EXERCISE 1: Rocket Launch & Weather Simulation

This project simulates a rocket launch preparation system that combines weather data and rocket components using object-oriented principles in Java.

Key Features:

AI Model Integration: Simulates decision-making for launch approval.

Weather Data Fetcher: Collects external weather conditions to influence launch choices.

Rocket Components: Each component, modeled as a class, can be configured and validated before launch.

Configuration Manager: Centralized management of system settings.

File Receiver: Handles input data files for system configuration.

This exercise focuses on modular design, separation of concerns, and clean architecture for a simulation inspired by real-world scenarios.

EXERCISE 2: Astronaut Daily Schedule & Multi-User Chat Application

This exercise includes two Java-based projects, both demonstrating design patterns and best practices.

Part 1: Astronaut Daily Schedule Organizer (CRUD Application)

A console-based application to help astronauts manage their daily schedules.

Implements Singleton, Factory, and Observer patterns.

Supports CRUD operations: adding, removing, and viewing tasks.

Validation: prevents overlapping schedules.

Custom exceptions aid in error handling.

Logging system monitors activity.

Tasks are stored in a sorted, efficient manner for quick retrieval.

Part 2: Multi-User Chatting Application

A client-server chat system developed in Java for real-time communication.

User Authentication: login with a unique username.

Chat Rooms: create, join, and list rooms.

Public and private messaging support.

Message history is maintained for each room.

Uses Singleton, Adapter, and Observer patterns.

Built with multithreading to handle multiple clients at the same time.