Vit Bhopal university

Vityarthi project

Report on Pomodoro clock

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Branch : Ai and Ml

Subject : introduction to problem solving (python)

Subject code : CSE1021

Slot : A11+A12+A13

Problem Statement:

The goal is to develop a Pomodoro clock application in Python that helps users to manage their work and break intervals effectively . it is the project based on built in modules such as datetime time and winsound that gives a countdown timer a responsive beep alarming.

Functional Requirements:

- Start and stop a 25-minute work timer.
- Automatically switch between work and break intervals (short and long breaks).
- Play a sound alert at the end of each interval.
- Display remaining time in minutes and seconds.
- Allow resetting the timer.

Non-functional Requirements:

- Simple and intuitive coding interface .
- Used a minimal external dependencies and only built-in modules.
- Run on Windows OS (due to winsound module).
- Reliable and accurate timer countdown.
- Responsive sound alerts at fixed interval.

System Architecture:

- Timer module managing countdown logic using datetime and time.
- Sound module triggering audible alerts using winsound.
- Main control loop handling user input and switching between states (work, break, reset).
- Console output module for displaying timer and status updates.

Design Decisions & Rationale:

- Used built-in datetime and time modules for accurate time and date .
- Choosed a built in winsound module which provide beep sound and set frequency.
- Prepared a simple structure of code without any complex terms and theory.
- The project has a future scalablity and has a good scope

Implementation Details:

- I have Used a while loops and time module statement time.sleep(1) for countdown.
- Played Beep sounds with winsound at interval end.
- Printed countdown timer to the program updating every second.
- You should handle the timer and beep management at proper time duration.

Screenshots / Results:

- Screenshot of terminal showing countdown timer with work and break session respectively with time .
- Sound alerts are coming at regular interval .
- Date and time of the clock when starts and ends are coming properly.

Testing Approach:

- I have tested Manually by running multiple Pomodoro cycles.
- I have Verified timer accuracy with a stopwatch.
- I have ensured sound alerts at correct times.

Challenges Faced:

- Timing accuracy and ensuring timer runs smoothly without lag.
- Managing timing and sound playback without using UI.
- Ensuring winsound compatibility in the project

Learnings & Key Takeaways:

- Gained practical experience with Python's datetime, time, and winsound modules.
- Understood basic timer logic and state management during program .
- Learned importance of designing project for future projects .
- During the project Appreciated the value of simple productivity tools.

References :

- Vityarthi flipped course
- first python by paul berry

End of the report