CSCI 491 Senior Research Project

Course Outline

Student: Madelaine Jones

PROJECT TITLE: Workout Tracker Application

Supervisor: Dr. David Wessels

Committee members: Dr. Luis Meneses

Proposal: CSCI 491 Senior Research Project (6 credits)

September 5th, 2023, through April 30, 2024

Pre-requisites: 4th year standing and at least a B average in your five most recent computer science courses.

Topic outline

The primary objective of this project is to design, develop, and deploy a Workout Tracker application to the Apple App Store. This endeavor aims to provide the student with a comprehensive understanding of the practical facets of software development, often overlooked in academic settings. By the project's conclusion, the student will have a functional app available on the App Store, with insights into the entire app development lifecycle, from initial design to post-launch maintenance.

Project Description:

The project is split into two primary segments: the development of the Workout Tracker application and the production and maintenance processes.

Workout Tracker App:

A tool that allows users to efficiently track and manage their workouts. While the core functionality is simple, the emphasis is on the production-level aspects of the app development process.

Specific areas to be addressed:

1. Workout Tracker Application Development:
    - Design and development of core functionalities such as creating, editing, viewing, and deleting workouts.
    - Implementation of iCloud sync for workout data.
    - Developing a user interface

- Develop stretch functional requirements such as workout templates, library of pre-existing workouts, progress sharing, and more.

2. Production and Maintenance:
   - Comprehensive documentation, including licensing and task tracking.
   - Following a testing plan
   - Implementation of logs and metrics for performance analysis.
   - Navigating the Apple App Store approval process.
   - Emphasis on user experience.
   - Incorporation of best DevOps practices, with a focus on CI/CD.

3. Process to be followed:
   - Design phase detailing UML diagrams, functional and non-functional requirements, testing plan and UI/UX mock-ups.
   - Learn XCode and Swift
   - Set up the development environment establishing: XCode, emulation, Git repo etc.
   - Develop the core functionalities of the Workout Tracker application.
   - Perform thorough usability testing.
   - Publish the app.
   - Post-launch, shift focus to app maintenance, gathering metrics, user feedback, and pushing necessary updates.

4. Specific Deliverables:
   - A technical design document drafted early in the design process.
   - A meticulously crafted project report detailing the app store approval process, methodologies, and development processes.
   - A fully functional Workout Tracker application available on the Apple App Store by the project's end.
   - An in-depth app publishing guide for upper-level undergraduates that outlines key development steps, highlights potential challenges with solutions, and offers curated links to valuable external resources.

Project Deliverables and Schedule:

The student and instructor will meet weekly (time and location TBA) to review the project progress, design and implementation options, and the best means of attaining the project's short term and long-term goals. At each meeting the student is expected to provide a short (10-15 minute) briefing on the state of the project, and to bring current copies of relevant documents (see the project timetable detailed below).

In accordance with the goals of the project, the deliverables and evaluation will be as shown below.

Index	Milestone	Submitted to	Due Date
1	Proposal	Dean	15-Sep
2	Midterm Review	Supervisor	12-Jan

		Committee	19-Jan
		Presentation	26-Jan
3	Final Project Report	Supervisor	05-Apr
		Committee	19-Apr
		Presentation	30-Apr

Each section's submission will contribute to the final report, including details of possible alternatives and justification for the choice made, as well as a description of that choice. Deliverables are expected to consider changes, recommendations, and decisions reached based on previous deliverables.

The final project report will thus include both a formal description of the project, the research behind it, the practical implementation of the project, a description of the rationale behind the implementation choices, and experimentation to show the strengths and weaknesses of the chosen approaches. The letter grade for the course is established by the committee and is based on the student's success at meeting the requirements and deliverables.

Project grading criteria:

The letter grade assigned will be one of the following four:

- Pass with honours: A+
- Pass with distinction: B+
- Pass: C
- Fail: F

The final grade for the project will be determined by the committee, based on the subsequent criteria:

Pass with Honours, A+:

- A comprehensive and well-articulated final report detailing every stage of the app development process.
- A fully functional Workout Tracker app on the with all the outlined features implemented and active user engagement.
- Successful navigation of the Apple App Store approval process and implementation of best development practices (including documentation, logs, well written code) that would allow another developer to easily continue work on the project.

Pass with Distinction, B+:

- A detailed final report on the app development process.
- A fully functional Workout Tracker app with all the outlined features implemented and published to the app store.

Pass, C:

- A final report detailing the primary stages of the app development process.
- A Workout Tracker app *not* published to the app store but in a working condition.
- Basic documentation and some understanding of the App Store approval process.

Incomplete, I: May be granted if the student has shown significant progress but hasn't met the criteria for a C.

Any other result will be treated as a **Fail, F**.