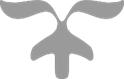


**CLEVELAND CLINIC MANAGEMENT**

**SYSTEM**

****

**Acknowledgements**

Firstly, I would like to extend my heartfelt gratitude to my parents for providing me with the research material in order to prepare this project. I would also like to thank my Computer Science teacher Mr B Ndau for the guidance he gave me on how to carry out the project and lastly my friends Takunda F, Masamvu M, Mawoyo A and Mhlanga L for the discussions and help in preparing the documentation. Thank you so much guys.

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# Section A: SELECTION, INVESTIGATION AND ANALYSIS

## Problem definition and background analysis

CLEVELAND CLINIC

Cleveland is a private clinic located in Hobhouse Township, Mutare in Zimbabwe. The clinic was founded by Doctor Moses Mullins in 2015 when an outbreak of malaria had hit Hobhouse. The majority of Hobhouse inhabitants (about 1500 people) usually visit this clinic since it is easily accessible and cheap in the area. The clinic has three branches, one in Mutare, the other in Harare and the last one in Bulawayo. There are three nurses, one doctor and two general workers at the clinic. Of the two general workers, one is a security guard responsible for maintaining order and keeping the clinic secure. The clinic provides cure or treatment for minor diseases since it is not fully developed yet. The clinic also offers guidance and counseling to HIV/AIDS patients. The clinic uses a manual system such that large volumes of files are stored at the clinic.

The system has the following files used in the running:

**Patients Files, Payments Files and HIV/AIDS Counsel files**

All these files are manual and the clinics’ employees use pens and counter books to the record all the details.

## Investigation of the current system

### Research Instruments

A. Questionnaires

This is a document with detailed and unambiguous questions which have to be answered by the respondent. The researcher decided to use questionnaires for the following reasons:

* Large volumes of data can be collected from many people in a short period.
* Many people feel comfortable since questionnaires maintain privacy
* They are generally practical and straight to the point

B. Interviews

This refers to the face to face communication between two or more people where the interviewee is asked questions by the interviewer and responds. The analyst chose interviews as a research because:

* Data is obtained from the original source
* The interviewer can capture verbal and non-verbal clues
* The interviewee keeps focus

Medical Staff Questionnaire

**NB.** Dear Respondent, this is questionnaire is seeking information from you to provide the best of what you know concerning Cleveland Clinic in any aspect.

**-Please tick in the box**   **on the appropriate answer**

1. Your age range (in years)?

0 – 20 20 – 40 41-60 61+

1. Sex: Male Female
2. For how many years have you been employed at this clinic?

1– 5 6 – 10 11- 15 16+

cc

cc

cc

1. What do you use to input or capture data?

Handwriting Computerised System

cc

1. Do you face any problems while using the system?

Yes No

ccc

1. The clinic operates for how many hours a day?

1– 5 6 – 10 11- 15 16-24

ccc

ccc

ccc

ccc

1. Do you have any back copies of records?

ccc

Yes No

1. Would you feel comfortable using computers as a replacement for the current system?

Yes No

1. Do you think your patients are happy with your services?

Yes No

1. Any additional comments for the system.

***Thank you!!***

Patients Questionnaire

NOTE: Use ticks when appropriate and please pay special attention to the questions

1. Age:
2. Briefly describe your experiences with the current system.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Very Good | Normal | Poor |
| 3a. Waiting Periods |  |  |  |
| b. Customer Care |  |  |  |
| c. Efficiency |  |  |  |
| d. Rate of Processing  e. Level of cleanliness at clinic  f. Patients Goodwill  g. Hours of service  h. Reliability |  |  |  |

***Thank you!!***

Interview Guides

Medical Staff

* When was this clinic established?
* Who started it?
* Where do you record and store patients’ records?
* What security measures have you put in place to safeguard the clinic?
* For how long have you been using this system?
* How do you deal with the large volumes of people when you are so few?
* Would you feel comfortable using computers as a replacement?
* Which strengths do you think your system has?
* Do you think your patients appreciate your services?
* Is there anything else you might want to add regarding your clinic?
* What measures have you put in place to ensure that the clinic is clean all the time?
* Is there anything else you might want to add regarding the clinic?

***Thank you!!***

Patients

* What do you think concerning the clinics’ system of operation?
* Have you been inconvenienced at any point?
* Do you think they should carry on with the current system?
* How long does it usually take to be assisted?
* Are you satisfied with the clinics’ services?
* Which areas do you think need amendments?
* Are the clinic’s workers hospitable and patient with people?
* Is there anything else you might want to add regarding the clinic?

***Thank you!!***

## Broad description of existing system

**Data flow diagram for existing system**

|  |
| --- |
| First Name  Surname  ID Number  Sex  Disease  Age  Registration      Patient  Patient submits forms  Receptionist  Updating Records    Patients Records  Counsel Records  Counseling Room  Doctor’s Workroom  Directing Patient to Doctor or AIDS/HIV Counsel Room  Studies Problem  Payment Records  After analysis of Problem Area  Updating Records    Dispensary  Payment for Medicine  Medication is offered  Receipts    Updating Records |

## Evaluation of the existing solution

### Weaknesses

1. The system uses manual records and as a result, patients records are destroyed in most cases with water or burnt when too many.
2. The clinic’s system is slow as it takes a lot of time for the nurses to prepare records for one person such that there are often long queues which in turn, inconvenience the patients who need immediate attention.
3. Misplacement of patient records also occurs at this clinic since large volumes of files are kept. For example, patient records of Smith John were misplaced according to the nurses.
4. The clinic faces a problem of shortage of storage space due to use of hard copies such that there is no backup for patient information. Once one’s information is lost, it is lost forever.
5. Data security at the clinic is generally poor. It faces distortion or theft of accounting records or patient records since all information is found in hard copy only and the nurses complain about that often.
6. The workload for the few employees is too much such that when they become tired all operations are slowed down leading to customer dissatisfaction.
7. Too much paperwork is involved in recording all the details which is tiresome for the few employees.
8. It is very slow in searching for a patient’s records since one has to go through all the records one by one.
9. Deleting a record is difficult since a record has to be looked for firstly and this is a mammoth task as one has to go through all the records firstly.

### Strengths

1. System is not affected by power cuts since paperwork is made use of.
2. System cannot be attacked by viruses since the system is manual throughout
3. System is cheap to use and maintain since it is manual.

## Requirements specifications

### Software Requirements

* **Microsoft Office Access 2010 or later**- this will be used for storing patient records. It will be used for creating the database and tables such as the Patients table. Information will be accessed via Microsoft Visual Basics.Net
* **Microsoft Visual Basics.Net**- this will be used to make the system’s interface. The Microsoft Package and Development wizard will be essential in designing the systems setup. This will make the system compatible with other systems.
* **Microsoft Office Word 2010 or later***-* this will be used in typing the user and technical documentation. Users can also use it to type reports and minutes of meetings of Cleveland Clinic.
* **Antivirus Software such as AVG**- this utility software will be used to protect the system from viruses or spywares. The antivirus will also prevent unauthorized access into the computer system as it has web protection platforms.
* **Windows 7 or later** – this operating system will be the main guide and it is compatible with other Microsoft Packages too.

### Hardware Requirements

**Input Devices**

* **Keyboard***-* this will be used for entering data into the system such as typing the documentations for the system. It will be used to amend or organize data.
* **Mouse-** used to enter data into the computer by clicking. In this system, the mouse will be used to select buttons on forms like Patients Form, Payments Form Close Form and so on.

**Processing Devices**

* **An Intel *(R)* Celeron G1610T @ 2.30 GHz Dual Core Processor**- needed for fast, searching records in the system and booting the computer.

**Output Devices**

* **Monitor-** this will act as the interface between the user and the computer system. It will be used for displaying the various forms and records on the computer screen for editing and during entry. The user will be able to see, add and modify records he or she sees displayed on the screen.
* **Printer (Laser Jet)-** This output device will be used for printing patient records when necessary and the receipts. It also produces hardcopies of forms and reports based on queries. A LaserJet printer will be needed to print faster and to produce better quality output.

**Storage Devices**

* **Hard drive (500 gigabytes)** - this efficient data storage device will contain the system’s files and all the patient records will be stored on it. It will also store the operating system and programming language to modify the system.
* **DVD ROM (4.7 GB) -**this will be used for storing the backups and data recovery purposes in case of accidental loss of data.

## Aims and objectives

Aims

* To produce a fast system which is time saving
* To come up with a system which will reduce paperwork
* To produce a user-friendly system
* To come up with a system with good data security
* To come up with a system with which backups can be made

Objectives

The new system must be able to:

1. Easy to use

2. Validate data during entry so as to reduce errors

3. Free from viruses or any malware

4. Ensure data security and integrity with respect to patients information

5. Fast and time saving

6. Make quick search of data in records

7. Delete unwanted records from the system

## Evidence of research

The researcher was able to visit Cleveland Clinic. The research was done and guided with the use of questionnaires as well as interviews. The questionnaires were filled in and as well interview guides and responses were recorded.

* Refer to Appendix for the results**.**

# Section B: DESIGN

## Consideration of alternative methods

Alternative Solution One

1. To keep on using the current manual system but then ensure that it is modified by adding more employees and adopting strict security measures so as to safe keep customers records and payments records too.

Advantages

* This solution can work out when there is no electricity
* Queues will be shortened as there will be more workers

Disadvantages

* The solution is expensive since the new workers will require salaries
* The new employees may take time to cope with the new system
* Co-ordination problems arise as there will be many people in charge
* The records can be damaged by fire or water
* More stationery and other accessories will be required hence increasing expenses

Alternative Solution Two

1. **Off-the-shelf software**

This refers to buying generalised software like Microsoft Access from software vendors in a shop or a software market place. This software will be a ready-made program set to perform a particular task.

Advantages

* Saves time than developing a new software
* Less expensive as the cost of buying the software is shared across a wider customer base
* Chances of errors are slim since the program is thoroughly tested before use.

Disadvantages

* Solution might not meet the individual needs of an organisation.
* The program may fail to run on the organisation’s purchased hardware.
* Solution might have distracting extra features which may be unsuitable for the use of a clinic.
* It may have some features which will be never made use of.
* System might need constant updating in order to work efficiently

### Justification of method of solution

**Method of solution: Tailor-made/Bespoke software**

After closely analysing the alternative methods, the researcher has decided to adopt the **Custom-made software** as this one will be made to meet the individual needs of the clinic and the needs of the patients satisfactorily.

Advantages

* Individual needs of the organization are met
* Increased levels of security through the use of passwords and unauthorized access will be prohibited.
* The needs of patients(consumers) are met to satisfaction
* It can be written in a way to run it on the hardware available
* No extra unwanted features will be found
* It is faster thus solving the problem of long queues
* Can always be updated to adjust to needs
* Organization will have full control over the system unlike Generic software controlled by the programmers
* Lower costs since the programmer is doing the work for free

Disadvantages

* The new system may take time to develop
* System might need to be updated here and there
* The system may fail to run if an error is made in programming it

## Input design

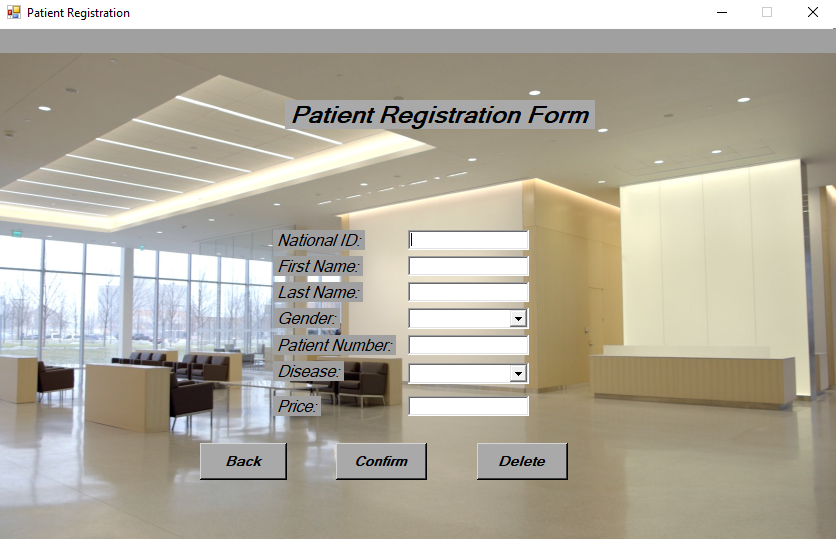
### Data Capture Forms

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  | | --- | --- | | **Program: Cleveland Clinic Management System** | **File Number :** 1 | | **Designed By: Mavera Kuziva** | **Layout Name:** Patient Registration Form |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   National ID   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   First Name   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Last Name   |  | | --- | |  |     Sex     |  |  | | --- | --- | |  |  |   Patient Number   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Disease     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | $ |  |  |  |  |  |   Price |

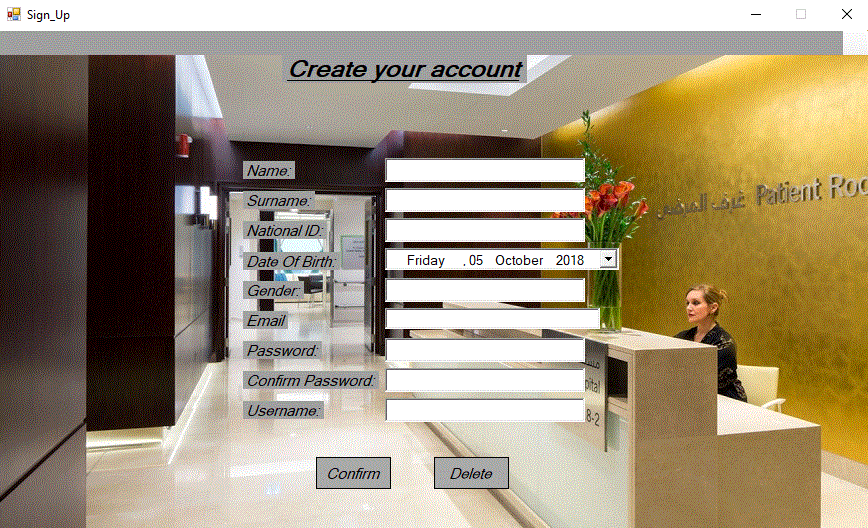
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| |  |  | | --- | --- | | **Program: Cleveland Clinic Management System** | **File Number : 2** | | **Designed By: Mavera Kuziva** | **Layout Name:** Sign Up Form |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Name     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Surname     |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   ID. Number   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |   Date of Birth     |  | | --- | |  |   Sex     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Email Address     |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Password     |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Confirm Password     |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Username   |  |  | | --- | --- | | **Program: Cleveland Clinic Management System** | **File Number :** 3 | | **Designed By: Mavera Kuziva** | **Layout Name:** Payments Form |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |   Receipt Number     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   Bank Name     |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |   Date of Transaction     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | $ |  |  |  |  |  |   Amount Paid |

### Screen Layouts

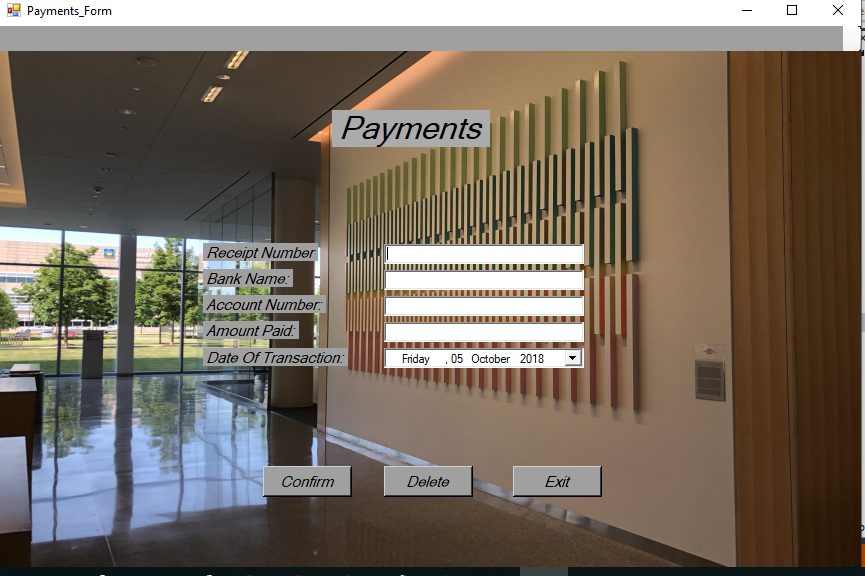
**Patient Registration Form**

****

**Sign Up Form**

****

**Payments Form**

****

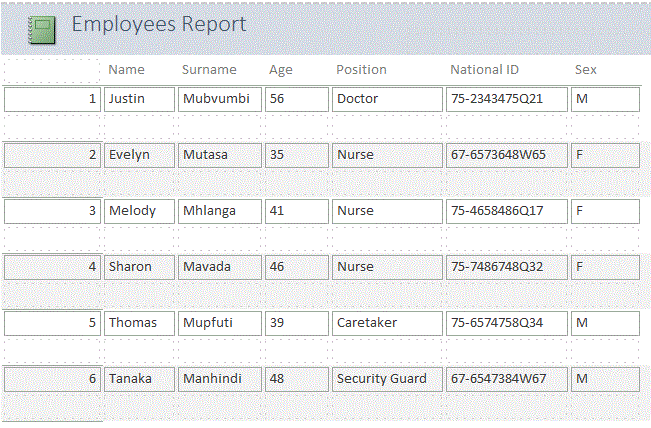
## Output Design

Output from Cleveland Clinic Management System is as follows:

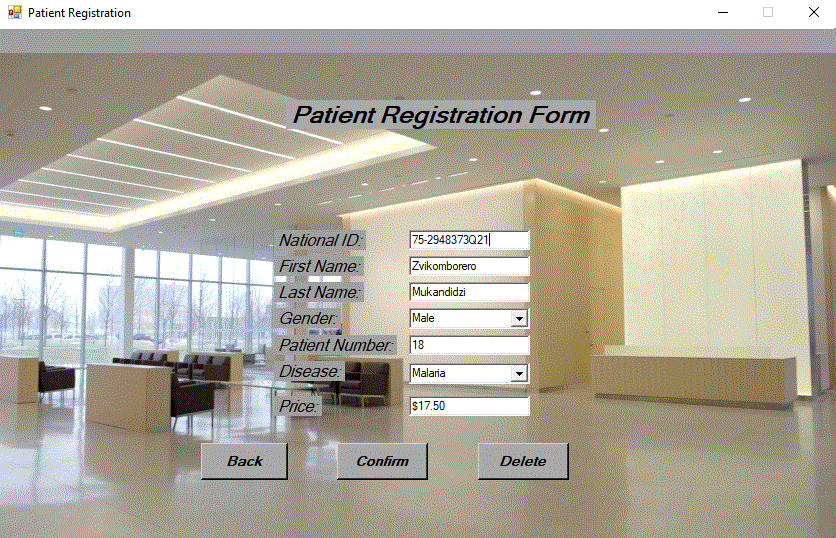
* Forms (showing Patients Details, Payments Information and Employees Details)
* Reports (showing Patients Records, Payments Records and Employees Records)
* Queries (showing searches from Patients, Employees and Payments Records)

### Specification of Required Output:

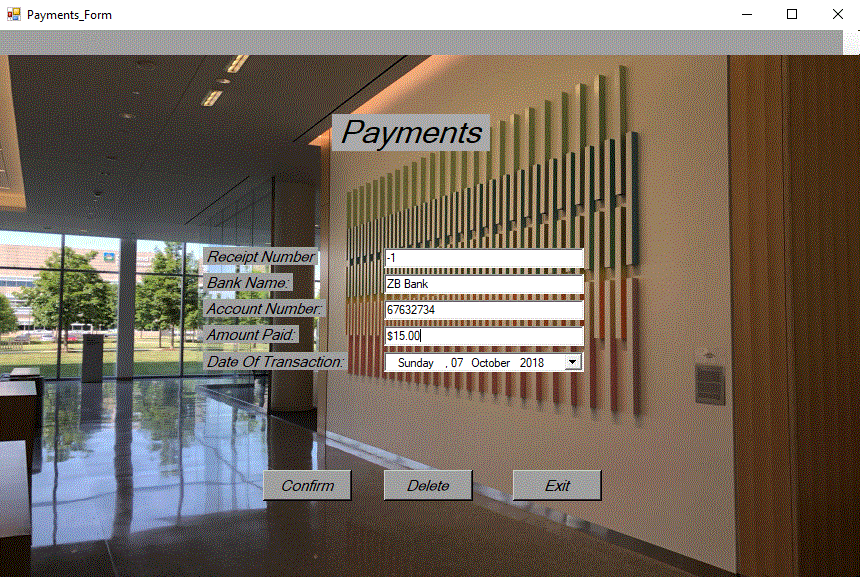
1. Report showing Employees Records



1. Form showing Patient Details



1. Form showing Payment Details



## Test Plan

### Design and Documentation of Test Plan

**Name of Test Plan**: **Black-box Testing**

**Description:**

Black-box Testing is used to test the system according to its specification. The functionalities Cleveland Clinic Management System will be tested by other members who are unaware of the code and how it was designed. Black-box testing would assist in discovering errors in the system that may be invisible. Inputting data that contains errors into the system to see if the validation procedures will identify the errors. Black-box testing includes the use of the following test data**: standard data, extreme data and abnormal data.**

Black box testing has the following benefits:

* There is no need to know the system code and therefore testing will be objective.
* Black-box testing tests the functionality of the system not the structure of the system
* It is one of the easiest testing strategies.

|  |  |  |
| --- | --- | --- |
| **Test Data Type** | **Age Field(in Counsel Form)** | **Outcome** |
| Standard Data | 35 | Accepted |
| Extreme Data | 14(minimum age) | Accepted |
| Abnormal Data | -19 | Rejected |

# Section C: SYSTEM DEVELOPMENT

## Technical Documentation

### Pseudocodes

1. **Search Record**

**Start Module**

Open switchboard

Select query option

Select the type of query, either Patients, Payments, Employees...

Enter **value** to be searched

While not End OF File

Read first record

Compare value to be searched with value of current record

IF values are similar Then

Display record

Else read next record

End While

If no values are similar, Then Display record not found

End if

**End module**

# 2. Patient Registration Form Pseudocode

## Start Module

Select Patient Registration Form option

Open Patient Registration form and select option

If selected option is Add Then

Show Blank Form

Type the record

End If

If selected option is Delete Then Delete Current Record

ElseIf selected option is Print Then Print Current Record

ElseIf selected option is Save Then Save Last Operation

ElseIf selected option is Previous Then go to previous record

ElseIf selected option is Next Then go to next record

ElseIf selected option is First Then go to the first record

ElseIf selected option is Last Then go to the Last record

End If

**End module**

# 3. Switchboard Menu

Open System Menu

Enter Password

Select Other Options

Select case

Case of Counsel

Display HIV and AIDS Counsel Form

Case of About Us

Display About Us Form

Case of Help

Display Assistance Form

Case of Back

Display Payments Form

Case of Exit

Display Thank You Form

Case Else

Display “Invalid Option”

End Select

**End Menu**

### Flowcharts for modules

## Search Record flowchart

Yes

No

Yes

No

Input value

End of

File?

Read Next Record

Values are

Same?

Display

record

rd

Display record

Not Found

Begin

End

### Program Listing

ImportsSystem.Data.OleDb

ImportsSystem.Text

ImportsSystem.Security.Cryptography

PublicClasslogin

Dim username AsString

Dim password AsString

Dim attempts AsInteger = 5

DimconnstringAsString = "Provider=Microsoft.ACE.OLEDB.12.0;Data Source=C:\Users\ok\Desktop\library.accdb"

Dim connect AsNewOleDbConnection

#Region"Connections"

PublicSubopenconnection() GLOBAL VARIABLE

Ifconnect.State = ConnectionState.ClosedThen

connect.ConnectionString = connstring

connect.Open()

ElseIfconnect.State = ConnectionState.OpenThen

Me.Refresh()

EndIf

Public Class Sign\_Up

Private Sub btnconfirm\_Click(sender As Object, e As EventArgs) Handles btnconfirm.Click

If NameTextBox.Text = "" Then

MessageBox.Show("Please enter your Name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If SurnameTextBox.Text = "" Then

MessageBox.Show("Please enter your Surname", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If National\_IDTextBox.Text = "" Then

MessageBox.Show("Please enter your National ID (must be less than 11 characters)", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If Date\_Of\_BirthDateTimePicker.Text = "" Then

MessageBox.Show("Please select the date", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If GenderTextBox.Text = "" Then

MessageBox.Show("Please enter the gender", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If AddressTextBox.Text = "" Then

MessageBox.Show("Please fill in the address", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If PasswordTextBox.Text = "" Then

MessageBox.Show("Please enter your Password", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If Confirm\_PasswordTextBox.Text = "" Then

MessageBox.Show("Please Confirm your password", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If UsernameTextBox.Text = "" Then

MessageBox.Show("Please enter your Username", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If PasswordTextBox.Text <> Confirm\_PasswordTextBox.Text Then

MsgBox("Please enter the same Passwords")

Return

End If

My.Settings.ID = IDTextBox.Text

My.Settings.Name = NameTextBox.Text

My.Settings.Surname = SurnameTextBox.Text

My.Settings.NationalID = National\_IDTextBox.Text

My.Settings.DateOfBirth = Date\_Of\_BirthDateTimePicker.Text

My.Settings.Gender = GenderTextBox.Text

My.Settings.Password = PasswordTextBox.Text

My.Settings.ConfirmPassword = Confirm\_PasswordTextBox.Text

My.Settings.Address = AddressTextBox.Text

My.Settings.Username = UsernameTextBox.Text

My.Settings.Save()

MessageBox.Show("Your record has been saved successfully", "Sign Up", MessageBoxButtons.OK, MessageBoxIcon.Information)

Login\_Form.Show()

Me.Hide()

Sign\_UpBindingNavigatorSaveItem.PerformClick()

End Sub

Private Sub btndelete\_Click(sender As Object, e As EventArgs) Handles btndelete.Click

BindingNavigatorDeleteItem.PerformClick()

End Sub

Private Sub Sign\_UpBindingNavigatorSaveItem\_Click(sender As Object, e As EventArgs)

Me.Validate()

Me.Sign\_UpBindingSource.EndEdit()

Me.TableAdapterManager.UpdateAll(Me.DataSet1)

End Sub

Private Sub Sign\_UpBindingNavigatorSaveItem\_Click\_1(sender As Object, e As EventArgs) Handles Sign\_UpBindingNavigatorSaveItem.Click

Me.Validate()

Me.Sign\_UpBindingSource.EndEdit()

' Me.TableAdapterManager.UpdateAll(Me.DataSet1)

End Sub

Private Sub Sign\_Up\_Load(sender As Object, e As EventArgs) Handles MyBase.Load

'TODO: This line of code loads data into the 'DataSet1.Sign\_Up' table. You can move, or remove it, as needed.

' Me.Sign\_UpTableAdapter.Fill(Me.DataSet1.Sign\_Up)

BindingNavigatorAddNewItem.PerformClick()

End Sub

End Class

Public Class Patient\_Registration

Private Sub Button2\_Click(sender As Object, e As EventArgs) Handles Button3.Click

BindingNavigatorDeleteItem.PerformClick()

End Sub

Private Sub Button1\_Click(sender As Object, e As EventArgs) Handles Button1.Click

If National\_IDTextBox.Text = "" Then

MessageBox.Show("Please fill in your National ID", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If First\_NameTextBox.Text = "" Then

MessageBox.Show("Please fill in the First Name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If Last\_NameTextBox.Text = "" Then

MessageBox.Show("Please your last name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If GenderComboBox.Text = "" Then

MessageBox.Show("Please fill in the Gender", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If DiseaseComboBox.Text = "" Then

MessageBox.Show("Please fill in the Disease", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If DiseaseComboBox.SelectedItem = "Malaria" Then

PriceTextBox.Text = "30"

ElseIf DiseaseComboBox.Text = "Diarrhoea" Then

MessageBox.Show(" The price is $40", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Cholera" Then

MessageBox.Show(" The price is $42", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Chest Pains" Then

MessageBox.Show(" The price is $35", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Headaches" Then

MessageBox.Show(" The price is $22", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Fever" Then

MessageBox.Show(" The price is $30", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Others" Then

MessageBox.Show("Please may you visit the clinic for further assistance", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

Return

Else

MsgBox("Please select from the Disease ComboBox")

Return

End If

If MessageBox.Show("You are successfully registered. Confirm?", "Notice", MessageBoxButtons.OKCancel, MessageBoxIcon.Information) = Windows.Forms.DialogResult.Yes Then

RegistrationBindingNavigatorSaveItem.PerformClick()

Payments\_Form.Show()

Me.Hide()

ElseIf Windows.Forms.DialogResult.Cancel Then

Return

End If

Private Sub Patient\_Registration\_Load(sender As Object, e As EventArgs) Handles MyBase.Load

'TODO: This line of code loads data into the 'DataSet2.Registration' table. You can move, or remove it, as needed.

' Me.RegistrationTableAdapter.Fill(Me.DataSet2.Registration)

BindingNavigatorAddNewItem.PerformClick()

End Sub

Private Sub RadioButton10\_CheckedChanged(sender As Object, e As EventArgs)

End Sub

Private Sub RegistrationBindingNavigatorSaveItem\_Click(sender As Object, e As EventArgs) Handles RegistrationBindingNavigatorSaveItem.Click

Me.Validate()

Me.RegistrationBindingSource.EndEdit()

Me.TableAdapterManager.UpdateAll(Me.DataSet2)

End Sub

Private Sub Button2\_Click\_1(sender As Object, e As EventArgs) Handles Button2.Click

Login\_Form.Show()

Me.Hide()

End Sub

End Class

Public Class Patient\_Registration

Private Sub Button2\_Click(sender As Object, e As EventArgs) Handles Button3.Click

BindingNavigatorDeleteItem.PerformClick()

End Sub

Private Sub Button1\_Click(sender As Object, e As EventArgs) Handles Button1.Click

If National\_IDTextBox.Text = "" Then

MessageBox.Show("Please fill in your National ID", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If First\_NameTextBox.Text = "" Then

MessageBox.Show("Please fill in the First Name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If Last\_NameTextBox.Text = "" Then

MessageBox.Show("Please your last name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If GenderComboBox.Text = "" Then

MessageBox.Show("Please fill in the Gender", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If DiseaseComboBox.Text = "" Then

MessageBox.Show("Please fill in the Disease", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If DiseaseComboBox.SelectedItem = "Malaria" Then

PriceTextBox.Text = "30"

ElseIf DiseaseComboBox.Text = "Diarrhoea" Then

MessageBox.Show(" The price is $40", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Cholera" Then

MessageBox.Show(" The price is $42", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Chest Pains" Then

MessageBox.Show(" The price is $35", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Headaches" Then

MessageBox.Show(" The price is $22", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Fever" Then

MessageBox.Show(" The price is $30", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

ElseIf DiseaseComboBox.Text = "Others" Then

MessageBox.Show("Please may you visit the clinic for further assistance", "NOTICE", MessageBoxButtons.OK, MessageBoxIcon.Information)

Return

Else

MsgBox("Please select from the Disease ComboBox")

Return

End If

If MessageBox.Show("You are successfully registered. Confirm?", "Notice", MessageBoxButtons.OKCancel, MessageBoxIcon.Information) = Windows.Forms.DialogResult.Yes Then

RegistrationBindingNavigatorSaveItem.PerformClick()

Payments\_Form.Show()

Me.Hide()

ElseIf Windows.Forms.DialogResult.Cancel Then

Return

End If

End Sub

Private Sub Label7\_Click(sender As Object, e As EventArgs)

End Sub

Private Sub Patient\_Registration\_Load(sender As Object, e As EventArgs) Handles MyBase.Load

'TODO: This line of code loads data into the 'DataSet2.Registration' table. You can move, or remove it, as needed.

' Me.RegistrationTableAdapter.Fill(Me.DataSet2.Registration)

BindingNavigatorAddNewItem.PerformClick()

End Sub

Private Sub RadioButton10\_CheckedChanged(sender As Object, e As EventArgs)

End Sub

Private Sub RegistrationBindingNavigatorSaveItem\_Click(sender As Object, e As EventArgs) Handles RegistrationBindingNavigatorSaveItem.Click

Me.Validate()

Me.RegistrationBindingSource.EndEdit()

Me.TableAdapterManager.UpdateAll(Me.DataSet2)

End Sub

Private Sub Button2\_Click\_1(sender As Object, e As EventArgs) Handles Button2.Click

Login\_Form.Show()

Me.Hide()

End Sub

End Class

Public Class HIV\_and\_AIDS\_Counsel

Private Sub HIV\_and\_AIDS\_Counsel\_Load(sender As Object, e As EventArgs) Handles MyBase.Load

'TODO: This line of code loads data into the 'DataSet4.Counsel' table. You can move, or remove it, as needed.

Me.CounselTableAdapter.Fill(Me.DataSet4.Counsel)

BindingNavigatorAddNewItem.PerformClick()

End Sub

Private Sub Button2\_Click(sender As Object, e As EventArgs) Handles Button3.Click

MessageBox.Show("Are you sure you want to exit", "Notice", MessageBoxButtons.YesNo, MessageBoxIcon.Exclamation)

If vbYes Then

Thank\_you.Show()

Me.Hide()

ElseIf vbNo Then

Return

End If

End Sub

Private Sub Button1\_Click(sender As Object, e As EventArgs) Handles Button1.Click

If IDTextBox.Text = "" Then

MessageBox.Show("Please fill in all the details", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If NameTextBox.Text = "" Then

MessageBox.Show("Please fill in the Name", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If SurnameTextBox.Text = "" Then

MessageBox.Show("Please fill in the Surname", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If National\_IDTextBox.Text = "" Then

MessageBox.Show("Please fill in the National.ID", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If AgeTextBox.Text = "" Then

MessageBox.Show("Please fill in the Age", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

If AddressTextBox.Text = "" Then

MessageBox.Show("Please fill in the Address", "Error", MessageBoxButtons.OK, MessageBoxIcon.Error)

Return

End If

Dim Ag As Integer

If Ag < 14 Then

MessageBox.Show("Please enter a valid age", "Warning", MessageBoxButtons.OK, MessageBoxIcon.Warning)

Return

ElseIf Ag > 100 Then

MessageBox.Show("Please enter a valid age", "Warning", MessageBoxButtons.OK, MessageBoxIcon.Warning)

Return

Ag = AgeTextBox.Text

End If

CounselBindingNavigatorSaveItem.PerformClick()

HIV\_and\_AID\_Data.Show()

Me.Hide()

End Sub

Private Sub Button2\_Click\_1(sender As Object, e As EventArgs) Handles Button2.Click

Other\_options.Show()

Me.Hide()

End Sub

Private Sub CounselBindingNavigatorSaveItem\_Click(sender As Object, e As EventArgs) Handles CounselBindingNavigatorSaveItem.Click

Me.Validate()

Me.CounselBindingSource.EndEdit()

Me.TableAdapterManager.UpdateAll(Me.DataSet4)

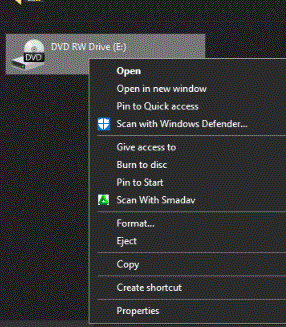
End Sub

End Class

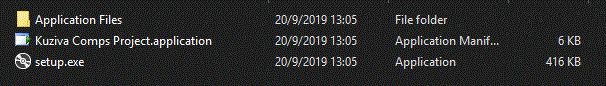
## User Documentation

### Installation

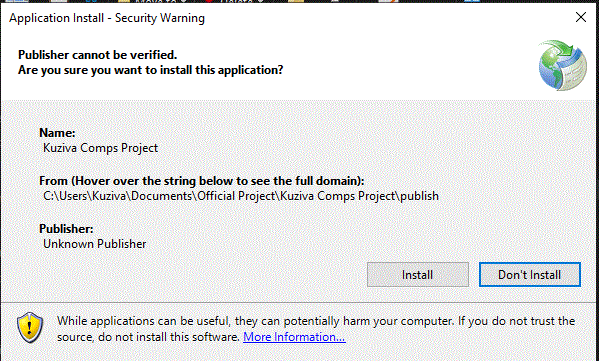
* Insert **CD** in the DVD/CD ROM Drive
* Click on **Start**
* Click on **Computer**
* Open DVD/CD ROM Drive



* Open the folder named **Cleveland Clinic Management System**
* Open the file named **Setup** as shown below



* The following will be displayed

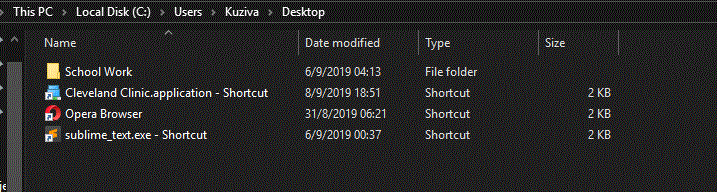


* Click on **Install**
* System will be Installed on Computer

### Running the System

In order to run the system, follow the steps below

* Click **Start** on Taskbar
* Type **Desktop**
* Click on Desktop
* The following will be displayed

****

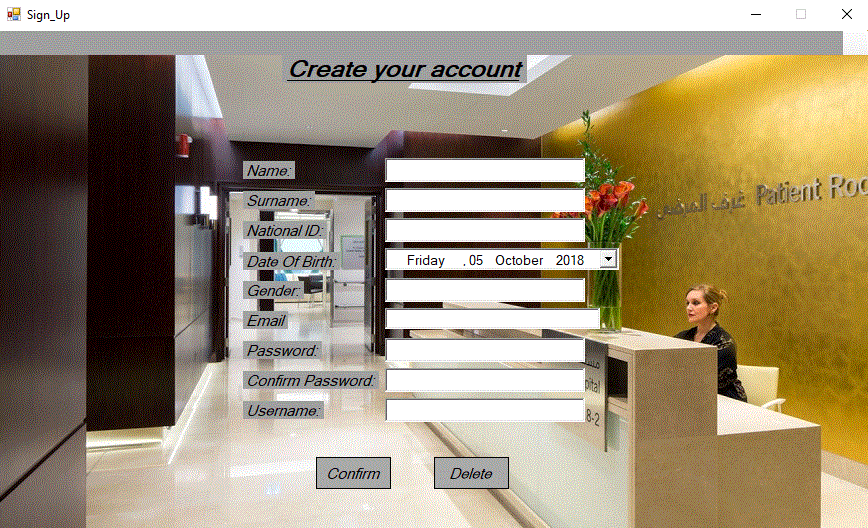
* Click on **Cleveland Clinic .application**
* The following will be displayed

****

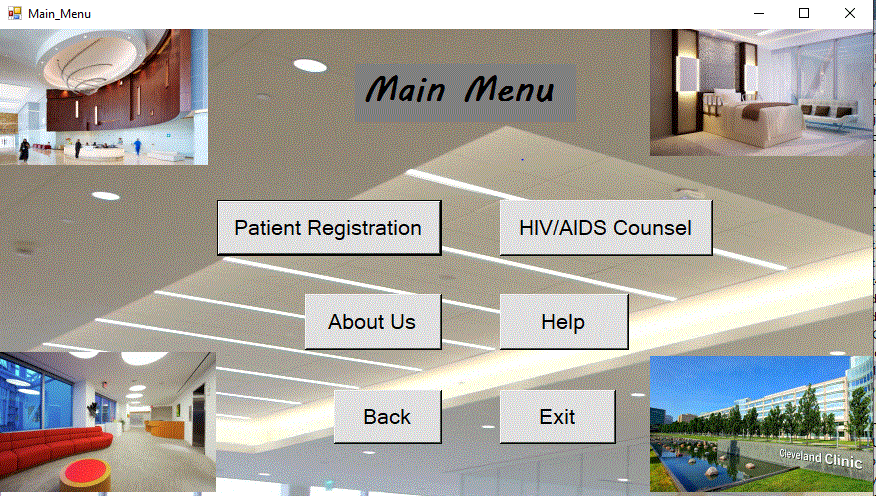
* Click on **Continue**
* The login form will be displayed as follows:



* Click on **Sign Up** in order to create a new account
* The **Sign Up** form will be displayed as follows:

****

* Fill in the details and safely keep your **Password** and **Username**
* Click on **Confirm**
* The Login form will be displayed
* Enter your **Username** and **Password**
* Click on **Login**
* The following will be displayed

****

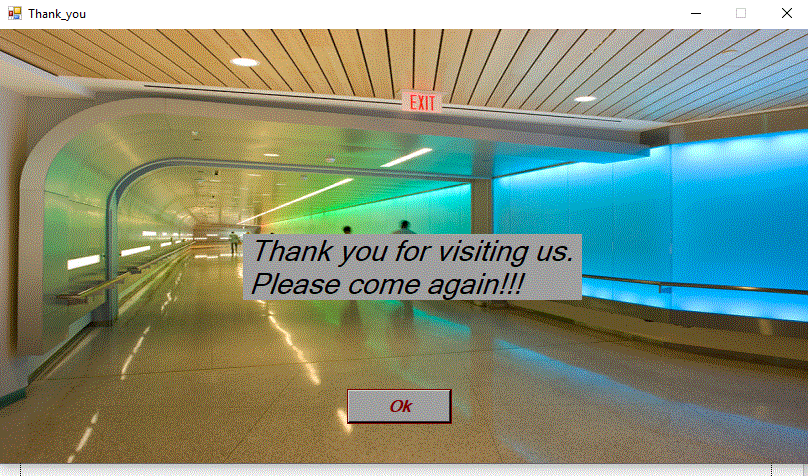
* Navigate the system as you wish

### Exiting the System

* The system has one main exit point
* This is shown below:



* Click on **Exit**
* The following will be displayed:

****

* Click on **OK**
* System will be exited.

# Section D: TESTING AND EVALUATION

## User testing

### Testing for Data Types

1. **Testing for Standard Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **File** | **Tested field** | **Tested data** | **Result** |
| Patient Registration File | Gender | Male | Accepted |
|  | Disease | Malaria | Accepted |
| Patient Number | 60 | Accepted |

**2.Testing for Abnormal Data**

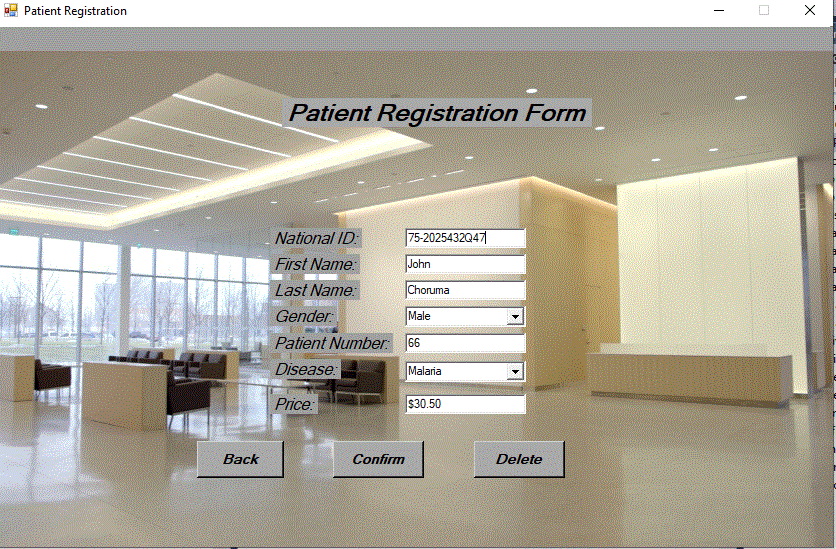
|  |  |  |  |
| --- | --- | --- | --- |
| **File** | **Tested field** | **Tested data** | **Result** |
| Patient Registration File | Gender | Both | Rejected |
|  | Disease | Fun | Rejected |
| Patient Number | -66 | Rejected |

**3.Testing for Extreme Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **File** | **Tested field** | **Tested data** | **Result** |
| Patient Registration File | Gender | Male | Accepted |
|  | Disease | Malaria | Accepted |
| Patient Number | 1 | Accepted |

### Samples runs and Error Messages

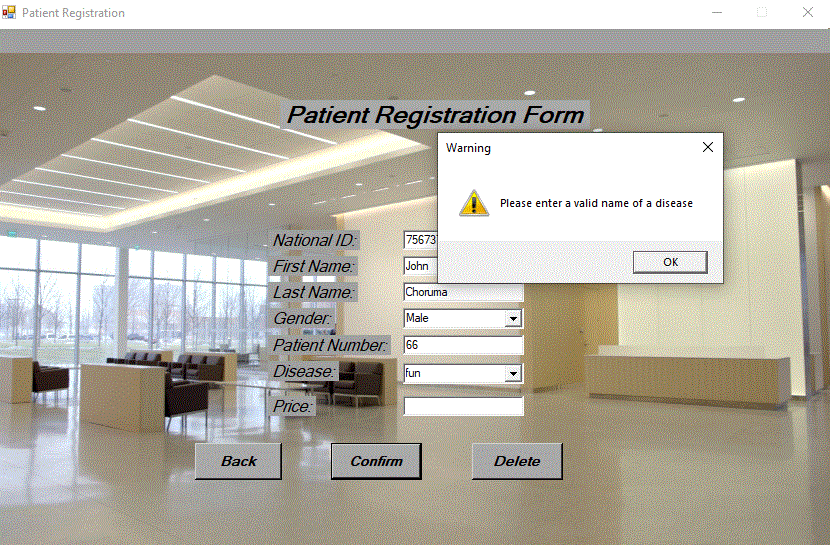
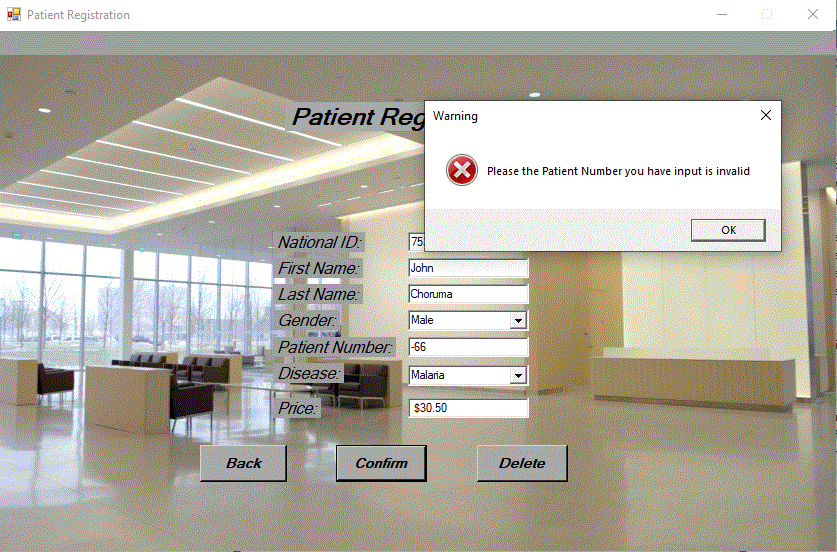
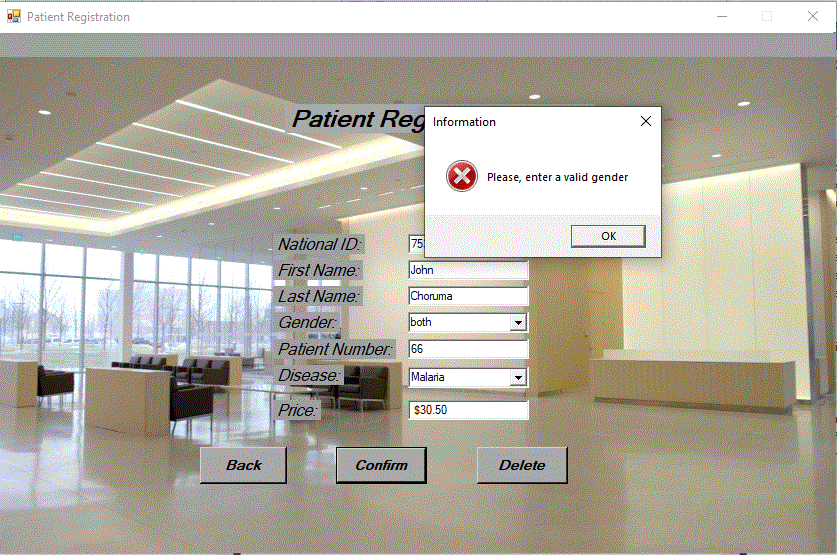
Testing for Standard Data



Valid Details have been entered

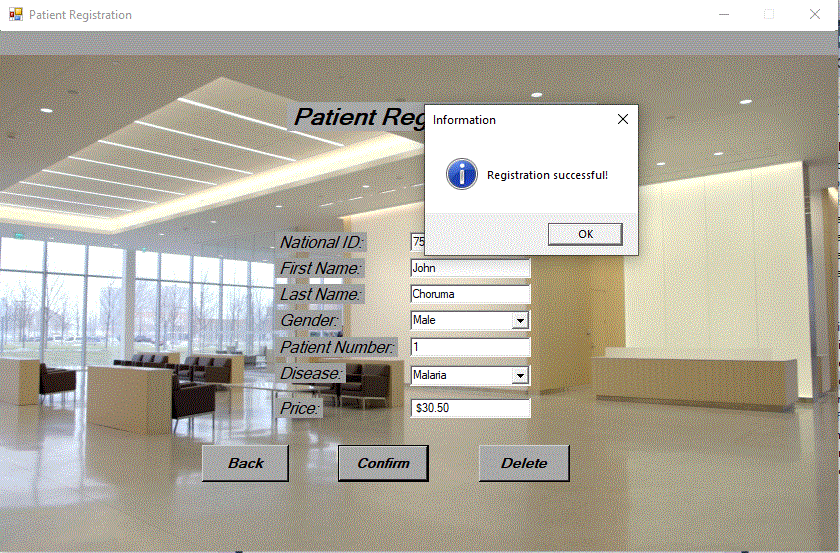
Entered

Testing for Abnormal Data



NB: THE ABOVE ERROR MESSAGES ARE SEEN IN CASES OF INVALID INPUT

Testing for Extreme Data



## Evaluation of the System

### Achievements:

* The system can add and save new records easily and neatly
* The system can delete unwanted records from the system neatly
* The system produces patients, employees and payment reports
* The system searches Records and Display required patient and payment record in less than 5 seconds thus long ques foregone
* The system protects data by using usernames and password hence data security improvement
* The system has very minimal duplication of records, which is commendable
* The system can validate data during entry thereby minimizing data entry errors
* Printing of hardcopy information can now be done by the system
* The system allows printing of reports generated by it
* Sorting of records in a particular order, either ascending or descending is now possible in a short time interval.
* The new system is very user friendly

### Limitations:

* System does not automatically calculate change
* System is not linked to the internet
* Although data duplication was hugely reduced, there still exists some traces of data duplication
* The system does not sort Patient records in ascending order of surname

### Opportunities for further developments:

The new system can be further developed by adding the following:

* Link the system to the internet
* Automatic calculation of change can be added
* Adding a module that will sort records either in ascending or descending order of any given field
* Add more modules to cater for expansion of the new system

## Appendix

**Appendix A: Interview Guide Findings**

1. Medical Staff

**Interviewer:** When was this clinic established?

**Interviewee:** *May 2015*

**Interviewer:** Who started it?

**Interviewee:** *Doctor Moses Mullins*

**Interviewer:** Where do you record and store patients’ records?

**Interviewee:** *In 2 Quire notebooks*

**Interviewer:** What security measures have you put in place to safeguard the clinic?

**Interviewee:** *We have a security guard who ensures the safety of the clinic*

**Interviewer:** Forhow long have you been using this system?

**Interviewee:** *4 years and 1 month roughly*

**Interviewer:** How do you deal with the large volumes of people when you are few?

**Interviewee:** *We select those with serious cases first then if there no more time, we send the remaining back home and assist them the following day*

**Interviewer:** Would you feel comfortable using computers as a replacement?

**Interviewee:** *Very much Sir*

**Interviewer:** Which strengths do you think your system has?

**Interviewee:** *Its cheap. Its unaffected by power cuts and we do not experience any problems of hackers*

**Interviewer:** Do you think your patients appreciate your services?

**Interviewee:** *Sometimes they do although they complain most of the time*

**Interviewer:** What measures have you put in place to ensure that the clinic is clean all the time?

**Interviewee:** *We have one general worker who ensures that the clinic is clean all the time*

**Interviewer:** Is there anything else you might want to add regarding the clinic?

**Interviewee:** *Nothing Sir*

***Thank you!!***

1. Patients

**Interviewer:** What do you think concerning the clinics’ system of operation?

**Interviewee:** *I strongly think and feel that it is very poor*

**Interviewer:** Have you been inconvenienced at any point?

**Interviewee:** *Yes. They could not assist my sick aunt the same day I went there*

**Interviewer:** Do you think they should carry on with the current system?

**Interviewee:** *No*

**Interviewer:** How long does it usually take to be assisted?

**Interviewee:** *about 30 minutes*

**Interviewer:** Are you satisfied with the clinics’ services?

**Interviewee:** *Not at all*

**Interviewer:** Which areas do you think need amendments?

**Interviewee:** *Time taken to save a patient and the system seems so outdated*

**Interviewer:** Are the clinic’s workers hospitable and patient with people?

**Interviewee:** *I think they are not so bad in that area*

**Interviewer:** Is there anything else you might want to add regarding the clinic?

**Interviewee:** *I think I am done*

***Thank you!!***

**Appendix B: Filled in Questionnaires**

Medical Staff Questionnaire

**NB.** Dear Respondent, this is questionnaire is seeking information from you to provide the best of what you know concerning Cleveland Clinic in any aspect.

**-Please tick in the box**   **on the appropriate answer**

1. Your age range (in years)?

0– 20 21 – 40 41-60 61+

1. Sex: Male Female

3. For how many years have you been employed at this clinic?

1– 5 6 – 10 11- 15 16+

cc

cc

cc

4.What do you use to input or capture data?

Handwriting Computerised System

cc

5.Do you face any problems while using the system?

Yes No

ccc

6.The clinic operates for how many hours a day?

1– 5 6 – 10 11- 15 16-24

ccc

ccc

ccc

ccc

7.Do you have any back copies of records?

ccc

Yes No

8.Would you feel comfortable using computers as a replacement for the current system?

Yes No

9.Do you think your patients are happy with your services?

Yes No

10.Any additional comments for the system.

***Thank you!!***

Patients Questionnaire

NOTE: Use ticks when appropriate and please pay special attention to the questions

1. Age:
2. Briefly describe your experiences with the current system.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Very Good | Normal | Poor |
| 3a. Waiting Periods |  |  |  |
| b. Customer Care |  |  |  |
| c. Efficiency |  |  |  |
| d. Rate of Processing  e. Level of cleanliness at clinic  f. Patients Goodwill  g. Hours of service  h. Reliability |  |  |  |

***Thank you!!***