

## Criterion A: Planning

### Hospital Management System

#### Defining the Problem

Client: Dr. Ajay Gupta

Advisor: Ms. [REDACTED] (Computer Science Teacher)

Dr. Ajay Gupta is the director of a multispecialty hospital that offers OPD consultation in four specialties; services such as surgical procedures and lab tests; and room facilities for patients in need of long-term treatment. The hospital needs to maintain records for all the patients' information, daily entries for OPDs, different services availed by the patients, room logs and payments information. Currently, the receptionist uses physical registers to manually store data and generate handwritten bills for the patients.

During my initial interaction with the client<sup>1</sup>(Refer to Appendix A for the transcript of the initial interview with the client), he revealed that this has become a major problem for the hospital's management, not only because manually entering data is time-consuming, but also because it is almost impossible to retrieve a patient's history. While writing down all the payment details, the receptionist often commits mistakes in performing calculations and the patients receive an incorrect bill report. Moreover, due to the fact that there are different registers for different types of payments, it is extremely hard for the director to keep track of all payments.

I proposed the idea of developing a hospital management system for Dr. Gupta to replace the inefficient method currently being used. After gaining the approval of my computer science teacher (advisor), I discussed all the details of the required application with my client in order to develop the appropriate solution to his problem.

Word Count: 235

#### Rationale for Proposed Solution

I decided to create this Hospital Management System using a programming language so that the program is interactive and user-friendly. After considering languages like C and Python, I ultimately chose Java because of its GUI capabilities and the JFrame and Swing libraries that would allow me to create an intuitive interface. Moreover, the language is platform independent and free. Using the user-friendly IDE, NetBeans, a graphical interface could be created which would allow me to create different forms and easily navigable windows for the different functions.

In order to store all the information, I decided to create a relational database. While I considered several options like MS Access, I finally decided to use MySQL as it is an open source and free-to-use database system (compared to the expense of Access) that can be easily connected to the software to retrieve,

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<sup>1</sup>Dr. Ajay Gupta, Interview 1, Appendix A

edit, or delete patient data using queries. Queries can be used to view selective data from the database which would allow the receptionist to search for specific information. The Java program will calculate the total expenses of a patient by accessing different tables from the MySQL database and allow the receptionist to print the bill too which was requested by the client during the initial interview. The database will be locally hosted because the application only needs to work on one device i.e., the hospital's computer system. An online solution like a website was not chosen since the hospital's reception does not have a stable internet connection. I believe this solution will make the hospital's management easier, faster, and more efficient by eliminating manual error.

Word Count: 265

### **Stating Success Criteria**

1. The application is protected by a username and password, and different types of users i.e., the receptionist and the director are directed to different interfaces after logging in.
2. A data entry form to add, update, or delete a patient's basic information
3. The receptionist can enter daily visits and services availed by OPD and indoor patients.
4. The receptionist can view room occupancy and allot an available room to an indoor patient.
5. The receptionist can search for a specific patient to view all of his/her previous visits and the details of the visits.
6. The receptionist can view basic patient information every time a patient is selected so that she can verify it with the patient in case the wrong patient has been selected.
7. Perform calculations automatically to calculate the expenses of a patient.
8. Ability to print and save bills for a patient including all of his/her expenses.
9. Allows the admin/director to edit the doctor's fee, organizational discount and service fee.
10. The admin can view monthly and yearly payment records.
11. The program has graphical features and easy-to-navigate user interface.