**BAHRIA UNIVERSITY (KARACHI CAMPUS**)

**Software Requirement Engineering (SEN- 211)**

**Assignment 01**

**Fall 2023**

**Class: BSE 3B Shift: Morning**

**Course Instructor: ENGR. BUSHRA FAZAL KHAN Due Date: 02 Nov 2023**

**Assignment Date: 26 Oct 2023 Marks: 03 Points**

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Question:

For the given scenario identify and list all Functional and Non-Functional Requirements. For each Non-Functional requirement identify the type of Non-functional, Goal, Objective, and Quantitative verifiable metric where possible to create proper non-functional statements.

Consider the problem description. A private neighborhood health clinic wants to automate management of their operations by implementing an interactive web-based software system using the html5 standard, which should make the system run on tablets and smart phones as well as desktop and laptop machines. The Clinic Management System (CMS) is to be used by both patients and the clinic personnel (doctors, nurses, and administrative staff). A patient will be able to make on-line appointments for an examination, cancel an existing appointment, inspect lab results, check their outstanding balance, and make payments using their credit cards. A doctor will be able to record their schedules including the time periods they are busy and periods they have time off. They will also be able to browse their schedules for any appointments for examinations. The doctors could also ask to cancel appointments during a specified period, in case they become unavailable for unexpected reasons, subject to approval by the clinic director, who is also a doctor with management responsibilities. A doctor may browse a list of his/her patients, including past patients. Initially only some brief information is displayed for each patient, but the doctor may ask for details (including picture and patient records in chronological order). A nurse will be able to request time-off using CMS, subject to approval by the head nurse (head nurse herself/himself reports to the clinic director). The administrative staff can also help patients, doctors, and nurses to perform operations on their behalf, in situations where such a user does not have access to the Internet. The accounting of the clinic for both customers (balances due) and clinic personnel (their salaries and other compensation) are to be managed by an existing software module put in place by the clinic when they first started operation. User authentication is especially critical for such a system with sensitive information for both patients and clinic personnel. In addition, clinics currently have only about a couple of hundred active patients but as time goes by, especially after the automated system is in place, the clinic management expects to have at least thousands of patients if not more.

To attract more customers, the clinic management has also decided to put two types (silver and gold) of memberships in place with varying privileges. One can become a silver customer if they have used clinic facilities regularly for at least two years. A customer who has been a silver customer for at least two years gets to be a gold customer, assuming they have never failed to make payments past their due dates. Both silver and gold customers are provided with more flexible time slots for making appointments. Gold customers get additional privileges such as getting an SMS notification when their lab results are ready.

Answer:

Functional Requirements:

1. Appointment Management:

* Patients can make online appointments for examinations.
* Patients can cancel existing appointments.
* Doctors can record their schedules, including busy and free time periods.
* Doctors can browse their schedules for appointments.
* Doctors can request to cancel appointments during a specified period, subject to approval by the clinic director.

1. Patient Information:

* Doctors can browse a list of their patients, including past patients.
* Doctors can request detailed patient information, including pictures and records in chronological order.

1. Nurse Time-Off Request:

* Nurses can request time off using the CMS.
* The head nurse approves or rejects nurse time-off requests.

1. Administrative Staff Support:

* Administrative staff can assist patients, doctors, and nurses in performing operations on their behalf when they don't have internet access.

1. User Authentication:

* User authentication is critical for the system to access sensitive patient and clinic personnel information.

1. Membership Management:

* Two types of memberships: silver and gold.
* Silver membership is achieved after using clinic facilities regularly for at least two years.
* Gold membership is attained after being a silver member for at least two years and not failing to make payments past their due dates.
* Silver and gold members receive various privileges, including flexible appointment time slots and SMS notifications for lab results.

Non-Functional Requirements:

1. Usability:

* The system should be user-friendly for patients, doctors, nurses, and administrative staff.
* The interface should be intuitive and easy to navigate.

1. Accessibility:
   * The system should run on tablets, smartphones, desktops, and laptops, meeting HTML5 standards for cross-device compatibility.
2. Performance:

* The system should be responsive and handle a growing number of patients efficiently.
* Response times for critical functions, like appointment scheduling, should be kept within acceptable limits.

1. Scalability:

* The system should scale to accommodate thousands of patients as the clinic expects to grow over time.

1. Security:

* Patient and clinic personnel data should be securely stored and accessed.
* User authentication should be robust to protect sensitive information.

1. Reliability:

* The system should be available and reliable, ensuring minimal downtime.
* Data integrity must be maintained to prevent data loss or corruption.

1. Approval Workflow:

* The system should provide an approval workflow for various actions, such as appointment cancellations and nurse time-off requests.

1. Performance Monitoring:

* The system should provide performance monitoring and reporting to track usage and identify potential issues.

1. Membership Privileges:

* The system should ensure that silver and gold members receive their respective privileges as described.

1. Compatibility:

* The system should be compatible with the existing clinic accounting software module.

1. Payment Processing:

* The system should securely handle credit card payments for appointment fees and outstanding balances.

1. Notification:

* The system should send SMS notifications to gold members when lab results are ready.

1. Data Storage:

* The system should efficiently store and retrieve patient and clinic personnel data, including images and records.

1. Administrative Support:

* Administrative staff should have the necessary tools and permissions to assist users effectively.

1. Mobile Responsiveness:

* The system should provide a mobile-responsive design to ensure usability on smartphones and tablets.

1. Data Privacy:

* The system should adhere to data privacy regulations and protect the confidentiality of patient and clinic personnel data.