Project Documentation: Digital Clock Application

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1. Introduction

A command-line program written in C is called the Digital Clock Application. It offers a number of timekeeping options, such as showing the time, setting alarms, starting a stopwatch, and starting a timer. The software makes use of the time.h library to get system time and carry out actions involving time.

2. Objective

The goal of this project is to develop a flexible clock and timer application that enables users to easily complete time-related tasks. Users should be able to engage with the program's various capabilities through an easy-to-use interface.

3. Requirements

The Clock and Timer Application has the following requirements:

- The program must display the current time, including hours, minutes, and seconds.
- Users should be able to toggle the display of the current date.
- The application should allow users to set an alarm at a specific time.
- A stopwatch feature should be implemented, displaying the elapsed time until it is stopped by the user.
- Users should be able to start a timer by specifying a duration, and the program will countdown until the time is up.
- A snooze option must be provided to allow users to temporarily silence the alarm for a specific duration.
- The program should have an intuitive menu-driven interface for users to interact with different functionalities.
- Error handling should be implemented to handle invalid inputs or exceptional scenarios gracefully.
- The application should be compatible with systems supporting C programming language and the required libraries.

4. Functionality

The following features are available with the Digital Clock Application:

- Showing the current time: The application displays the time in the format HH:MM:SS after retrieving the system's current time.
- Users have the option of showing or hiding the current date in the format DD:MM:YYYY.
- Alarm clock: Users have the option of setting an alarm for a specified hour and minute. An alarm message is shown as soon as the alarm time and system time coincide.
- Stopwatch: A stopwatch feature is implemented in the program, which begins counting the seconds since the user last stopped it.
- Timer: A timer can be started by the user by entering a period in seconds. The countdown will begin after the stated time has passed.
- Snooze: Users can delay the alarm for a predetermined amount of time. Once the time allotted for snoozing has passed, the application will sound the alarm once more.

5. Usage

To use the Digital Clock Application, follow these steps:

1. Compile the source code using a C compiler.
2. Run the compiled executable.
3. The program will display the current time and menu options.
4. Choose an option by entering the corresponding number and pressing Enter.
5. Follow the on-screen prompts to perform different tasks, such as setting an alarm or starting a stopwatch.
6. Use the provided features as needed.
7. To exit the program, select the "Exit" option from the menu.

6. Dependencies

The Digital Clock Application has the following dependencies:

- Standard C libraries: **stdio.h**, **time.h**, **stdbool.h**, **stdlib.h**, **unistd.h**

7. Installation

To install and run the Digital Clock Application, perform the following steps:

1. Clone the repository or download the source code files.
2. Ensure you have a C compiler installed on your system.
3. Compile the source code using the C compiler. For example:

8. Contributing

The Clock and Timer Application is open to suggestions. Please share any problems you run into or recommendations for enhancements using the project's repository.

9. License

The MIT License governs the release of the Digital Clock Application. As long as you abide by the license terms, you are free to alter and distribute the code.

This project documentation gives a general overview of the Digital Clock Application's goals, needs, features, and usage guidelines. Dependencies, installation procedures, contribution policies, and license details are also covered. Feel free to change this template to suit the needs of your particular project.