**Online Hospital Emergency System**

Group Project: 2-3 students.

Deadline: Sunday May 26th, 2024

Following the MVC architectural pattern, build a web application using Java Servlets, JSPs, and HTML (also you can use JavaScript and CSS for frontend) for the hospital emergency system.

The requirements are as follows:

1. The patient should register in the system using his/her email address and phone number.
   1. The patient’s profile should include (all fields are required):
      1. First name
      2. Last name
      3. Date of birth (date field)
      4. Address
      5. Medical history
      6. Chronic diseases
      7. Allergies
2. The patient can submit a case before arriving at the hospital:
   1. Checkbox: are you submitting this case on behalf of someone else (checkbox):
      1. If checked (if not checked then the patient is the one who submits the case)
         1. Enter patient’s name
         2. Relationship to patient: Friend or Family
   2. what is the patient feeling
   3. When Symptoms: did it start: text field
   4. Is the patient injured? Yes, No
      1. If yes, what kind of injury
      2. Upload an image of the injury (required field), you can save the image to the database as a BLOB or store it in the disk and add a path to it in the database.
3. When the patient submits the case, its status will be **New**.
4. The patient should get a case number in this format: Cxxxxxxxx, where the x represents a digit. This case number should be incremented for each new case. So, first case will be C00000001, and the second case will be C00000002, and so on. The patient only gets this case after the submission. You need to make sure in your code that two patients will not have a race condition if they submit at the same time. Should use synchronization.
5. The patient may be able to cancel the case at any time before being admitted to the hospital. If the patient is already admitted to the hospital, then only the Admission Officer can cancel the case. The status will be **Canceled**.
6. The Admission Officer can cancel a case if the case doesn’t include enough information. Then, its status will be **Rejected**.
7. If the patient arrives but the admission officer has already canceled his case, then the officer can reopen the case if the patient provides enough information at the hospital. Its status will be changed to **New**.
8. The officer should review the submitted case. When the patient arrives at the hospital, the officer will admit the patient. A checkbox field “Patient is present” should be checked in the case form.
9. If the patient is not present for one hour, then the status of the case will be changed to **Canceled**. If the patient arrives later, then only the officer can reopen the case and its status will change to **New**.
10. The officer will then assign the case to the screening nurse for initial assessment. The screening nurse will then review the case and assign it a level of urgency/priority based on its severity. Once the priority is determined, the status of the case will be changed to **Initial Assessment**. The patient must be present at the hospital at this stage.
11. The priority of the case should be:
    1. Emergency (priority 1- red). Waiting time: immediate response
    2. Very urgent (priority 2- orange). Waiting time: up to 1 hour
    3. Urgent (priority 3- yellow). Waiting time: 1-3 hours
    4. Less urgent (priority 4- green). Waiting time: 3-6 hours
    5. Non-urgent (priority 5- blue). Waiting time: 6-10 hours

For example, if the case has a Very Urgent priority, then, the status background will be Orange as follows:

|  |
| --- |
| **Very Urgent** |

The priorities should be configured as context parameters in the web.xml file where the waiting times and the colors can be configurable:

<web-app>

<context-param>

<param-name>parameter1</param-name>

<param-value>ValueOfParameter1</param-value>

</context-param>

</web-app>

1. The screening nurse will determine the kind of needed treatment and will assign it to the proper department (status will be changed to **Assigned**):
   1. **Triage**: Where patients are initially assessed based on the severity of their condition to determine the order of treatment.
   2. **Treatment Rooms**: Where medical staff provide immediate care to patients, including procedures such as wound care, suturing, and administering medications.
   3. **Resuscitation Area**: Reserved for critical patients requiring immediate life-saving interventions, such as those experiencing cardiac arrest or severe trauma.
   4. **Diagnostic Imaging**: Where medical imaging tests such as X-rays, CT scans, and ultrasounds are performed to aid in diagnosis.
   5. **Laboratory**: Where blood tests and other diagnostic procedures are conducted to assist in diagnosing patients' conditions.
   6. **Observation Area**: Where patients with less severe conditions are monitored for a period before discharge or admission to the hospital.
   7. **Psychiatric Emergency Services**: Dedicated to assessing and treating patients experiencing mental health crises or psychiatric emergencies.
2. The screening nurse can transfer the patient to another hospital for treatment. If the case is transferred, then its status will be **Transferred**.
3. The case can be in any of the following states:
   1. New
   2. Initial Assessment
   3. Assigned
   4. Closed
   5. Transferred
   6. Rejected
   7. Canceled
4. Each department will have a doctor on duty and a nurse. The nurse in the department is responsible for changing the status to either:
   1. Closed: the required treatment is provided, no further action.
   2. Transferred: transferred to another hospital.
5. You need to include at least one nurse and one doctor in each department in the database. These Emergency director (is also a doctor) can update the nurses and doctors in the departments.
6. Before closing the case, the nurse shall enter the type of treatment provided. This may include:
   1. Discharge home with instructions for follow-up care.
   2. Admission to the hospital for further observation or treatment.
   3. Transfer to another hospital for specialized care.
   4. Referral to outpatient services.
7. Follow-up: some patients who are discharged from the emergency room are often asked to follow up with a doctor in the hospital. A doctor will be selected for follow-up (see 19).
8. The hospital contains a list of doctors that the patient can follow up with.

**All the information in the system shall be stored in a relational database system of your choice.**