

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION



STUDENT ENROLMENT SYSTEM

By

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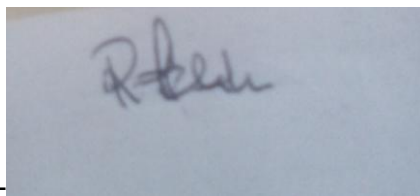
Title : **Student Enrolment System for St Matthias Tsonzo High School**

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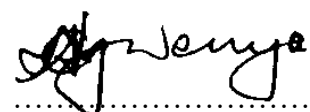
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DEDICATION

This study is dedicated to the glory of God Almighty and to **Mutandi family**, I thank you for all the support you have given me both financially and morally. I thank you for believing in me, May God continue to bless you.

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Table of Contents

List of figures	ix
Chapter 1: Problem Identification.....	1
1.1 Introduction.....	1
1.2 Description of current system.	1
1.3 Statement of the Problem.....	2
1.4 System Objectives.....	2
1.5 Description of the proposed system	3
1.6 Limitations/challenges	3
1.7 Scope/delimitation of the system	3
1.8 Definition of terms	4
Chapter 2.....	5
2.1 Introduction.....	5
2.2 Requirement Analysis.....	5
2.3 Data requirements:	5
2.4 Processing requirements:	7
2.5 Software requirements:	8
2.6 Hardware requirements:	8
2.6.1. Hardware Requirements.....	9
Chapter 3: Design	10
3.1 Introduction.....	10
3.2 User interface design:	10
3.3 Input and output design.....	12
3.4 Database design	12
3.5 Processes design:	14
Chapter 4: Coding and Testing	15
4.1 Introduction.....	15
4.2 Technical documentation	15
4.3 Unit and System Testing	18
4.4 User testing: plan and results	19
Chapter 5: Implementation/Deployment.....	20
5.1 Introduction.....	20

5.1.1. Implementation	20
5.2 Conversion plan	20
5.2.1. Parallel Conversion	20
5.2.2. Advantages	20
5.2.3 Disadvantages	20
5.3 User manual	20
Chapter 6: Evaluation and Conclusion.....	21
6.1. Introduction.....	21
6.2 evaluation of the system.....	21
6.3 Conclusion	21
References.....	23

List of figures

Figure 1 fees payment form.....	6
Figure 2: registration form.....	6
Figure 3:Login form.....	10
Figure 4:Main menu.....	11
Figure 5:Fees payment.....	11
Figure 6:Registration form.....	12
<i>Fig</i> Figure 7.....	19
Figure 8:test and result.....	19

Chapter 1: Problem Identification

1.1 Introduction

St Matthias Tsonzo High School was first established as an Upper Top day secondary school in January 1982, soon after the liberation war of Zimbabwe and the headmaster during that time was the late Rev. A.C. Make who was assisted by a staff of four teachers and an enrolment of 78 students. Rev. The school struggled to exist because of an acute shortage of classrooms, accommodation, teaching facilities and staff housing. There was nothing like a staffroom, library and laboratories. Teachers worked hard to improvise learning equipment. The school started to develop seriously between 1985 and 1989 when classrooms and other learning facilities were built with the help of the surrounding community. During the period 1995-1996, the school started to build boarding facilities that included the hostels, the dining hall and more teachers' houses. A 'level studies commenced in 1997. The school has been in operation for many years. During the entire time the school has been running. They have been using a paper-based, manual system for keeping track of the enrolled students and their academic results. Such a system, however, is cumbersome and does not scale very well. Predictably, as student number have increased, it has become increasingly difficult to manage the manual system. A better solution was needed.

1.2 Description of current system.

The current system of keeping student records at St Matthias Tsonzo High School is a manual, paper-based system. This system consists of three parts, the student registration data, the fees payment and the clearance.

The student registration data is the information that is collected by the school administration when a new student is enrolled. This information is typically captured once upon enrolment and usually does not change. The information includes things like the personal information of the student including their name, date of birth, national registration number, grade 7 and/or form 4 results to name a few. The information also includes the personal and contact information of their parent or guardian and any other next-of-kin for emergency situations.

In the current system, the student registration information is captured on a paper based form which is filled in by the student or parent/guardian in the presence of a school enrollment official. This information is then filed away in the relevant folder for that particular school term and year. If for any reason the information contained in a particular students file, the appropriate folder would have to be physically located perused, each time some information is required. This is cumbersome and does not scale.

1.3 Statement of the Problem

While the current system has served St Matthias Tsonzo High well in the past, as student numbers have steadily increased over the years, the shortcomings of the system are beginning to show. The following are a number of problems that users have reported recently.

- **Slow speed** - Creating, fetching, updating and deleting paper-based records is a very slow and cumbersome process. It reduces organizational efficiency and increases bureaucratic overhead costs.
- **Prone to data loss** - Paper-based records are difficult and expensive to duplicate and backup. This makes them vulnerable to data loss due to accidents as devastating as fire or as silly as spilling coffee on files.
- **Limited by geography** - Under the current system, you need to be physically present at the school to see a student's results or you need to have received a paper copy via the mail or sent via the student.
- **Expensive** - Paper records are expensive to create and maintain, not only in terms of the actual cost of the material but also in terms of the cost of the space used to store those paper records.

1.4 System Objectives

- The system has to be able to add new records of newly enrolled students.
- The system should be able to delete unwanted records.
- The system should be able to search records and display the result.
- The system should be able to cancel an operation as this enables the user to do what he or she feels most prominent to do with the data and also the system should be able to

navigate through the system records smartly i.e. by moving to the Next, Previous, First and Last Records

- The New System must also be able to provide an online help interface for each and every form/file so as to assist users if they may not be able to operate the system, suppose if they are still new at the use of the new system.

1.5 Description of the proposed system

The proposed electronic student management system for St Matthias Tsonzo High School shall be developed with VB.NET for the User interface and Access Database

The system will consist of a login page to allow only authenticated and authorized users to access the system. The system will limit what can be done based on the type of user that is logged in.

The system will also be composed of forms for entering data. The first will be used to capture the student's personal data upon enrolment by the school admin user and the other will be used by the teacher user to enter students' academic results. The Students user accounts will be able to see reports generated from the system that show the students information as well as their results.

1.6 Limitations/challenges

The project is more likely to face the following limitations:

- Budget: funds to carry out the proposed is likely to become the major problem which will affect the implementation of the system. The major cash crisis which has hit the country is going to affect the funds allocation more often.
- Time: this is one of the major commodity which will affect the implementation of the system, the system is paged to three months both the feasibility and designing processes. It is more likely going to be difficult for the programmer to make an analysis of the proposed system and to exhaust all the information and features to be considered for developing the system.
- Ignorance: this will affect the implementation of the proposed system. Generally, the implementation of a new innovation may also be constraint by the degree of acceptance since people have a tendency of resisting new ways of doing things.

1.7 Scope/delimitation of the system

The scope of the proposed school management system will be confined to St Matthias Tsonzo High School only and will be delimited in scope to only focus on the functions of capturing and

storing student enrolment information and academic records. Other functions of school management such as fees payment, registration and other things are outside the scope of the proposed system.

1.8 Definition of terms

- **Microsoft Access-** is database management system
- **Authentication** - The state of a user being logged in.
- **Authorization** - The state of a user having sufficient permission in order to perform a desired task.
- **A-level** - Advanced Level.
- **Enrolment**, the process in which high school students enrol at a university or **college** usually to attain **college** credit.

Chapter 2

2.1 Introduction

This chapter focuses on requirements specifications whose major purpose is to assist the researcher to define the position of the system to see whether it is feasible to implement or not. These include: requirements analysis, data requirements, processing requirements, software requirements and lastly the hardware requirements.

2.2 Requirement Analysis

In order to get the requirements for the St Matthias Tsonzo students enrollment system, we need to have a fact finding plan. This is a detailed description of how the information will be gathered, recorded and analysed in order to come up with the requirements. The fact finding plan for this project consisted of in-person interviews and document analysis.

We interviewed the key personnel who are involved in the current manual system. These are the registrar who registers the details of students as they are enrolled and the teachers who are responsible for creating report cards that contain the academic results of the students. These people were interviewed according to the interview questions in appendices A & B and their responses were recorded to be analysed later. Follow on questions may have been asked depending on their answers to the listed questions.

We also engaged in document analysis where we analysed the various documents that are used in the current manual system. These, together with the responses from the interviews will be very helpful in coming up with data requirements and user interfaces for our system. The documents analysed were the student registration form used by the registrar as well as a sample report card. These are attached to this report are appendix C & appendix D respectively.

2.3 Data requirements:

The system will accept input through two forms, one for the student registration details and fees payment form. These forms will be digital versions of the documents analysed in the requirements analysis stage. The data entered will then be stored in various tables in an Access database.

The output will be presented to the user on the screen display. There will be a list view which will show all the records at a glance. There will also be a detailed view which will show the details of a single student. The detail view will come up when a single record from the list view is clicked.

Figure 1 fees payment form

Name		<i>SAVE</i>
Surname		PRINT
Student		DELETE
Class		PREVIOUS
Date		VIEW
Amount		
Balance		

Figure 2: registration form

Student Number	
----------------	----------------------

2.4 Processing requirements:

For the students' registration portion of the system, the data entered will need to go through some simple validation checks to confirm that it is valid. That is, for example for the date of birth, the system will check if a proper date has been entered in the correct format and they date is in the past. Another validation check is checking that the national registration number is of the correct length. After validation, the data is then saved in the database.

Once saved to the database, the data can be searched to retrieve records and can also be edited or deleted as need be. The system may also allow for printing of the records though the main use case will be viewing the records electronically.

The users of the system needs a system that is **error free**, a system which is **fast in serving students** and can **quickly retrieve and process data** within a short space of time. The system should be able to **sort student's records** in either ascending or descending order, to **easily search** needed records and **display them instantly** on the screen. They need a system that allows **easy amendment of errors**, a system that has **restricted access to files and is password protected**, whereby someone will need a password in order to gain access into the system. The system should also be able to **add a record** of a new student to the system who would have joined the school. The managerial crew also requires a system which is able to **delete the record** of people who might have unfortunately passed away and for those people who might have opted to leave the Institution. Since the new system to be implemented will be mainly based on softcopy information, the Clerk of the system also advised the creation of a **printing interface**, whereby hardcopy information can be produced in order to keep the information as backup and also to send these **printouts** to the rightful students

2.5 Software requirements:

- **Microsoft Visual Basic. Net:** This is used to create the Interface of the system and Microsoft Visual Basic Tool called the Package and Deployment Wizard is also needed, so as to create the Setup of the system, which can make it to be operable on another different computer system. It will also be used in modifying the program in the future
- **Microsoft Access 2003/2007:** This Database Management System is used for creating the database files which will be used to store data. Microsoft office Access is used as the backend to the Visual Basic Program.
- **Microsoft Word 2007:** This is used for documenting the system, that is, for creating the user and the technical documentation of the system.
- **Windows 7 Operating System:** this will act as the background on which the application

2.6 Hardware requirements:

2.6.1. Hardware Requirements

Input Devices

- **Keyboard:** This will be used for entering data in the fields of different files of the system. It is also used for the purpose of amending data in Shelter Medical Aid Society Membership System.
- **Mouse:** This is required for the purpose of item selection i.e. selecting the files to view and also to click buttons which enable certain actions to be performed.

Output Devices

- **LaserJet Printer:** This is required for printing hardcopy documents like reports and queries. A fast printing device is needed.
- **Monitor (Visual Display Unit):** This will be used for displaying forms, records and reports on the computer screen for editing and during entering. It also displays error message and online help for the user.
- **Speakers:** requires speakers for warning sounds to be heard when an invalid operation has occurred and also for entertainment through outputting music and sounds.

Storage Devices

- **Hard Disk:** Used to store system files and data. At least 80 GB hard disk is needed.
- **Compact Disk (CD) or Digital Versatile Disk (DVD):** These will be used for creating backups of the system files and data for recovery purposes in case of accidental loss of data.

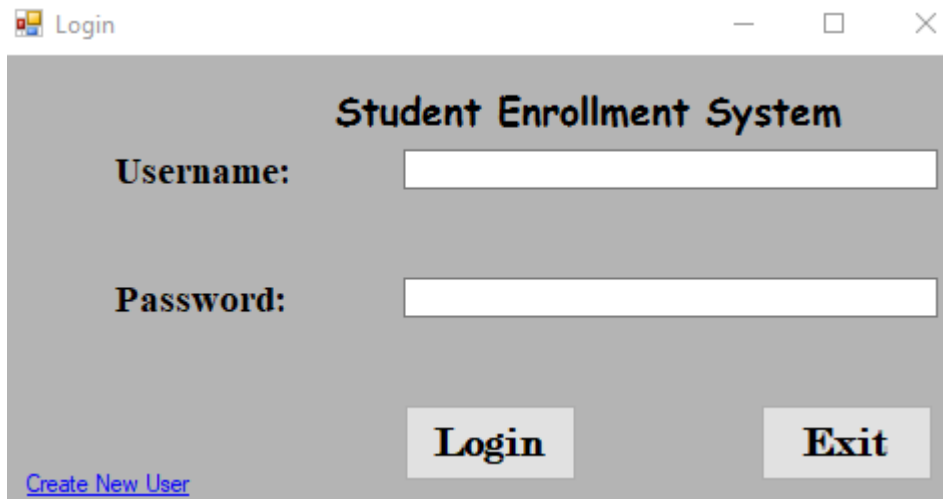
Chapter 3: Design

3.1 Introduction

The System Design Document describes the system requirements, operating environment, system and subsystem architecture, files and database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces

3.2 User interface design:

Figure 3:Login form



The image shows a screenshot of a login form window titled "Login". The window has a standard Windows-style title bar with minimize, maximize, and close buttons. The main content area has a gray background and is titled "Student Enrollment System" in a bold, black, serif font. Below the title, there are two input fields: "Username:" and "Password:". Each label is followed by a white rectangular input box. At the bottom of the form, there are two buttons: "Login" and "Exit", both in a bold, black, serif font. In the bottom-left corner, there is a blue hyperlink that says "Create New User".

Figure 4:Main menu



Figure 5:Fees payment

Fees Payment

File

Student ID:

Firstname:

Surame:

Form:

Fees Paid:

Fees Due:

Add new **Save** **Delete**

Next **Previous**

	Student ID	Firstname	Surame	Form	Fees Paid	Fees Due
▶	2	Sydney	Mangwanya	100	353	100
	3	Maita	Tambanemoto	400	53	400
*						

Figure 6:Registration form

Registration

File

National ID Number: 07-123456V63 Address: 1890 Mkoba 15, Gweru

Forename: Malta

Surname: Tambanemoto Class: Upper 6 Commercials

Student ID: 3 Student Type: Boarder

DOB: Wednesday, 12 January 2000

Sex: Male Previous School: St Georges High School

Search

Add new Save Delete

Move First Next Previous Move Last

National ID Number	Forename	Surname	Student ID	DOB	Sex	Address	Class	Student Type	Previous School
07-123456V63	Malta	Tambanemoto	3	12/1/2000	Male	1890 Mkoba 15, ...	Upper 6 Commer...	Boarder	St Georges High ...
07-657494V66	Melinda	Dube	1	22/8/2001	Female	432 Hospital Hill, ...	Upper 6 Commer...	Day	First Class College
63-1636049X66	Sydney	Mangwanya	2	9/5/2001	Male	203 Rhino Run, ...	Lower 6 Arts	Boarder	Makumbe High S...
63-789654V66	Tawanda	Kusena	5	23/3/2003	Male	23 Sakubva, Mut...	4A1	Day	Nyanyadzi High
66-263378B66	Tinotenda	Mavi	6	17/9/2002	Female	197 Murambi, Mu...	3A2	Day	Mutare Girls High
72-9834526B66	Ashley	Wakapila	4	19/6/2002	Female	Hse Number 20 ...	4A2	Boarder	Harare Girls High

3.3 Input and output design

This phase focuses on the design of the proposed system, the design being based on the findings of the analysis of the current system. It gives an outline of the physical design, the architecture design, interface design, database design and program design. It outlines all the design needed for the proposed system

After exploring and documenting all the processes involved in the existing system it is now time to design the proposed system. This involves giving an outline of how the proposed system is going to be developed, configured and deployed. In this phase I am going to outline the Physical Design, Systems Architecture and Database design, Interface Design, Program Design and Test Design.

3.4 Database design

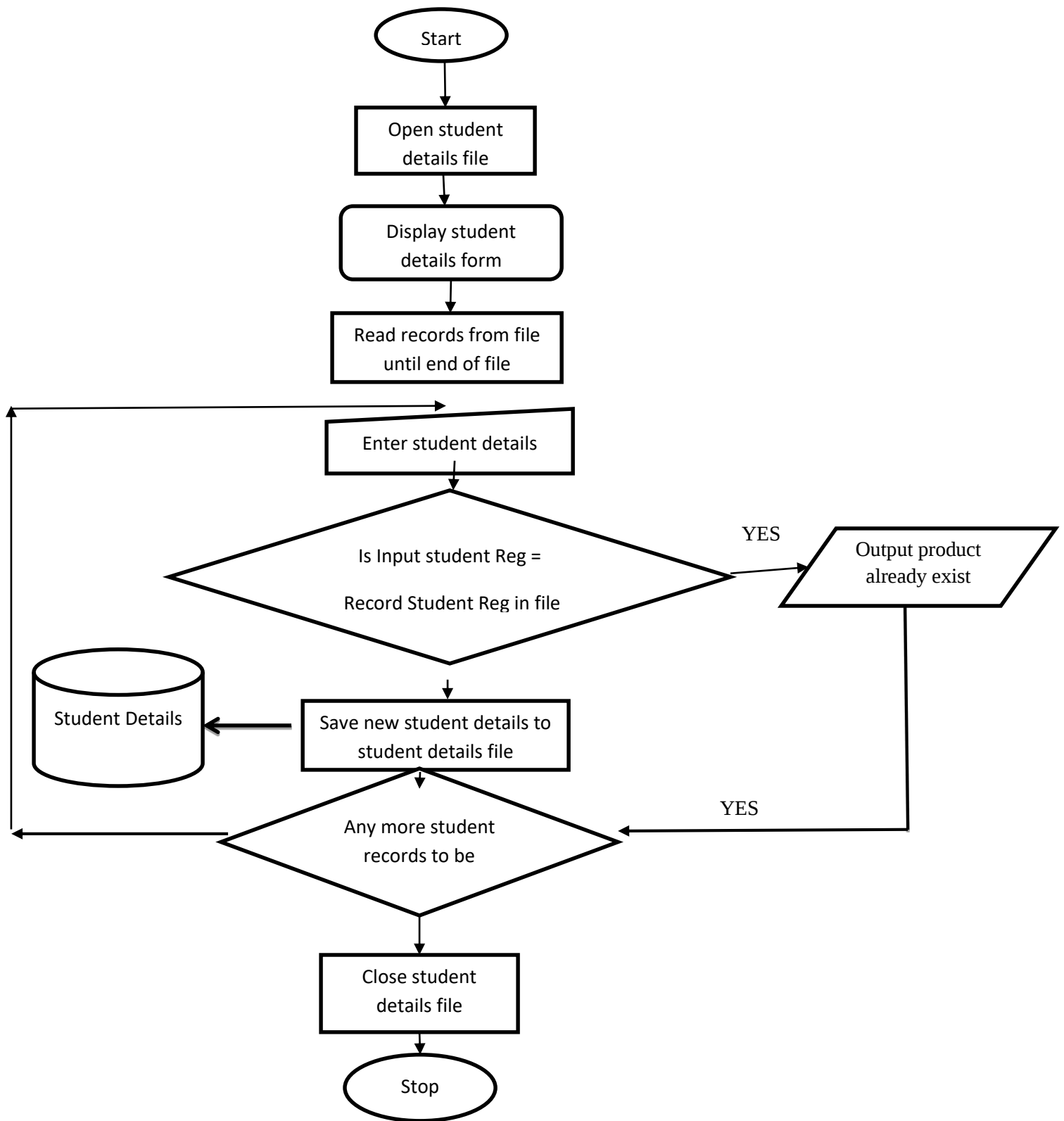
Database design is the process of designing the logical and physical structure of one or more databases to accommodate the information need of the users. In simpler terms, it is the process of coming up with a detailed model of the database. When designing a database, one has to be having in mind the objectives of the system so as to develop a database that satisfies the system. The

specific storage structure and access paths of the system are specified here. The data types, functions and characteristics of each attribute in the system are chosen and specified.

The Relational database model is used in designing the content management system's database due to its simplicity in describing data elements and the relationships between them. Database design seeks to meet the following needs:

- Should provide for efficient storage, update and retrieval from the database
- Should be reliable. The stored data should have high integrity and promote users to trust in that data.
- Should be adaptable and scalable to new and unforeseen requirements and applications

3.5 Processes design:



Chapter 4: Coding and Testing

4.1 Introduction

In this chapter researcher is going to display source code of the system.

4.2 Technical documentation

'THIS CODE WAS DESIGNED BY RUDOLF MUTANDI

Imports System.Data.OleDb

Imports System.Text

Imports System.Security.Cryptography

Public Class frmlogin

Dim uname **As** String

Dim passwd **As** String

Dim attempts **As** Integer = 5

Dim connstring **As** String = "Provider=Microsoft.ACE.OLEDB.12.0;Data
Source=C:\Users\Rudolf\Documents\raddie.accdb"

Dim connect **As New** OleDbConnection

#Region "Connections"

Public Sub openconnection()

If connect.State = ConnectionState.Closed **Then**

 connect.ConnectionString = connstring

 connect.Open()

ElseIf connect.State = ConnectionState.Open **Then**

 Me.Refresh()

End If

End Sub

Public Sub closeconnection()

If connect.State = ConnectionState.Open **Then**

 connect.Close()

ElseIf connect.State = ConnectionState.Closed **Then**

 Me.Refresh()

End If

End Sub

#End Region

#Region "Login Button"

Private Sub btnConfirm_Click(**ByVal** sender **As** System.Object, **ByVal** e **As**
System.EventArgs) **Handles** btnConfirm.Click

 openconnection()

 uname = txtusername.Text.Trim

 passwd = txtpassword.Text.Trim

```

If attempts = 0 Then
    MsgBox("For Security purposes,The System is Shutting Down",
MsgBoxStyle.Information, "Security level 2")
    closeconnection()
    Me.Dispose()
    Me.Close()
ElseIf uname = "" Or IsNothing(uname) = True Then
    hideerrors()
    lblerrorusername.Show()
    lblerrorusername.Text = "Please Enter Username"
    txtusername.Focus()
    attempts = attempts - 1
    lblerrorattempts.Text = attempts & "Attempts left"
    Exit Sub
ElseIf uname.Length < 1 Then
    hideerrors()
    lblerrorusername.Show()
    lblerrorusername.Text = "Please Enter Username correctly"
    txtusername.Focus()
    attempts = attempts - 1
    lblerrorattempts.Text = attempts & "Attempts left"
    Exit Sub

ElseIf passwd = "" Or IsNothing(passwd) = True Then
    hideerrors()
    lblerrorpassword.Show()
    lblerrorpassword.Text = "Please Enter Password"
    txtpassword.Focus()
    attempts = attempts - 1
    lblerrorattempts.Text = attempts & "Attempts left"
    Exit Sub
ElseIf passwd.Length < 6 Then
    hideerrors()
    lblerrorpassword.Show()
    lblerrorpassword.Text = "Please Enter Password Correctly"
    txtpassword.Focus()
    attempts = attempts - 1
    lblerrorattempts.Text = attempts & "Attempts left"
    Exit Sub
Else
    Dim ue As New UnicodeEncoding()
    Dim ByteSourceText() As Byte = ue.GetBytes(passwd)
    Dim Md5 As New MD5CryptoServiceProvider()
    Dim ByteHash() As Byte = Md5.ComputeHash(ByteSourceText)
    Convert.ToBase64String(ByteHash)
    Dim hashPwd As String

```

```

hashPwd = Convert.ToBase64String(ByteHash)

Dim Selectqry As String = "SELECT username, password FROM logo WHERE
username ='" + uname + "'"
Dim da As OleDbDataAdapter
da = New OleDbDataAdapter(Selectqry, connect)
Dim dtset As DataSet
dtset = New DataSet()
Try
    da.Fill(dtset, "logo")
Catch ex As Exception
    MsgBox("Error occurred , Please try again", MessageBoxIcon.Error, "Error")
Exit Sub
End Try
Dim dttable As DataTable
dttable = New DataTable
dttable = dtset.Tables("logo")

Dim dbuname, dbpasswd As String
For Each tempRow In dttable.Rows
    dbuname = tempRow("username").ToString
    dbpasswd = tempRow("password").ToString

    If (dbuname = uname) And (dbpasswd = passwd) Then
        clearinputs()
        closeconnection()
        MsgBox("Welcome " + uname, MsgBoxStyle.Information, "Welcome")
        frmMain.Show()
        attempts = 5
        hideerrors()
        Me.Hide()
    Else
        attempts = attempts - 1
        hideerrors()
        MsgBox("Error occurred.Please try again", MessageBoxIcon.Error, "Error")
        lblerrorattempts.Show()
        lblerrorattempts.Text = attempts & "Attempts left"
        Me.Refresh()
        Me.WindowState = FormWindowState.Normal
        Exit Sub
    End If
Next

End If

```

```

    End Sub
#End Region
#Region "Exit Button"

    Private Sub btnExit_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles btnExit.Click
        Me.Dispose()
        Me.Close()

    End Sub
#End Region
#Region "Clear inputs"
    Private Sub clearinputs()
        txtusername.Clear()
        txtpassword.Clear()

    End Sub
#End Region
#Region "Hide errors"
    Private Sub hideerrors()
        lblerrorattempts.Hide()
        lblerrorattempts.Hide()
        lblerrorpassword.Hide()

    End Sub

#End Region

    Private Sub frmlogin_Load(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles MyBase.Load

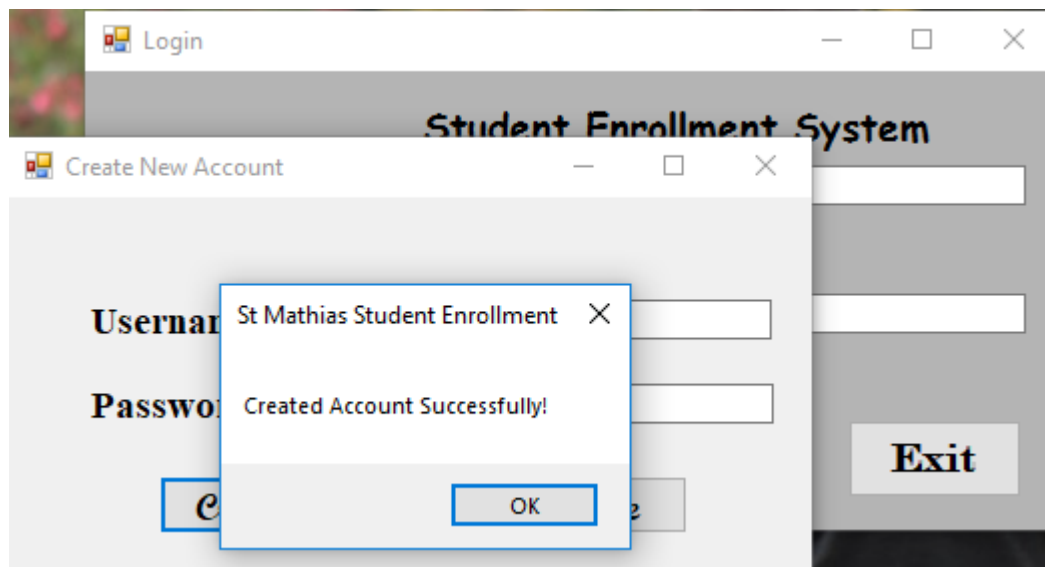
    End Sub
End Class

```

4.3 Unit and System Testing

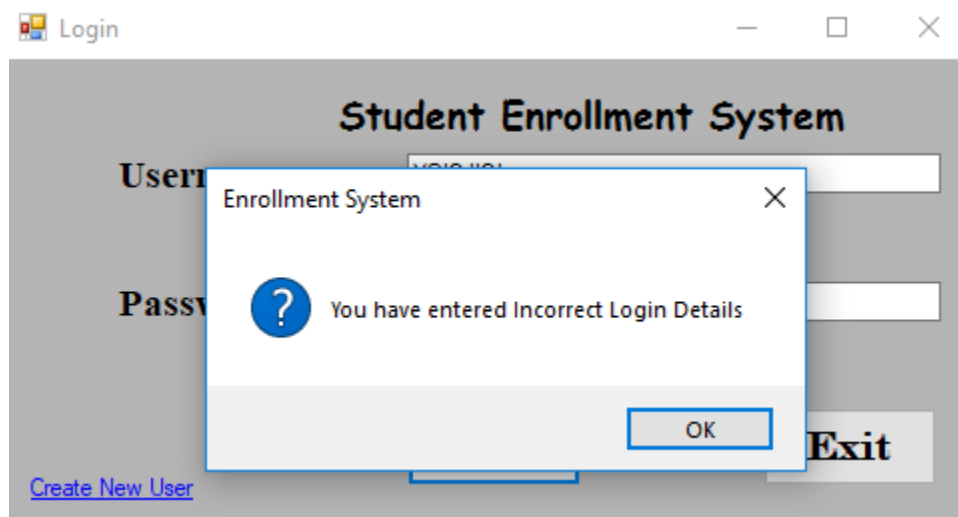
That was conducted on the complete integrated student Enrollment System to evaluate the systems compliance with its specified requirements also performance testing was carried out to see .Verification seeks to ensure that implemented program meets the expectations of the application users

Fig Figure 7



4.4 User testing: plan and results

Figure 8: test and result



Chapter 5: Implementation/Deployment

5.1 Introduction

In this chapter will be mainly focusing on how to implement and deployment of the system.

5.1.1. Implementation

It is the translation of design model into the functional system by putting into effect all the pieces of code together and collaborates to form the whole system that satisfies the user requirements. In this chapter the researcher will start by describing the various development tools that were used to develop the system, the researcher will explain the major functionalities of the system.

5.2 Conversion plan

Deployment –the system is an offline application. User will have the setup in her or his computer.

5.2.1. Parallel Conversion

The process of transferring operations from one computer system to another, during which both systems are run together for a period of time to ensure that they are producing identical results.

Cost is relatively high as both systems are in operation for the changeover period .Risk is limited to the module

5.2.2. Advantages

It primary appeal is in the potential for continued smooth operations during the change one period. The new system can be run alongside the old system for weeks allowing the discovering of any problems in the system

5.2.3 Disadvantages

Running the system in parallel, demands twice the resources to accomplish the same work as single system. This demands the double workload slows production, Probability of errors.

Input errors are always a possibility, but when the amount of data being double the probability of error increases.

5.3 User manual

Training will be done to ensure that users of the system would work on the system with little difficulties

Headmaster- the finished product will be presented to the headmaster first before any training commences .The presentation includes teaching them on how to access their reports .the training also presents an opportunity for explaining to the headmaster the contents of the system.

Chapter 6: Evaluation and Conclusion

6.1. Introduction

In this chapter the researcher is going to evaluate the system and give future recommendation .outline the constraints and limitations and clarify whether the objectives where met or not.

6.2 evaluation of the system

The newly developed system works satisfactory so as to say .It managed to meet the objectives specified as originally specified. User Friendliness- with the use of visual Basic as the developing environment, graphical user interface system was designed that met user requirements since most of the user are more familiar with windows based interfaces.

Although there were sore shortfalls that were encountered in the development and implementation of the student management system .These included time was scarce ,to have carried out enough research ,therefore the system was built too quickly to meet the institutional needs disregarding what the market really needs .

6.3 Conclusion

The project environment was non –threatening ,and less experienced fellow students asked questions easily .Most of the questions asked fostered creativity and contributed much in the design in the design and implementation phase. The system has computerized most of the clinic procedures especially in the issue enrolment of a student .the system helped to come up with an easy way to reporting information at a school. Computerized information management systems are being used in almost everyday corner of the world, is it retail, commerce, industry health and agriculture. Efficient and effective information systems are becoming a competitive edge for most organizations, which has resulted in continued survival of in the modern sophisticated and dynamic business environment.

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