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## Software Required:

* Apache Maven
* Tomcat/ Any application server – to deploy the project
* Eclipse/STS
* MySQL

# How to run the Project:

After you get the project into your workspace, open command prompt and get to the project directory then run the following commands after you ensure you have maven working:

mvn clean install

mvn eclipse:eclipse

Now, go to your IDE and go to src/main/resources hibernate.cfg.xml file and uncomment the following line to create a new schema for our hospital enterprise.

<property name="hibernate.hbm2ddl.auto">create</property>

Update your MySQL username and password

In MySql create a schema: ***CREATE SCHEMA healthcare;***

This will create the schema when you run the project on server. It only for the first time now uncomment it.

# Workflow:

After you run the project, in the project folder there is an inputSQL.sql which you need to run in Mysql. Initially, we will have an Admin login with Credentials **admin/ADMIN**.

All the Roles are explained below briefly.

The Admin will be able to create Assistant Doctors, Doctors and Pharmacists along with their user accounts.

And the patient needs to sign himself up to the hospital assigning himself a primary doctor to treat him and send his complaint to any of the assistant doctors available in the hospital.

When the assistant doctor logs in he sees the patient complaints and he takes the vital signs and assesses the patient conditions and his history and forwards it to the doctor for medication.

The pharmacist will create the drugs into his inventory adding the medication guides and the communication plan.

The doctor will login to check the reports filed by the assistant doctor and then suggest the patient his medication for the cause.

The patient will be able to login and check his reports.

# Technical Overview:

I have designed a Hospital Enterprise Application using Spring MVC architecture and Hibernate.

Used Interceptor for Authentication, Cross Scripting Filter to avoid cross-site scripting. In order to validate the user inputs I have used Hibernate validator and Spring Validator. The Application built is an Annotation Based Web-Application.

For an improved view, I have used JSPs, Velocity and Freemarker embedding them with Bootstrap as well as jQuery for better user-experience.

# Entities:

**Assessment**: Doctor assesses the patient’s condition with a pre-defined set of questions which are required for further diagnosis.

**VitalSign**: The details of the vital signs recorded by the doctor during the diagnosis process such as heart rate, respiratory rate, blood pressure etc.

**MedicationDetails**: contains the details regarding the prescription of a particular encounter including the instructions.

**Encounter**: contains the details of VitalSigns, MedicationDetails and the respective patient and the doctors.

**Patient**: contains the patient details.

**Person**: super class of the patient entity.

**Drug**: contains the details of the drugs like name, communication plan and medication guide following the REMS.

**CommunicationPlan**: contains the details who can use the drug.

**MedicationGuide**: contains the details how to use the drug.

**Organization**: Contains the list of organizatiosns such as doctor, pharmacist, assistant doctor and Lab Assistant.

**Employee**: Super class containing employee details

**Doctor**: contains the doctor specific details

**Pharmacist**: contains the pharmacist specific details

**AssistantDoctor**: contains the AssistantDoctor specific details

**WorkRequest**: Super class containing workrequest details

**Consultation WorkRequest**: consultant workrequest details having encounter and patient details

**Medication WorkRequest**: medication workrequest details

**UserAccount**: contains the username, password and the role details for each type of user.

# Roles:

**DoctorRole**: He has to treat the patient by diagnosing him and when needed he needs to recommend lab tests. He is responsible to the preliminary analysis for the patient.

**Pharmacist**: He receives the prescription from the doctor which needs to be delivered to the patient. He also notifies the patient regarding the delivery.

**Patient**: He has the liberty to create himself a new useraccount in the hospital enterprise and check for updates.

**AssistantDoctor:** His role is to record the vital signs and note the chief complaint of the patient.

**HospitalAdmin:** The admin has liberty to create the users for the doctors, pharmacists and assistantdoctors.

# Business Idea:

**Problem:** To design an electronic-Medical interface to integrate Doctor, Laboratory and Pharmacy at one desk for a Hospital enterprise.

**Solution:** The whole idea is to implement an innovative patient desk where a patient can log his complaint with the assistant doctor for a doctor appointment. Then the assistant doctor would guide him through the process sending him to a doctor to start the health checkup process. The assistant doctor according to his feasibility would assign the request to himself and will record the patient’s vital signs and forwards it to the concerned doctor and the doctor takes a preliminary assessment notes. The Doctor by looking at the encounter details like complaint, vital signs, preliminary analysis would decide to give him a medication or to forward him to any other specialist in case of emergency. The medication is taken forward to the pharmacist or the lab assistant as required. The REMS will be implemented to take care of the patient safety.