sections, namely.

3.2.1 Database design

Because of increasing public awareness of the importance of information in all areas of life, it led to finding ways to store, retrieve and process data, which is known as the database. Through this rule, information is placed directly at the disposal of planning devices without the need to know the characteristics of the calculator in addition to the possibility of finding results and making decisions from To develop work systems using data and classifying it according to the characteristics and nature of the work, the database also provides procedures for maintaining security and data privacy [24].

3.2.2 Create a database for the project

The study sought to build a database to store the information flowing from the website designed for vocational high school graduates who wish to complete their academic studies in the technical institutes of the Southern Technical University.

3.2.3 Choosing a suitable technology for storing information

In order to reach the desired goal of designing a suitable database, the (phpmyadmin) database management system was used, which is an open source web-based database management tool that can be used in two different ways [25].

3.2.3.1 Administration by executing an SQL query

Php my admin allows database administrators to execute SQL language expressions directly on the web interface when opening the project database via code of the most important advantages of SQL databases, Trace static desi, You store data in tables, SQL is used to query data, Join supports between tables for querying data, Encourages the normalization principle to reduce data redundancy [26].

3.2.3.2 Administration via the PHPmyadmin interface

This is done through direct interaction of the browser window [27],and a database for the project will be created, which consists of several tables, and each table contains a set of field addresses that pertain to the students such as the student ID number, the student's name, the student's total, and other required information.

3.2.4 Design database

Through the **PHPmyadmin** interface, a database was designed in the name of admission. This database contains three main tables and six branched tables from the main table for students, which saves inside the information flowing from the designed website that students use to enter their required information and another main table in the name of the users that saves the student's identification number, The login code and the student's name, This information is used as an access code for the designed website, The third main table in the name of officials. The entry code and password for the site administrator and management are stored, the required data is loaded, chart shown in Figure.

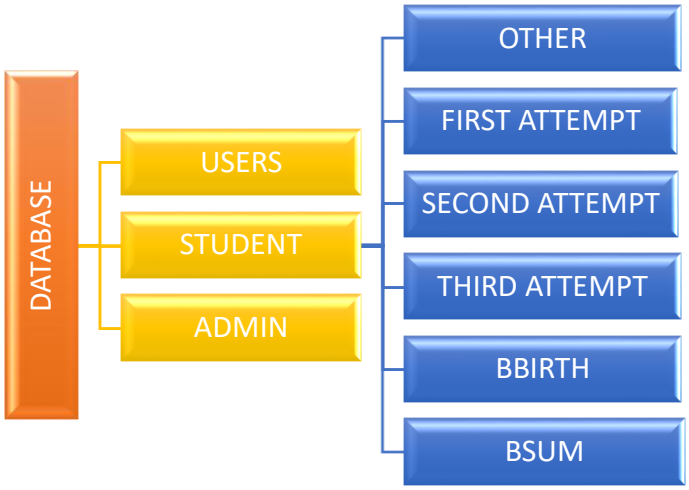

Figure 3.1: Database schema

3.2.5 Design organizational and logical structures for database

Initially, a table can be defined as a group of records, each record containing information of the same type, In addition, the record is a single line of the table or a row that contains a set of fields, or in other words, it is a group of data stored in the fields that belong to one element, and the record is the current unit of data that provides us with the real information. As for the field, it can also be defined, as a specific element within the record can be said [28].

- **The user's table**, which is a table consisting of three fields id, password, name that stores the information for the login process in the login page of the site designed for the data flow of students of professional high schools in Iraq who took the ministerial general examinations and for all attempts and those who intend to obtain a seat in one of the technical institutes of the Southern Technical University, and the table diagram is shown in Figure.

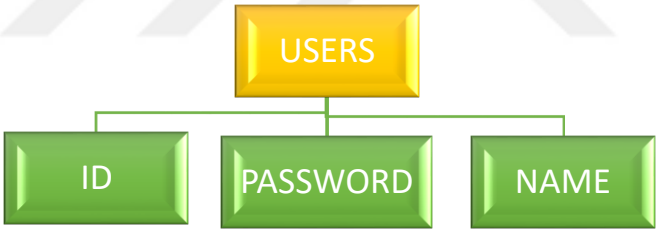

Figure 3.2: User's table diagram

The table was uniquely designed with the name (users) that is not repeatable It contains three fields as we have shown previously, and the first field was named (id) which is considered as the username. The type of this field is INT (14) and this means that the field must contain an integer number the number in parentheses means that the length of the field is (14) this field cannot be empty since we used the phrase (NOT NULL) The second field was named password, which is considered as the password of the type INT (14) also with length 14 Also, it cannot be empty because we used the phrase (NOT NULL). The third field, name, this is a text field (not a numeric one like the previous field). In SQL, the field is called the VARCHAR (50) which is one of the types of text fields. The number between the parentheses is the maximum length the number of

characters that can be entered in the field. In this case, the user can choose a name with a maximum length of 50 characters. This field cannot be empty (NOT NULL), and the logical structure is shown in the following table.

Table 3.1: The logical structure of student login information

FIELD	TYPE	LENGHT/VALUES	NULL
ID	INT	14	NOT NULL
PASSWORD	1NT	14	NOT NULL
NAME	CHARACTERS	50	NOT NULL

- **admin table**, which is a table consisting of three fields: id, password, name and it is similar to the user's table, but different in its work in granting the permission of those authorized to enter, it stores the information for the login process on the login page of the designed site, which is a page also similar to the registration page Access to the data flow site, but the difference in this page is to allow only authorized administration to enter this site to extract the results, and the structure for the table is shown in Figure .

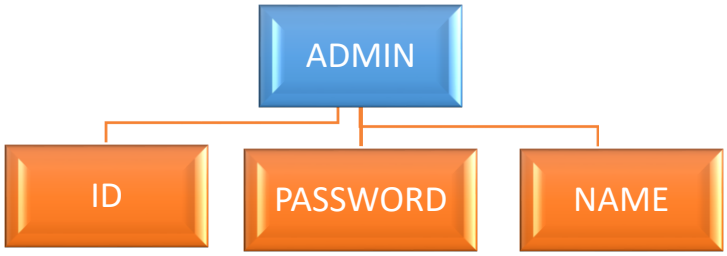

Figure 3.3: Admins table diagram

The table was uniquely designed with the name (admin) that is not repeatable. It contains three fields as we have shown previously, and the first field was named (id) which is considered as the username. The type of this field is INT (10) and this means that the field must contain an integer number the number in parentheses means that the length of the field is (10) this field cannot be

empty since we used the phrase (NOT NULL). The second field was named password, which is considered as the password of the type INT (14) also with length 10 Also, it cannot be empty because we used the phrase (NOT NULL). The third field, name, this is a text field (not a numeric one like the previous field). In SQL the field is called the VARCHAR (30) field which is one of the types of text fields. The number between the parentheses is the maximum length the number of characters that can be entered in the field. In this case, the user can choose a name with a maximum length of 30 characters. This field cannot be empty (NOT NULL), and the logical structure is shown in the following table.

Table 3.2: The logical structure of the administrator login information

FIELD	TYPE	LENGHT/VALUES	NULL
ID	INT	10	NOT NULL
PASSWORD	1NT	10	NOT NULL
NAME	CHARACTERS	30	NOT NULL

- **Student table,** which is a table consisting of fourteen fields. The information flowing from the information entry page is stored after the login process and it is considered as the main store for the flowing information as it contains all the information required from the university to obtain a seat in one of the technical institutes of the Southern Technical University Figure shows the structure of the table.

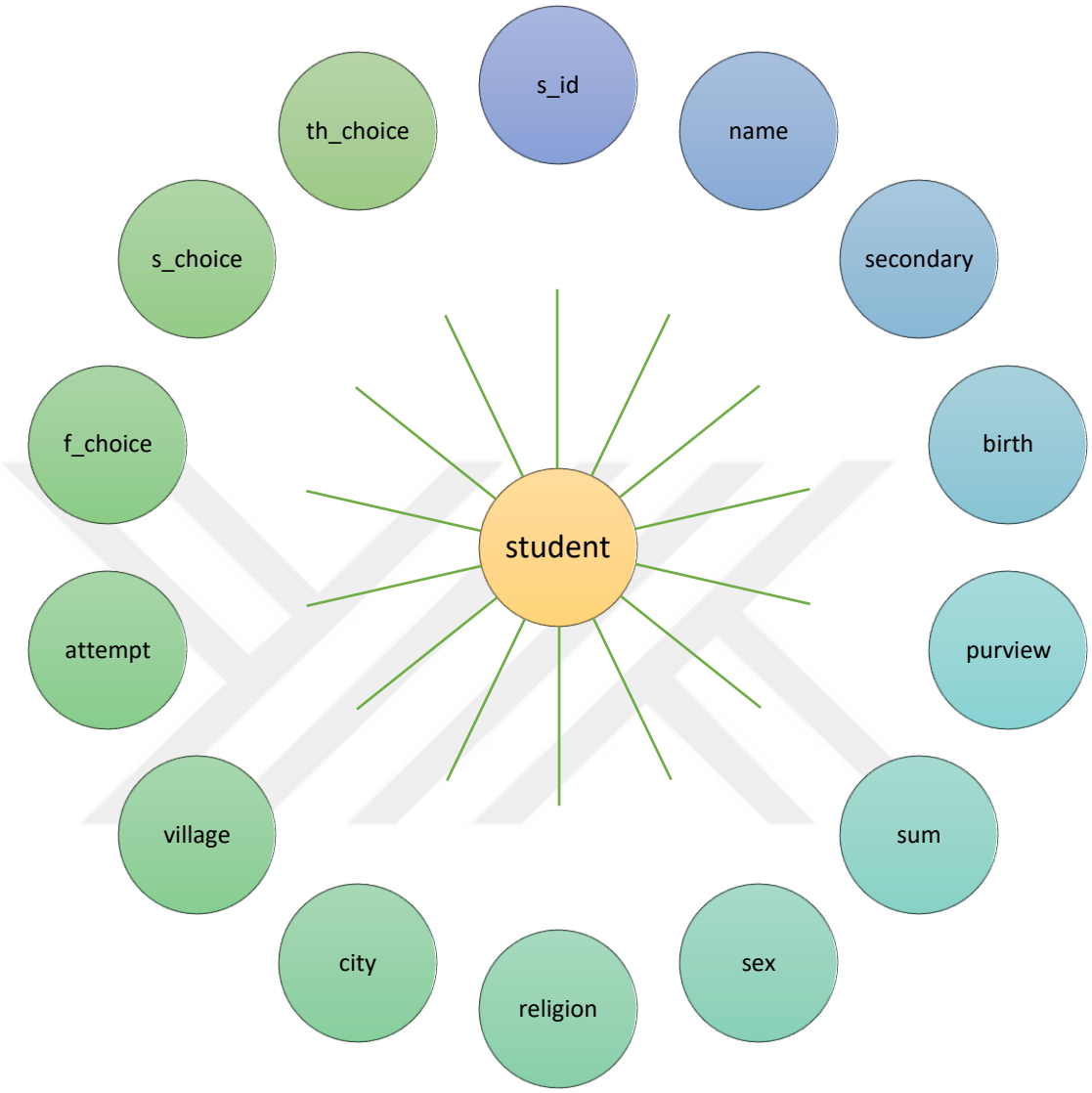

Figure 3.4: The organization chart for the student information table

The table is uniquely designed with the name (student) that is not repeatable and contains fourteen fields as we have shown previously, and the first field was named (s-id), which is considered as the student ID number. The type of this field is (14) INT, and this means that the field must contain The number in parentheses means that the length of the field is (14) and this field cannot be empty since we used the phrase (NOT NULL). And the second field was named, which is stored inside the full name of the student of the type VARCHAR (70) In SQL, the field is called a field, which is one of the types of text fields. The number between the parentheses is the maximum length of the number of characters that can be entered, and it cannot be empty because we used the phrase (NOT NULL). The secondary field is also a text field, VARCHAR (70), meaning that the name is

a maximum of 70 characters long. This field can be NOT NULL, and so for the rest of the fields, it must be of type (NOT NULL) because we need all the data without loss or loss of data and the logical structure shows all the fields used in the aforementioned table in the following table.

Table 3.3: Logical chart for the student information table

FIELD	TYPE	LENGHT/VALUES	NULL
s-id	INT	14	NOT NULL
name	CHARACTERS	70	NOT NULL
secondary	CHARACTERS	70	NOT NULL
birth	DATA	---	NOT NULL
purview	CHARACTERS	70	NOT NULL
sum	INT	6	NOT NULL
sex	CHARACTERS	8	NOT NULL
religion	CHARACTERS	8	NOT NULL
city	CHARACTERS	10	NOT NULL
village	CHARACTERS	10	NOT NULL
attempt	CHARACTERS	10	NOT NULL
f_choice	CHARACTERS	40	NOT NULL
S_choice	CHARACTERS	40	NOT NULL
th_choice	CHARACTERS	40	NOT NULL

- **Tables related to the student's schedule** it consists of six tables linked to the (student) table, each table contains fourteen fields, and the field names and the structure and logical structure are similar to the student's table. The reason is that the six tables are used as stores for the same information that is inside the student's table, but they are classification into several classes to facilitate The process of extracting the acceptance results more accurately, and the data is sorted through the other site that was designed, which is the results extraction site, which can be connected to the table (users) and the (student) table and the tables linked to the (student) table. The design of related tables was what is known as the relational database

system, called the database management system or what is known among specialists in that field as DBMS, as it is called the Relational Database Management System and abbreviated as RDBMS [28] , and a database management system that uses a table One or more tables have a relationship. We have mentioned a relational word here to distinguish it from other database management systems, for example (the hierarchical system) used to save information in a way that provides easy handling and retrieval of data in more than one way[29],and the tables linked to the requesting table are as follows

- Age rejections table
- Table of rejected people due to total(SUM)
- Table of admissions from other religions
- Schedule of admissions from the first attempt
- Schedule of those admitted from the second attempt
- Schedule of admissions from the third attempt

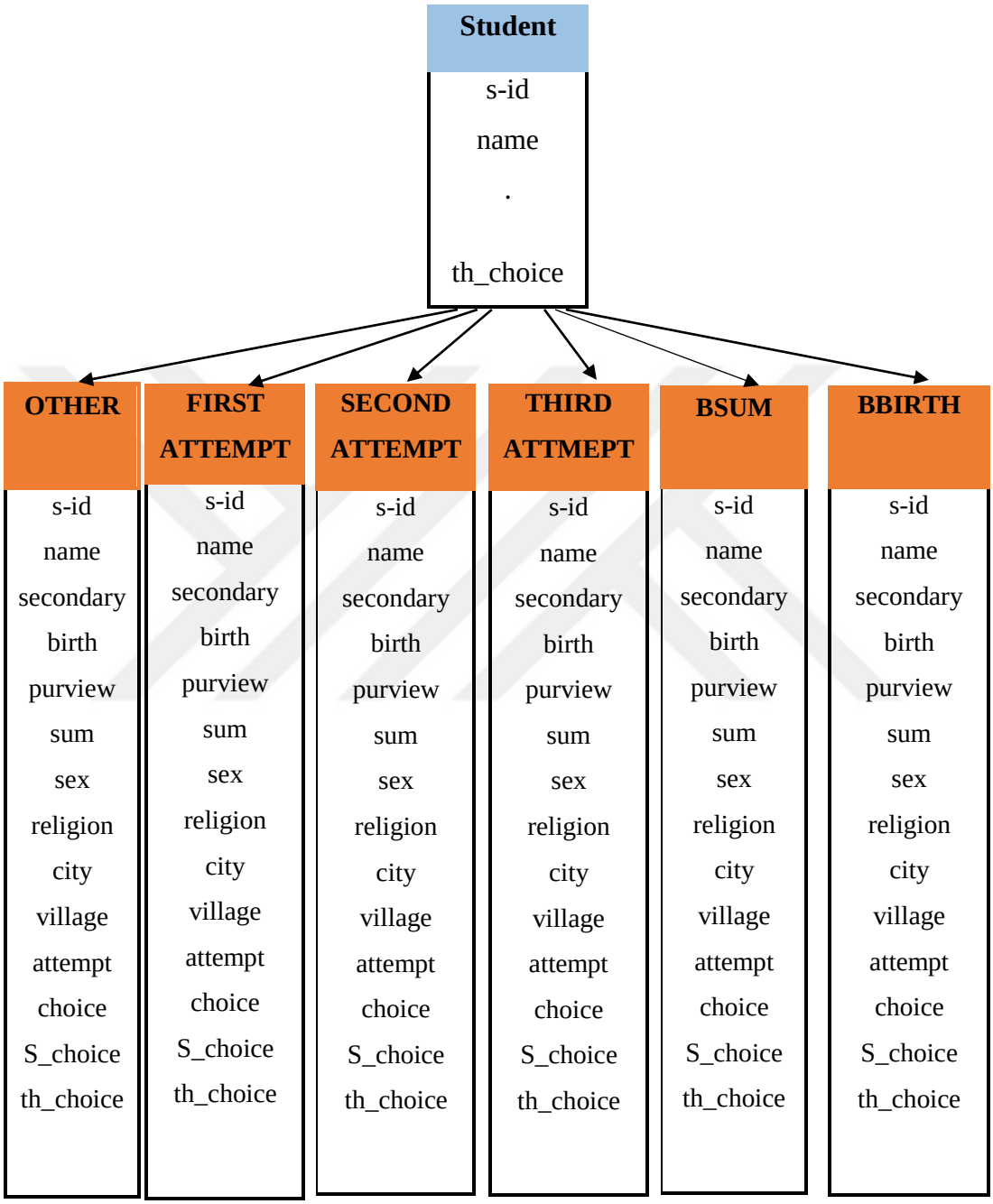

Figure 3.5: The related tables in the Student table

3.2.6 Website design

The website consists of pages programmed in any of the web languages that display and take data on the Internet. The sites differ from each other in terms of their work, programming and method of work, and the languages used in creating those sites and according to the work performed [30]. We will mention two types of them as follows.

- Static sites, which are regular sites that contain static pages that do not change except programmatically by changing the code of the pages and display the data statically as they are non-interactive, that is, they do not contain a database of input and output data[31],and they are the least used at all and are programmed in the description language (HTML) and (CSS), but at the same time they are the two basic languages in the design of any website, and it is worth noting that there are many programming languages as we mentioned previously that programmers use to program websites, but whatever the language used in programming any website, the final form of the page is controlled by these two languages, namely (HTML) and (CSS) [30] which can be defined as follows.

  - HTML (Hyper Text Markup Language) is the building block of the web. It describes and defines the content of a web page. Other technologies besides HTML usually describe the appearance of a web page (CSS) or its interaction with the user (JavaScript), and the term "hypertext" refers to links that link web pages to each other, either on one side or between multiple sites. Links are an essential aspect of the web. By uploading content on the Internet and linking it to other pages created by other people, you become an active participant on the Internet, using HTML "tags" to describe text, images, and other content for display on your web browser. HTML tags include special "elements" such as <head>, <title>, <body>, <header>, <footer>, <article>, <section>, <p>, , , <image >, and many more [32].

- **CSS** (Cascading Style Sheets) is the language of web design and adding dynamism to pages designed with HTML, and CSS codes are developed based on HTML codes, and without HTML it is not possible to write or use CSS, CSS codes are expressed.

through styles, colors and backgrounds Screen formatting and CSS codes are translated into styles via internet browsers such as Chrome, Firefox, and Opera [33]

- Dynamic sites, or what some call them interactive sites, are most of what a technology company offers [34],They are sites built mainly in a programming language such as PHP [35]and the content is fetched through a database or other files, and this type of site is the most used at present It can also be said that most of the sites on the Internet are dynamic (interactive) sites, And they mentioned of the advantages of dynamic sites [34].

  - Developing them or adding and modifying the content presented to them is easy and smooth through a special control panel.
  - It contains an unlimited number of pages, which allows the entry of a huge amount of data through the owner of the site.
  - Providing communication and interaction between the site management and visitors, which raises the sales rates.
  - Beloved to search engines and always occupies advanced positions in search engines.

In this chapter and this section, in particular, the types of sites, the best of them and the appropriate languages to create the required site were discussed. We have chosen to create the site (dynamic sites) since we have designed databases in the first section of this chapter with (MySQL) And it was managed by language queries (SQL) and interface (PHPMYAdmin) and according to the requirements of the university that will be mentioned later in this chapter and the section, in particular, we chose the languages that fulfil the required need and according to the requirements of the university, which is the language (HTML), (CSS) that were defined and the language (PHP) , which can be defined as a programming language for developing web pages, and it is an open-source language (not owned by a company) developed by a team of volunteers and designed

to develop and program applications and web pages and implement all its orders through the server or server in browsers and interact with data and its output [36].

3.2.7 Designing the student data flow site for admission to STU

The website for the flow of student information was created by the requirements and conditions of the university, which were as follows

- That the site is compatible with all computers, tablets and mobile devices during the presentation.
- That the entry limit is for students of vocational middle schools in Iraq and all attempts.
- That the username be the student's identification number and the password or password that is generated by a special mechanism.
- Use the password and password only once to avoid duplicating data in the database.
- Forcing the student to enter all the required information to avoid missing data, because all the required data is important for admission and distribution of students to the technical institutes of the university.
- Confirm the sending of student information to the database.
- Displaying the data for the student to confirm the process of sending the information to the database after importing it from the database.

On this basis, the site was designed according to the conditions required by the university, as the site contained four pages on the site and they were as follows

- Login page.
- Student information entry page.
- Confirmation of data transmission page.
- A page for displaying student information after entering the ID number.

3.2.8 Login page

This page is designed to limit only professional high school students who have skipped or passed the general exams in all three attempts and the mechanism for making this page when entering the password represented by the student ID number and the password assigned to each student, the code for the page design will secure a connection to the designed database[36],especially to a table (users) to make sure that the ID and password are identical, The following figure shows the login page for the designed site.

Figure 3.6: Student login page

3.2.8.1 How the page works

Since the number of students who are graduates of professional preparations is very large, it may reach (1000-2000) students for the southern governorates only, which represent three governorates, namely(Basra, Nasiriya and Masan) so it is necessary to think about an appropriate mechanism for how the student obtained his user name and password to access the site, it has been done The use of the student ID number used in the general examinations, which was handed over to each student by the Iraqi Ministry of Education, the aforementioned ministry sends lists containing the information of students who passed the exams to the university, especially to the site manager in the form of an Excel program, so that the role of the site manager is to create the

password for each student through a special formula With the Excel program and converting the file into (csv) format, then a copy of the information is downloaded to the table (user) via the (phpmyadmin) interface that contains the student's identification number, password and the name of the student by the site administrator, as he is the only one who is able to access the designed database Specifically[25],to the users' table and the admin table only, and after that, special lists of students containing the student’s name, identification number and password are sent to the Ministry of Education. The Iraqi environment is secret, after which each student obtains private information to enter the site, and with this mechanism, the students who can access the site are identified.

3.2.9 Student information entry page

The page for entering student information is designed according to the standards set by the university, and among the specified criteria is forcing the user to enter all the required information to avoid losing data. The page was designed per this standard so that the page that follows the information entry page is not moved without completing all the information and then pressing On the command (registration), then the move is to the next page of the designed site, if all fields are not completed, a message will appear that says (field is required), and one of the advantages of this page is not to repeat the data for the same (ID-student) to avoid confusion It may happen when students are shown the admission results[36],and the figure shows the form of the information entry page.

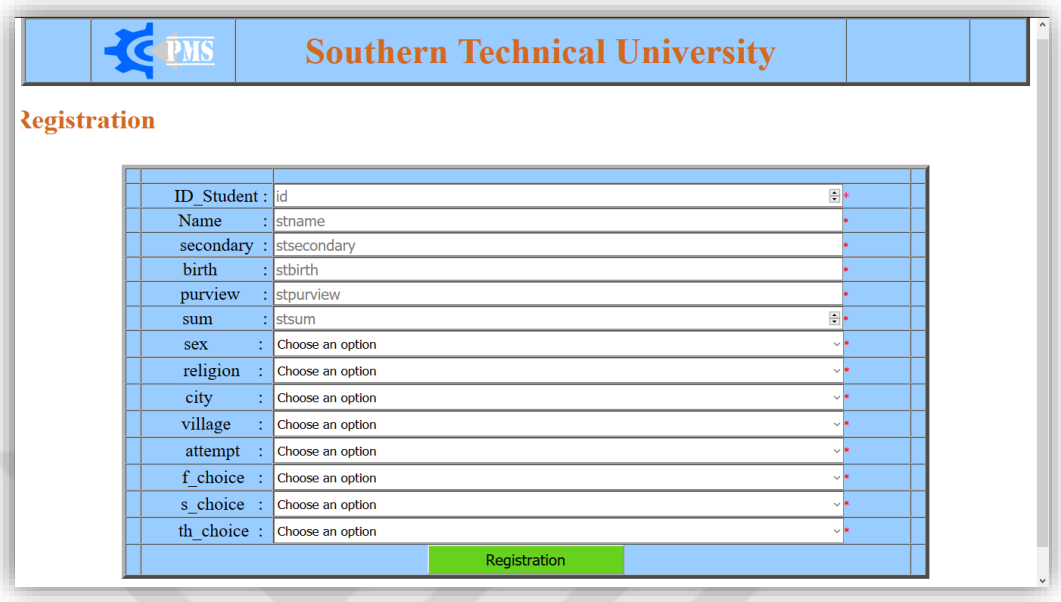

Figure 3.7: Student information entry page

3.2.9.1 How the page works

When all information is entered and the command (registration) is pressed, this means that the code for the data entry page secures a connection to the database, and if the connection is verified, the information will be transferred to the database, especially to the table (student) and the tables associated with it, and in case of duplication (ID-student)) None of the data is stored because of the presence of similar information, and this feature is designed in the

database designed on the site[36]. As for the fields from which the data entry page is formed and the meaning of each field is described as follows

- **ID student** this field represents the student id.
- **Name** The full name of the student.
- **Secondary** is the name of the professional high school that the student graduated from.
- **Birth** the year of the student's birth without mentioning the month or day.
- **Purview** of the major or department from which the student graduated.
- **Sum** of the total grades obtained by the student upon graduating from high school.
- **Sex**, which is a multiple-choice type that contains two options (male, female) to determine the gender of the student.

- **Religion**, which is a multiple-choice type that contains two options (Muslim, other) to determine the student's religion
- **City**, which is a multiple-choice type that contains three options (Basra, Dhi Qar, Maysan) to challenge the province or state in which the student lives.
- **Village**, which is a multiple-choice type, contains eighteen options (City Center, Abu Al Khaseeb, Zubair, Fayhaa, FAO, Al Hartha, Qurna, Shatt al Arab, Al Shatrah, Al Rifai, Al Shuyoukh, Al Jabayesh, Al Kahla. Saleh kelai, AL major, AL meimona, Ali AL gurbey, other), which determines the village in which the student lives and is the closest point to the student's place of residence.
- **Attempt**, which is a multiple-choice type that contains three options (Attempt First, Attempt Second, and Third Attempt) to determine the attempt with which the student passed the general exams.
- **F-choice**, which is a multiple-choice type that contains five options (Basra Technical Institute, Technical Institute in Dhi Qar, Technical Institute in Maysan, Technical Institute in Shatrah, Al-Qurna Technical Institute) the first choice that determines the name of the institute that the student intends Have a seat in it.
- **S-choice** it is of a multiple-choice type that contains five options (Basra Technical Institute, Technical Institute in Dhi Qar, Technical Institute in Maysan, Technical Institute in Shatrah, Al-Qurna Technical Institute) the second choice specifies the name of the institute that the student intends have a seat in it.
- **Th - choice** it is of a multiple-choice type that contains five options (Basra Technical Institute, Technical Institute in Dhi Qar, Technical Institute in Maysan, Technical Institute in Shatrah, Al-Qurna Technical Institute). The second choice specifies the name of the institute that the student intends. Have a seat in it.

3.2.10 Data transmission confirmation page

On this page, the information is confirmed to be sent to the database in the table (student) that we referred to earlier in this semester, and the process is done by entering the (ID student) number in the designated field on the designed page and then pressing the (submit) key, then the page is

moved The following site and the figure shows the form of the data transmission confirmation page.

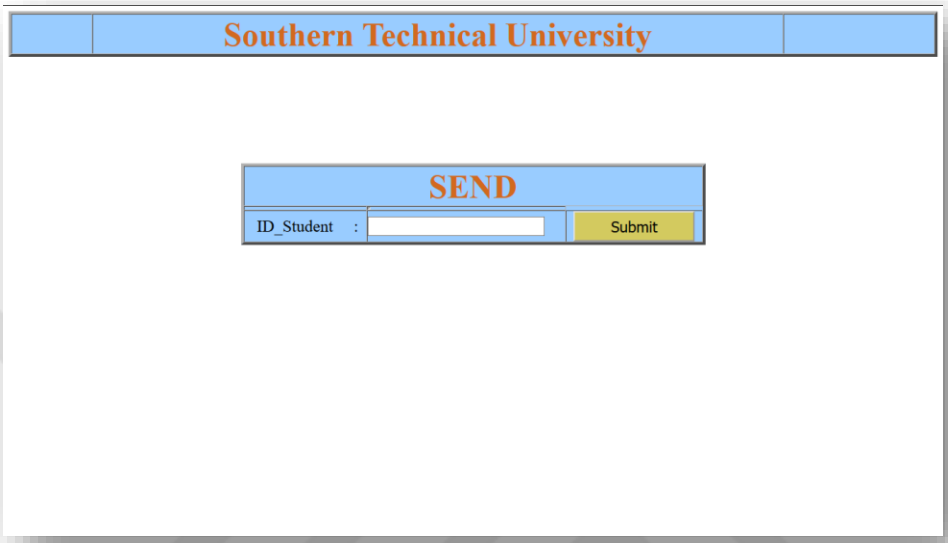

Figure 3.8: Data transmission confirmation page

3.2.10.1 How the page works

When you click on the command (submit), the connection to the database is secured via the page's code to make sure that the ID number is in the table (student). If there is no match, then it is not moved to the next page on the site. If there is a match, it will move to the page. But after completing the second process, which is to completely delete the student's record from the table (users) designated for storing the ID and password so that the student cannot use the student's ID-student code and the password for the process of logging in to the login page on the site[36] .

3.2.11 The student data display page after entering the ID number

This page is responsible for displaying the data that has been sent to the database to ensure that the data is sent correctly, and this is done by entering the student ID number (ID student) and pressing the command (search) so that the information is displayed in the designated fields on the page which are of the type of reading only, i.e. the student is not allowed By changing any of the previously entered information in the information entry page, and upon completion, the(EXIT)

key is pressed and back to the first page on the site, which is the login page. Thus, the student has completed the registration process, and the figure shows what the student data display page looks like.

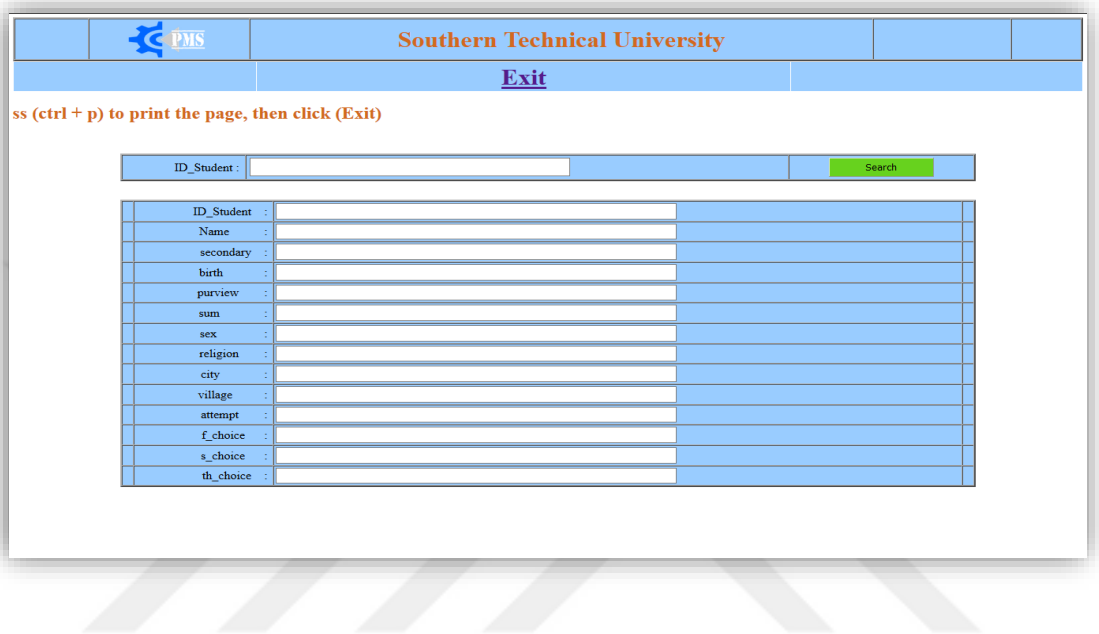

Figure 3.9: The student data display page after entering the ID number

3.2.11.1 How the page works

When writing the student ID number (ID_student) and clicking on the command (search). The code for the page secures the connection to the database and especially to the table (student) which is the main store for student information. The code for searching for the student ID number is run. The record information in full and displays it on the dedicated page on the site and then press the command (EXIT) to exit the page. If no information is displayed, this means the ID is incorrect; indeed the requestor is to try again. With this chapter of our research, we have finished the first problem of the site, from which many problems have branched out, which were solved in this site, namely the problem of data flow or private information for students.

3.3 WEBSITE DESIGN DATA PROCESSING

You can apply for admission to a university. Especially since this matter often causes students to worry and confusion, but now obtaining university admission has become not impossible or costly as many students think today, as many universities have started to activate the service of obtaining

university admission electronically through the university website or by traditional methods by sending The papers to the university address, or the application via another person residing in the same country as the university in which the student wishes to study.

It must be noted at the outset that the possibility of obtaining university admission varies from one country to another and even from one university to another within the same country or city. There are always conditions for admission and these conditions vary from country to country or university to university and before starting the design process for the site that handles the flowing data to extract student admission and distribute them to the institutes, it is necessary to know the special admission requirements to design the site based on which, for example, the conditions for admission to technical universities in Iraq, especially the conditions for admission to graduates of vocational secondary schools in Iraq, who are under discussion now, which are influential conditions for admission, which were set by the Iraqi Ministry of Higher Education, and the following were:

3.3.1 The applicant must be less than 25 years old

There are many conditions set by the Iraqi Ministry of Higher Education to obtain a study seat in the technical institutes of technical universities, but in this section of the study, we focused only on the two conditions mentioned because they are considered the most important in the student admission process in its early stages, and other conditions may be influential, but It does not fall within the core of the problem that we are about to solve in the study, especially in this section of the study.

The first condition is one of the important conditions in the admission process, and we would like to mention that the education system in Iraq, especially in the Iraqi Ministry of Education and the Directorate of Vocational Education in Iraq, which is part of the Ministry of Education, allows students to study at all ages, where education is divided into morning and evening, and the external education system Morning education outputs from students who are over eighteen years of age and who are always less than twenty-five years because the Ministry of Education does not allow those over twenty-four years of age to stay in morning preparatory schools and there is a special case also in the morning school that the student if He failed by two attempts at the same stage, as he is transferred from morning study to evening study even if their age is less than twenty-five

years. Therefore evening study is mixed and contains all ages and can be as input for technical institutes in addition to morning school graduates from middle school for admission to technical institutes when a condition is met Age As for the third category, and we mean external education, some students were not allowed by living conditions to complete their studies. Morning, evening, or one of the other circumstances that kept them away from the places of study, they can participate in the general examinations conducted by the Ministry of Education and who also consider them as inputs for admission to technical institutes because some students meet the first admission condition, which is that the age of the applicant is less than twenty-five years.

3.3.2 Total of marks by the student is 480

This condition is considered one of the most complex conditions because it has many ramifications, as it is divided into two parts. The first part is for Muslim students and the second part is for non-Muslims. The reason for this is not political or social. As for the non-Muslim students, the total of scores is divided by seven to extract their average and the reason for the difference between the two classes is the subject of Islamic education, and from here we can say there is a difference in the total of grades between the two classes, which must be taken into account and an increase in complexity also, the first section is divided into two categories as well, and as mentioned earlier The first section are the Muslim students, the first category who succeeded in the first attempt in the general examinations conducted by the Ministry of Education in the last stage of the middle school. This category of students has added to them eight marks on the total because they passed the general exams from the first attempt, which leads to the acceptance of students with less than one condition The total is eight degrees or marks, for example, if the application got a total of 472 degrees and was successful from the first attempt It is considered acceptable due to the presence of an increase in a total of eight additional marks so that the total of the marks becomes 480. As for the second category, students who passed the general examinations for the second or third attempt, the condition shall be applied to them without increase or decrease, that is, the total of their scores must be 480, and the second section is students Non-Muslims or other religions are also divided into two categories: the first is the successful ones from the first attempt and the second category the successful ones from the second and third attempt. 420 and those who passed the first attempt would be 413, to add seven additional marks, because they passed the first attempt with seven academic subjects, and the reason for that is that

they are not included in the subject (Islamic education). As for the second category in this section, the total admission is 420 for successful students from the second and third attempts.

Hence, the vision became clear in the design of the site to solve this complexity, and the best solution would be to classify the flowing data into several categories to facilitate after that in the third phase their distribution to the technical institutes of the Southern Technical University.

The site is designed using PHP, queries (MySQL) and site programming languages (HTML language) and language (CSS). This site consists of seven pages that are managed by officials licensed by the university and this site depends on the information flowing in the cloud database designed in the first section of This chapter, especially on the table (student), which is the main store for the flowing data, which will be processed through software codes designed in the mentioned languages, and the table (admin), which is considered as a store of passwords and passwords for site administrators, where the site is one of the following pages.

- **Admin login page**

This page is designed to determine the entry of officials to manage the site and the mechanism of this page when entering the password represented by the administrator's identification number (ID_ADMIN) and the password (Password) and then press the (submit) command to activate the code for the design of the page in the programming languages used and which were mentioned which It will secure the connection to the designed database, especially to the ADMIN table, to ensure that the ID number and password stored by the system administrator are identical in the table. The process is considered as a defensive line for attacks that may occur, and the following figure shows the login page for the designed site.

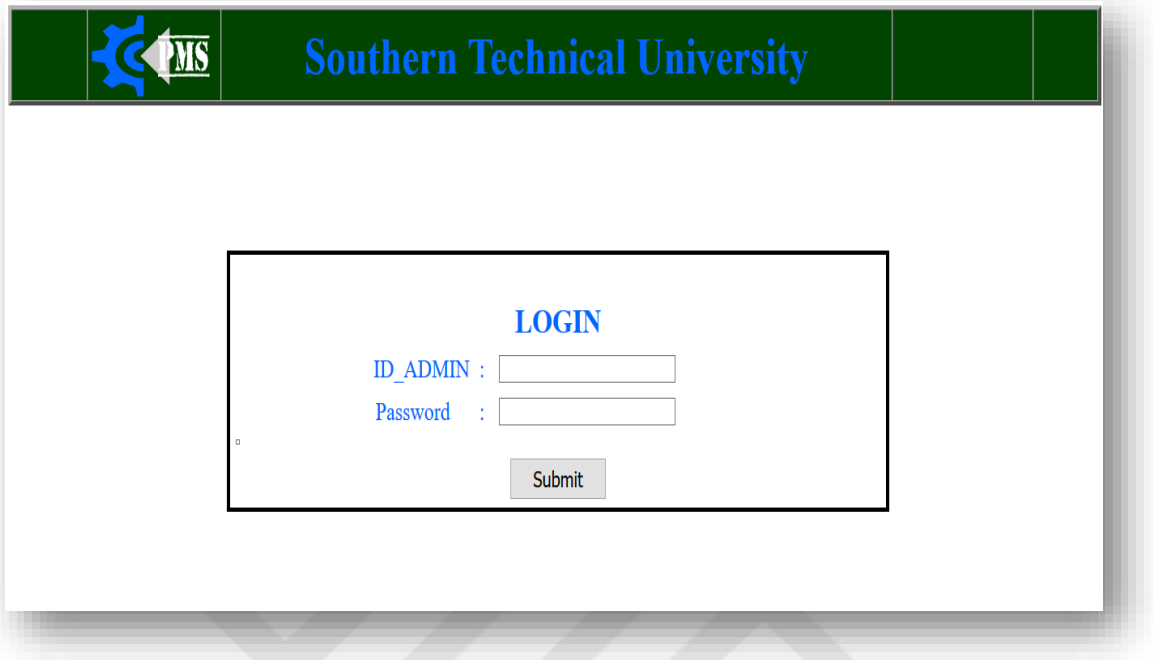

Figure 3.10: Admin login page

- **Page sorting data for students rejected because of age**

After the successful login process through the login page, the page of data screening for students rejected because of age appears, and the work of this page will be to extract or sort unacceptable students because of age, i.e. those over twenty-four years old, and it is one of the conditions set by the Iraqi Ministry of Higher Education for admission to undergraduate studies. The mechanism of the page works after pressing the command (BECAUSE OF AGE), the designed code is activated and the connection to the designed database is specifically connected to the main database table (student), which is the main store for all student data flowing from the data flow site as mentioned earlier in the first section of this chapter where The search and prospecting of students over the age of twenty-four years are carried out, especially in the field or column (birth). If the condition is met, the student's record is completely transferred to the designed table inside the pre-designed database (bbirth) and so on until all records within the table (student) are inspected. Upon completion, it will automatically switch to the next page on the site. The reason for designing the page was at the beginning of the site and it was the first treatment in the This is the reason for the fact that the

age condition includes all groups and there is no exception for any of the students, so it was necessary to place it first in order not to confuse the work of the site, that is, a guarantee for not copying a student's record that is not included in the admission from other categories, and the following figure shows the page of data for students rejected because of age.

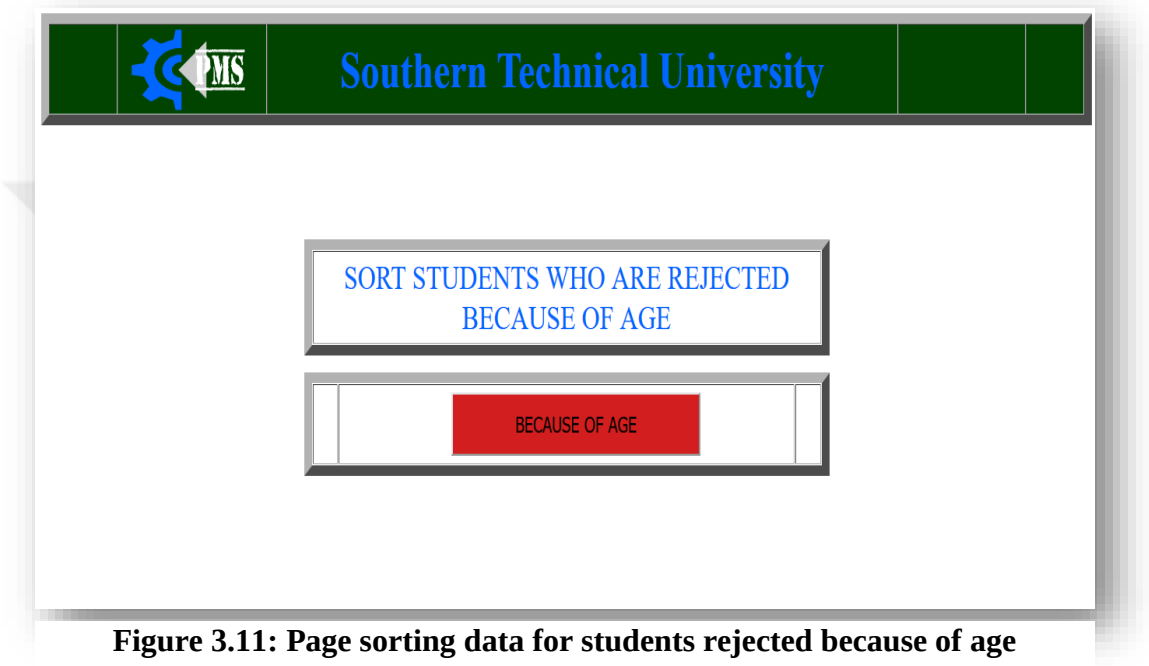

Figure 3.11: Page sorting data for students rejected because of age

- **Page sorting data for students admitted from other religions**

After completing the first condition, which was set by the Iraqi Ministry of Higher Education, which was the age requirement to sort out unacceptable students because of their ages that exceed twenty-four years, and since the second condition is the condition of the total that consists of two parts, as we mentioned earlier in the subject of designing a site for data processing, which was Muslim students and non-Muslim students due to the difference in the total of admission, and as we have shown previously, this page is designed to sort and classify the data of students admitted from other religions and the mechanism of the page works after pressing the command (ACCEPTED STUDENTS) activates the code designed for that page and connects to the designed database, and in particular the connection to the database table The main data (student), which is the main store for all student data flowing from the data flow

site, where the records of students from other religions are searched and excavated in the (religion) fields to search for the value (other) and the field (sum) if the sum value is greater than or equal 413 In the event of a match, the student's record is copied to the table (bother) designed to store data for students admitted from other religions. For the process until the completion of all records and the main reason for sorting the data of students admitted from other religions before extracting the data of unaccepted students because of the total, and this comes back while if the data of unacceptable students due to the total were extracted without sorting the data of students from other religions, they will be considered unacceptable students. The reason is due to the fact that the total admission for students from other religions is less than the total of Muslim students, and for reasons previously mentioned in the condition of crowds from this semester, upon completion of the entire screening process, the transfer is automatically made to the next page of the site and the following figure shows the page for sorting data for students admitted from other religions.

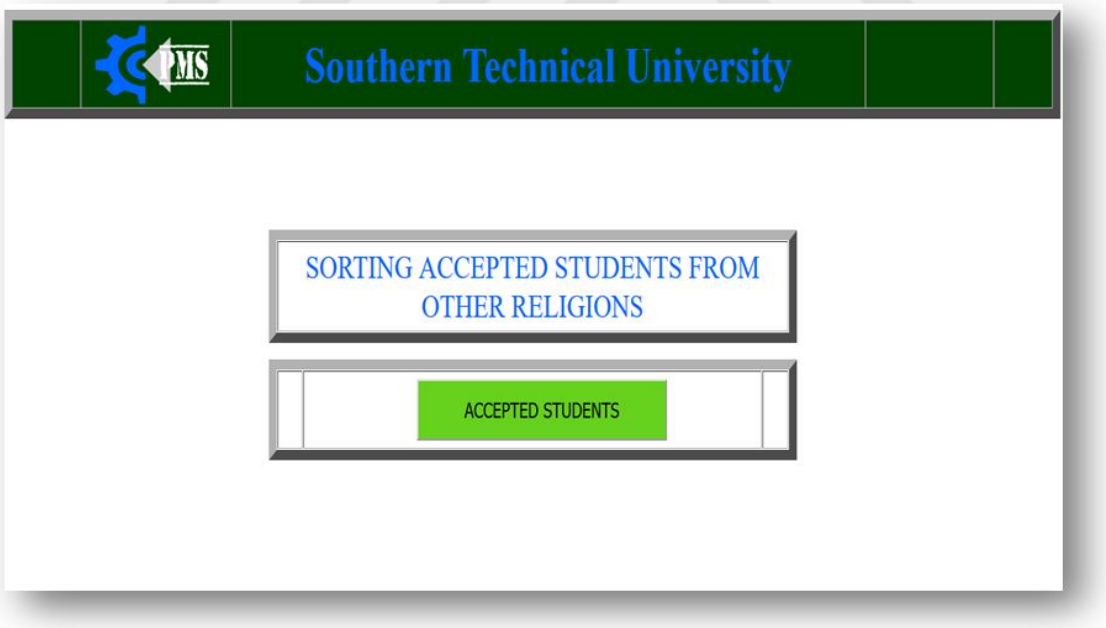

Figure 3.12: Page sorting data for students admitted from other religions

- **Page sorting data for students rejected because of the total**

After the data were filtered in the database and the data of students who were rejected because of age and non-Muslim students were transferred as a second stage, now the data of unaccepted students due to the total must be processed as a third stage, but there are some problems and some complexity as we mentioned that in the subject of designing a site for data processing, especially in the second section on the condition of the total for Muslim students, so that the difference in the total of acceptance was for the first, second and third attempt, so that the total admission for students who succeeded in the first attempt was 472, and those who succeeded in the second and third attempt would be 480, so to sort the data of students rejected because of the total, it must be less than 472 for students Those who succeeded in the first attempt and was less than 480 for the students who were successful in the second and third attempt. The data of students who were rejected because of age and students from other religions have been transferred and there is no remaining of the unaccepted students who are rejected because of the total. This page is designed to sort the data of students rejected because of the total, which was formed From separate codes, the first code sorts the data of the rejected students and who They had passed the general exams from the first attempt, but the total of the scores they obtained was less than 472, and the second code sorts the data for students who were rejected because of the total as well, but it was for students who passed the general examinations for the second and third attempt, whose total score was less than 480. With regard to the mechanism of the page functioning after pressing the command (BECAUSE OF SUM), the special codes that work to secure the connection to the data base and especially to the table (student) are activated and then the code for sorting the data of the rejected students starts from the first attempt and this is done by matching the condition with the two fields (sum) and (attempt) If the total is less than 472 and the attempt was the first in the attempt field, the student's record is transferred to the table (bsum) until all records are completed and upon completion, the second code is automatically converted, which is the code for sorting the information of students rejected because of the group for the attempt The second and third are also on the same table (student) and the two fields (sum) and (attempt) and with a different condition for the total, which is less than 480, and the second or third attempt will be if The two conditions are fulfilled together, the student's record is transferred to the table (bsum) also. Until all records in the student's table are completed, and upon completion, the student's record

is automatically transferred to the next page, the following figure shows the data screening page for students rejected because of the total.

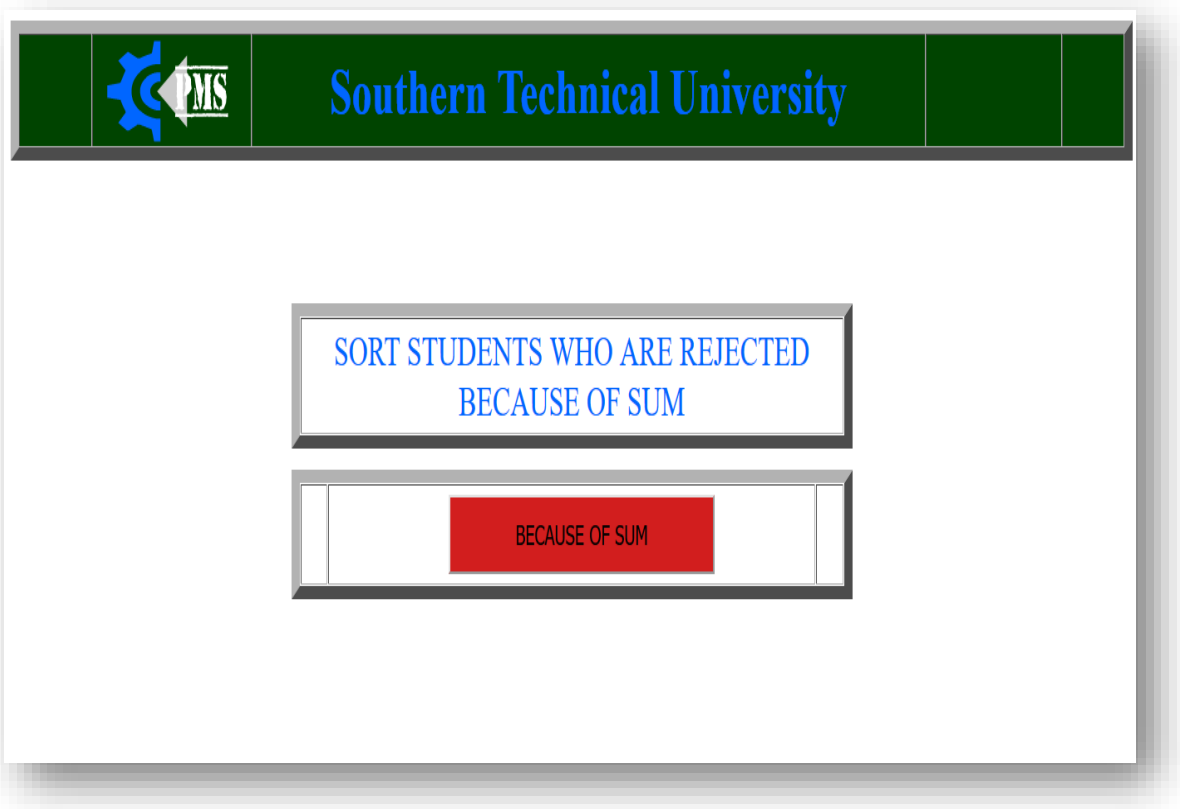

Figure 3.13: Page sorting data for students rejected because of the total

- **Page sorting data for accepted students from the first attempt**

It is intended to sort the data of the accepted students from the first attempt is to sort the students who passed the ministerial general examinations from the first attempt. As we mentioned earlier, their total admission is greater than or equal to 472 and not 480, and the page work mechanism after pressing the command (ACCEPTED STUDENTS) is activated the codes for the page and its guest These codes secure the connection to the database designed down to the table (student), especially to the field (attempt) to search for the value (first attempt), meaning

the successful student from the first attempt, and upon matching the student's record is transferred completely to the table (first). This process is repeated until the completion of the preview all records, upon completion, will automatically move to the next page, and the following figure shows a page for sorting the data of accepted students from the first attempt.

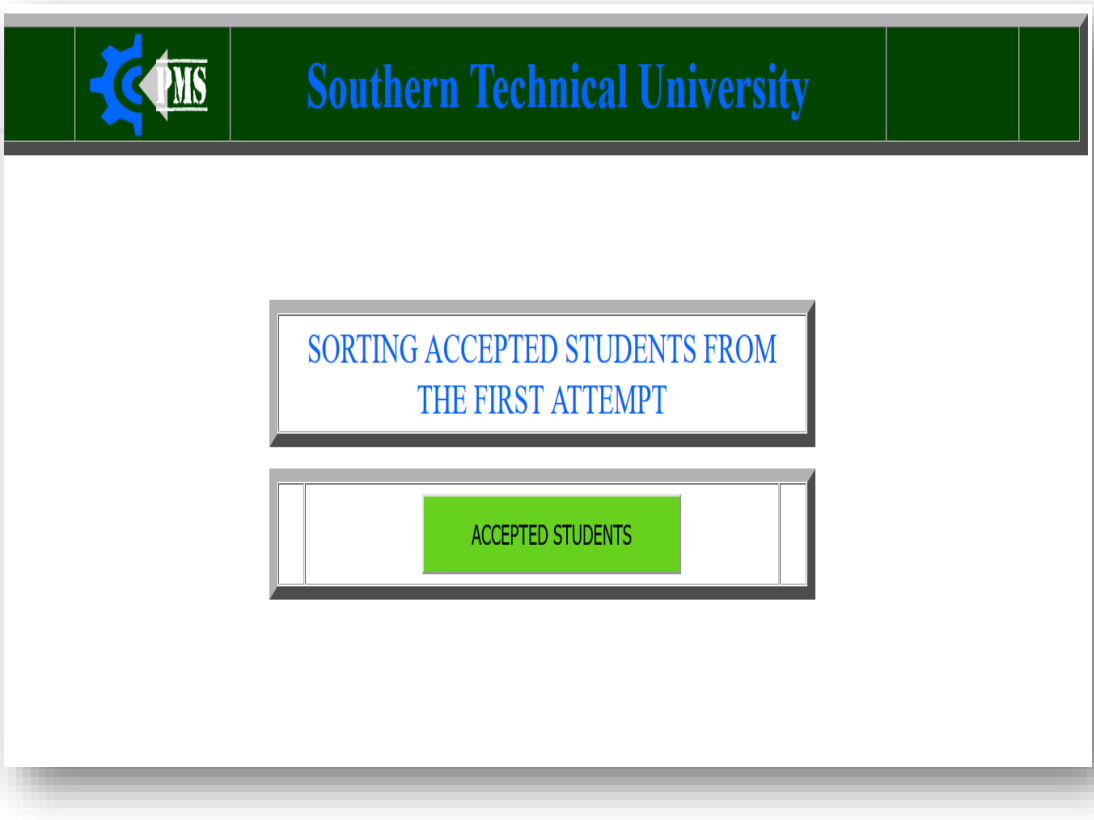

Figure 3.14: Page sorting data for accepted students from the first attempt

- **Page sorting data for accepted students from the second attempt**

It is intended to sort the data of the accepted students from the second attempt is to sort the students who passed the ministerial general exams from the second attempt, and as we mentioned earlier, their total admission is greater than or equal to 480 and the page work mechanism after pressing the command (ACCEPTED STUDENTS) is activated the codes for the page and the guest of these codes Securing the connection to the database designed down to the table (student) and especially to the field (attempt) to search for the value, the second attempt, meaning the successful student from the (second attempt), and upon congruence, the

student's entire record is transferred to the (second) table. This process is repeated until all records are finished and upon completion, it automatically moves to the next page, and the following figure shows a page for sorting the data of accepted students from the second attempt.

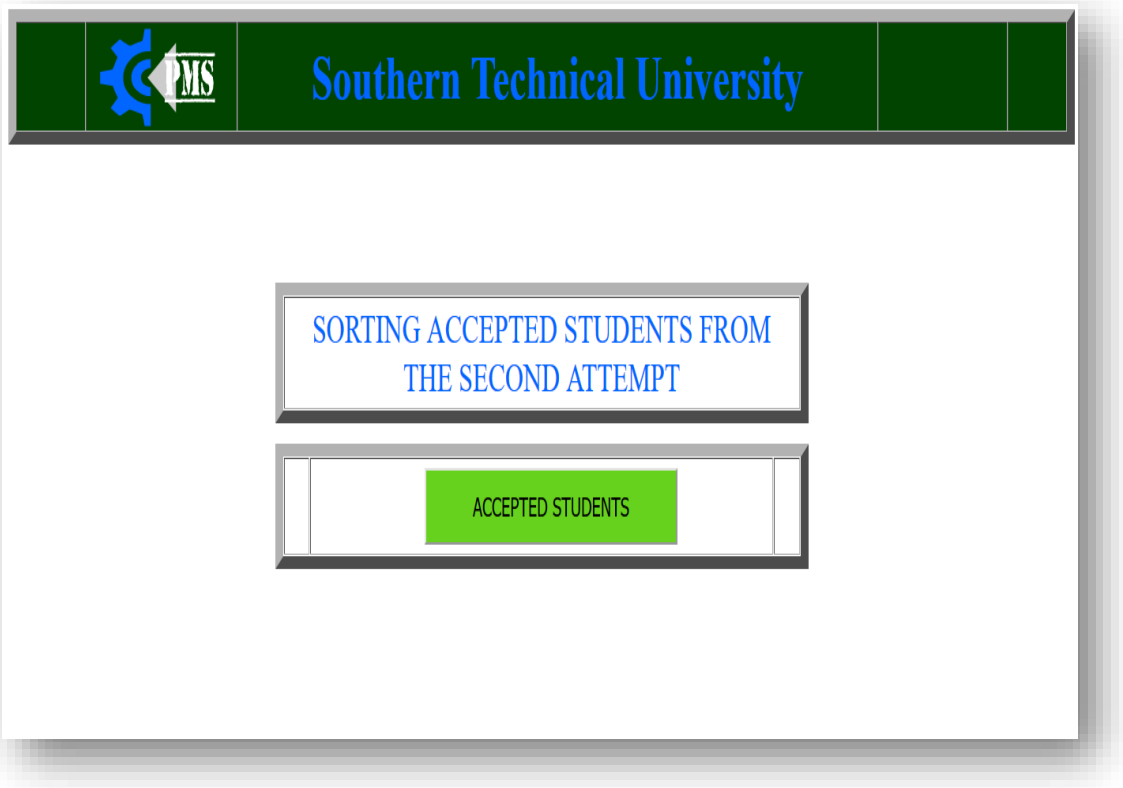

Figure 3.15: Page sorting data for accepted students from the second attempt

- **Page sorting data for accepted students from the third attempt**

The total admission of students who passed the ministerial general examinations that are held by the Iraqi Ministry of Education from the third attempt is 480. Also, this page is designed to sort the data of only accepted students who passed the public exams from the third attempt. The code for the page written in PHP and MySQL queries, as we mentioned earlier so that the designed database is connected and then to the table (student) to transfer the entire existing data to the table (third attempt) and after completing the transfer of all records, it automatically

moves to the next and last page in the site and in the form The following shows the page for sorting the data of accepted students from the third attempt.

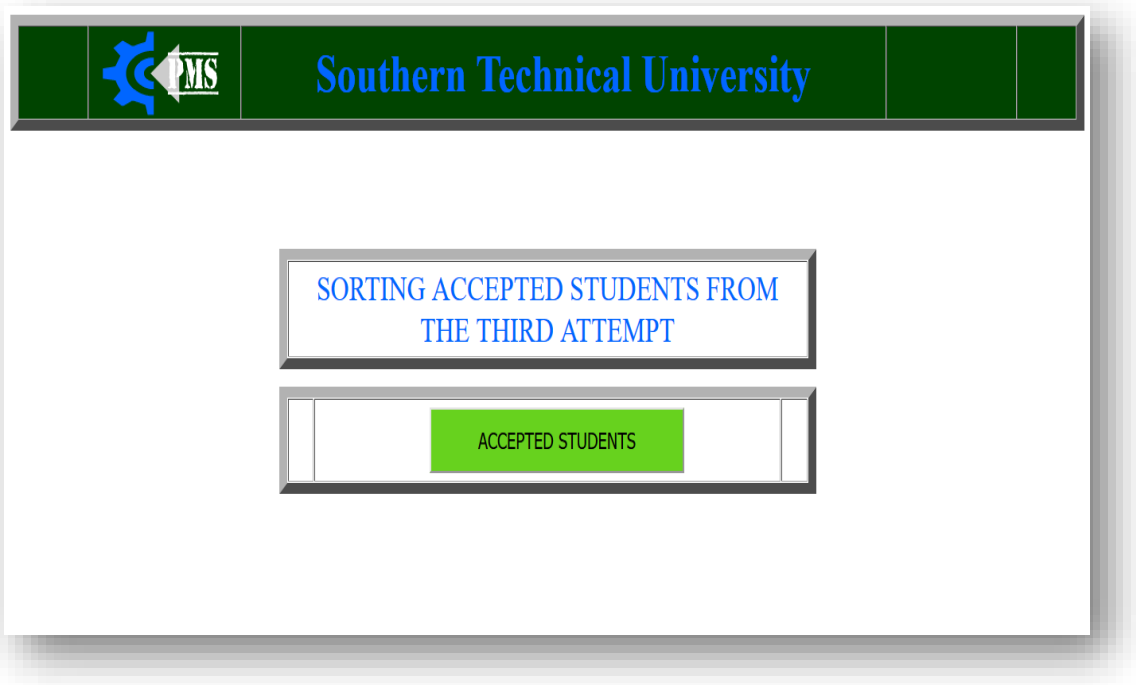

Figure 3.16: Page sorting data for accepted students from the third attempt

- **Reports download page**

This page is designed for the purpose of downloading the final reports from the data processing site after the data sorting process in the previous pages and after the screening process, the site's administrator now has nothing to do but download reports for the accepted and unaccepted students of all their categories to then analyze the data to take appropriate decisions in their distribution to the institutes of the Technical University Southern, the format of the withdrawn reports is in the format (EXCEL) and that the mechanism of the page work is by clicking only on the commands on the page to activate the codes designed to connect to the database and especially to the table attached to the matter, for example if we assume that the

site administrator pressed the command (Other Religions are Accepted), then it is called (OTHER) table, which is the store in which the information of the students accepted from other religions is kept, and after verification of the connection, the second code responsible for uploading the data in the form of an excel program is activated and this process is repeated for all the commands on the page, but with the difference of contacting the table that is designated to save each class and the points The following explains the work of each order and each schedule related to the matter according to the aforementioned mechanism.

- The command (Other Religions are Accepted) to download the accepted students from other religions from the (bother) schedule
- The command (Accepted The First Try) to download the accepted students from the first attempts of the (First) schedule
- The (Accepted The Second Try) command to load the accepted students from the second attempts of the (second) schedule
- The command (Accepted The Third Try) to load the accepted students from the third attempts of the (third) schedule
- Unacceptable Age command to load unacceptable students due to age from the (bbirth) schedule
- The command (Unacceptable sum) to load unacceptable students due to the sum from the (bsum) table

The following figure shows a page for downloading the reports of rejected and accepted students.

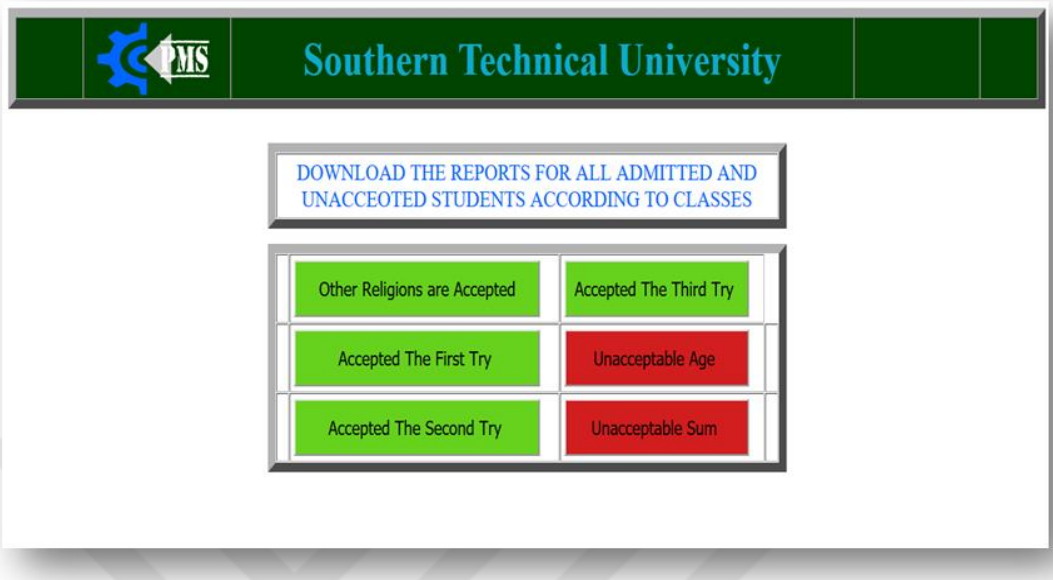

Figure 3.17: Reports download page

3.4 ANALYZING DATA USING BIG DATA TECHNOLOGIES

Until recently, access to data was the main challenge for most people, but now the situation has changed and now the challenge is how to use and benefit from this data. Data analysis is especially important for businessmen and managers who may want to convert data into information that can be used in decision-making. By using, this data through sophisticated analyzes and by adopting key metrics easily and efficiently, we will find ourselves with an unparalleled understanding and insights into various aspects of operational and strategic business planning.

In this section of this chapter, we will show, through the Excel program, which is one of the techniques used in analyzing big data, [23] how to analyze the data downloaded from the data processing site to distribute students to the institutes of the university because of its unlimited number of columns and rows and the ease of dealing with The data in sorting and processing it through ready-made functions and other functions that are designed by programmers to solve a specific problem, in addition to the feature of data visualization and a lot of other advantages [21],Similar programs and this is a result of its strong and high flexibility. It is considered one of the spreadsheet programs, and the first in the world in this field [23].

3.4.1 Distributing the accepted students to the technical institutes using the Excel

After completing the process of downloading students' data after sorting them into several categories, and it was in the form of excel, we will focus in our work in this section on how to distribute students to the institutes of the university according to the conditions set by the university and one of the important conditions is the distribution of students to the institutes close to their areas of residence, as we mentioned earlier. Because of its economic importance for the student and the university, taking into account the issue of their distribution according to their specializations or close to their specializations, there are some problems in this area, as some of the specializations found in professional preparations whose outputs are considered as inputs to the technical institutes are not available in the institutes that exist in the city As an example in the city of Dhi Qar, there are two institutes, the Technical Institute of Shatrah and the Technical Institute of Dhi Qar, and one of the specializations in the professional preparations is the specialty of (chemical industries). The specialty (art of family education) is found in vocational schools in the cities affiliated with the Southern Technical University, which is the city of (Al Basra, Dhi Qar, Maysan), but this specialization does not exist in all the institutes of the university except for the Technical Institute of Dhi Qar, so this issue must be taken into consideration in the distribution of students to the institutes and the following table shows the specializations in the vocational preparations of the city of Basra and the villages and places near Basra Technical Institute.

Table 3.4: Professional specializations available in Basra city and the villages near the Basra Technical Institute

city	Technical institutes	Village	purview in secondary schools
Basra	Basra Technical Institute	City Center	Accounting
			Administration
		Abu Al Khaseeb	Air conditioning and refrigerator
			Carpentry department
			Cars department
		Al Zubair	Computer assembly and maintenance
			Electricity
			Electricity generation and transmission
		Al Fayhaa,	Electronic and control
			Mechanics
		Al FAO	Medical device
			Petrochemical industries
		Shatt al Arab	Plumbing technology
			The art of family education
			Welding and forming metals

From the table for Basra Governorate, we note that the Technical Institute of Basra in the field of (purview in secondary schools) contains the scientific specializations in all vocational secondary schools in the city of Basra, and all specializations are available in the aforementioned institute except for the specialization (The Art of Family Education), which must be taken Taking into account when distributing the students of Basra city to the technical institute of Basra, meaning

that graduates of this specialization cannot be accepted in the aforementioned institute due to the lack of specialization in the institute, and with regard to the technical institute of Qurnah, which is considered one of the institutes in the city of Basra as well, there is a similar case but for more than one specialization in addition To the aforementioned specialization, but they can be accepted in a closer institute, which is the Technical Institute of Basra, and the following table shows the villages near the institute and all specializations from the graduates of vocational high schools in the city of Basra.

Table 3.5: Professional specializations available in Basra city and the villages near the Al-Qurna Technical Institute

city	Technical institutes	Village	purview in secondary schools
Basra	Al-Qurna Technical Institute	Al Hartha	Accounting
			Administration
			Air conditioning and refrigerator
			Carpentry department
			Cars department
			Computer assembly and maintenance
			Electricity
			Electricity generation and transmission
		Al Qurna	Electronic and control
			Mechanics
			Medical device
			Petrochemical industries
			Plumbing technology
			The art of family education
			Welding and forming metals

We note from the schedule of the Technical Institute (Qurnah) after re-listing all the specializations for the secondary vocational schools that the institute does not accept all specializations and only accepts the specializations indicated in green and to solve this problem they can be accepted into the Technical Institute of Basra, which is the closest institute to the villages close to the Technical Institute Qurnah except for specialization (The art of family education), which is located in the

Technical Institute of Dhi Qar, and the following table shows in the details of the Technical Institute of Dhi Qar, the villages and places near it, and the scientific specializations available from graduates of vocational secondary schools in the city of Dhi Qar.

Table 3.6: Professional specialties available in Dhi Qar and the villages near the Dhi Qar Technical Institute

city	Technical institutes	Village	purview in secondary schools
Dhi Qar	Technical Institute in Dhi Qar	City Center	Accounting
			Administration
			computer networks
			Carpentry department
			Electronic management
			Computer assembly and maintenance
			Electricity
			Electricity generation and transmission
			Electronic and control
			Construction department
			Medical device
			Welding and forming metals
			Petrochemical industries
			Maintenance of elevators
			The art of family education

From the table for Dhi Qar governorate, we note that the Technical Institute in Dhi Qar in the field of (purview in secondary schools) contains scientific specializations in all vocational secondary schools in the city of Dhi Qar, and all specializations are available in the aforementioned institute except for the specialty (Petrochemical industries), which must be taken Taking into account when distributing the students of Dhi Qar city to the Technical Institute of Dhi Qar, meaning that graduates of this specialty cannot be accepted into the aforementioned institute due to the lack of specialization, and this case is also repeated in the technical institute in part, and it is one of the institutes that is also signed in the city of Dhi Qar in addition to specializations Others are not available in the aforementioned institute, and the following table shows the name of the institute and the villages close to it, in addition to the specializations available from the secondary schools in the city.

Table 3.7: Professional specialties available in Dhi Qar and the villages near the Technical Institute in Shatrah

city	Technical institutes	Village	purview in secondary schools
Dhi Qar	Technical Institute in Shatrah	Al Shatrah	Accounting
			Administration
			computer networks
			Carpentry department
		Al Rifai	Electronic management
			Computer assembly and maintenance
			Electricity
			Electricity generation and transmission
		Al Shuyoukh	Electronic and control
			Construction department
			Medical device
			Welding and forming metals
		Al Jabayesh	Petrochemical industries
			Maintenance of elevators
			The art of family education

We note from the schedule of the Technical Institute in part after re-listing all specializations for the secondary vocational schools that the institute does not accept the disciplines (Petrochemical industries) and (The art of family education) and is indicated in red to solve this problem. Graduates of the major (Petrochemical industries) can be accepted in the Technical Institute of Basra. Which is considered the only institute in the university that has that specialization. As for the specialization (The Art of Family Education), students who have the aforementioned specialization can be accepted in the Technical Institute of Dhi Qar, and it is the only institute in which this specialization is also located.

After all the problems in the aforementioned institutes were revealed, only the technical institute was left in Maysan, which is also affiliated with the university and is in the city of Maysan, which contains vocational secondary schools that also have different specializations, which are considered as inputs to the aforementioned institute, which accepts all specializations except for one specialization only (The art of family education) This specialty is, as we mentioned earlier in this section of this chapter, that it exists only in the Technical Institute of Dhi Qar, and students of

this specialty can be accepted in the Technical Institute of Dhi Qar mentioned above, and the following table shows the specializations found in vocational secondary schools in Maysan city and its villages.

Table 3.8: Professional specializations available in the city of Maysan and the villages near the Technical Institute of Maysan

city	Technical institutes	Village	purview in secondary schools
Maysan	Technical Institute in Maysan	City Center	Accounting
			Administration
		Al Kahla.	Mechanics
		Saleh kelai	Cars department
		AL major	Computer assembly and maintenance
		AL meimona	Electricity
		Ali AL gurbey	Electronic and control
			The art of family education

After reviewing the most important problems in the distribution of students to the technical institutes of the university and after choosing the Excel 2016 program, in our study we developed an appropriate mechanism to solve these problems after the analysis tools in the program were used, and among the important tools that were used and what is acceptable is the interface of the program and its formats And the special functions in the program, and to solve this problem, we used the function (IF), the function (AND), and the function (OR) in an equation designed by the researcher according to the rules of functions in the Excel 2016 program, and in this equation all the problems related to the distribution of students, including the problems were taken into account Which has been presented in this section of the study and also focused on the fields in which the information necessary for the distribution process, which is considered among the information flowing in the first section of this chapter in the data flow site, which was loaded on the second site after sorting it, which was (purview, city And that the mechanism of action of the equation is

by identifying the city first, then the village, and after that the scientific specialization. For clarification in a more accurate way, it is by testing the cell belonging to the field (city) and Whether the site is from one of the cities and the test of the cell belonging to the field (Village) if it is from the villages of that city and the rest of the cell belonging to the field (purview) whether the scientific speciality is one of the specializations available in the city. On it, all the conditions are printed inside the cell in which the equation was placed, i.e. in the field (the institute in which the student is accepted). But if it is not applied, the next test begins on the other technical institute if there are two technical institutes in the same city, and if the test ends, the second city is tested with all the institutes in it and then Third, and after completion, there are two anomalies with two specializations mentioned previously, namely (The Art of Family Education). This specialty is only available at the Technical Institute in Dhi Qar, so the test is performed only on the cell belonging to the (purview) field with the specialty test if it contains the aforementioned specialization and if the test result is correct to print Directly at the Technical Institute of Dhi Qar, and if it is not achieved, only the specialization (Petrochemical industries) and a hobby of the abnormal specialties will remain, and only I in the technical institute of Basra and a test is conducted as happened in the test of the first abnormal specialization and these two tests are at the end of the mathematical equation designed by the researcher from this study to then copy this equation in all cells of the new created field which was in the name of (the institute accepted in the student) after Upload the data of accepted students for each admission category separately, and after completion, the file is converted from the Excel program format to the (CSV) format, so that the site administrator can then upload it to the last site so that students can know the results of their acceptance from the designed site.

3.5 THE SITE FOR DISPLAYING STUDENTS ADMITTED TO THE UNIVERSITY'S TECHNICAL INSTITUTES

After completing the three stages that were mentioned in this chapter of the study, through which the application process for a study seat was facilitated in the technical institutes of the target university for the student and the administration. To complete this task, a special site was designed to display the data of the accepted students to facilitate the process of informing the student of the location of his acceptance to remove the bottleneck that may occur from reviews by the students, which confuses the work and the length of the queues. Imagine that approximately (1500) students

or more are standing in one line. To find out their acceptance, what happens, with what is doubtful that causes confusion in the work and frequent mistakes by the administration, so the site was designed to avoid these forms.

3.5.1 Designing website pages and how they work

This site consists of five pages, four secondary pages and one page branching out of which the remaining four pages are designed. These pages on the site are designed like the previous ones from the sites designed in this study using the language of (PHP) and language queries (MYSQL) using cloud storage techniques and reserved for the site by the dedicated companies to host the three designed websites and the following figure shows the home page of the designed website.

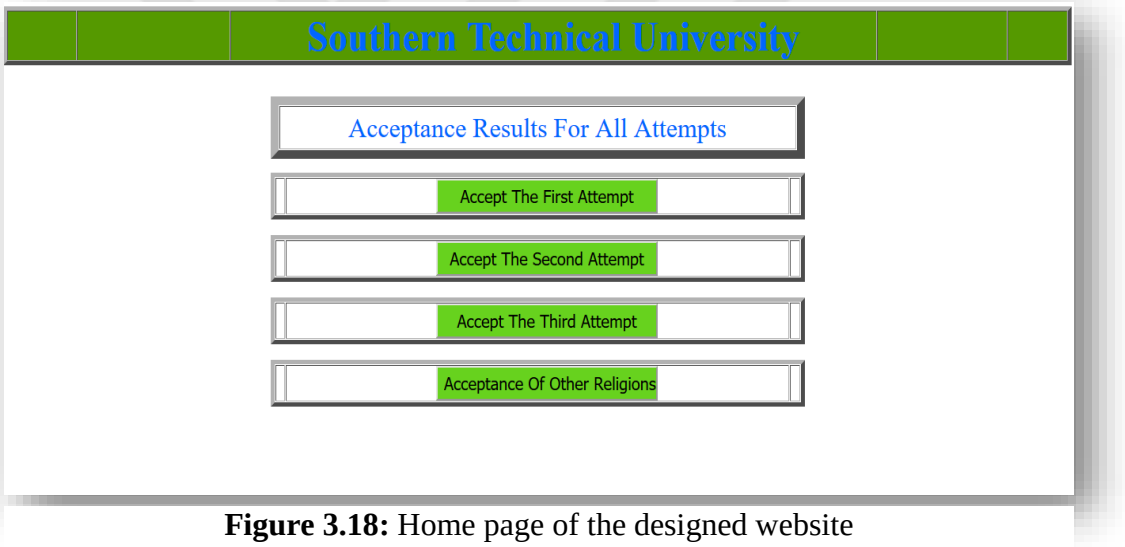

Figure 3.18: Home page of the designed website

This page is considered as the main interface of the designed website through which access to the class to which the student belongs, for example, if the student is a student who skips the general final exams from the first attempt, then the student should press the command (Accept The First Attempt) to automatically switch to The page for extracting admission information for accepted students from the first attempt, and the following figure shows the page for information for students admitted to technical institutes and who passed the first attempt.

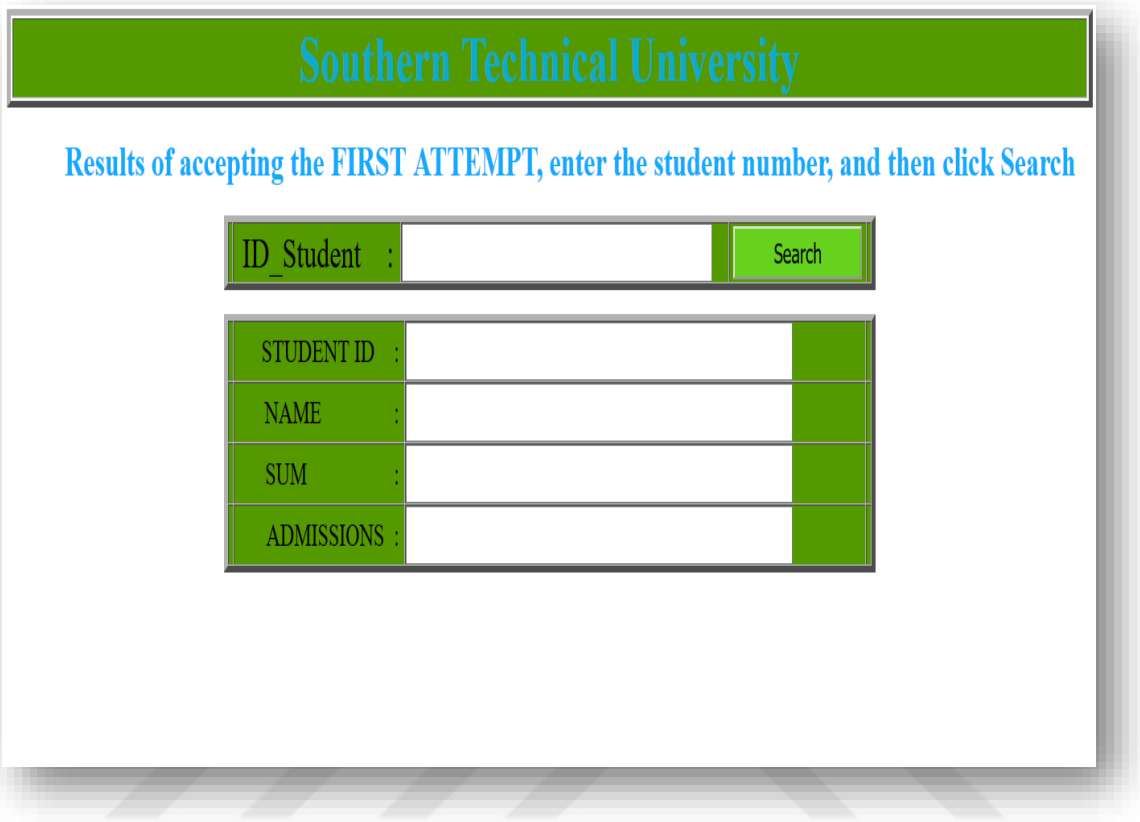

Figure 3.19: The page for displaying information for students who passed the first attempt

After switching to the page for displaying the acceptance information, the student should not just enter his ID number and press the (search) command, so that the required information is displayed on the page only, which is (student-id, name, sum, admissions), which is information that the student can infer about a place of acceptance in one of the technical institutes without the direct review process to the university and especially to the registration and admission department at the university. Attractive, in addition to that accuracy and high speed in the registration process and the mechanism of the page work when entering the student ID and pressing the (search) key on the aforementioned page, which is the page of those accepted from the first attempt, the codes assigned to that page, especially the code that secures the connection to the database And especially to the table (first) to fetch the student's information according to the student's ID number and display it in the designated fields on the page, which are the responsibility of the designed private queries. About the other pages, the mechanism for working with them is similar, and the only

difference includes contacting the table of the database so that when you click on the command (Accept The second Attempt) on the home page of the site, the switch is made to the page for displaying the information of students who have been accepted in the technical institutes and who have succeeded in the second attempt in General examinations, which are the principle of work This page is very similar to the information page for successful students from the first attempt, but with the difference of the mechanism only, and the difference is The mechanism is the connection to the table. Here, the connection is made in the (second) table in the designed database. The following figure shows the page for displaying the information of the students accepted from the second attempt.

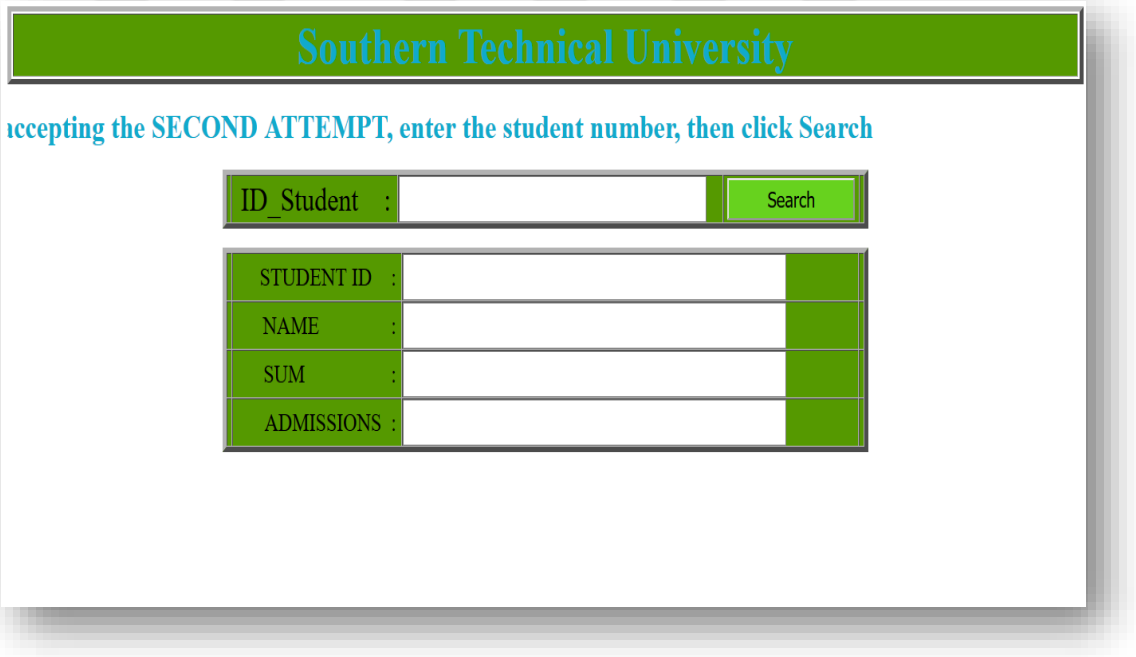

Figure 3.20: The page for displaying information for students who passed the second attempt

As for the third matter in the main interface of the designed site (Accept The Third Attempt), the switch is made directly to the page for displaying the data of the students accepted from the third attempt, and the principle of its work and the mechanism of work is similar as the previous ones from the pages that display student information. The only difference is also in contacting the table

so that it relates to the code is in the (third) table, and the following figure shows the page for displaying admission information for students from the third attempt.

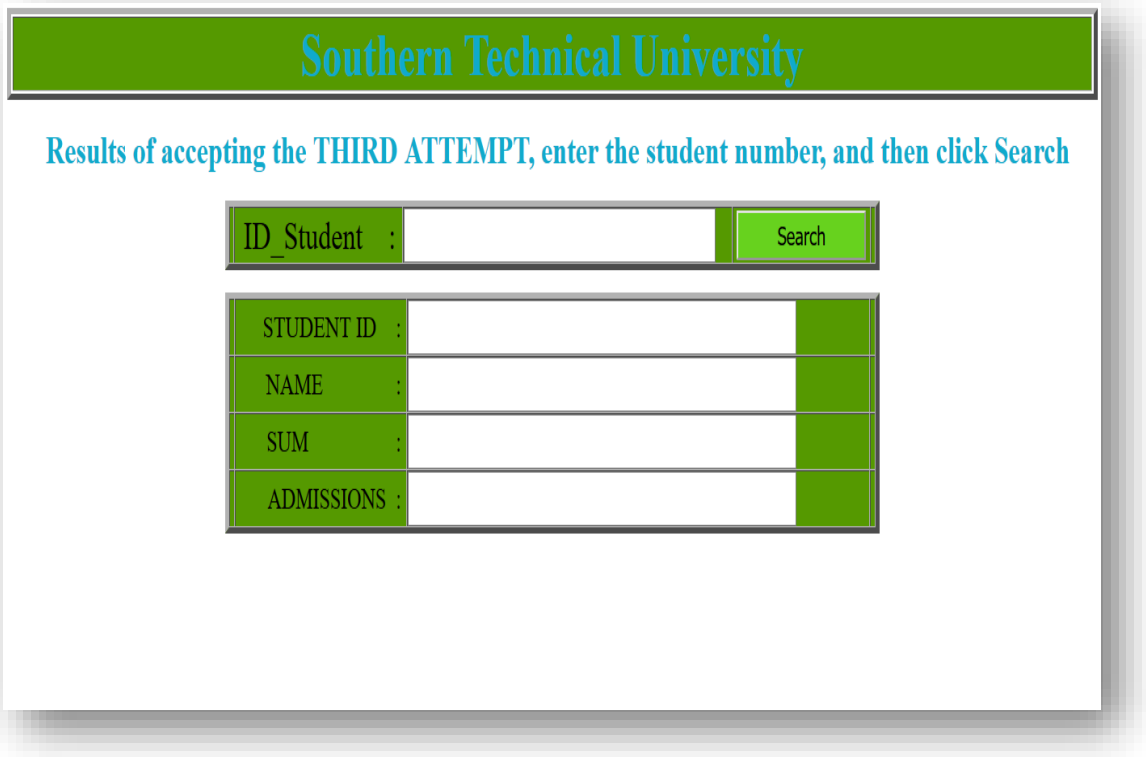

Figure 3.21: The page for displaying information for students who passed the third attempt

There is nothing left of the main interface of the site except the command (Acceptance Of Other Religions) and this matter is for students admitted to technical institutes of other religions, and after clicking on this matter, it automatically turns to the page dedicated to displaying student information for the aforementioned category, and that the mechanism of this page is similar to the previous one Pages, but the contact is in a (bother) table, and after that, students' information from students accepted from other religions is displayed, and the following figure shows the page for displaying information for students admitted from other religions.

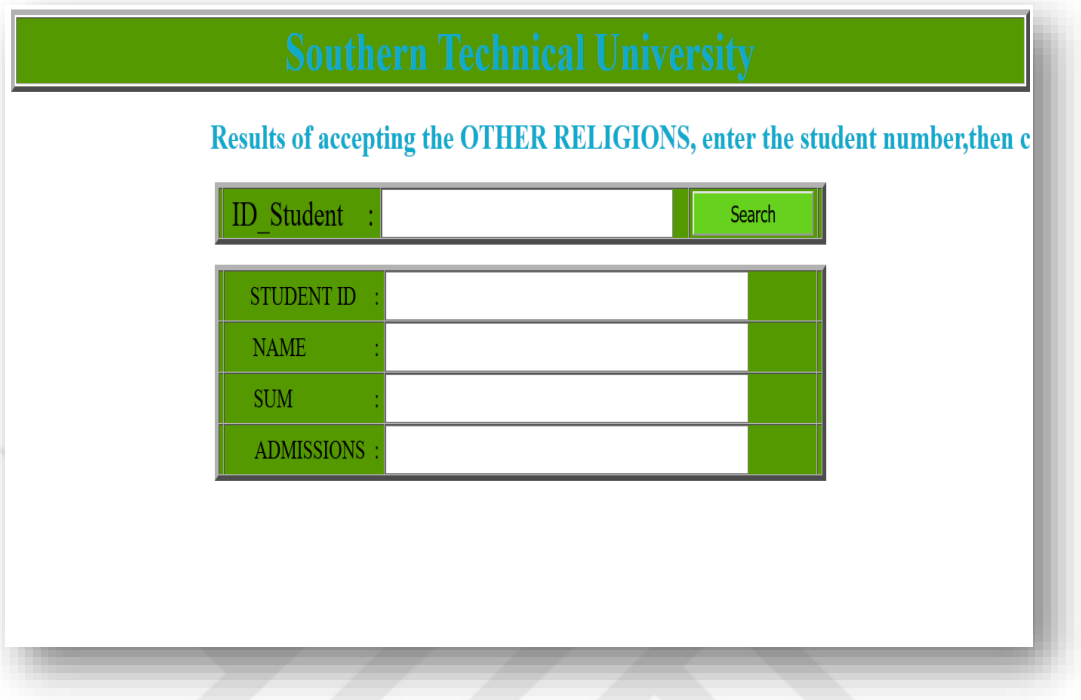

Figure 3.22: Information page for students admitted from other religions

4. RESULTS AND DISCUSSION

4.1 COMPARE PREVIOUS INFORMATION AND INFORMATION OBTAINED FROM THE DESIGNED WEBSITE

The previous information or results will be discussed with the information flowing from the designed website; in fact, the university did not have a platform or a special site to receive the information. The task of collecting data or information of the students targeted in our research and distributing students was the responsibility of the Iraqi Ministry of Higher Education at the beginning of the university's establishment and in subsequent years The ministry's mission was limited to collecting students' information through the ministry's website and sending it to the concerned universities, including the Southern Technical University. The university's mission is to sort the information and analyze it to send it after that to the technical institutes of the technical universities and according to the terms of reference of the previously mentioned students, but the information received from the ministry's website has a lot. Among the problems, including the loss of data, and the missing data had an active role in the process of accepting students or distributing them to technical institutes in terms of accuracy in work and speed of completion, and the important missing data was the exact address of the student represented in the field (Village), which was added to the site designed in our research and this The information influences the appropriate decision-making for admission to the institute closest to the student's residence In terms of the economic importance of the student with the issue of transportation from the student's residence and the institute, and in addition to that the need to provide housing for the student is eliminated, and to explain the importance of adding the (Village) field, we would like to show this by taking an example of that. Indeed, the money path The city of Basra contains several villages linked to the city There are two technical institutes in it, and the two institutes are located within the administrative boundaries of the city, namely (Technical Institute of Basra) and (Technical Institute of Qurna), but some villages are close to (Technical Institute of Qurnah). Indeed, for example, the city centre of (Basra) is far from the institute for a distance that may reach (69) km. Each institute of the university has villages that are close to it, and this problem is repeated in the city of Dhi Qar, which also contains two institutes except for the city of (Maysan) that contains only one institute, and in order to make an appropriate decision for the distribution of students, the

field of (Village) in the site designed in our project, and the table shows the villages belonging to each city and every village that are close to each technical institute.

Table 4.1: Technical institutes located in cities and villages near each institute

City	Technical institutes	Village
Basra	Basra Technical Institute	City Center
		Abu Al Khaseeb
		Al Zubair
		Al Fayhaa,
		Al FAO
		Shatt al Arab
	Al-Qurna Technical Institute	Al Hartha
		Al Qurna
Dhi Qar	Technical Institute in Dhi Qar	City Center
	Technical Institute in Shatrah	Al Shatrah
		Al Rifai
		Al Shuyoukh
		Al Jabayesh
Maysan	Technical Institute in Maysan	City Center
		Al Kahla.
		Saleh kelai
		AL major
		AL meimona
		Ali AL gurbey

Among the missing information was also in the student's options for choosing the institute, as each student has the right to choose three institutes. We find some information also missing because in the previous platform, not all fields were required and in addition to that, it was not of the multiple-choice type, which forces the student to enter the information. Manually, the information required

in the fields is in the form of numbers or symbols, for example, the special code in the Technical Institute of Basra was (822), and moreover, if the field is not empty and the number is not written differently or differently from what is agreed upon, then it is written for example (821), which causes confusion for the sorting process. And the special distribution at the university and in the table (10) shows each technical institute, the code or the special code, and the table (11) that shows the information received from the Iraqi Ministry of Higher Education regarding the student's choices regarding the technical institutes.

Table 4.2: Codes for technical institutes

Technical institutes	code or symbol
Basra Technical Institute	822
Al-Qurna Technical Institute	824
Technical Institute in Dhi Qar	961
Technical Institute in Shatrah	891
Technical Institute in Maysan	871

Table 4.3: A form of information sent by the Ministry of Education

NAME	CITY	F_CHOIS	S_CHOIS	TH_CHOIS
Student_1	Maysan	871	824	691
Student_2	Basra		822	817
Student_3	Maysan	872	891	
Student_4	Dhi Qar	961	823	824
Student_5	Basra	822		
Student_6	Basra	824	823	
Student_7	Dhi Qar	892	822	961

In Table (11) we note that it does not contain all the fields sent from the Ministry of Education and that it includes the fields that we are about to compare with the information obtained from the

designed site , We notice in the table (11) in the record (Student_1) the field (TH_CHOIS) the symbol (691) This code does not resemble any of the symbols in the table (10), when converting it to text on the site designed for the distribution of students and sorting them, it causes confusion in the work of the site and as if we also embrace In the table of information received from the ministry (11) in the record (Student_2) field (F_CHOIS), we note that the field is empty and there is no information or code in it.

When comparing the information obtained from the designed site in our search and the information obtained from the ministry's website, we note that the two main problems that were mentioned were solved, except that the lost information was eliminated by not accessing the other page until after all the information was entered. In other words, all the information is required and in order to avoid the error in entering the symbols, we have transformed the field from the data entry form to multiple-choice, as we have indicated previously, and as we have solved the problem of symbols to avoid the subject of the student's lack of understanding of those symbols, he may choose a technical institute that the student does not want. Normal, understood by everyone, so that the student can choose correctly and without trouble, and as the second problem has been solved is the lack of a village address by adding a multiple choice field that also contains the village in which the student lives, and when distributing students, we ensure that the student is accepted into a nearby technical institute on His area of residence and the explanatory table (12) represents a sample of the information received on the designed site.

Table 4.4: A sample of the information received from the data flow platform

s_id	name	secondary	birth	purview	sum	sex	religion	city	village	attempt	f_choice	s_choice	th_choice
1618351010088	Ali Gbar Gasb Hassan	Aadadeh Shhdaa Alantfadh Alsnaaeh	2000	Electricity generation and transmission	589	male	muslim	Basra	City center	first attempt	Basra Technical Institute	Al-Qurna Technical Institute	Technical Institute in Maysan
1618321110106	Zyen Alaabdyen Hade Razouke Yousef	Aadadeh Alrafdyen Almhneh	2000	Medical device	547	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Technical Institute in Maysan	Technical Institute in Shatrah
1618321110109	Saleh Anwar Saleh Abdul Alhafez	Aadadeh Alrafdyen Almhneh	1996	Medical device	485	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Technical Institute in Shatrah	Technical Institute in Maysan
1618351010089	Ali Mazen Mke Rashd	Aadadeh Shhdaa Alantfadh Alsnaaeh	1998	Electricity generation and transmission	491	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Al-Qurna Technical Institute	Technical Institute in Maysan
1618321110134	Nasser Abdul Alkarim Nasser Hussein	Aadadeh Alrafdyen Almhneh	1999	Medical device	517	male	muslim	Basra	City center	first attempt	Basra Technical Institute	Technical Institute in Shatrah	Technical Institute in Maysan
1618351010094	Mhde Khalaf Jaber Nafl	Aadadeh Shhdaa Alantfadh Alsnaaeh	1998	Electricity generation and transmission	513	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Al-Qurna Technical Institute	Technical Institute in Dhi Qar
1618351010076	Jawad Kazim Jamil Awdh	Aadadeh Shhdaa Alantfadh Alsnaaeh	2000	Electricity generation and transmission	510	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Al-Qurna Technical Institute	Technical Institute in Maysan
1618351010077	Hassanyen Taleb Ibrahim Adres	Aadadeh Shhdaa Alantfadh Alsnaaeh	1997	Electricity generation and transmission	516	male	muslim	Basra	City center	first attempt	Basra Technical Institute	Technical Institute in Dhi Qar	Technical Institute in Maysan
1618351010078	Hussein Thussein Ali Hussein	Aadadeh Shhdaa Alantfadh Alsnaaeh	2000	Electricity generation and transmission	500	male	muslim	Basra	City center	second attempt	Basra Technical Institute	Al-Qurna Technical Institute	Technical Institute in Maysan

Activate Windows

4.2 COMPARISON BETWEEN SORTING DATA USING EXCEL AND THE DESIGNED DATA PROCESSING WEBSITE

In this section of this chapter of the study, two methods of sorting data for accepted and unaccepted students in Excel will be compared and the second method using the designed data processing site.

- **Sorting data using Excel** In this method, the Excel program was used to sort the students' data into two categories of acceptable and unacceptable students using special designed functions, in particular the function (IF). These two categories were also sorted into several categories. A sample of thirty students was used, as shown in Table (5) which will The designed functions are applied to it in order to complete the required sorting process.

Table 4.5: The sample to be sorted

name	birth	sum	religion	attempt
Student 1	2000	411	other	first attempt
Student 2	1994	545	Muslim	second attempt
Student 3	1996	516	Muslim	second attempt
Student 4	1995	470	Muslim	Third attempt
Student 5	2000	477	Muslim	Third attempt
Student 6	1991	504	Muslim	first attempt
Student 7	1998	455	other	first attempt
Student 8	1997	578	other	Third attempt
Student 9	1999	412	Muslim	first attempt
Student 10	2000	480	Muslim	Third attempt
Student 11	1994	465	Muslim	first attempt
Student 12	1996	499	Muslim	second attempt
Student 13	1995	466	Muslim	Third attempt
Student 14	2000	599	Muslim	first attempt
Student 15	1991	504	Muslim	first attempt
Student 16	1998	455	Muslim	first attempt
Student 17	1997	578	Muslim	second attempt
Student 18	1999	412	Muslim	Third attempt
Student 19	2000	412	other	second attempt
Student 20	1994	465	other	second attempt
Student 21	1996	499	other	second attempt
Student 22	1995	466	Muslim	second attempt
Student 23	2000	599	Muslim	second attempt
Student 24	1991	466	Muslim	first attempt
Student 25	1998	599	Muslim	second attempt
Student 26	1997	504	Muslim	first attempt
Student 27	1999	455	Muslim	Third attempt
Student 28	2000	578	Muslim	first attempt
Student 29	1994	412	Muslim	first attempt
Student 30	1996	480	other	first attempt

- **Students are not accepted** This category is also divided into two categories.

    - **Students rejected because of age** We notice in the table (6) after adding a field (rejected because of age) and after using the special function **(=IF(B2>1995,("Acceptable"),("unacceptable")))** to extract students who were rejected because of age on the field (birth), the results appeared as shown in the table (6). Students over the age of (25) were identified. For them in the field (rejected because of age) and they were described as (unacceptable) students, after which the results are transferred and put into a new sheet in the excel program and rename the it (students rejected because of age).

Table 4.6: Students rejected because of age

Name	birth	sum	religion	attempt	Rejected because of age
Student 2	1994	545	Muslim	second attempt	unacceptable
Student 4	1995	470	Muslim	Third attempt	unacceptable
Student 6	1991	504	Muslim	first attempt	unacceptable
Student 11	1994	465	Muslim	first attempt	unacceptable
Student 13	1995	466	Muslim	Third attempt	unacceptable
Student 15	1991	504	Muslim	first attempt	unacceptable
Student 20	1994	465	other	second attempt	Unacceptable
Student 22	1995	466	Muslim	second attempt	Unacceptable
Student 24	1991	466	Muslim	first attempt	unacceptable
Student 29	1994	412	Muslim	first attempt	unacceptable

Before sorting the data of students rejected because of hunger, students' data from other religions must be sorted. The reason for this is that the total degree of acceptance of students from religions differs from that of Muslim students and depends on the field (religion) and choosing (others). The

sorting is then transferred to a new sheet in Excel. And renaming it to other religions, as shown in Table (7).

Table 4.7: Sorting data for non-Muslim students

name	birth	sum	religion	attempt
Student 1	2000	411	other	first attempt
Student 7	1998	455	other	first attempt
Student 8	1997	578	other	Third attempt
Student 19	2000	412	other	second attempt
Student 21	1996	499	other	second attempt
Student 30	1996	480	other	first attempt

After completing the process of sorting data for students from other religions, the data of accepted and unaccepted students must be sorted, a field (**Accepted students meet the total condition or are rejected**) is added and by applying the function (=IF(AND(C3>=412,E3=$M$2),$K$2,IF(AND(C3>=420,E3=$M$3),$K$2,IF(AND(C3>=420, E3=$M$4),$K$2,$K$3))))to the field (**sum**) and (**attempt**), (**Acceptable**) is printed in front of the field for the student who meets the admission requirements and (**unacceptable**) who does not meet the admission requirements Shown in the table (8)

Table 4.8: Accepted and unaccepted from other religions

name	birth	sum	religion	attempt	Accepted students meet the total condition or are rejected
Student 1	2000	411	other	first attempt	unacceptable
Student 7	1998	455	other	first attempt	Acceptable
Student 8	1997	578	other	Third attempt	Acceptable
Student 19	2000	412	other	second attempt	unacceptable
Student 21	1996	499	other	second attempt	Acceptable
Student 30	1996	480	other	first attempt	Acceptable

- **Students rejected because of total scores** After transferring the data of students rejected because of age and data of students from other religions, only Muslim students were left in

the sample used, and in this section the data of students rejected because of the total scores were sorted based on the field (sum) and (attempt) using the function **(=IF(AND(C3<=472,E3=$M$2), $K$3,IF(AND(C3>=480,E3=$M$3), $K$3,IF(AND(C3>=480,E3=$M$4), $K$3,$K$2))))** according to the specified conditions, after which data can be transferred The rejected students to a new sheet, and it will be renamed as the rejected students because of the total scores and the table (9) shows the results of the rejected students**.**

Table 4.9 : Students rejected because of total scores

name	birth	sum	religion	attempt	rejected because of total scores
Student 5	2000	477	Muslim	Third attempt	unacceptable
Student 9	1999	412	Muslim	first attempt	unacceptable
Student 16	1998	455	Muslim	first attempt	unacceptable
Student 18	1999	412	Muslim	Third attempt	unacceptable
Student 27	1999	455	Muslim	Third attempt	unacceptable

- **Accepted students** Accepted students After the completion of the data sorting of the students rejected because of their age and total grades, and transferring them to new sheets, if only the accepted students remain among the Muslim students, and for the three attempts, the table (10) shows the results of the accepted students**.**

Table 4.10 : Accepted students from all attempts

Name	birth	sum	religion	attempt	Accepted students
Student 14	2000	599	Muslim	first attempt	Acceptable
Student 26	1997	504	Muslim	first attempt	Acceptable
Student 3	1996	516	Muslim	second attempt	Acceptable
Student 12	1996	499	Muslim	second attempt	Acceptable
Student 28	2000	578	Muslim	first attempt	Acceptable
Student 17	1997	578	Muslim	second attempt	Acceptable
Student 23	2000	599	Muslim	second attempt	Acceptable
Student 25	1998	599	Muslim	second attempt	Acceptable
Student 10	2000	480	Muslim	Third attempt	Acceptable

- **Sorting student data using the designed data processing site** After completing the data flow from the data flow site, the authorized person enters to extract the sorting results from the data processing site designed by the researcher, from the reports download page shown in figure (3.17) in the third chapter of this study, the reports that have been sorted are downloaded through the site as follows**:**

  - The results of sorting rejected students because of their age, and the results are similar in the process of sorting using excel shown in the table (6)**.**
  - Results of sorting data for students admitted from other religions shown in table (11).

Table 4.11: Accepted from other religions

Name	birth	sum	religion	attempt	Accepted from other religions
Student 7	1998	455	other	first attempt	Acceptable
Student 8	1997	578	other	Third attempt	Acceptable
Student 21	1996	499	other	second attempt	Acceptable
Student 30	1996	480	other	first attempt	Acceptable

- Results of sorting data for rejected students due to total scores shown in Table (12)

Table 4.12: Data of students rejected because of total scores

Name	birth	sum	religion	attempt	Rejected because of sum
Student 1	2000	411	other	first attempt	unacceptable
Student 5	2000	477	Muslim	Third attempt	unacceptable
Student 9	1999	412	Muslim	first attempt	unacceptable
Student 16	1998	455	Muslim	first attempt	unacceptable
Student 18	1999	412	Muslim	Third attempt	unacceptable
Student 19	2000	412	other	second attempt	unacceptable
Student 27	1999	455	Muslim	Third attempt	unacceptable

- Details of accepted students from the first attempt and as shown in Table (13)

Table 4.13: accepted students from the first attempt

Name	birth	sum	religion	attempt	Accepted from the first attempt
Student 14	2000	599	Muslim	first attempt	Acceptable
Student 26	1997	504	Muslim	first attempt	Acceptable
Student 28	2000	578	Muslim	first attempt	Acceptable

- Details of students accepted from the second attempt and as shown in Table (14)

Table 4.14: accepted students from the second attempt

Name	birth	sum	religion	attempt	Accepted from the second attempt
Student 3	1996	516	Muslim	second attempt	Acceptable
Student 12	1996	499	Muslim	second attempt	Acceptable
Student 17	1997	578	Muslim	second attempt	Acceptable
Student 23	2000	599	Muslim	second attempt	Acceptable
Student 25	1998	599	Muslim	second attempt	Acceptable

- Details of students accepted from the third attempt and as shown in Table (15)

Table 4.15: accepted students from the third attempt

Name	birth	sum	religion	attempt	Accepted from the third attempt
Student 10	2000	480	Muslim	Third attempt	**Acceptable**

4.2.1 Discuss the results of the two methods

- **Sorting using Excel** We noticed in this method that in every process of applying the function to sort a certain category, we must sort the data again to be transferred to a new sheet and rename it again by copy-and-paste method and that this method may have a lot of errors and waste of time, as we also noted in sorting the students' data from The other religions shown in the table (8) that the students' data in this table are for the rejected and accepted students in the same table, that is, they need a new screening process, and we also noted in the accepted students's schedule, as shown in the table (10) that the data are for all students who are accepted from all three attempts, meaning another need for Sorting process again, each according to its category (first attempt, second attempt, third attempt) We also noticed that this method is similar to the manual method used for sorting data.

- **Sort using the designed site** We noticed from the results presented in the tables that the error rate is equal to zero, and we do not need to clean the data or re-sort it again, as in the first method, and the results are sorted according to the required categories, in the correct manner and in a fast manner, as it is possible to obtain the data immediately after the end of the submission period and it is possible to process a lot Of data without loss of time.

4.3 COMPARISON OF THE DISTRIBUTION ACCORDING TO ONE PARAMETER AND THE ADOPTED METHOD USING THREE PARAMETERS

two methods were used to distribute students to institutes, after the process of sorting students into three categories.

- Rejected because of age
- Rejected because of the total
- Accepted students

Table (16) shows the number of students according to each class, as shown in Graph (1).

Table 4.16: Classification of students

	Acceptable	Rejected age	Rejected total	Grand Total
Count of Student status	**1170**	**31**	**221**	**1422**

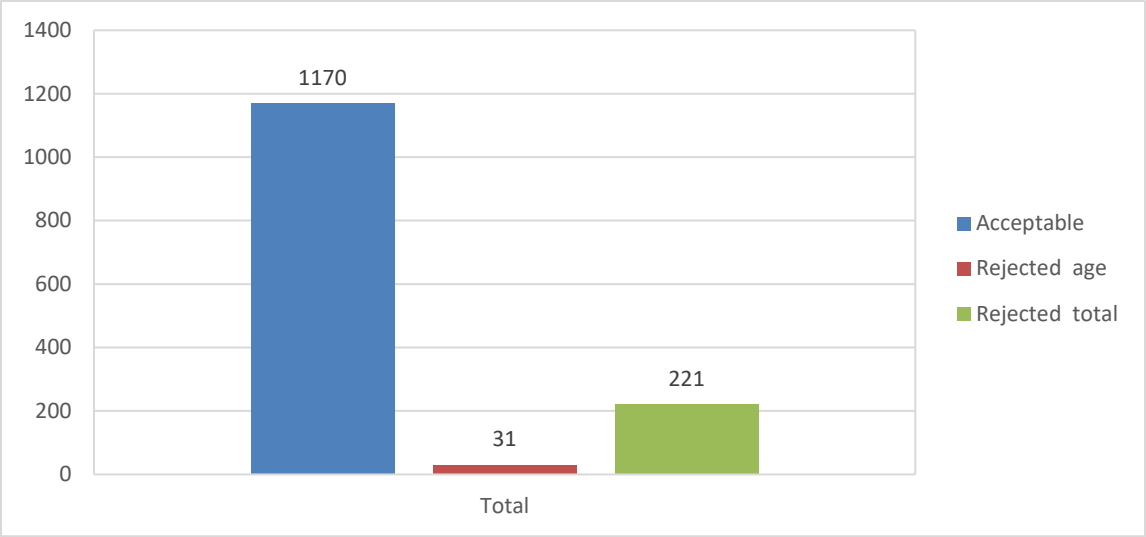

Figure 4.1: Classification of students

4.3.1 Distribution according to one parameter

Most universities have a registration system to accept students, and these universities depend on the information flowing in the registration system, which in turn is able to sort students' data into two categories, the accepted category and the rejected category, according to the university policy. Accept it or reject it. The focus will be on the category of admitted students. We have noted in previous studies presented in the second semester of this thesis that the student has been chosen by the main degree and the topic differs only in terms of admission. But let us focus on the distribution process on colleges or institutes affiliated with the universities, because it depends mainly on choosing the student according to the conditions that make him acceptable to the college or institute in which he wishes to complete his studies.

This method was applied to the data of accepted students only for the purpose of distributing them to institutes based on the student's first choice (f_choice). The results of the distribution appeared

in Table (17) and Graph (2), which shows the number of students admitted to each technical institute.

Table 4.17:Student distribution

Technical Institute	Number students
Al-Qurna Technical Institute	176
Basra Technical Institute	604
Technical Institute in Dhi Qar	123
Technical Institute in Maysan	152
Technical Institute in Shatrah	115
Grand Total	**1170**

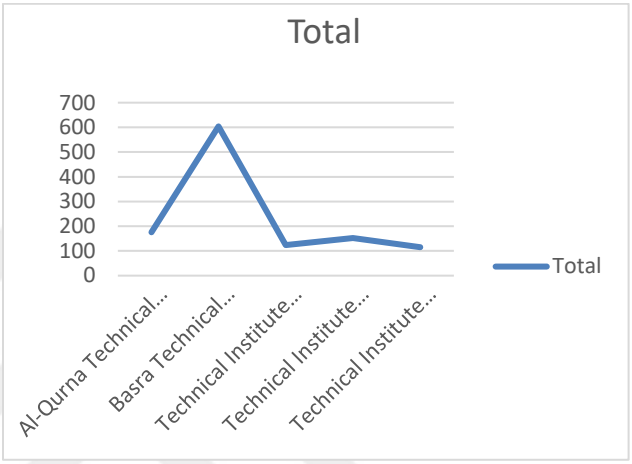

Figure 4.2: Student distribution

We also note in the table (18) and the graph (3) the results of the distribution of students and the cities in which they live. For example, we note the number of students who live in the city of Basra (721). (168) Has been accepted into the Technical Institute of Qurnah (550) in the Technical Institute of Basra, and these two institutes are affiliated with the city of Basra. (1) Dhi Qar Technical Institute (2) was accepted in the Technical Institute of Maysan These two institutes are not affiliated with the city of Basra.

Table 4.18: The number of students in each city

City	Student Count
Basra	**721**
Al-Qurna Technical Institute	168
Basra Technical Institute	550
Technical Institute in Dhi Qar	1
Technical Institute in Maysan	2
Dhi Qar	**309**
Al-Qurna Technical Institute	6
Basra Technical Institute	53
Technical Institute in Dhi	122
Technical Institute in Maysan	13
Technical Institute in Shatrah	115
Maysan	**140**
Al-Qurna Technical Institute	2
Basra Technical Institute	1
Technical Institute in Maysan	137
Grand Total	**1170**

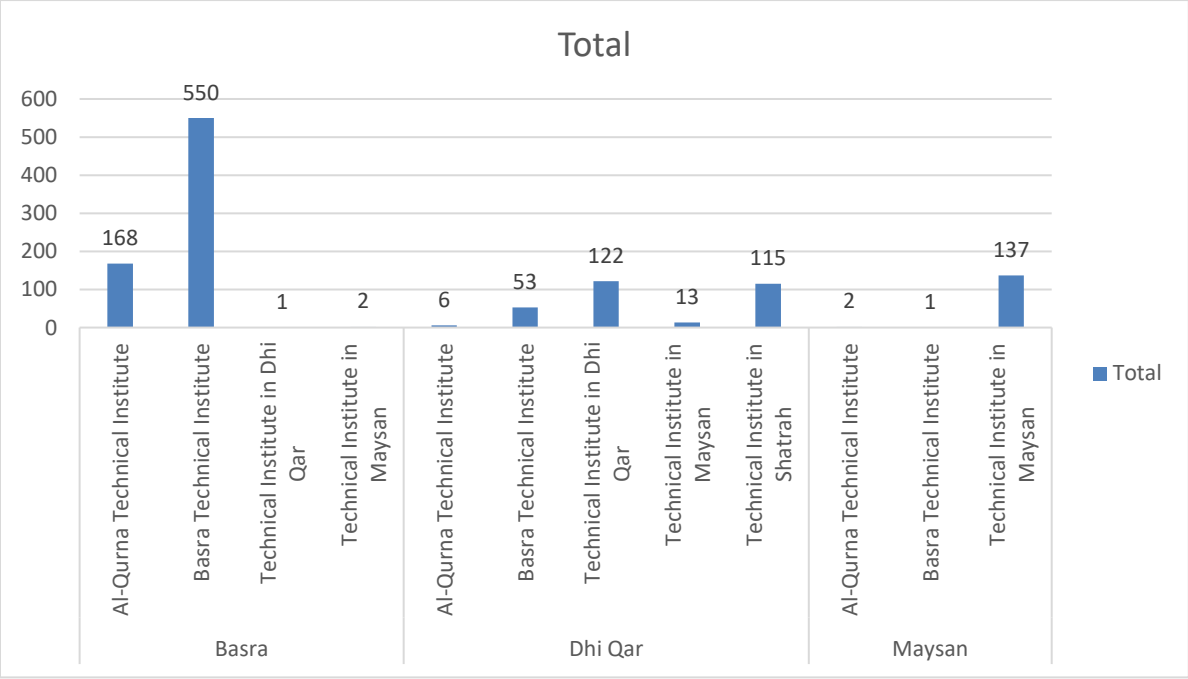

Figure 4.3: The number of students in each city

The graph shown in Figure (4) shows the distribution of accepted students and one parameter was approved (f_choice). The graph shows the major and the accepted institute in which the student is.

We noticed the presence of students accepted in specializations that are not available in the accepted institutes.

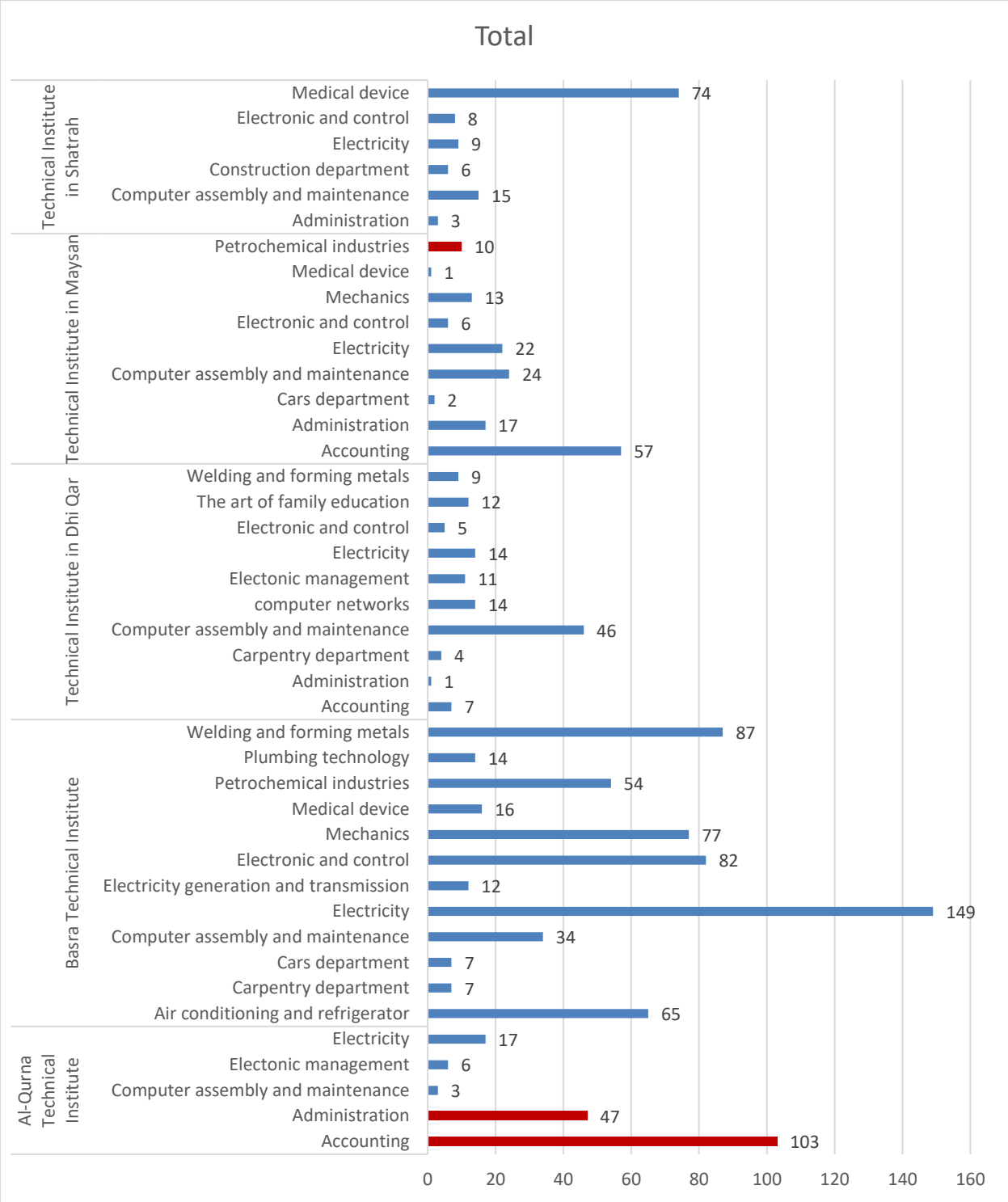

Figure 4.4: Distribution depending on one parameter (f_choic)

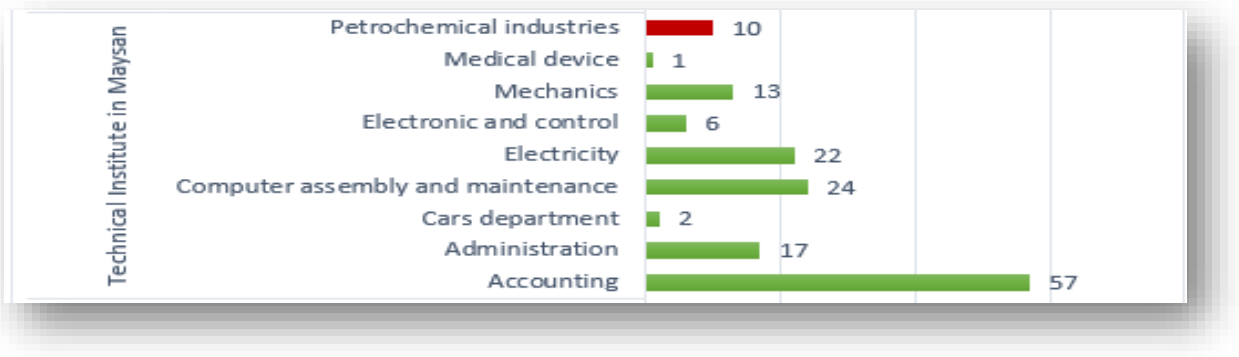

Figure 4.5: Distribution of students at the Technical Institute in Maysan

We note about ten students accepted in the major (Petrochemical industries) and this specialization is not available in the aforementioned institute and only exists in the technical institute of Basra as shown in the table (19) of the technical institute of architecture and the table (20) of the technical institute of Basra.

Table 4.19: Professional specializations available in the city of Maysan andTechnical Institute of Maysan

city	Technical institutes	purview in secondary schools
Maysan	Technical Institute in Maysan	Accounting
		Administration
		Mechanics
		Cars department
		Computer assembly and maintenance
		Petrochemical industries
		Electricity
		Electronic and control
		The art of family education

Table 4.20: Professional specializations available in Basra city and Basra Technical Institute

city	Technical institutes	purview in secondary schools
Basra	Basra Technical Institute	Accounting
		Administration
		Air conditioning and refrigerator
		Carpentry department
		Cars department
		Computer assembly and maintenance
		Electricity
		Electricity generation and transmission
		Electronic and control
		Mechanics
		Medical device
		Petrochemical industries
		Plumbing technology
		The art of family education
		Welding and forming metals

In addition to that, we note the figure (6) excerpt from the graph (4) of the Technical Institute AL-Qorna, the presence of students accepted in the specialty (Administration, Accounting) and these two specializations are not available in the aforementioned institute and as shown in the table (21) which shows the specializations available at the AL-Qorna Technical Institute.

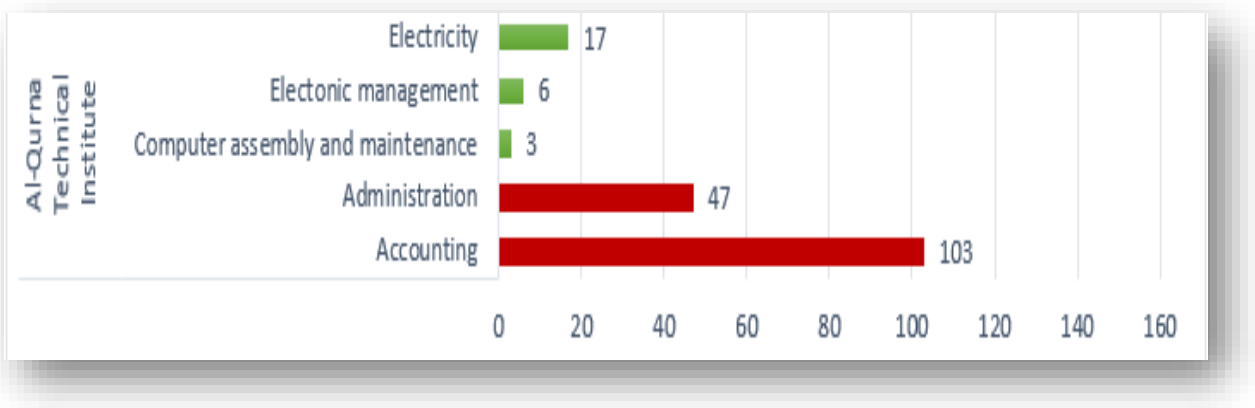

Figure 4.6: Distribution of students at the Qurna Technical Institute

Table 4.21: Professional specializations available in Basra city and Al-Qurna Technical Institute

city	Technical institutes	purview in secondary schools
Basra	Al-Qurna Technical Institute	Computer assembly and maintenance
		Electricity
		Electricity generation and transmission
		Electronic and control
		Medical device

We note also in Table (19), (20) and (22) specialization **(The art of family education)** specified in red color, it is not present in the Technical Institute of Maysan and the Technical Institute of Basra and the Technical Institute of Shatrah and this specialization is available only in the Technical Institute of Dhi Qar and we also note in Table (19) , (22) ,(23) specialization **(Petrochemical industries)** is not available at the Technical Institute of Maysan and Technologist Dhi Qar and Technician Shatra and is available only in the Technical Institute for his eyesight must be taken into account when designing an equation in the excel program capable of distributing students correctly, avoiding the errors that have been mentioned in the process Distribution of students to technical institutes.

Table 4.22: Professional specialties available in Dhi Qar and Technical Institute in Shatrah

city	Technical institutes	purview in secondary schools
Dhi Qar	Technical Institute in Shatrah	Accounting
		Administration
		computer networks
		Carpentry department
		Electronic management
		Computer assembly and maintenance
		Electricity
		Electricity generation and transmission
		Electronic and control
		Construction department
		Medical device
		Welding and forming metals
		Petrochemical industries
		Maintenance of elevators
		The art of family education

Table 4.23: Professional specialties available in Dhi Qar and Dhi Qar Technical Institute

city	Technical institutes	purview in secondary schools
Dhi Qar	Technical Institute in Dhi Qar	Accounting
		Administration
		computer networks
		Carpentry department
		Electronic management
		Computer assembly and maintenance
		Electricity
		Electricity generation and transmission
		Electronic and control
		Construction department
		Medical device
		Welding and forming metals
		Petrochemical industries
		Maintenance of elevators
		The art of family education

4.3.2 The adopted method using three parameters

In this method, we relied on the distribution process on a function designed by the researcher in the Excel program shown in Figure (7).

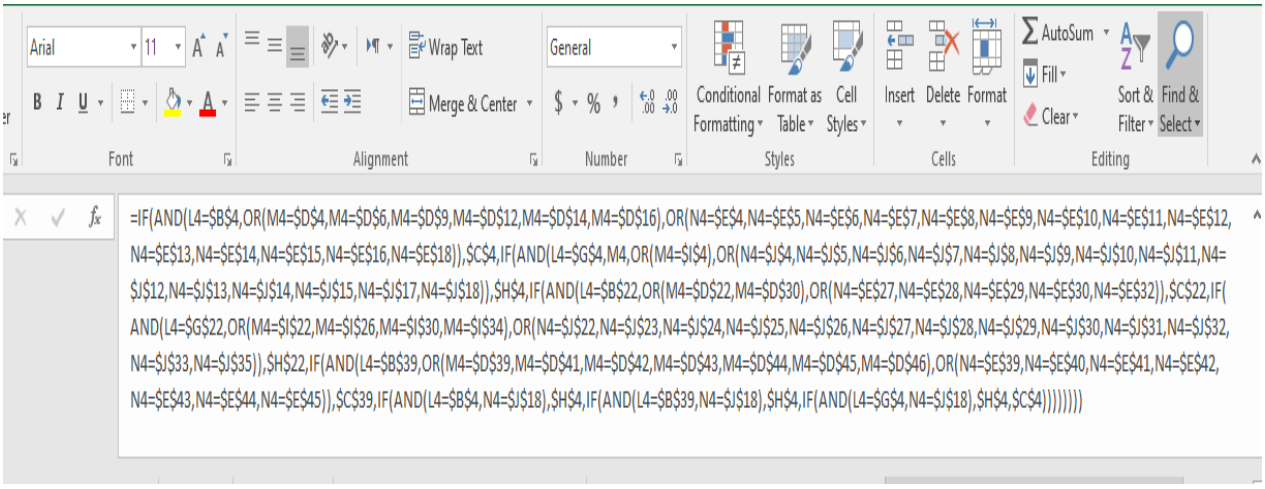

Figure 4.7: The function used in the distribution of students

This function relied on three functions (IF,AND,OR). This function tests the fields (city, village, purview). If the condition is met, the student accepts the institute in his city, for example if the student is He lives in the city of Basra and in the village of Al-Zubair, which is one of the villages belonging to the city of Basra and specializes in (petrochemical industries). This specialization is available at the Technical Institute in Basra. Table (24) and graph (8) show the number of students admitted to each institute.

Table 4.24: Student distribution

Technical Institute	Number students
Al-Qurna Technical Institute	89
Basra Technical Institute	686
Technical Institute in Dhi Qar	169
Technical Institute in Maysan	144
Technical Institute in Shatrah	82
Grand Total	**1170**

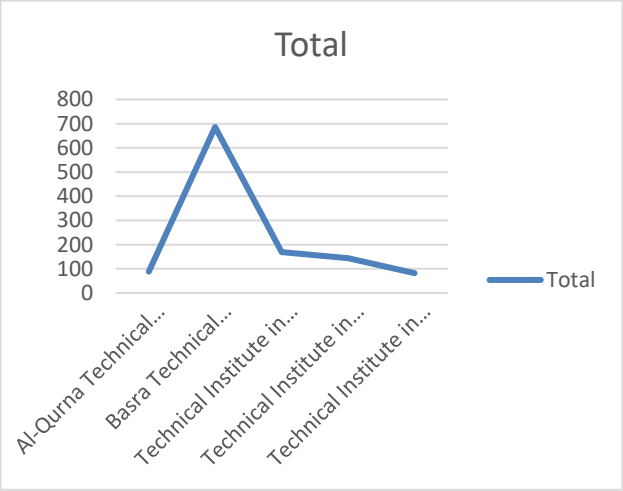

Figure 4.8: Student distribution

We notice in the table (24) and the diagram (8) that there is a difference in numbers from the first method. If we noticed the students admitted to the Technical Institute Qornah in the first method, the number of students (176) was as shown in the table (17), but now the number of students has become (89) and as shown in the table (24).The change was not limited to this institute only, but also to all institutes, even if we note also in the table (25) and graph (9) that shows the students admitted to the institutes near their cities of residence and the villages that belong to them only.

Table 4.25: The number of students in each city

Row Labels	Count of Technical Institute
Basra	**721**
Al-Qurna Technical Institute	89
Basra Technical Institute	632
Dhi Qar	**305**
Basra Technical Institute	54
Technical Institute in Dhi Qar	169
Technical Institute in Shatrah	82
Maysan	**144**
Technical Institute in Maysan	144
Grand Total	**1170**

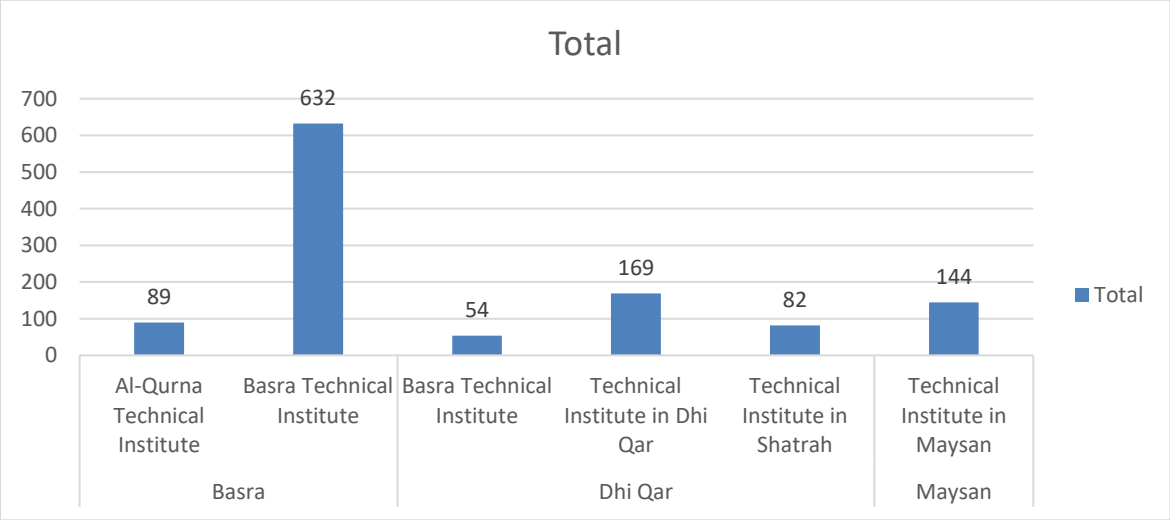

Figure 4.9: The number of students in each city

Except (54) students from Dhi Qar city have accepted their admission to the Technical Institute of Basra, and the reason for that is that students are from the (petrochemical industries) specialization and this specialty is not available only in the Technical Institute of Basra, as we mentioned earlier, and the graph (10) illustrates that.

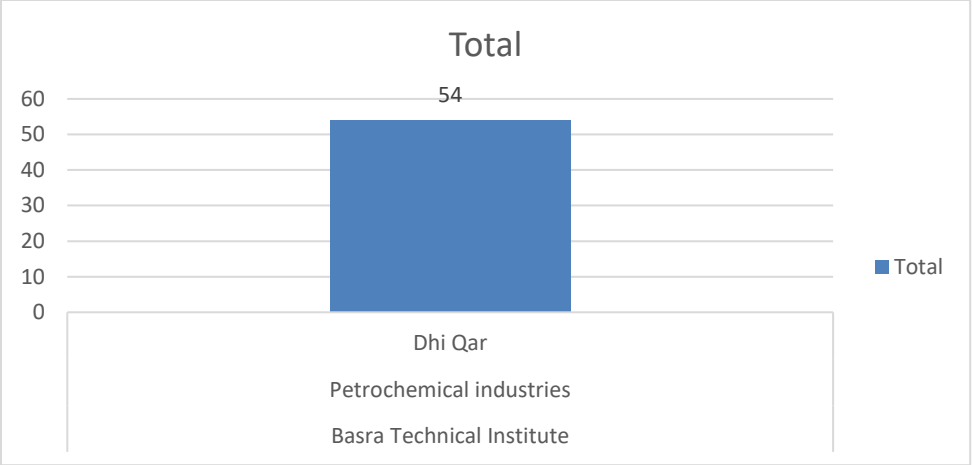

Figure 4.10: They live in the city of Dhi Qar and are accepted into the Basra Institute

If we noticed in the graph (11), which shows the entire distribution process, that all students were accepted into nearby institutes located in their cities and close to their areas of residence.

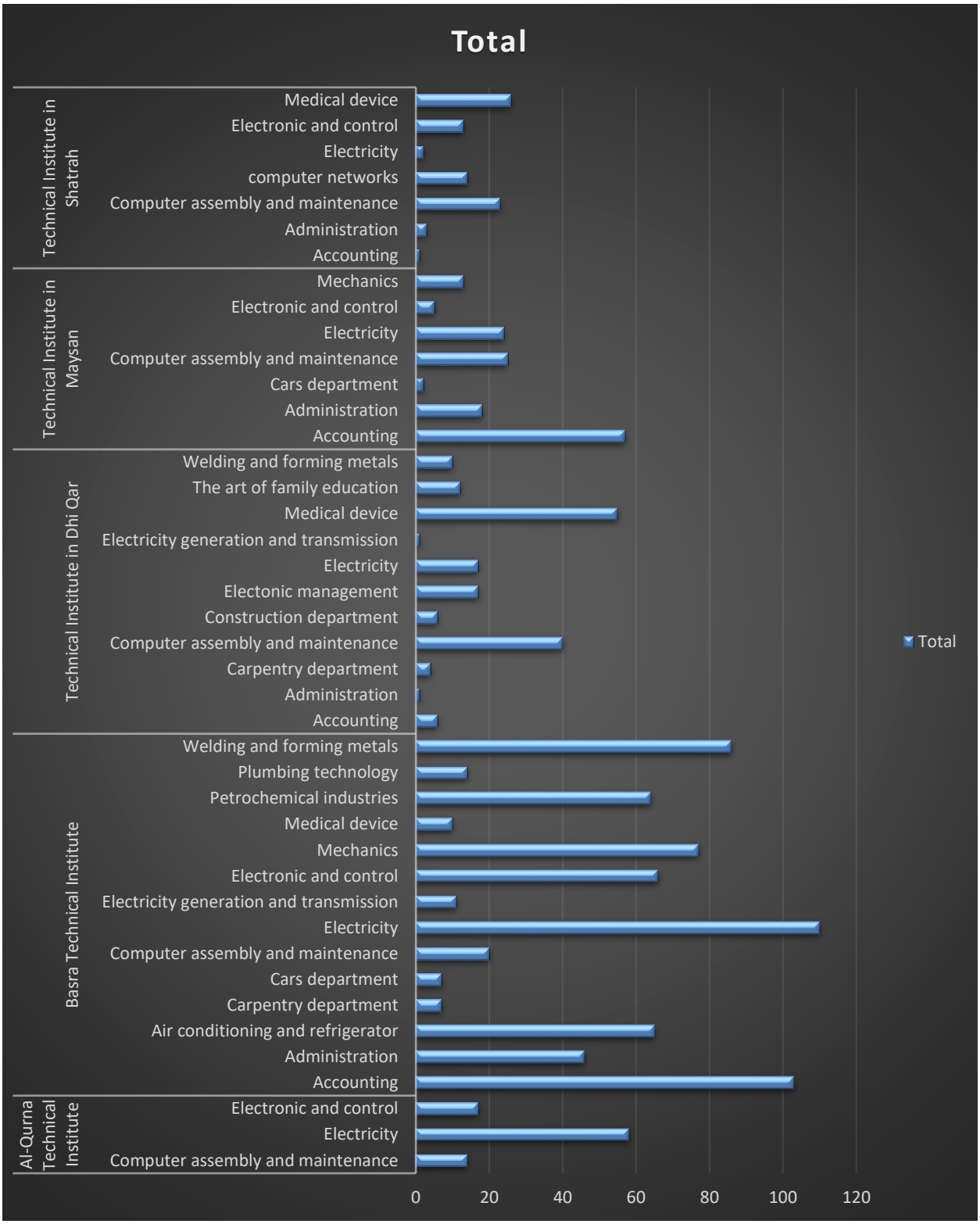

Figure 4.11: Distribution of students depending on the designed function

Compared with the first method, the designed post has proven efficient in distributing students correctly and without errors. We can say that the second method is better than the first with infinite accuracy in distributing students. The data used as a model and this method can be used for an unlimited number. The tool (PIVOT TABLE) was used to analyze the data available in the Excel 2016 program.

4.3.3 Discuss the results of the two methods

The number of accepted students was (1170) only, as shown in the graph (1), who were distributed to the technical institutes using two methods, whose results will be compared as follows:

- **Results of the first method** Results of the first method Distribution of students according to the choice of the student (f_choice) and by adopting the tables and charts shown in the first method, we reached the following
  - Some students were admitted to technical institutes far from their areas of residence despite the availability of the technical institute and their required specialization in their city of residence, as shown in the table (18) and the graph (3)**.**
  - We also noticed that some students were accepted into institutes that do not have their scientific specialization, and as shown in the graph (4), and we explained this case in the graph (5) and (6)**.**
- **The second method adopted** A special function designed by the researcher was used in the Excel program, shown in Figure (7), which was applied to three fields(city, village, purview),and depending on the tables and graphs shown in this method, we came to the following.
  - Acceptance of students in institutes close to their residential areas, as shown in the table (25) and chart (9) except for (54) students They live in the city of Dhi Qar and have been accepted into the Technical Institute of Basra, and the reason for this is that their specialization is not available in the technical institutes of their city, and as shown in the graph (10)**.**

- Acceptance of all students according to their specializations or close to it, and no student other than his major is accepted, as shown in the chart (11)**.**
- There is a big discrepancy in the number of students admitted to the technical institutes between the first method shown in the table (17) and the graph (2) and the second method shown in the table (24) and the graph (8)**.**

And from comparing the results between the first method and the second adopted method, it was the best because it fulfilled the required conditions, which is the admission of students to institutes close to their areas of residence and according to their specialization.

After the completion of the process of distributing students to the technical institutes of the Southern Technical University, which was the responsibility of the university presidency, then the lists of the admission process were sent to the institutes after sorting them according to each of the technical institutes, then students were distributed to the scientific departments of the technical institutes and this Responsibility lies with the deanships of technical institutes, and we like to mention that the technical institutes are not only students from secondary schools but also students of other academic preparations who accept central admission. During the technical institutes' deanships also, that is why we see the discrepancy in the process of accepting students as in chart (22). For example, we see the Technical Institute of Basra, some majors whose numbers are large, may reach dozens of students in that specialty and others may reach at least ten students and this It applies to the rest of the institutes so that the numbers are balanced after the results of the academic secondary school students appear, and this is a responsibility Deanships of technical institutes. After completing the process of sending lists to the institutes, the results of admission are then announced on the results announcement site designed in our project to be done through its designed pages announcing the results that we mentioned earlier by entering the student's identification number and by category to inform the institute with which the student is accepted and then the student goes To the technical institute in which the acceptance appeared to complete the registration form according to the requirements.

5. CONCLUSIONS AND FUTURE VISIONS

5.1 CONCLUSIONS

From the above, an electronic system was designed that is capable of registering students at the Southern Technical University. The system was divided into three main sites and the first site was for the flow of student data through the use of the login interface of the designed site, and after providing each student with a user name and password to be able to access the following pages To enter the information required to complete the registration process, we used cloud storage techniques that were obtained through service providers in the cloud to create a database for the project via the (PHPMyAdmin) interface. A data processing site that is managed by the site administrator was also designed to sort the data of students applying for on a study seat in one of the institutes of the university who were divided into two vertical parts, the first section was the unaccepted students, and the other section was the accepted students. Another site for students, which is a site for displaying information for accepted students after completing the distribution process, this system was designed in PHP and CSS language, and MySQL language queries, and when using and applying this project to approximately 1500 students who graduated from vocational schools, we concluded the following**:**

- High speed in receiving student data after the end of the specified application period, which was set by the university within fifteen days, after which the data would be downloaded from the data processing site after the completion of the processing process. The period may be thirty days after the end of the registration period.
- There is no distortion or loss in the data when we used the designed website for the flow of data, and that the loss and distortion of data negatively affect the acceptance process of students, especially when they are distributed to technical institutes as in the previous mechanism.
- Completeness of the required information represented by the student's address at the nearest point of reference and not, as previously, only the name of the city in which the student resides, which affects his admission process to one of the institutes near his residence and according to his scientific specialization.

- The data analysis technology, using big data techniques, contributed to the accurate distribution of students according to the scientific specialization of each student, is a big difference from the previous method, as we explained in the fourth semester of this study.
- The long queues of students in front of the university's staff offices disappeared to zero in the university presidency building, where the application process was completed and the acceptance of students was announced through the designed websites, due to the possibility of creating the designed sites on all types of tablets and computers connected to the Internet.
- The money that was paid to provide housing for students admitted from other cities was greatly reduced, and the reason was due to the admission of students to institutes close to the student's residence. Therefore, the need to fulfil their own housing was eliminated, and in addition to providing transportation costs for the student himself to get from residents to the institute and vice versa.

5.2 FUTURE VISION

One of the important things that must be paid attention to is that the admission laws change from year to year, especially the issue of the student's age, so that the Iraqi law for the Iraqi Ministry of Education does not allow students to complete their university studies for those over the age of twenty-four years, and in addition to that some new departments and specializations may arise. Therefore, it must be possible to design a page for the project, to enter admission requirements and control the introduction of new specializations on which the designed codes depend, especially in the data processing site, and to design pages for technical institutes to download the information of accepted students directly without waiting for the university presidency to send that information after the distribution and sorting of information. For each institute separately.

REFERENCES

[1] A. G. Prajapati, S. J. Sharma, and V. S. Badgujar, "All about Cloud: A Systematic Survey," *2018 Int. Conf. Smart City Emerg. Technol. ICSCET 2018*, pp. 1–6, 2018, doi: 10.1109/ICSCET.2018.8537277.

[2] C. Yang, Q. Huang, Z. Li, K. Liu, and F. Hu, "Big Data and cloud computing : innovation opportunities and challenges," vol. 8947, 2017, doi: 10.1080/17538947.2016.1239771.

[3] Y. Demchenko, C. De Laat, and P. Membrey, "Defining Architecture Components of the Big Data Ecosystem," pp. 104–112, 2014.

[4] B. Furht and F. Villanustre, "Big data technologies and applications," *Big Data Technol. Appl.*, pp. 1–400, 2016, doi: 10.1007/978-3-319-44550-2.

[5] Y. Liu, F. Gao, and Y. Liu, "Design and implementation of student registration system for universities," *2012 2nd Int. Conf. Consum. Electron. Commun. Networks, CECNet 2012 - Proc.*, no. 2, pp. 1760–1763, 2012, doi: 10.1109/CECNet.2012.6202263.

[6] A. Professor, "Web Based Student Information Management System," *Int. J. Adv. Res. Comput. Commun. Eng.*, vol. 2, no. 6, pp. 2342–2348, 2013, [Online]. Available: www.ijarcce.com.

[7] Marlindawati, "the Design of an Online Information System of New Student Using Web Engineering Method," *Int. Semin. Sci. Issues Trends*, p. 109, 2014.

[8] efal1000student. miun. s. Efosa Alohan, "Building a Student Information System," 2015.

[9] E. S. Ali, "Alkan University College Student Information Management System," *Am. J. Oper. Manag. Inf. Syst.*, vol. 1, no. 1, pp. 1–6, 2016, doi: 10.11648/j.ajomis.20160101.11.

[10] Y. Singh, F. Kandah, and W. Zhang, "A secured cost-effective multi-cloud storage in cloud computing," *2011 IEEE Conf. Comput. Commun. Work. INFOCOM WKSHPS 2011*, pp. 619–624, 2011, doi: 10.1109/INFCOMW.2011.5928887.

[11] V. Ulnerabilities and T. Chou, "S Ecurity T Hreats on C Loud C Omputing," *Int. J. Inf.*

Theory, vol. 5, no. 3, pp. 79–88, 2014, [Online]. Available: http://airccse.org/journal/nsa/5513nsa02.pdf.

[12] G. Ramachandra, M. Iftikhar, and F. Aslam Khan, "ScienceDirect The 3rd International Workshop on Cyber Security and Digital Investigation (CSDI 2017) A Comprehensive Survey on Security in Cloud Computing," *Procedia Comput. Sci.*, vol. 110, no. 2012, pp. 0–000, 2017.

[13] A. Rashid and A. Chaturvedi, "Cloud Computing Characteristics and Services A Brief Review," *Int. J. Comput. Sci. Eng.*, vol. 7, no. 2, pp. 421–426, 2019, doi: 10.26438/ijcse/v7i2.421426.

[14] H. Zhang, "An Analysis of The Chinese College Admission System Haibo Zhang PhD in Economics The University of Edinburgh," 2009.

[15] S. Braun, N. Dwenger, and D. Kübler, "Telling the truth may not pay off: An empirical study of centralized university admissions in Germany," *B.E. J. Econ. Anal. Policy*, vol. 10, no. 1, 2010, doi: 10.2202/1935-1682.2294.

[16] W. Paper, "www.econstor.eu," 2013.

[17] H. Fissalma and H. Ajie, "Design and Development of Student Admission System in the State University of Jakarta," *KnE Soc. Sci.*, vol. 3, no. 12, p. 92, 2019, doi: 10.18502/kss.v3i12.4076.

[18] V. S and S. S, "Research in Big Data - An Overview," *Informatics Eng. an Int. J.*, vol. 4, no. 3, pp. 01–20, 2016, doi: 10.5121/ieij.2016.4301.

[19] S. S. Chaurasia and A. Frieda Rosin, "From Big Data to Big Impact: analytics for teaching and learning in higher education," *Ind. Commer. Train.*, vol. 49, no. 7–8, pp. 321–328, 2017, doi: 10.1108/ICT-10-2016-0069.

[20] M. Jose, P. S. Kurian, and V. Biju, "Progression analysis of students in a higher education institution using big data open source predictive modeling tool," *2016 3rd MEC Int. Conf. Big Data Smart City, ICBDSC 2016*, no. 1, pp. 113–117, 2016, doi: 10.1109/ICBDSC.2016.7460352.

[21] A. M. and D. Sharma2, “ANALYZING DATA USING EXCEL,” no. August, pp. 1–5, 2016.

[22] Y. S. Su, T. J. Ding, J. H. Lue, C. F. Lai, and C. N. Su, “Applying big data analysis technique to students’ learning behavior and learning resource recommendation in a MOOCs course,” *Proc. 2017 IEEE Int. Conf. Appl. Syst. Innov. Appl. Syst. Innov. Mod. Technol. ICASI 2017*, pp. 1229–1230, 2017, doi: 10.1109/ICASI.2017.7988114.

[23] Z. Sun, *Managerial Perspectives on Intelligent Big Data Analytics - P.180 ff.*, vol. i. .

[24] B. Gunjal, “Database Management : Concepts and Design Database System : Concepts and Design,” *E-Journals by Res. Sch. Natl. Inst. Technol. Rourkela*, no. December 2003, pp. 1–19, 2014.

[25] The phpMyAdmin devel team, “phpMyAdmin Documentation,” 2014.

[26] M. Uma, V. Sneha, G. Sneha, J. Bhuvana, and B. Bharathi, “Formation of SQL from natural language query using NLP,” *ICCIDS 2019 - 2nd Int. Conf. Comput. Intell. Data Sci. Proc.*, pp. 1–5, 2019, doi: 10.1109/ICCIDS.2019.8862080.

[27] P. Interface, “Introduction to MySQL and phpMyAdmin,” pp. 1–5, 2015.

[28] U. Computers, “Chapter 14 : Databases and Database Management Systems,” 2015.

[29] J. Zhang, “A data synchronization method oriented to custom hierarchical multi-node system,” *Proc. - 2015 IEEE Int. Conf. Comput. Intell. Commun. Technol. CICT 2015*, pp. 666–669, 2015, doi: 10.1109/CICT.2015.152.

[30] L. Vinet and A. Zhedanov, “A ‘missing’ family of classical orthogonal polynomials,” *J. Phys. A Math. Theor.*, vol. 44, no. 8, pp. 1689–1699, 2011, doi: 10.1088/1751-8113/44/8/085201.

[31] R. Ri, F. Dqg, and T. T. Frp, “$ 6WDWLF 6KHOO % DVHG : HE 3DJH , PSOHPHQWDWLRQ 0HWKRG DQG $ SSOLFDWLRQ LQ + DLHU ’ 3ULQWLQJ,” pp. 162–165, 2016.

[32] A. Pérez *et al.*, *A “missing” family of classical orthogonal polynomials*, vol. 44, no. 8. 2011.

[33] C. Schmitt, *Cascading Style Sheets for Web Design*. .

[34] J. Ravi, Z. Yu, and W. Shi, “A survey on dynamic Web content generation and delivery techniques,” *J. Netw. Comput. Appl.*, vol. 32, no. 5, pp. 943–960, 2009, doi: 10.1016/j.jnca.2009.03.005.

[35] M. Tomisa, M. Milkovic, and M. Cacic, “Performance Evaluation of Dynamic and Static WordPress-based Websites,” *ICSEC 2019 - 23rd Int. Comput. Sci. Eng. Conf.*, pp. 321–324, 2019, doi: 10.1109/ICSEC47112.2019.8974709.

[36] M. Peacock, *PHP 5 Social Networking*. 2010.