🌍 World Clock Utility

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Date: 18th May 2025
Language: C
Version: 1.0

📓 Overview

The **World Clock Utility** is a real-time C-based application that displays the current time across multiple global time zones. It calculates localized time from Coordinated Universal Time (UTC), taking into account unique hour-minute offsets and Daylight Saving Time (DST) rules for each region.Designed with modularity and education in mind, this project is ideal for both real-world use and as a teaching tool to demonstrate struct usage, control flow, time computation, and data normalization.

🚀 Features

- Real-time time zone conversion from UTC
- Country-specific time offsets and DST support
- 12-hour format with AM/PM conversion
- Simplified date management for transitions between days and months
- Organized, extensible, and modular codebase

🛠️ How to Compile & Run

▶️ Step 1: Save Files

Ensure the following two files are in the same directory:

- main.c – contains the logic and main loop
- world_clock.h – contains struct definitions and function prototypes

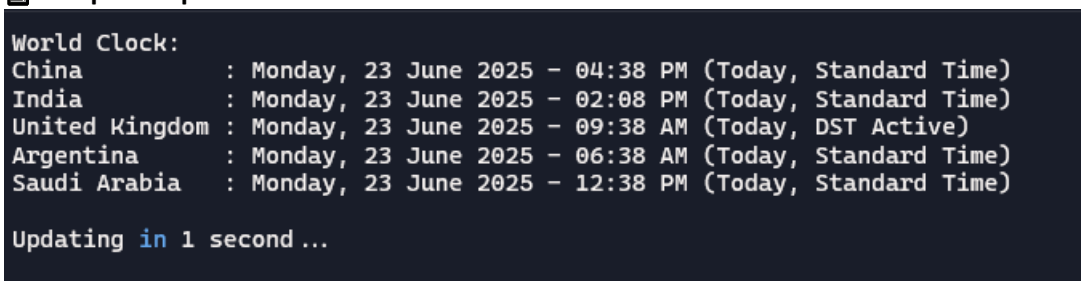
▶️ Step 2: Compile with GCC

```
gcc main.c -o world_clock
```

▶️ Step 3: Execute

```
./world_clock
```

📃 Sample Output



Note: The actual time displayed depends on your system clock.

□ Project Structure

— main.c // Core implementation and main loop

— world_clock.h // Definitions for structs, constants, and functions

🗺 **Time Zone Configuration**

Country	UTC Offset	DST Active
China	+08:00	No
India	+05:30	No
United Kingdom	+00:00	Yes
Argentina	−03:00	No
Saudi Arabia	+03:00	No

□ Educational Significance

This utility serves as an excellent reference or classroom demo for:

- Understanding UTC and time zone math
- Applying structs for real-world data
- Normalizing data values using modular functions
- Building readable and maintainable C programs

🌬 **Possible Enhancements**

- Incorporate accurate calendar logic (e.g., 31-day months and leap years)
- Add interactive menu for user-selected time zones
- Extend support with config files or time APIs (e.g., NTP)
- Develop a GUI using a graphics library or terminal-based interface

📪 **Contact**

Feel free to reach out for suggestions, collaborations, or academic discussion:
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