**CHAPTER FOUR**

**SYSTEM DESIGN**

**4.1 Introduction**

This chapter describes the specific features of the system. It includes the various deigns of the system and its description. The Drug Management System adopted Object Oriented to the System Analysis and Design.

**4.1.1 Logical Design**

This section details an abstract representation of the data flows, inputs and outputs of the system.

**• Context diagram**

Context diagram plays an important role in this systems design. Context diagram clearly defines the functionality of the application thus it dictates what the user can get from the application.

View User Records

Add Users

**Administrator**

**USER**

Delete Drug Records

View Drug Records

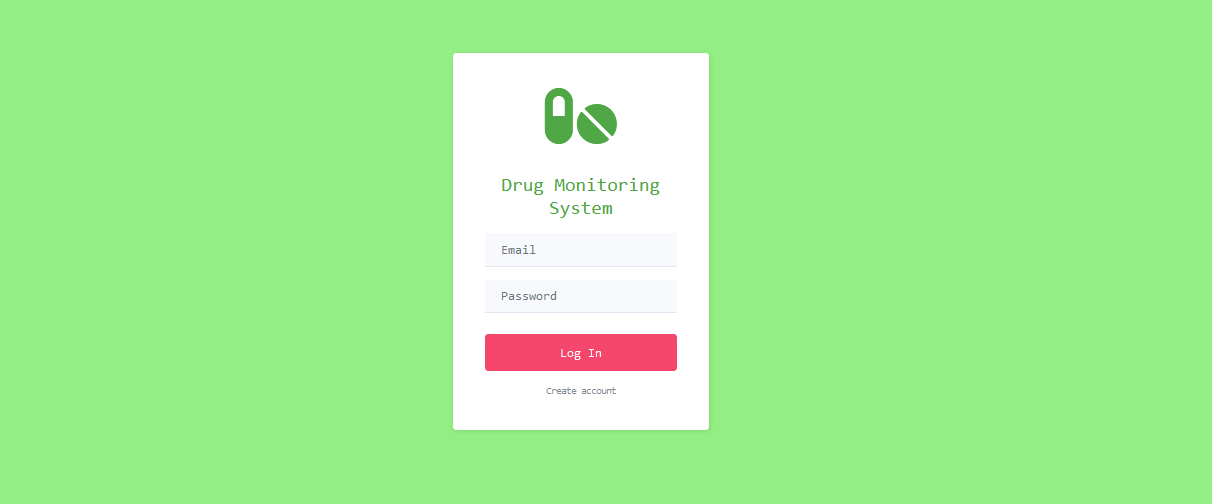
Add Drugs

*Figure: Context Diagram*

**4.1.2 Interface Design**

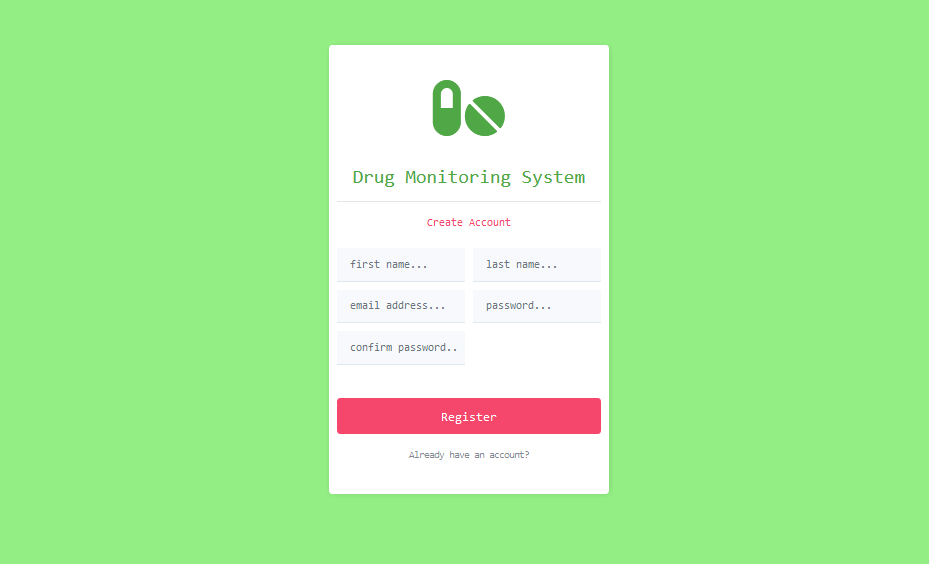
This represents the Users Interface details of the system.

**i). Login Page**

****

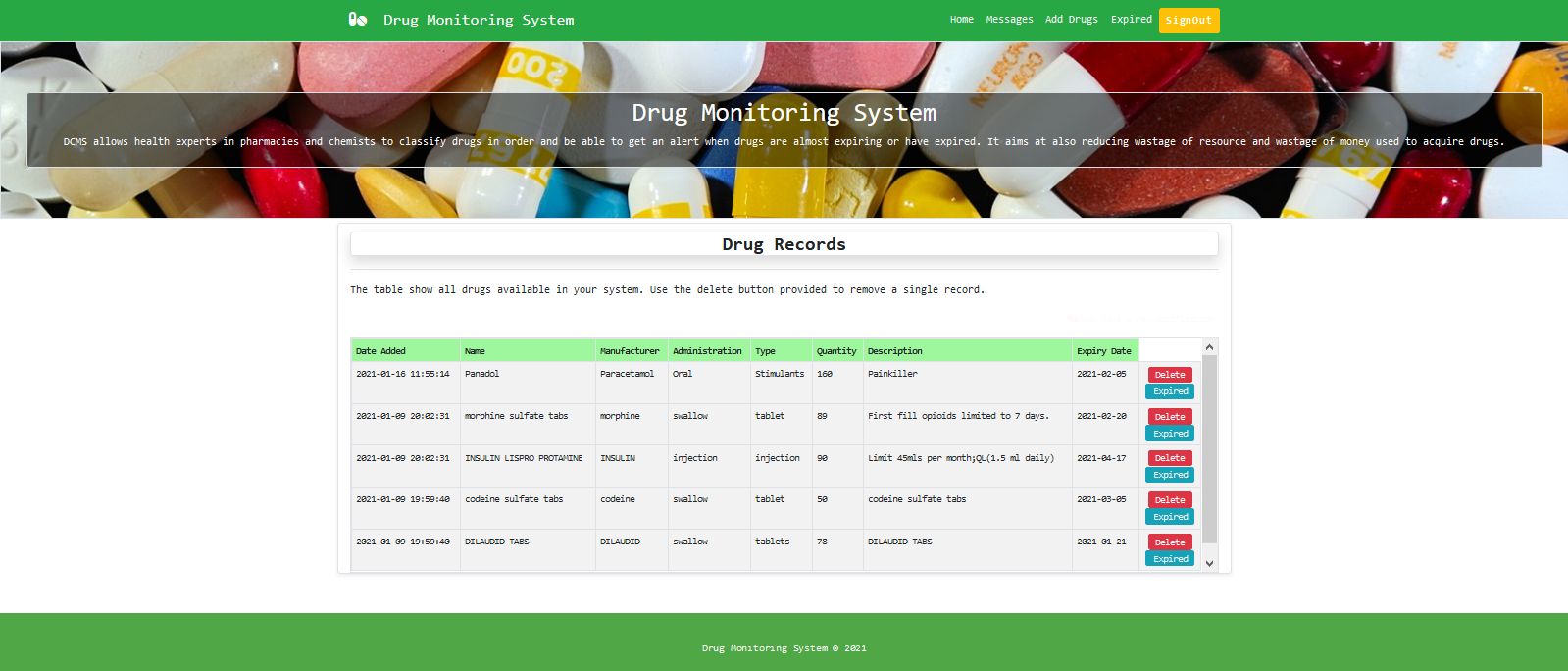
*Figure: login diagram*

**ii). Registration Page**

****

*Figure: create account diagram*

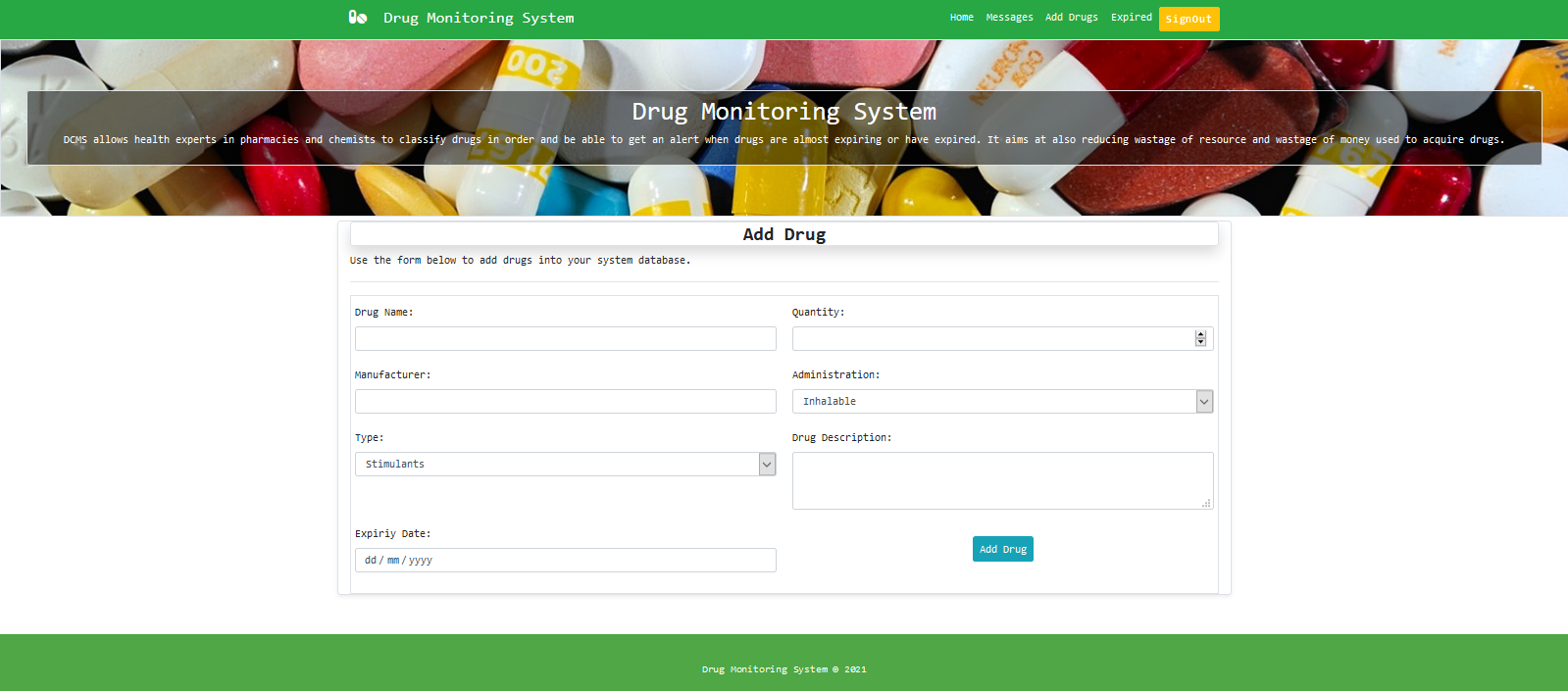
**iii). Drug Records page**

****

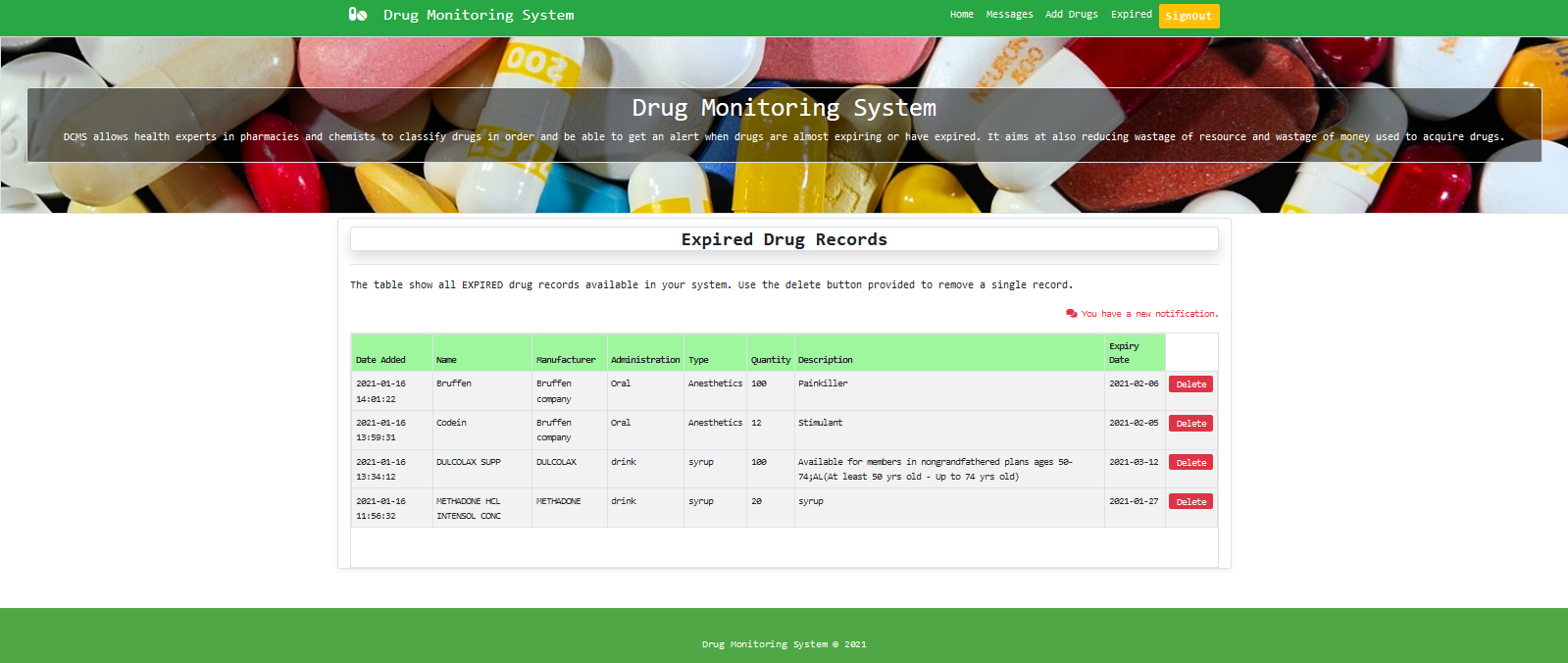
This page shows all the records of drugs added into the system.

*Figure: drug records diagram*

**iv). Add Drugs Page**

This page provides the user with a form to add drugs into the system.

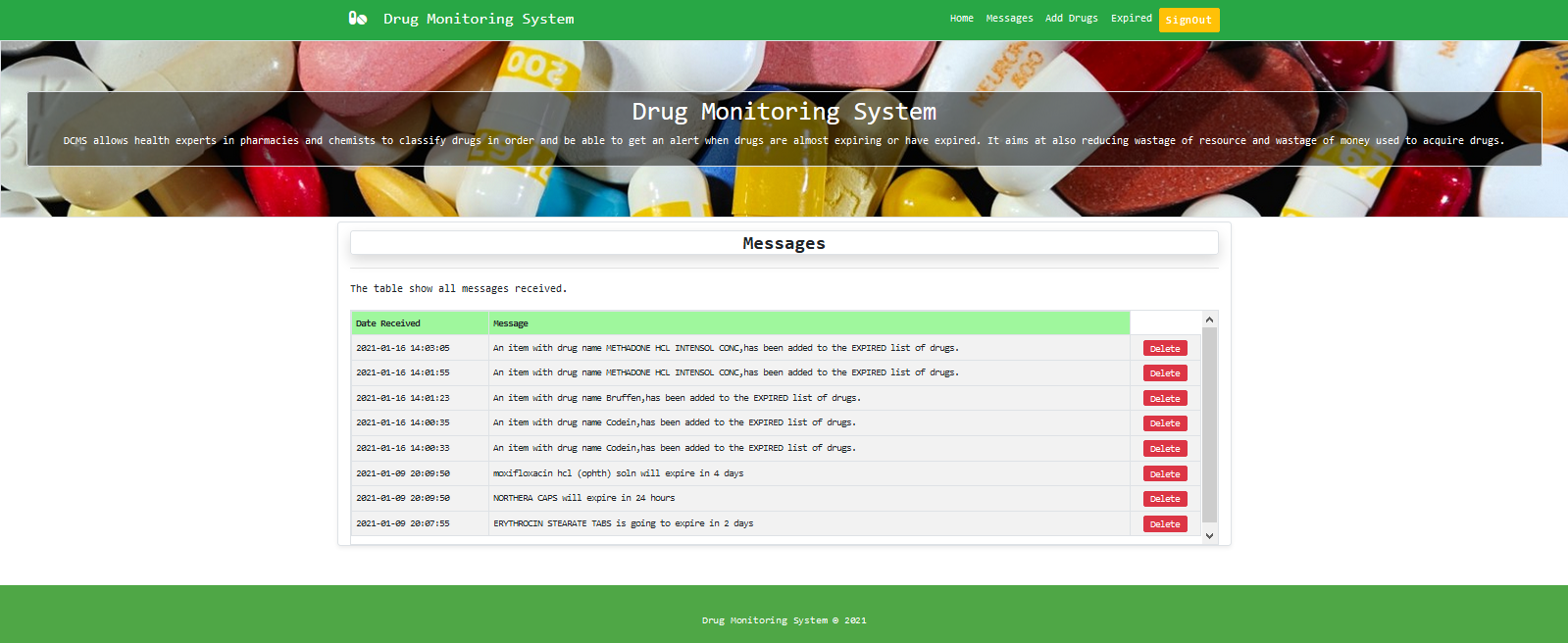
*Figure: add drugs diagram*

**v). Expired Drugs Page**

This page provides the user with a list of all expired drugs stored into the system.

*Figure: expired drugs diagram*

**vi). Messages Page**

****This page provides the user with a list of all the messages received from the system.

*Figure: messages diagram*

**4.2 Physical Design**

This section details a graphical representation of the system showing the system's internal and external entities, and the flows of data into and out of these entities.

**4.2.1 Class Design**

This models the static view of a system. It comprises of the classes, interfaces, and collaborations of a system; and the relationships between them.

User

Name

ID

CreateAccount()

ViewRecords()

AddRecords()

System Administrator

Name

ID

ViewRecords()

AddRecords()

DeleteRecords()

*Figure: class design*

**4.2.2 System Use Case Diagram**

This section presents an outside view of the manner the elements in a system behave and how they can be used in the context.

System User

Drug Management System

System Administrator

*Figure: use case diagram*

**4.3.1 System Front End Description**

The front-end system is part of an information system that is directly accessed and interacted with by the user and enables users to access and request the features and services of the underlying information system.

The programming languages used to develop the front end system include:

**i). HTML**

Hypertext Markup Language is a coding language with tags that identify and structure text, images, videos, and other media on a web page.

**ii). CSS**

This is a simple design language intended to simplify the process of making web pages presentable Advantages include: Pages load faster, multiple device compatibility and easy to maintain.

**iii). JavaScript**

This is a scripting language that can be used with HTML to produce dynamic effects and interactions on web pages.

Advantages include: Less server interaction, increased interactivity and immediate feedback to the visitors/users.

**4.3.2 System Back End Description**

These systems are used as part of corporate management and they work by obtaining user input and gathering input from other systems to provide responsive output.

The programming languages used to develop the back end system include:

**i). PHP**

Hypertext Preprocessor is a server side scripting language that is embedded in HTML. It is used to manage dynamic content, databases, session tracking, even build entire e commerce sites. It is designed to pull and edit information in the database. It's most commonly bundled with databases written in the SQL language.

Advantages include: It can be used with a large number of relational database management systems, it is a fully object oriented language and it is platform independence.

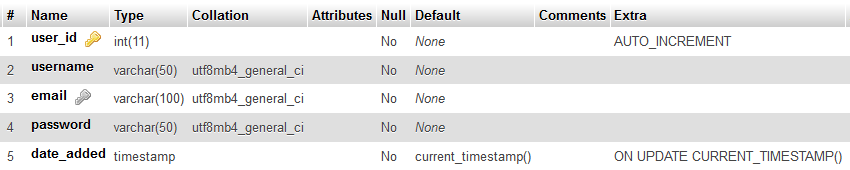
ii). SQL

Structured Query Language (SQL) is the standard language for relational database management systems. It is used to interact with the database that is a part of the back end. Statements written in SQL are employed to accomplish tasks related to updating or retrieval of data.

Advantages include: SQL Queries can be used to retrieve large amounts of records from a database quickly and efficiently, SQL joins two or more tables and show it as one object to user and SQL is portable.

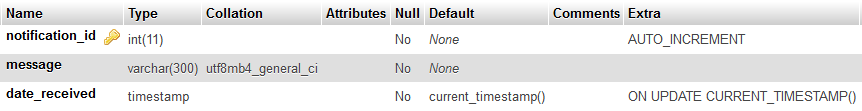
**4.4 Database Design**

**Users Table Structure**

The following table represents the design used to create the users table structure in the database system.

*Figure Users Table Structure*

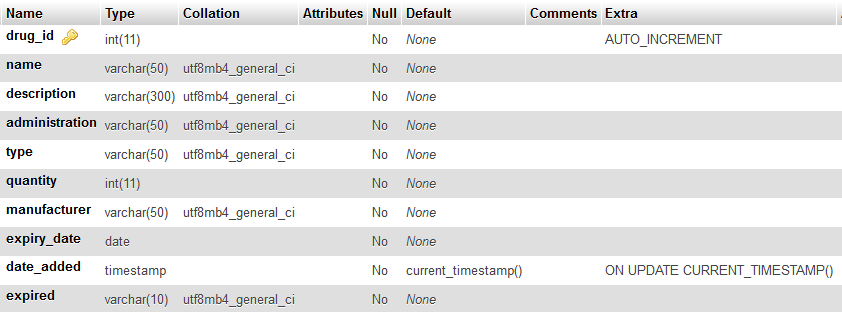
**Notifications Table Structure**

The following table represents the design used to create the notification table structure in the database system.

*Figure Notifications Table Structure*

**Drugs Table Structure**

The following table represents the design used to create the drugs table structure in the database system.

*Figure Drugs Table Structure*

**CHAPTER FIVE**

**SYSTEM CODE GENERATION AND TESTING**

**6.1 Introduction**

This chapter illustrates the implementation and the testing of the system.

**5.2 System Code Generation**

This section explains the different modules available in the system.

**a) User Login Module**

This module allows users to login into the system using the validated account.

if(isset($\_POST["login"])){

//get data

$email=$\_POST["email"] ?? '';

$password=$\_POST["password"] ?? '';

//check data match

$sql2="SELECT \* FROM `users` where `email` = '$email' LIMIT 1;";

$query2=mysqli\_query($connect,$sql2) or die (mysqli\_error($connect));

$result2=mysqli\_fetch\_assoc($query2);

$r\_email=$result2["email"] ?? '';

$r\_password=$result2["password"] ?? '';

//check if user exist

if(mysqli\_num\_rows($query2) <= 0){

//error no user

echo "<script type='text/javascript'>alert('User does NOT exist. Proceed to Create account.');

window.location='register.php';

</script>";

}

else if(mysqli\_num\_rows($query2) >=1){

//check password match

if($r\_email == $email and $r\_password != $password){

//error password match

echo "<script type='text/javascript'>alert('INCORRECT password. Try again.');

window.location='index.php';

</script>";

}

else if($r\_email == $email and $r\_password == $password){

//success login

$\_SESSION["id"]=$email;

header("location:viewdrugs.php");

};

};

};

**b) User Registration Module**

This module allows users to create accounts into the system.

if(isset($\_POST["register"])){

//get data

$fname=ucfirst($\_POST["fname"]) ?? '';

$lname=ucfirst($\_POST["lname"]) ?? '';

$email=$\_POST["email"] ?? '';

$pass1=$\_POST["pass1"] ?? '';

$pass2=$\_POST["pass2"] ?? '';

//create username

$username=$fname.$lname;

//test password match

if($pass1 != $pass2){

//error password match

echo "<script type='text/javascript'>alert('The two passwords do NOT match. Try again.');

window.location='register.php';

</script>";

}

else if ($pass1 == $pass2){

//check if user exixts

$sql0="SELECT \* FROM `users` WHERE `email` = '$email' LIMIT 1;";

$query0=mysqli\_query($connect,$sql0) or die (mysqli\_error($connect));

$reqult0=mysqli\_fetch\_assoc($query0);

//

if(mysqli\_num\_rows($query0) >= 1){

//error user exists

echo "<script type='text/javascript'>alert('User already exists. Proceed to login.');

window.location='index.php';

</script>";

}

else if (mysqli\_num\_rows($query0) <= 0){

//insert data

$sql1="INSERT INTO `users` (`username`, `email`, `password`, `date\_added`) VALUES ('$username', '$email', '$pass1', current\_timestamp()); ";

$query1=mysqli\_query($connect,$sql1) or die (mysqli\_error($connect));

//success register

echo "<script type='text/javascript'>alert('Account Created. Proceed to login.');

window.location='index.php';

</script>";

};

};

};

**c) Add Drugs Module**

This module allows users add drugs into the system.

if(isset($\_POST["add"])){

//get values

$dname=ucfirst($\_POST["dname"]) ?? '';

$qty=$\_POST["qty"] ?? '';

$mnf=ucfirst($\_POST["mnf"]) ?? '';

$adm=ucfirst($\_POST["adm"]) ?? '';

$type=ucfirst($\_POST["type"]) ?? '';

$desc=ucfirst($\_POST["desc"]) ?? '';

$expiry=$\_POST["expiry"] ?? '';

$expired="No";

//inser values

$sql\_add="INSERT INTO `drugs` (`name`, `description`, `administration`, `type`, `quantity`, `manufacturer`, `expiry\_date`, `date\_added`, `expired`) VALUES ('$dname', '$desc', '$adm', '$type', '$qty', '$mnf', '$expiry', current\_timestamp(), '$expired');";

$query\_add=mysqli\_query($connect,$sql\_add) or die (mysqli\_error($connect));

header("location:viewdrugs.php");

};

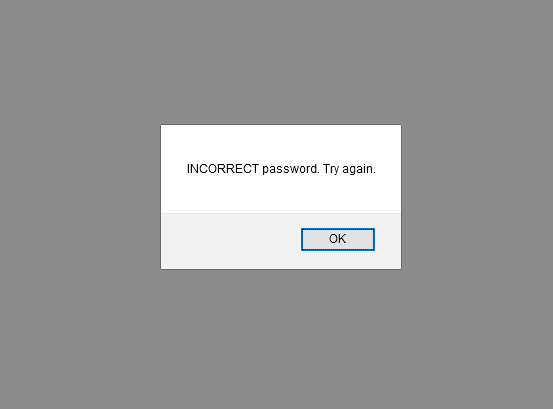
**5.3 System Testing**

The objectives of this section include:

* Building quality in the system developed.
* Demonstrating the working capabilities of the system
* Assessing progress and suitability of the system.

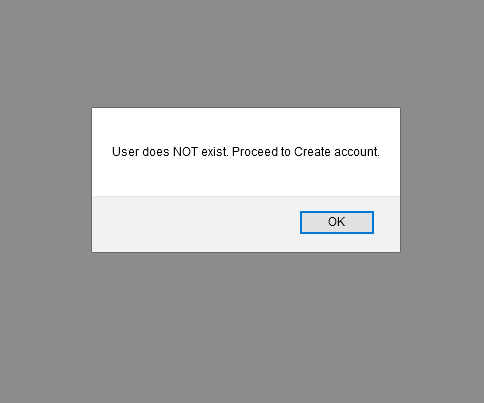
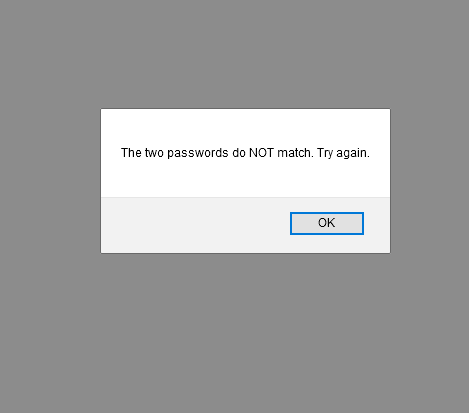
The above objectives were achieved by conducting various software testing methods:

1. **GUI testing —** this test attempts to cover all the functionality of the system and fully exercise the GUI itself. The objective at this point will be test sequence of events and relevance in terms of colors and appearance of the GUI interface.



***Figure login error***

1. **Security testing —** this type of testing involves the testing of software in order to identify any flaws and gaps from a security and vulnerability point of view. In the figure below (figure 13), a user receives an alert when a wrong password is entered, the wrong email address or both the email and the password don't exist in the application's database.



***Figure login error***

***Figure registration error***

**CHAPTER SIX**

**SYSTEM CONCLUSION AND RECOMMENDATION**

**6.1 Conclusions**

The Drug Monitoring System application managed to solve some of the problems associated with drug recording and storage. This was accomplished by providing the user with a fast and easy to use and access platform to record and store drug information, providing a way for users to view these records and be kept up-to-date with the status of each drug

**6.2 Recommendations**

I strongly recommend further testing, deployment and maintenance of the application to users to provide familiarity and comfort while using the application. The application should be able to provide real-time interaction to the user.

**APPENDICES**

**Appendix 1: Project Budget**

|  |  |  |  |
| --- | --- | --- | --- |
| **`** | **Quantity** | **Unit cost (Ksh)** | **Total (Ksh)** |
| **Material supplies** | | | |
| Foolscaps | 2reams | 300 | 600 |
| Ball point pens | 10 | 20 | 200 |
|  |  | **Sub-total 8** | **00** |
| **Proposal preparation** | | | |
| Typing & Printing | 25page5 | 20 | 500 |
| Photocopying | 10 copies x 25 pages (250) | 2 | 500 |
| Binding | 10 copies | 50 | 500 |
|  |  | **Sub-total** | **1,500** |
| **Travel and subsistence** | | | |
| Transport | 3 Months | 2,000 | 6,000 |
| **Sub-total** | | | **6,000** |
| **Equipment** | | | |
| Computer and other  equipment's |  | 35,000 | 35,000 |
| **Sub-total** | | | **40,000** |
| **Data collection** | | | |
| Photocopy of questionnaires | 300 | 2 | 600 |
| **Sub-total** | | | **600** |
| **Communication** | | | |
| Internet browsing | 4 times a week (2 months) | 1,000 | 2,000 |
|  |  | **Sub-total** | **2,000** |
| **Document Production** | | | |
| Photocopy | 3 copiesx38 pages | 2 | 228 |
| Binding | 3 copies | 150 | 450 |
| **Subtotal** | | | **678** |
| **GRANDTOTAL** | | | **41,578** |

*Table Project Budget*

**Appendix 2: Project Work Plan**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TASK**  **NAME** | **Duration**  **7 Months** | **January** | **February** | **March** | **April** | **May** | **June** | **July** | **August** |
| **Research and Data Collection** | |  |  |  |  |  |  |  |  |
| **Proposal writing** | |  |  |  |  |  |  |  |  |
| **Proposal Approval and Presentation** | |  |  |  |  |  |  |  |  |
| **System and Software Design** | |  |  |  |  |  |  |  |  |
| **Implementation and Unit Testing** | |  |  |  |  |  |  |  |  |
| **Integration and System Testing** | |  |  |  |  |  |  |  |  |
| **Deployment** | |  |  |  |  |  |  |  |  |

*Table Project Work Plan*

**Appendix 3: SAMPLE QUESTIONNAIRE**

**GENERAL USER DATA**

*(Please tick appropriately)*

1. Gender

Female Male

2. Have you ever recorded drugs information?

Yes No

3. How long did it take you to go through the whole process?

1 hour 2 hours

3 hours 4 hours

5hours 6 to 12 hours

Not applicable

4. In reference to Q3, how effective have these methods been for you?

Very effective Somehow effective

Slightly effective Ineffective

Not effective at all

5. What challenges did you experience?

Processes took long time

Others (specify)

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