ECAMPUSCONNECT

An enterprise application by Dhaval Joshi and Advait Patel

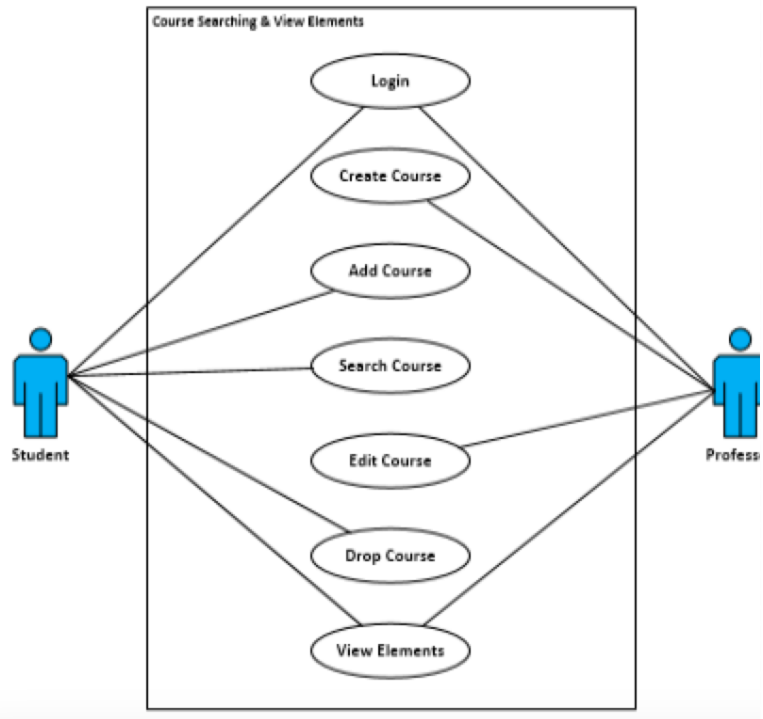
SE554 – Enterprise Component Architecture Project

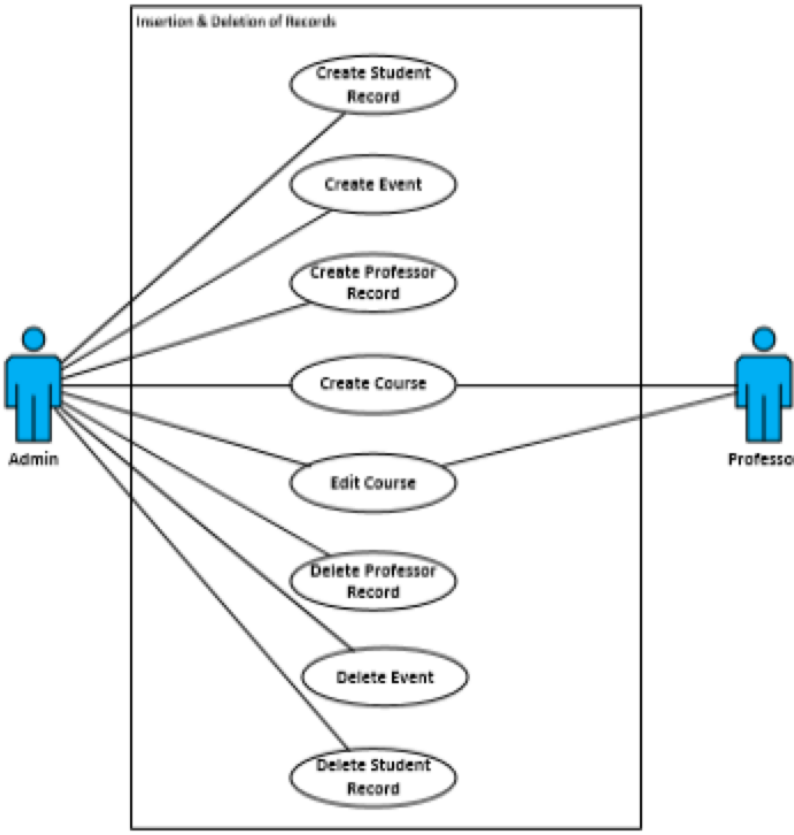
Contents

Overview

ECampusConnect is an enterprise application whose purpose is to provide easy access to college specific course management operations for students and staff members.

Use Case Diagrams:



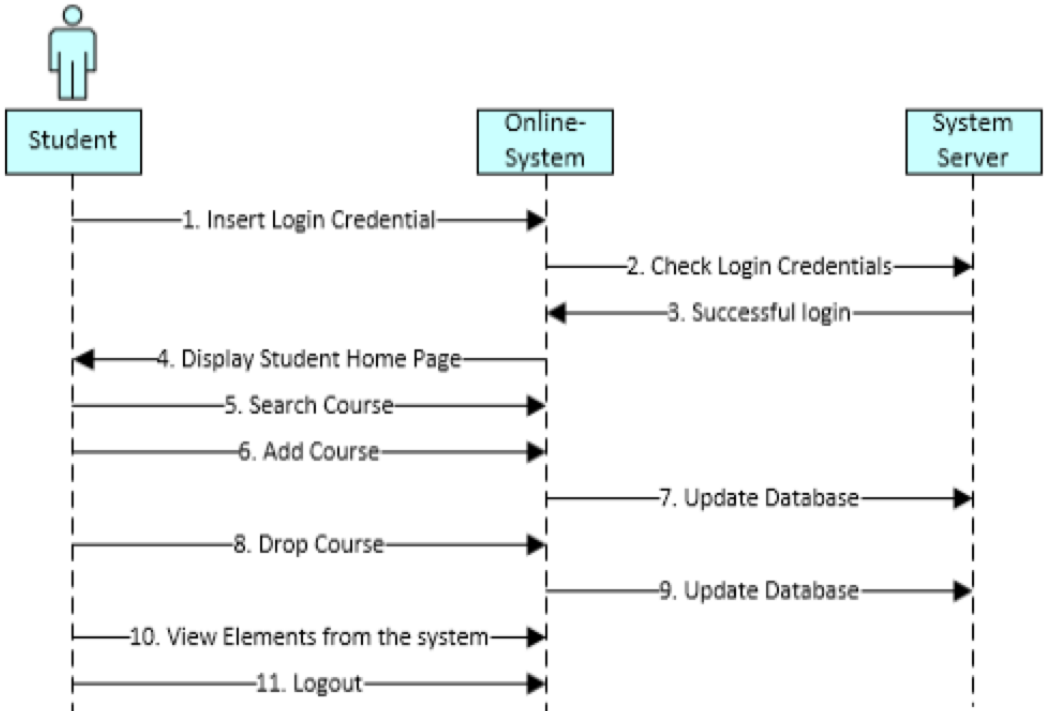


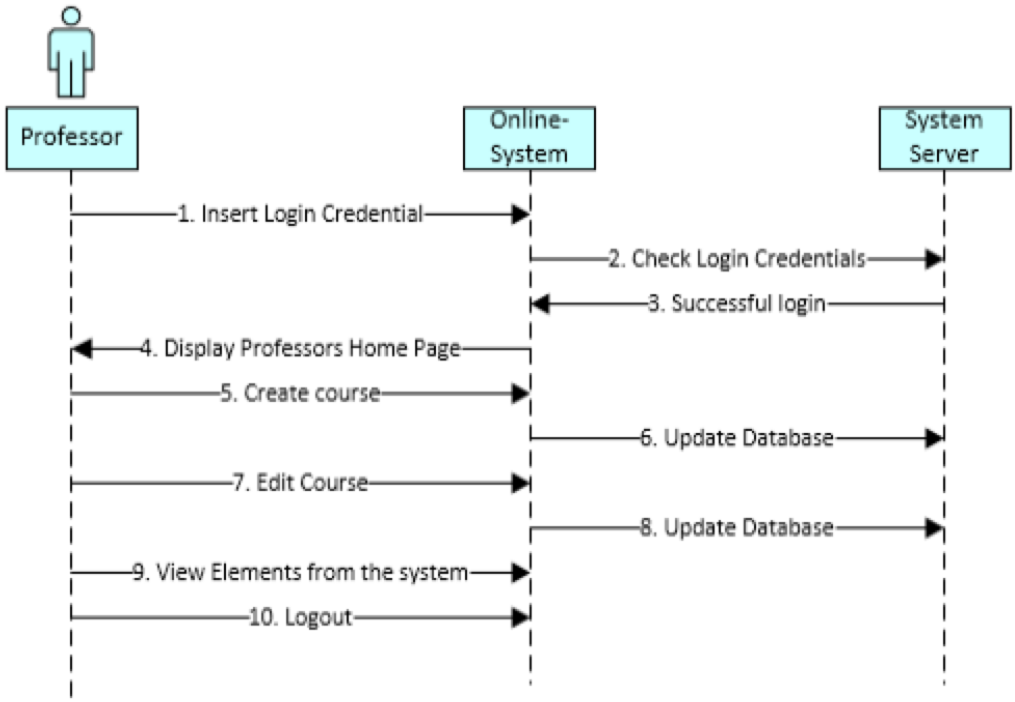
Description of problem

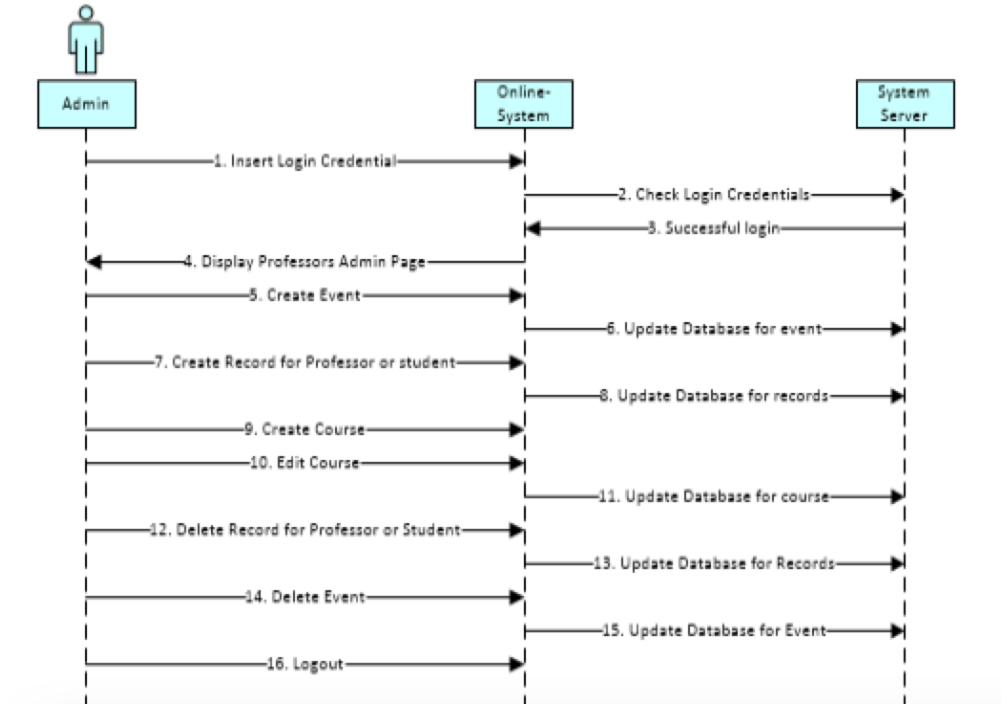
Basic course management(enroll/drop/add/delete/update etc.) operation service that supports human interaction using Web or system based request using message queue or via web services.

Design

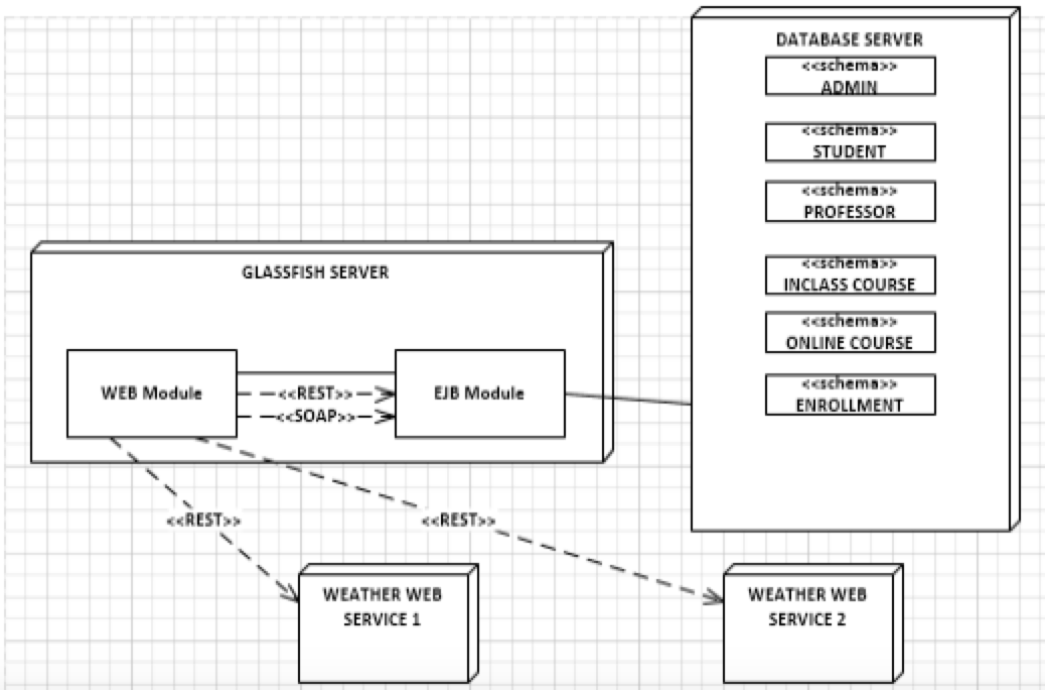
Sequence Diagrams:







Deployment Diagram:



Discussion of how your design met the requirements

This project met most of the functional requirements but was created to validate the component interaction for different technology pieces and to leverage the skills gained.

Discussion of lessons learned

Almost everything we learnt while doing this project and during the class was completely new and challenging. There was a lot to experiment with and hence, there were a lot of lessons to learn. Some of them are as follows:

- Initially we were not comfortable with using MAVEN but as we progressed in the project development, we realized its importance and accepted that we'll should to use it for our project.
- We had a lot of issues with Netbeans. At some point Netbeans won't even close and delete existing projects. After reinstalling Netbeans (couple of times) and JAVA things were back to normal.
- Time is the most important thing when it comes to project management. Proper planning is very important.

Decision Log

Problem	What was decided	Alternatives considered	Rationale
Which IDE to use	Netbean	Eclipse, IntelliJ IDEA	Netbeans had all the components integrated in one UI
Which build to use	Maven	Netbean specific Ant	To make project independent of IDE
Application server to use	Glassfish	JBoss	Glassfish is integrated out of the box with Netbeans
Web only or complete enterprise application	Complete Enterprise Application	Individual component modules	Putting related things together in one place facilitates better management.
Persistence	Inheritance and Association	No object-orientation, object oriented	Inheritance and Association help to understand the relationship between entities more clearly.

Table Creation	Top Down approach	Top Down, Bottom Up, Somewhere in the middle.	Being software developers, our thought process was much more inclined towards Top Down approach. Also, we didn't have any ready made tables or entity classes hence the other two approaches were discarded.
Data Model	Single Table	Single Table, Joined, Table per Class.	Single Table data model gives higher performance when it comes to large data. Also, single table is easier to maintain.
Transaction	Bean Managed Transaction (BMT)	BMT, Container Managed Transaction (CMT)	As there were snippet of code for transaction in our application, we chose BMT as it fine grain control .
Messaging service	Publisher/ Subscriber (Pub/Sub) Messaging Domain	Point-to-Point (PTP) Messaging Domain	In Pub/Sub model, one message is delivered to all the subscribers. It is like broadcasting. Message is used as a message oriented middleware that is responsible to hold and deliver messages. Whereas, in PTP model, there is timing dependency between publisher and subscriber.
Type of Session Bean Access	Local Bean Access, Remote Bean Access	Local Bean Access, Remote Bean Access	Since all the modules are packaged together in our application, local bean access would suffice and reduce complexity. However, we did include Remote Bean access to understand its working.
Obtain reference of an enterprise bean	Dependency Injection	Dependency Injection, JNDI Lookup	We have used Dependency Injection to get a reference to the remote interface considering the fact the our client will run on a Java EE server- managed environment.
Type of Bean	Stateless Session Bean	Stateless Session Bean, Stateful Session Bean	Our application consists of both Stateless and Stateful Session Beans. Some of features won't need client specific data and hence they are implemented as Stateless Session Beans whereas the feature hat need client specific data are implemented as Stateful Session Beans.

WebServices	SOAP and REST	SOAP, REST	We implemented both to gain knowledge and experience these webservices. We created RESTful web service for viewing the list of courses available. We also used two public RESTful service for viewing weather. We used SOAP for passing messages and to use department related services.

Research and Implementation of Advance Concepts

- Entity Listeners
- Validation
- Singleton
- Calling two public REST service implementations

Github: https://github.com/springse554/ECampusConnect