

Java Final Project Proposal

Course: CS9053 – Introduction to Java

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Project Title: JavOS – A Simulated Operating System Environment

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Project Overview

JavOS is a desktop-style application built using JavaFX that simulates the look and feel of a basic operating system environment. It offers a login screen for access control, a multi-window GUI with a taskbar, and multiple simulated "applications" that run as independent threads. The standout feature is a terminal emulator capable of interpreting mock shell commands and displaying system-like outputs.

This project emphasizes a strong grasp of JavaFX for GUI design, Java threads for multitasking, and structured programming for building a clean and extensible system.

Key Features and Functionalities

1. GUI Desktop Environment (JavaFX)

- A main desktop window with a wallpaper, taskbar, and application launcher.
- Each app launches in its own movable and closable sub-window.
- Clean, modern styling with CSS to mimic real OS aesthetics.

2. Multithreaded App Management

- Each application (e.g., terminal, notepad, calculator) runs in a separate thread.
- Threads are managed by a thread pool and include process IDs for each app.

3. Terminal Emulator

- Simulated command-line interface styled with JavaFX.
- Supports basic shell-like commands such as:
 - `ls` – Lists available apps or directories.
 - `ps` – Displays running threads (apps) and their status.
 - `time` – Shows current system time.
 - `kill <pid>` – Simulates terminating an app (thread).
- Outputs are printed in styled console format (monospace font, color-coded feedback)
- Commands are parsed and executed within their own thread for responsiveness.

Testing and Demonstration

- Users will log in, open apps via the launcher, run mock terminal commands, and view thread info in the system monitor.
- Demonstrates multitasking by launching multiple apps simultaneously.
- Manual testing of command responses and app lifecycle handling.

Timeline

Week	Task
1	GUI Desktop Layout
2	Implement Launcher + Draggable Apps
3	Multithreaded App Framework
4	Terminal Emulator + Command Parsing
5	Styling + Debugging + Testing
6	Polishing + Documentation

Conclusion

JavOS delivers a fun and technically engaging simulation of an operating system desktop. Through well-organized use of GUI components, threads, and simulated terminal interactions, this project will showcase essential advanced Java concepts in a creative and interactive way.