

SE4930 Lab Project Descriptions

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1 Lab Sequence Overview

For SE4930, there will be five projects occurring in parallel. During the lab sessions, you will spend some time working on general skills labs. At other times, however, you will be working on team projects. Each team will be doing the same thing to their project at the same time.

This document describes the projects that will be conducted. As a class, it is your job to

1. Organize into teams.
2. Determine which of the projects each team will work on

In the event of indecisiveness or unbalanced teams, it is the right of the professor to assign teams and / or projects.

By the end of the quarter, we will be doing some implementation on the projects, but in no case will any project be fully functioning. The goal is to have at best a proof of concept project. In creating these proofs of concepts, it may be necessary to simplify development practices. How this is accomplished is up to the individual teams.

2 Wednesday's Lab

In Wednesday's lab, aside from finalizing team organization, we will begin analyzing this project and working on requirements analysis. For the purposes of this lab, the Stakeholder should be considered to be in instructor.

3 Project 1: Distributed UML Diagrammer

Software development teams work in distributed environments. That is normal. However, one problem with distributed environments is managing software design. The tools that we have for software design often are not conducive to operating in a distributed environment.

For this project, a client desires to have a UML system developed which will allow a distributed team to draw in a pseudo-whiteboard environment UML class diagrams and sequence diagrams. Diagrams will be kept under version control so that a person can revert to a previous version if necessary. Additionally, diagrams will be kept in a manner to allow a person to show the progression between one version and another version as well as highlight the differences between two different versions.

Additionally, the system must be capable of allowing the user to see only their version of a design or someone else's version of a design.

To protect intellectual property, the system requires users to be added to a given project in such a way as their actions are appropriately controlled.

While the ultimate goal of the system would be to recognize the UML context to enable automatic generation of skeleton source code, the initial system does not need any of this capability. Rather, it should focus on distributed drawing of UML diagrams.

4 Project 2: Mobile Flight Tracking System

Pilot fatigue is a major factor in aviation crashes. And each year, civilian pilots and small planes cause most of the domestic air crashes. To try and avoid some of these problems, there is a desire to have a better idea of how many hours pilots actually spend flying.

To do this, a proposal has been put together to use a mobile phone application to track pilot flight times and rest periods. The system will use GPS and the phone data system to automatically record when a pilot is flying. Additionally, a pilot must log their rest periods into the system so that they can be tracked.

In the event of an emergency, the system will also allow pilots to send a distress signal over the phone, providing their GPS coordinates and the date and time.

5 Project 3: Emergency First Aid System

Many people have medical conditions which require special treatment. For example, a person who suffers from epilepsy may have a seizure. People who are not aware of the person's condition may panic if the person goes into a seizure, resulting in excess ambulance trips and embarrassment.

You are being tasked with developing a mobile phone application to help random passersby to appropriately treat a person with a preexisting condition in the event of an emergency. For example, if a person is having a seizure, a bracelet or necklace will direct the person to the phone. There will be an application which will provide textual information about the condition and the best treatment options. It may ask the good samaritan for help in diagnosing the condition and will provide care assistance.

In the event that the good samaritan has questions, the system will automatically connect the user with an operator who can aid in assisting the samaritan. The operator will have appropriate access to the medical records of the patient and will be able to provide a more advanced diagnosis.

The system also will be capable of relaying location to emergency medical providers.