Final Project Proposal

Fitness Workout Tracker

Maintaining a consistent workout routine can be difficult, especially when people try to track multiple exercises, sets, repetitions, and progress over time. Many individuals forget what exercises they completed, which muscles they worked, or how to balance their routine efficiently. A digital workout tracker can help users organize their exercises, track performance, and plan workouts to meet their fitness goals. This application will store exercises, workouts, and user progress in an organized system that allows sorting by difficulty, muscle group, or duration.

Proposed Solution and Data Structures:

Data Structure 1: Binary Search Tree to store exercises by name or difficulty for efficient search and retrieval.

Data Structure 2: Queue to track the daily workout routine, ensuring exercises are completed in the intended order.

Sorting Algorithm: Insertion Sort to sort exercises by duration or difficulty when displaying workout plans.

Proposed Timeline

- **Sprint 1:** Develop core classes, Exercise, Workout, WorkoutManager – and create unit tests for exercise addition and retrieval.
- **Sprint 2:** Design GUI layout for displaying workouts, adding exercises, and input forms; populate with sample exercises.
- **Sprint 3:** Integrate BST for exercise storage, queue for daily routines, and implement insertion sort for displaying workouts by criteria.
- **Sprint 4:** Perform full testing, validate GUI interactions, finalize sorting and data structure functionalities, prepare demo, and document project.

GUI Concept:

- Sidebar for workout categories EX: cardio, strength
- Main display for daily workout routine and exercise details.
- Buttons for Add Exercise, Complete Exercise, and Sort by Duration/Difficulty.
- Input fields for exercise name, muscle group, sets, reps, and duration.