**CSCI 361/CSCI 341 Term Project**

**Fall 2019**

*Abstract*: This document describes the high-level requirements for the joint term project in the Software Engineering and Database courses. The software engineering component of the project consists in designing a web application that delivers role-based functionality and access. The database component consists in producing a database design that enables effective querying in a complex domain problem. This a team project, and there should be between 5 and 6 members on each team. To keep things uniform, we propose two projects, of equal difficulty, that teams may choose between: *railway station management* and *archaeological site management*. Teams must implement one of our proposed projects.

**CSCI 361 General Requirements**

* "Full stack" development meaning the implementation of both a browser based front-end and a Java server-side back-end
* The server-side component must be a Java enterprise/container application, meaning it should be deployable, as a war file, to a standard Java EE server such as Apache Tomcat, TomEE, Jetty, Glassfish, WebLogic, etc.
* The web application should interface to a relational database management system such as MySQL or PostgreSQL. An embedded database such as SQLite is not acceptable
* The web application should enable login and user profiles and take reasonable steps to main security and data integrity
* The application should make data available through both the web front-end and through a RESTful API
* The web front-end should also be (partially at least) *dynamic*, meaning that some information between the client and server should be sent through AJAX requests

**CSCI 341 General Requirements**

The portion of the project for the CSCI 341 course has 2 parts, an (E)ER model, followed by a relational model. Since the teams are large, the ER model should be created and presented to the course instructor by half the team, then the relational model must be created and presented by the other half of the team. The submissions will be graded partially on correctness, and partially on the perceived familiarity with the design by the team members presenting.

**Specific Requirements**

In this section, we list specific requirements for each of the proposed projects. The requirements are written as *user stories* which Mike Cohn (<https://www.mountaingoatsoftware.com/agile/user-stories>) describes as "short, simple descriptions of a feature told from the perspective of the person who desires the new capability."

Note that this list of requirements is not exhaustive or fully detailed. In the course of the semester, we will develop the complete picture of the required functionality and behavior. The requirements will change and be updated to simulate real-world contingencies.

**Railway Station Management**

In this project, teams will implement a system to manage operations at a train station. The system will need to keep track of arrivals and departures, tickets and availability, delays, maintenance, weather conditions, and so on. The system will allow role-based access for the roles of station manager, station agent, and passenger.

* As a user, I want to see a schedule (with map) of arrivals and departures for a given day
* As a passenger, I want to search the schedule so that I can book a ticket on given day to a given destination
* As a passenger, I want to create a profile so that I can review my travel and see upcoming trips
* As an agent, I want to cancel, create, and change, tickets so that I can fulfill passenger requests
* As a manager, I want to review the schedules of all station employees so that I can make payroll and adjust hours
* As a manger, I want to create and cancel routes and issue advisories so that I can ensure that passengers and agents have up-to-date information

**Archaeological Site Management**

In this project, teams will implement a system to track all work and findings at an archaeological excavation site. The system needs to be able manage different classes of artifacts and features. As described in the user stories below, the system also needs to be able to present findings visually using standard mapping and geographic formats.

* As a researcher, I want to be able to enter information relating to the artifacts I find
* As a researcher, I want to review my schedule so that I can plan activities for the week
* As a researcher or site manager, I want to be able to digitize information from standard 'context recording sheets'
* As a site manager, I want to plan a sampling strategy
* As a site manager, I want to see an interactive map of the excavation site so that I can review progress
* As a site manager, I want to search, along multiple dimensions (time, location, etc.), the artifacts and features that have been discovered at the site to date
* As a site manager, I want to import and export geographic information in standard formats such as 'shapefiles'
* As a site manager, I want to create and delete tasks, schedules, and researcher (employee) profiles so that I can manage operations at the excavation site