**CHAPTER THREE**

**SYSTEM ANALYSIS AND DESIGN**

**3.0 DESIGN OF THE PROPOSED PROJECT.**

The proposed short message service (SMS) project is a communication service component of the GSM mobile communication system which aims at providing a good platform that provides patients accessibility to their medical records. This can be use to gather information about the patient, retrieve and update patient’s history. The project will contain the following:

1. It has a database that will contain the patient’s information from birth to present, also medication and doctor’s advice and any other important information is stored and managed.
2. It allows the data stored in the database to be updated only by the authorized person, which is the administrator.
3. A means of authentication in which patients are first authenticated before accessing any information through the use of password.

**3.1 THE OUTPUT DESIGN**

The output deign is the interface where the desired output is displayed. The interface is very important in the design because it serves as an intermediary between the user (patients) and the system. It is through the interface the patients can access the information stored in the database. The interface also gives room for the administrator and the doctors to use the system.

The system has five entities, they are:

1. The administrator
2. The mobile operator
3. Web application
4. The patient (user)
5. The doctor (user)

The system has three major components that must interact together for effective communication in the system, they are:

1. The backend (database): Communication is made using MYSQL language
2. The middleware: It communicates with the database using RUBY programming language.
3. The user end: the user (the patient) who communicates with directly with the mobile service providers and with the internet.

**3.2 THE INPUT DESIGN**

In the design, the patients send their password and hospital identity number to the mobile service provider who authenticates the patients as the bona-fide user and then, allow login to the system and access to their medical records. Patients are required to register online with the system to obtain hospital identity number and password to use the mobile system. Complaints can be done online (i.e. patients can contact doctors online and tell them of any symptoms).

The doctors are also part of the system. The doctor’s log into the system online with their email and password, the web application will authenticate if the doctor is a bona-fide user of the system before granting access to use the system. Doctors are responsible for updating patient record, view patient record and schedule a patient for treatment. Doctors prescribe treatment for patients on any symptom after contacting the doctor.

The administrator is also part of the system. He performs management of the system, before he can use the system; he has to authenticate with his email and password. The administrator is responsible for registering the different categories the doctors belong to such as physiotherapy, oncology, and cardiology and so on. The administrator is responsible for registering doctors with the system and deleting patients when necessary. It is the function of the administrator to assign patients to doctors for advice and prescription.

Flowchart: Flowchart for the web input design of the system.

**Start**

**Doctor, admin or patient**

**View record, send message to doctor**

**Existing user**

**Login**

**New to the system**

Yes

No

**Register**

Doctor

**Register patient, update patient record, view patient record.**

Patient

**Logout**

**Add doctor, update doctor profile, view doctor profile, and delete doctor.**

Admin

**Flowchart: flowchart for the input design of the phone system.**

**Start**

**Send request input as SMS to short code**

**Request available**

**Display SMS error message**

No

Yes

**Display SMS Message**

**Another request**

**Stop**

**DATABASE**

The database and the various tables that serve as warehouse for data and their attributes are illustrated below. The design was done using MYSQL language. The database tables are listed below:

**Medical Database**

The medical database consist of all tables used for the design of the system, the name of the database is hospital database. It is made up of 10 tables. They are patients, medication, surgical diagnosis, family diagnosis, social diagnosis, allergies, treatment, nursing notes, patient history, and doctors.

**User Table**

The table holds the user’s information. The fields in this table contain information about the registered patient, doctors and their passwords. It consists of three fields. They are the username, password and isadmin.

**TABLE 3.1 PATIENT TABLES**

|  |  |  |
| --- | --- | --- |
| S/N | FIELD | TYPE |
| 1 | USERNAME | STRING |
| 2 | PASSWORD | STRING |
| 3 | isadmin | BOOLEAN |

**MEDICATION TABLE**

The medication table gives information about the current treatment of the patient. The table consists of four fields. They are patient condition, medicine offered, dosage and name of doctor in charge.

**TABLE 3.2 MEDICATION TABLE**

|  |  |  |
| --- | --- | --- |
| **S/N** | **FIELD** | **TYPE** |
| **1** | **Patient medical condition** | **string** |
| **2** | **Medicine offered** | **string** |
| **3** | **Dosage** | **integer** |
| **4** | **Doctor in charge** | **string** |

**SURGICAL DIAGNOSIS**

This table holds information about past and present surgical diagnosis of the patient. Here, information about the patient surgical condition and the procedure that took place. It contains three fields. They are patient health condition, procedure, and the name of the surgeon.

|  |  |  |
| --- | --- | --- |
| **S/N** | **FIELDS** | **TYPE** |
| **1** | **Patient condition** | **string** |
| **2** | **Procedure** | **string** |
| **3** | **Name of surgeon** | **string** |

**SOCIAL DIAGNOSIS**

This table gives information about patient social behavior. The table has four fields. They are; condition, reason for behavior, treatment, name of doctor.

|  |  |  |
| --- | --- | --- |
| **S/N** | **FIELDS** | **TYPE** |
| **1** | **condition** | **String** |
| **2** | **Reason for behavior** | **String** |
| **3** | **Treatment** | **String** |
| **4** | **Name of doctor** | **string** |

**DOCTORS TABLE**

This table holds doctor’s information. The fields in this table contain information about registered doctors who are granted privileges to use the system. The table has eight fields. They are; identity number (id), surname, gender, address, specialty, email, password.

|  |  |  |
| --- | --- | --- |
| S/N | FIELDS | TYPE |
| 1 | Dr\_id | integer |
| 2 | Name | String |
| 3 | Gender | String |
| 4 | Address | String |
| 5 | Specialty | String |
| 6 | EMAIL | String |

**ALLERGIES**

|  |  |  |
| --- | --- | --- |
| **S/N** | **FIELDS** | **TYPE** |
| **1** | **Irritant** | **String** |
| **2** | **Symptoms** | **String** |
| **3** | **Remedy** | **String** |
| **4** | **Name of doctor** | **String** |

**This table holds information different allergies of a patient. There are four fields here. The fields** are irritant, symptoms, remedy, name of doctor.

**PATIENT INFORMAION**

This table consists of patient’s record. The record contains information about the patient and the password to enable the patient gain access to his medical record. This table consists of 15 fields. They are; patient identity number, name, age, gender, origin, address, tribe, occupation, religion, phone number, next of kin, password, family history, and Email.

|  |  |  |
| --- | --- | --- |
| **S/N** | **FIELD** | **TYPE** |
| **1** | **Patient\_id** | **Integer** |
| **2** | **Name** | **String** |
| **3** | **Age** | **Integer** |
| **4** | **Gender** | **String** |
| **5** | **Origin** | **String** |

|  |  |  |
| --- | --- | --- |
| **6** | **Address** | **String** |
| **7** | **Tribe** | **String** |
| **8** | **Occupation** | **String** |
| **9** | **Religion** | **String** |
| **10** | **Phone\_no** | **Integer** |
| **11** | **Next of kin** | **String** |
| **12** | **Family history** | **String** |
| **13** | **Past medical history** | **String** |
| **14** | **Password** | **String** |