Converter Tool

(Temperature & Metric Units)

A Console-Based Utility Application

By : Walter Obinna Ogbe

Project Overview

A utility tool for converting units of temperature and metric measurements.

Supports both *temperature* (Celsius, Fahrenheit, Kelvin) and *metric* units (Length: m, km, cm, mm; Weight: kg, g, mg).

Built using **Java**, with a focus on **object oriented programming** principles

Project Goals

- Apply Java fundamentals to create a practical tool.
- Practice numerical calculations and user input handling.
- Reinforce understanding of OOP concepts like abstraction and class inheritance.
- Gain experience in building reusable and extendable code modules.

Features of the Tool

Temperature Conversion Support:

- Celsius ⟺ Fahrenheit
- Celsius ⟺ Kelvin
- Fahrenheit ⟺ Kelvin

Metric Unit Conversion Support:

Length

- Meters ⟺ Kilometers ⟺ Centimeters ⟺ Millimeters

Weight

- Kilograms ⟺ Grams ⟺ Milligrams

- **Interactive Console UI**: Easy-to-follow prompts guide users through selecting units and entering values
- **Input Validation**: Informs the user of invalid or unsupported unit combinations.

Tools and Technologies Used

- **Java SE (Standard Edition)**: The core programming language used for developing the application.
- **Java Scanner Class**: Enables interactive input from the user.
- **Control Structures**: Used if-else and switch expressions for unit conversion logic.
- **Object-Oriented Concepts**: Utilized inheritance and abstraction to enforce code reusability and cleaner structure.

Code Architecture

- Unit-converter (ABSTRACT CLASS)
  - Defines a common interface convert() for all converter types.
- Temperature-converter (SUBCLASS)
  - Temperature-specific logic using standard formulas
- Metric-converter (SUBCLASS)
  - Handles both length and weight conversion through unified logic.
- Converter-app (MAIN CLASS)
  - Controls user interaction, menu navigation, and initiates conversions based on input.

Sample Interaction