



Converter Tool (Temperature & Metric Units)

A Console-Based Utility Application

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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.

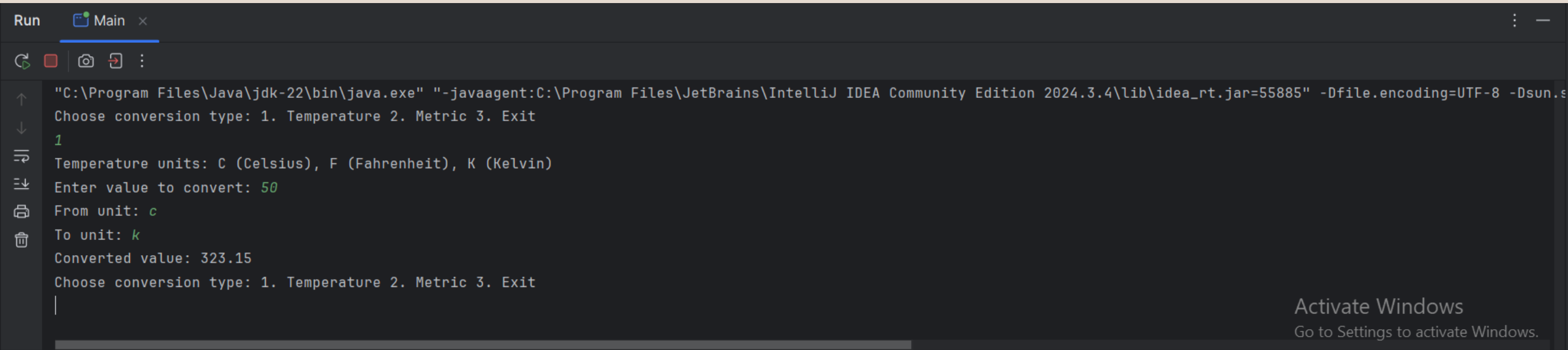
Tools and Technologies Used

- **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



The screenshot shows the IntelliJ IDEA Run console for a Java application. The console output displays a unit conversion program. The user has selected '1' for Temperature, entered '50' as the value, and 'c' as the source unit and 'k' as the target unit. The program has calculated and displayed the converted value as 323.15. The console also shows the Java command line and the 'Choose conversion type' prompt.

```
"C:\Program Files\Java\jdk-22\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2024.3.4\lib\idea_rt.jar=55885" -Dfile.encoding=UTF-8 -Dsun.s
Choose conversion type: 1. Temperature 2. Metric 3. Exit
1
Temperature units: C (Celsius), F (Fahrenheit), K (Kelvin)
Enter value to convert: 50
From unit: c
To unit: k
Converted value: 323.15
Choose conversion type: 1. Temperature 2. Metric 3. Exit
|
```

Activate Windows
Go to Settings to activate Windows.