CPSC254 Software Development with Open Source Systems

(Originally prepared by Prof. David Heckathorn, modified by Shivansh Vijay Nathani)

Learning Objectives

After completing the project, you are expected to be able to:

- Develop software that makes appropriate use of fundamental programming constructs to solve a computational problem.
- Develop well-designed code that can adapt to changes in code dependencies.
- Develop well-documented code that the open source community can easily understand and use.
- Demonstrate the ability to use Computer-Assisted Software Engineering (CASE) tools to manage a project. Examples of CASE tools include version control systems, documentation tools, issue trackers, and so forth.
- Demonstrate the ability to use a command-line interface in the course of software development and project management.

You will develop an open source web application in groups consisting of two or three members. As a group, you will decide on the goals of your application. It may either (a) solve a problem you identify, (b) facilitate the performance of a difficult task, or (c) provide functionalities that are missing in other applications. The goal should justify the development of your application. Your project ideas will be evaluated by the instructor to ensure that it can be completed within the duration of the course.

The project should also satisfy two requirements to be accepted.

- First, Develop a web application using HTML, CSS, PHP, JS or a Desktop application using C/C++ or Java. Use open-source libraries while building the web app/desktop app. If you are using any other languages please reach out to the professor before beginning.
- Second, use open source databases such as MySQL, etc to store data and the application should be hosted on a Linux based server/machine. Also detailed information is mentioned below.

The project needs to be done by a group of 2 - 4 students.

Detailed Explanation on what is to be done.

In this all-encompassing project, you will embark on a journey to create a robust web application hosted on a Linux-based server infrastructure. This project will challenge your technical skills and provide a comprehensive understanding of various aspects of Linux and open-source software.

Project Description:

Imagine designing and developing a dynamic web application capable of serving specific user needs or solving a particular problem. Your task is to build this web application and establish a secure and efficient Linux-based server infrastructure to host it. Here's an overview of what you'll achieve:

1. Web Application Development:

- Dive into web development to create your dynamic web application using a suitable technology stack as mentioned.
- Customize the application to meet your project's specific requirements and user expectations.

2. Automation with Shell Scripts:

- Master the art of shell scripting to automate routine server tasks. Implement scripts for data backups, log file management, and system maintenance.

3. Package Management:

- Use your distribution's package manager to install and configure necessary software components, including web servers, databases, and programming languages.

4. Project Presentation:

- Prepare a comprehensive project presentation that showcases your web application and the Linux-based server infrastructure you've built.
- Emphasize the role of open source software, discuss software licenses, and highlight the significance of Linux in modern web development

Build and host the application on a Linux based server/machine.

This project offers you a unique opportunity to gain hands-on experience in creating a real-world web application while simultaneously exploring the diverse world of Linux and open-source software. It's a journey of learning, innovation, and skill development that will equip you with valuable expertise for future technology projects.

Grading to be done based on the below criteria

Module	**Max Marks**
GUI	10
Communication with group members	10
Code Design	25
Documentation	25
Presentation	20
Use of existing software and libraries	10