FAST National University of Computer and Emerging Sciences

Department of Computer Science, Peshawar Campus

Assignments

(Fall 2022)

Course Name	Software Design & Analysis	**Instructor**	Usama Musharaf

Case Study:

The Hospital Management System (HMS) is a web application, which used for the control of hospital services. The HMS web application can be accessed by either mobile or computer browser. The HMS application combines all details regarding doctors, patients, nurses, hospital administrative, etc. into one software. HMS System allows the patients to register via a registration module (form), which gathers and stores all required patient's data such as name, e-mail, gender, etc. Registered patients can skip this step and login directly using their username and password through the login module. Nevertheless, unregistered users can only take advantage of major system features such as viewing the hospital timings. After the patient creates an account and register, he can access the allowed system features/functionalities for patients. Patients can view available appointments, book an appointment and manage his/her own profile. After the patient book an appointment, he can visit the hospital according to his appointment. Once the patient reaches the hospital, the receptionist will issue a clinic number for him since the receptionist has access to the system to view the appointments list and status with nurses and doctors.

The HMS system also allows the receptionist to create patient accounts and book an appointment, referring to the doctors' schedule, for unregistered patients. Once patient's turn came, the patient can explain his condition to the consulting nurse, so that the nurse performs the pre-assessment examinations to diagnose the problem and then redirect him to the concerned doctor/clinic. The HMS system enables the nurse to allot patients for the concerned doctors, to view doctors' status and to update patients' account. Then, the concerned doctor will diagnose the patient, and then enter the prescription needed for the patient. If the doctor sees that the patient needs any further examinations like collecting and processing specimens, the system allows the doctor to redirect the patient to the Nurse again. After the nurse collects the specimens, the specimens will be sent to the laboratory so that the lab assistant can process, analyze the specimens, and then generate and enter the test results into the system. Furthermore, the doctor can redirect the patient to the lab assistant if there is a need to perform examinations such as X-Ray images, CT scan, MRI. The lab assistant can access the system and generate test reports regarding the examinations or test performed.

On the other hand, the doctor keeps track of the examination results entered by the lab assistant and then recommend further actions to be taken if required, as well as enters a new prescription for the patient. The system also allows the patient to access his account to see prescription details and view his reports along with doctor advice. This feature is very useful since test reports usually take a long time to be generated, so that the patient may leave the hospital and view the results along with doctor's advice through his account without the need of going to the hospital again. Once the prescription is ready, the pharmacist will prepare the medicines for the patient and enters the dose and guidelines of each medicine into the system. When the patient goes to the pharmacy of the hospital, he/she will find the medicines ready so that he/she can pick and go easily. The patient has two options to know the dose and guidelines of each medicine, either by asking the pharmacist directly or by accessing his/her account to see it. This will help the patient be aware of the medicines' dose if he/she forgets it. Finally, the patient will need to go to the cashier to pay for his/her visit. The system allows the cashier to create and order invoice for payment through the billing module. In addition, the cashier can watch the payment history of the patients.

Assignment # 1:

Requirement Elicitation

- Identify Stakeholders
- Write all the Requirements
    - Business Requirements (objective)
        - BR-1
        - BR-2
    - Functional Requirements
        - FR-1
        - FR-2
    - User Requirements (Stackholders)
        - UR-1
        - UR-2
    - Non Functional Requirements
        - Availability
        - Security
        - Scalability
        - …
- Requirement Traceability Matrix

Hospital Management System						
#	**Conflict**	**Assoc NFR**	**Use Case**	**Activity**	**Swimlane**	**State Machine**
BR-1				**#-1**		
BR-2						
BR-3						
FR-1				**#-1**		
FR-2						
FR-3					**#-2**	
NFR-1		-				
NFR-2		-				

Assignment # 2:

Requirement Analysis

- Draw use-cases for the identified HMS case study.
- Draw an Activity Diagram for each use case to capture further details

or

- Draw Swimlane Diagram to link activities/processes with actors.