

**College of Electrical and Mechanical**

**Engineering**

**Software Engineering Department**

**Fundamental to programming I (SWEG2103)**

**Project**

**Group - 3**

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**Introduction**

Unlike our first project this project’s title is given, so we don’t have to come up with a problem to fix.

Hospital management system is very complicated system to build because it has different parts that needs different type of management system. But we tried to cover most parts in our project.

This project is our second project as a group. We learned some very essential lessons from our first project and from the courses that we took after. We included some features that we were not able to add because of limitation of knowledge.

This System is a comprehensive and user-friendly solution designed to streamline and enhance the efficiency of hospital operations. It serves as a digital hub for managing various aspects of a hospital, including patient records, appointments, billing, inventory, and staff scheduling.

With an intuitive interface, the app allows hospital administrators, doctors, nurses, and other staff members to easily access and add patient information. Detailed patient records can be created and maintained, containing essential data such as medical history, allergies, diagnoses, prescriptions, and test results. This ensures that healthcare professionals have instant access to accurate patient information, enabling them to make well-informed decisions quickly.

Billing and invoicing functionalities enable seamless financial management within the hospital. The app generates accurate invoices based on services provided, medication administered, and other relevant charges.

Efficient inventory management is crucial for smooth hospital operations. The app enables staff members to monitor and track medical supplies, equipment, and pharmaceuticals in real-time.

**Problem statement**

* Lack of classification of data
* Spending a lot of money for writing materials if we use papers for documentation system
* Manual calculating of medicine and laboratory tests and etc…

**Solutions**

* Assuring security of patient information and other information that isn’t allowed to be accessed by everyone.
* Minimizing the cost that will be spending on paper by substituting most paper documentation system by computerized system.
* Calculating the price of lab tests and medicine and informing the patient and etc.

**Pseudocode**

1. Start the program.
2. Display a menu with options (“Employee”, “Patient”, “Emergency”) for the user to choose from.
3. Ask the user to enter their choice (ask1).
4. If ask1 = 1,

* Ask the user to enter a passcode, if passcode is correct
* Ask the user to choose patNum (“Add a patient”,“Access patient info”,“Medical inventory”).
* If patNum = 1,
* Take patient info.
* Then take the info to the patients.cpp file that has a class.
* Save it to the text file (“patients.txt”).
* Go to step 3.
* If patNum = 2,
* Print patient info on the console from (“Patients.txt”).
* Go to step 3.
* If patNum = 3,
* Ask the user to choose patNum (“Add lab equipment”, “Access lab equipment info”).
* If patNum = 1,
* Take equipment info.
* Then take the info to the equipments.cpp file that has a class.
* Save the info to the text file (“Equipments.txt”).
* Go to step 3.
* If patNum = 2,
* Print equipment info to the console from (“Equipments.txt”).
* Go to step 3.
* Else if the passcode is not correct.
* Print wrong passcode!!
* Go to step 4.1.

1. If ask1 = 2,

* Display a menu with options for the user to choose from (“Access some doctors info”, “Calculate medicine price”, “calculate medical lab test price”, “continue”).
* If ask2 = 1,
* Print some doctors info on the console from (“Employee.txt”).
* Go to step 3.
* If ask2 = 2,
* Print the medicines that are available, and calculate their prices as the user enters their number.
* Print the price on the console
* Go to step 3.
* If ask2 = 3,
* Print the lab tests that are available, and calculate their prices as the user enters their number.
* Print the price on the console
* Go to step 3.
* If ask2 = 4,
* Ask which body part hurts.
* Ask the level of pain.
* If pain < 5, assign a nurse and pain > 5 assign a doctor.
* Take patients info and ticket price.
* Then take the info to the patients.cpp file that has a class.
* Print the patients info with assigned nurse/doctor.
* Go to step 3.

1. If ask1 = 3,

* Ask the user to choose patNum (“Add an emergency patient”, “Access emergency patient info”)
* If patNum = 1,
* Print the number of patients available by counting the number of lines in the text file and divide it by 6.
* If the number of patients is greater than or equal to 10.
* Print Emergency beds are full.
* Go to step 3.
* If the number of patients is less than 10
* Take patients info.
* Then take the info to the patients.cpp file that has a class.
* Print the patients info with assigned nurse/doctor.
* Save the info to the text file (“EMERGENCY.txt”).
* Go to step 3.
* If patNum = 2,
* Print patient info to the console from (“EMERGENCY.txt”).
* Go to step 3.

1. If ask1 = 0,

* End the program.

**Flowchart**

Read ask1(employee, patient, emergency)

If ask1=1

Print wrong passcode

If passcode is correct

Read passcode

Else

Read patNum(add or access patients or medical inventory)

If patNum = 2

If patNum = 1

If patNum = 3

Read patient(name, age, gender, assigned doctor, condition)

Print patient information

Read patNum(add or access medical inventory).

Save to patients.txt text file

If patNum = 2

If patNum = 1

Print equipment information

Read equipment(name, description, price).

Save to Equipments.txt text file

Read ask2(level of pain)

If ask2 < 5

Read pain(body parts).

Print price

Print price

Add prices as user enters

Print lab tests

Add prices as user enters

Print medicines

Print Dr./nurse info.

If ask1 = 3

If ask1 = 1

If ask2 = 2

Read ask2(access Dr. info, calculate medicine and lab test, continue)

If ask1 = 3

If ask1 = 2

Read patNum(add or access emergency patients

If ask1 = 4

If patNum = 1

Print num of taken beds

Else

If numOfpat > = 10

Assign a doctor

Print patient info with assigned doctor/nurse

Read name, age, ticket no.

Assign a nurse

Else

Print emergency patients info.

If patNum = 2

Save to EMERGENCY.txt

Print patients info.

Read patients info.

Print num of taken beds

Print emergency beds are full

**Conclusion**

In conclusion, implementing this hospital management system will prove to be a crucial step towards enhancing the efficiency and effectiveness of healthcare services. By integrating various departments, streamlining administrative tasks, and improving communication and data management, this system has revolutionized the way hospitals operate.

It can significantly reduce paperwork and manual errors, resulting in improved patient safety and enhanced quality of care. Automating processes such as appointment scheduling, billing, and inventory management has increased operational efficiency and reduced waiting times for patients.

Moreover, the hospital management system is going to facilitate seamless communication and collaboration among healthcare professionals, leading to better coordination of patient care. Real-time access to patient records and medical history has empowered healthcare providers to make informed decisions and provide personalized treatment plans.