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Developing an Efficient Desktop Application of Hospital Care Management System using Java and Database Management

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Abstract

These days with the accelerated increase in human population, the amount of information and records is also becoming humongous in almost every aspect that may be considered.

Handling such huge amounts of data has now become a backbreaking task. Handling involves – Inserting all the records accurately, displaying particular records according to the need, updating them as and when required and lastly deleting them when no longer of any use. These problems occur especially in large organizations where extensive amount of data is added and updated on a daily basis. We have considered one such organization that is Hospitals and have tackled this problem. We have worked on creating an efficient and user-friendly desktop application, which covers all aspects of data management with the help of Java on Net Beans IDE 7.3 as our front end and Microsoft SQL Server Management Studio asourbackend. This application makes data retrieval and handling incredibly easy to manage.

Keywords: *User-friendly, Efficient, Easy to use, Desktop Application, Database management, Java programming*

1. Introduction

A desktop application is an application that cannot be accessed on web, meaning, which does not need Internet to function. The sole purpose of introducing the health care management system is to reduce the cumbersome work of maintaining huge records at Hospitals [1] Hospitals in general are large organizations handling discrete and critical information about their patients and employees. Hence, it is important to have a smooth and reliable application that could help in efficient data storage and reduce the tedious work of maintaining records and handling all the paperwork. We have built the system with the intention of facilitating hassle free work in data management of any organization.

2. Related Work

2.1 Full integration of mobile computing to an enterprise hospital information system. Enhancing data quality, patient empowerment and medical research.[2]

2.2 It is a long-term, sustainable commitment to changing the culture of health care to become more collaborative, more transparent, and more proactive. A knowledge management infrastructure has become the measure of value of belonging to a hospital system or membership organization. [3]

3. Methodology

In this application, we created various forms like employment registration, patient registration, IPD patient details, OPD patient details, Drug store details, Pharmacy details and Daily patient details using Java language with the platform being Net Beans IDE 7.3

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for our front end working of the application. To store all this data in an organized manner we have used Microsoft SQL Server Management Studio for our back end. This section attempts to describe each module of the project in brief, and the detailed description of each of these modules. The Health Center Management System project has been divided into three modules:

3.1 Patient

This module is divided into 3 sub parts **p_reg (Patient Registration)**-This is for registering any patient into the medical institution. This form generates a registration number through which the patient is referred throughout his medical treatment.

IPD (Indoor Patient) IPD patients are those who suffer from some critical or chronic disease. They are admitted into the hospital under a specialized doctor because they need constant monitoring. This form confirms details like the blood group and previous medical record and admits the patient into the hospital. Results from cross-sectional studies of IPD patients [4].

OPD (Outdoor Patient) OPD patients are those who do not have chronicle diseases and therefore they do not need to be admitted in the hospital. They come only for check-ups and consultation. OPD form after being filled generates the department to which the patient is referred. The patients are served for common problems.

Then there is an update patient form to update any new information regarding the patient under the same card number issued in the beginning of the treatment.

There is another form view patient details. It gives various details like card number, registration number, name, and date of birth, age and address in tabular manner. There is a daily patient detail form, which helps in viewing the number of patients, and their respective details date vise.

3.2 Employee

The details of doctors are maintained separately. Master table like qualification_master and designation_master maintain the record of the degree held by a particular employee such as nurse, doctor, chief doctor etc. Forms like updating employee and viewing employee help in updating new information and viewing the details respectively.

3.3 Drug Store

The drug store department maintains the detailed record of high quality medicines. It keeps a check on the quantity of medicines and update in case of any medicine is declining. It is very difficult to maintain a record of different medicines. Thus the drug store department makes this job less cumbersome by notifying the expiry dates of various medicines in the store. [5]

4.ER Diagram

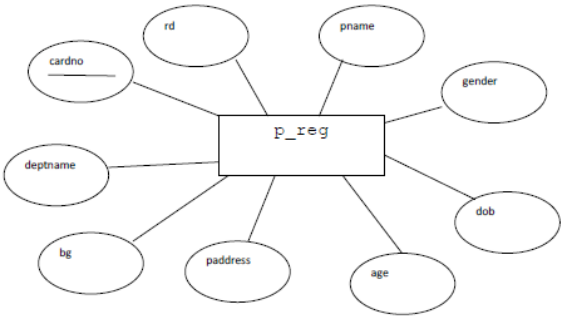

Diagram 1. It Represents the Entity p_reg and it's Various Attributes. Cardno is the Primary Key

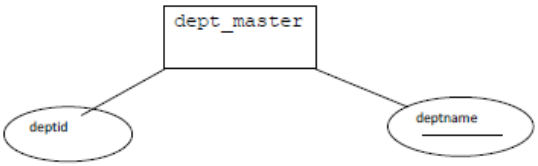

Diagram 2. It Represents the Entity dept_master and it's Attributes. Deptname is Primary Key

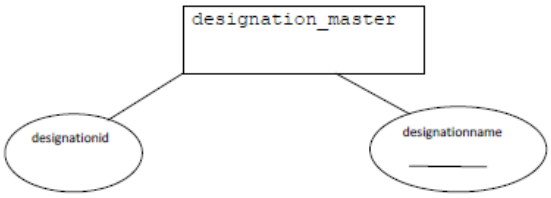

Diagram 3. It Represents the Entity designation_master and it's Attributes. Designation is Primary Key

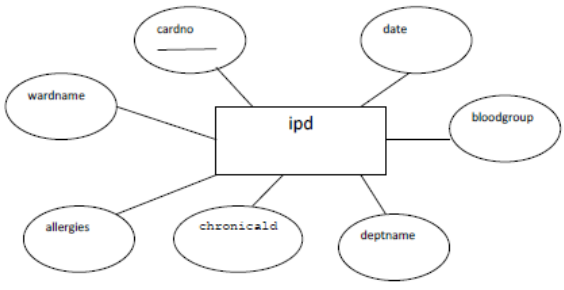

Diagram 4. It Represents the Entity ipd and it's Attributes. Cardno is Primary Key

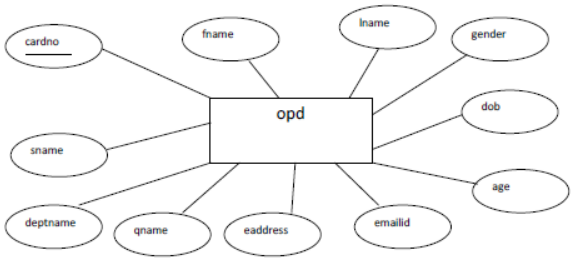

Diagram 5. It Represents the Entity opd and it's Attributes. Cardno is Primary Key

4. Working

Figure 1. Login Page of the Application

The application can be logged in by different users i.e. the employee (who could register, view and update patient) and the admin (administrator - who could register employees, update their details, add and update drug store details entries, register patients as well).

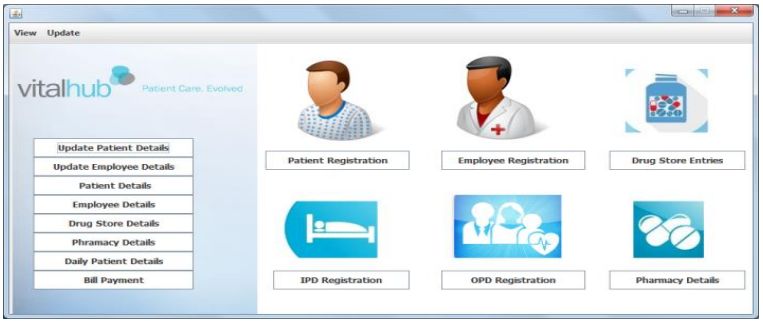

Figure 2. Main Page of Contents

The main page of the application provides an easy access to all the forms.

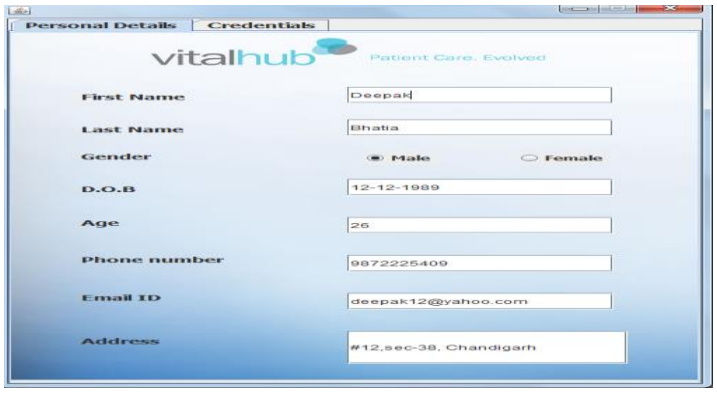

Figure 3. Employee Registration Form- Personal details

The personal details of every employee of the organization are kept by filling this form.

Figure 4. Employee Registration Form- Credentials

The credentials of all employees are stored and are then assigned a unique registration id, which can be used to later to access, view or update the details of that particular employee.

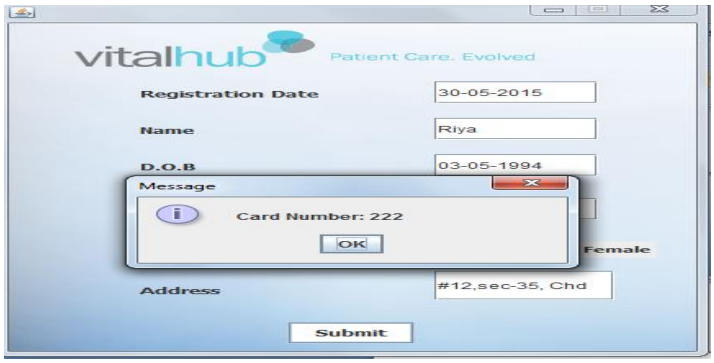

Figure 5. Patient Registration Form

The patients are also registered and provided a unique card number. The card number can be used by the patient whenever he visits.

Figure 6. Indoor Patient Department Form

The IPD form requires basic details to be filled like the date of admission, department referred, ward admitted to and as shown above.

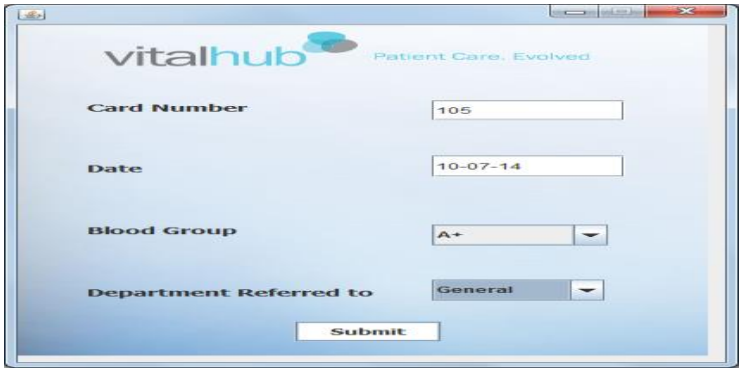

Figure 7. Outdoor Patient Form

The OPD form requires only a few details i.e. the date, blood group and department referred to.

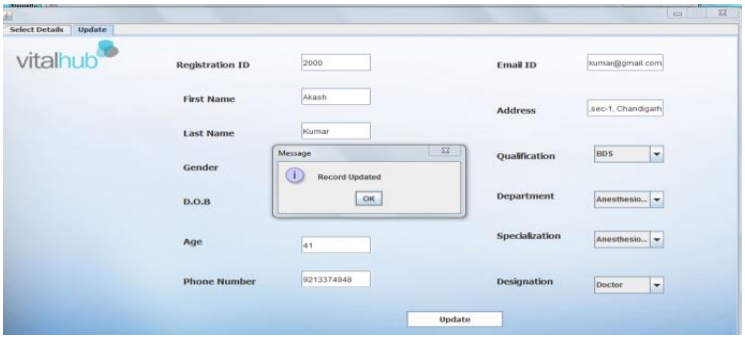

Figure 8. Update Employee Details Form

The application also provides an easy way to update the employee details by clicking the update employee details button on the main page.

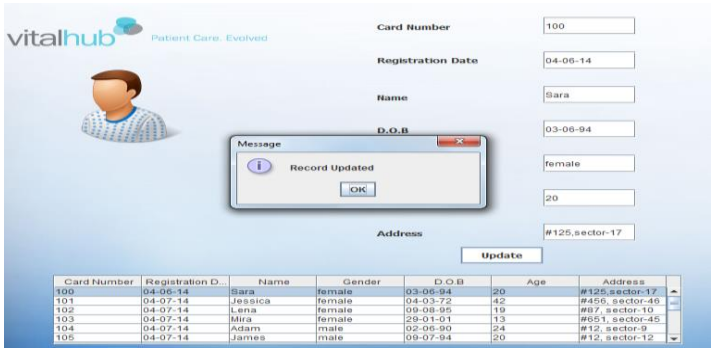

Figure 9. Daily Patient Detail Form

The application also provides an easy way to update patient details by clicking the update employee details on button the main page.

Figure 10. Drug Store Details Form

The application can also be used to enter the details of the stock of medicines coming into the hospital using the drug store entries form.

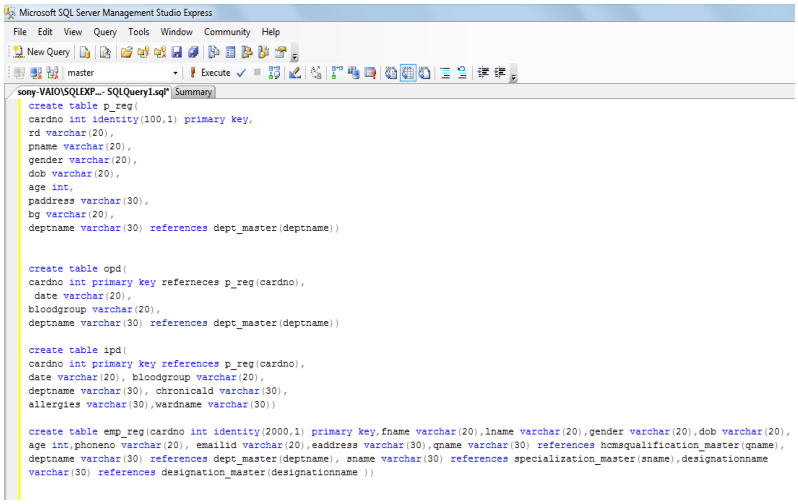

Figure 11. List of Tables Created

At the back end, MS SQL Server is used where a total of 12 tables were created.

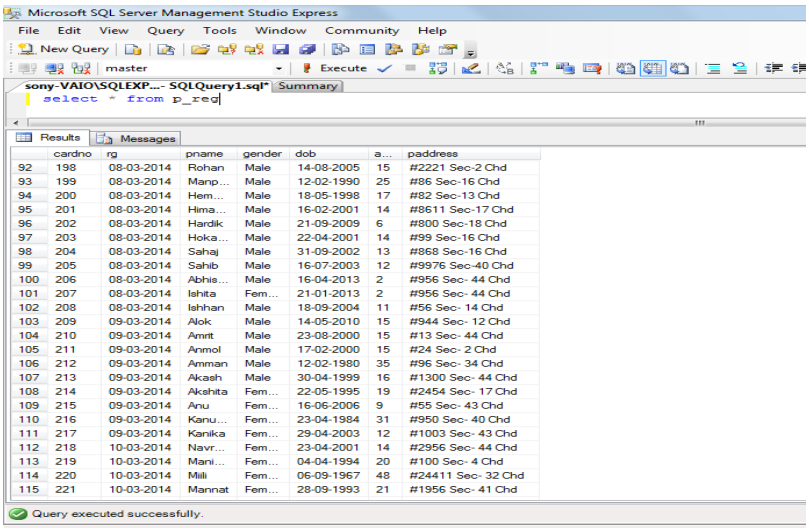

Figure 12. Entries of the p_reg table

This shows the details of p_reg table, which stores the registration details of all the patients. Similarly, the entries of the other forms are stored in their corresponding tables and can be retrieved later using the application. Strategic Working of health care organization [6].

5. Conclusion

The problem with the old system was manual paperwork. Paperwork is a hassle because, with time paper perishes, ink fades, or in any calamity it's more vulnerable to being destroyed than records on computer. The need for large organizations like hospitals to quit manual labour in processing and servicing the patient's request and adopting computerized data management system is most necessary and now inevitable. Large amounts of data cannot be handled manually in an efficient way; it is prone to errors and produces results at a much slower pace. In today's world, where time is money, an application that can do the same work at a much faster rate and that too accurately, proves to be a great asset. Java is a platform independent, flexible and a modularized language; hence it makes the application portable and efficient. A good delivery system [7].

6. Future Scope

With technological advancements booming, and fast paced lives of people, internet has crawled up in our lifestyle in such a way that we have become accustomed to getting everything done for us just in a few clicks. Therefore if this hospital care management system's desktop application is developed on web, it would bring about a huge change in the health care sector, as patients could book appointments with their doctors online, they could consult and leave messages for their doctors in times of emergency. A portal could be established where patients could get medicines and reports delivered to their homes. Doctors could post educational blogs for patients. The possibilities that Internet can establish are innumerable, hence if this application is converted to web using PHP, HTML and CSS it would be a significant step in making everyone's life a lot easier.

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