Surgeon's Database Management System (Regional) and Surgery Allocator

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Abstract

The covid pandemic rushed medical field to develop software in order to engage with patients and to maintain social distancing, There are 13 types of medical or health care software development was in trend since from the beginning of the pandemic. Due to the pandemic finding a rightful and availability of surgeons for a critical operation has become unpredictable. There are more than a dozen software available to main database of surgeon within their respective hospitals. Our main objective in this project is to develop a tool that could store and maintain database of different surgeons from different hospitals.

Keywords: Database management, python programming,Tkinter, firebase cloud,healthcare DBMS

Introduction

Database is the well-organized form of information and a well dedicated computer was used to store such database. Database related to health care is more confidential and need to be secured. So a DBMS (Database Management System) is needed to store, update the necessary information. These database management systems are ideal to use in small and large companies to organize and protect their precious information in various format.

Government currently made the healthcare IT sector into pressure by wanting them to design system that makes the functioning of the health care sector more transparent.

People are nowadays more aware about their health care requirements and they are demanding a more efficient and accessible healthcare system. Somany Information Technology firms are in urge to provide a variety of software service.

Main functions of this project dealing with surgery schedules,and the other with surgeon's database management. Our software mainly aims at optimizing the process andimproves the overall quality of services. Most of the manual process can be automated with usage of the well-designedsoftware's

Block Diagram
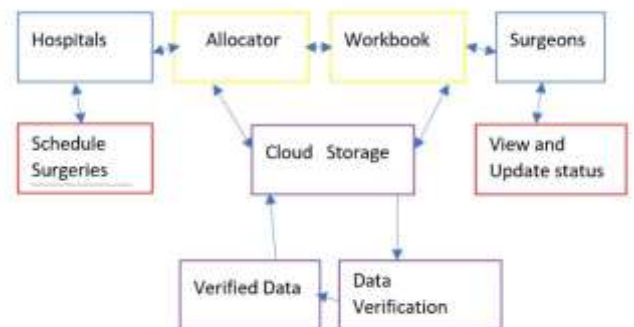
Proposed Methodology

From the above block diagram, it explains the working procedure of the software. Hospitals uses Allocator tool to fetch details of surgeons within their region which was already stored by the individual surgeons who used workbook software connected with the cloud storage. With the database, surgeons can update their profile and view, update surgeries scheduled by the hospitals. Firstly, hospital will request the surgeon they wish to perform surgery. Surgeon can acknowledge their request with the workbook software.

Surgeons will receive mails generated by the software regarding their allocated surgeries. Medical history of the patients also uploaded to the server which was protected with proper authentication. After receiving a mail from the allocator software regarding surgeries, surgeons can request and receive medical history of the patient by the hospital.

DBMS will verify the data provided by the surgeons and filter them after that DBMS will provide the processed data in the regional server. With the verified patient's medical history provided by the hospital, surgeons can cross check the data with patient before performing the surgery. So that, the hospitals can significantly reduce the surgical errors and also finding a specialist for a surgery will be fast and smooth. In addition, patients also can receive a detailed information about their surgeon on their request. With these hospitals can elude the fear among the patient and can develop confidence within them.

Table 1 Technology stack used

SOURCES	PURPOSE
1. PyCharm Professional	Development
2. Google Firebase Cloud	Cloud Storage
3. SQLite	Local/Offline Data Storage

Sections : Profile section

The above picture represents the profile section. the profile section contains the primary details about the surgeon or the hospital which can be viewed after verification of the user profile.

After verification the user can update their profile details within the software . Each every data about the user will be stored in the firebase cloud as child node of the parent node (profile) .The parent (profile) node has many children (user) nodes , each children node **acts a parent (ID) node which again** contains children node such as username , user password ,user availability , mobile and address etc. Each information can be accessed only by accessing the Parent (ID) node in Profile . The ID node is nothing but the unique id created and for the hospitals and surgeons . Except the profile picture each and every data will be stored in the real time database section of firebase and the profile picture was stored in the storage section in jpeg .

The storage database commonly used to store files in firebase . In the storage section we used to store the files related to the hospitals and surgeon like patient case history , profile picture of the user , surgeon documents .

The storage database also has parent and children nodes. As like the real time database the information can be accessed using the unique ID which is used in realtime database. When the user used to trigger the software to view the profile , we fetch information from both real time database and storage database (if necessary) and viewed in the software.

Output 1 : Surgery allocation section

Note : The technology stack mentioned is used for making prototype only

The primary information about the surgery such us date and time of the surgery , age , gender of the patient and other details about the surgery was stored in the real time database . As like the profile section , these informations are also stored under the parent node (ID),but in this time the ID was the unique ID of the patient which was created at the time of the admission .

First of all the hospital used to allot the surgery for the surgeon, then the surgeon responds by updating the status to ACCEPTED from ASSIGNED .

After accepting the surgery , the surgeon can request the medical history of the patient for study from the hospital , then the hospital will upload the necessary documents to the cloud (storage database) and surgeon can access the file . As the patient medical history files are   confidential, we will delete the files from the cloud once after downloaded by the doctor .

These are the primary features of the software . The additional features the data table and the analytics .

There are two data tables in the software used by the hospital and one data table in the software used by the surgeon . In the software used by the hospital one table contains the information about the surgeons and another table about the status of the allotted surgeries.

All the information from the cloud is fetched and fed to the data table . Information in the data table cannot be altered , but can be deleted. To update the information , user have to double click the respective row and need to go the respective section . If the hospital need to update about the surgeon profile , then they need to go profile section . The details of the respective doctor will be automatically filled in the text boxes and we only need to change the necessary information and click the update button. Then after updating the profile , the table will be refreshed automatically and fresh data will be fetched and can be viewed in the table .

The analytics feature will help the hospital and surgeon by providing the detailed insight about the progress.By analysing the progress of the doctors and hospitals the analytics feature will provide graph or map which is very useful.

Conclusion

Storing and maintaining the database is very important in each and every field and proper usage of the data / information collected makes the process easy for all . With our GUI we can access and use the data which was stored in the cloud storage .

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