Stop Watch

Done by :

230380720005 – Ashwini Dhumal.
23038072008 – Vaibhav Patil.

Decomposition:

1. Design and create a user interface with **buttons for start, stop, and reset**, as well as a display area for showing the elapsed time.
2. Implement a **timer mechanism** that starts when the user clicks the start button, updates the elapsed time continuously, and stops when the user clicks the stop button.
3. **Capture user input** by detecting button clicks and triggering the **corresponding actions**, such as starting, stopping, or resetting the timer.
4. **Continuously update** the displayed elapsed time on the user interface as the timer progresses, ensuring appropriate formatting and presentation.

Pattern Recognition:

1. Recognize the pattern of **starting** and **stopping** a timer to measure elapsed time.
2. Identify the need to continuously **update the displayed elapsed time** based on the timer's current value.
3. Observe the pattern of **resetting the timer to zero** and **starting the measurement again**.

Abstraction:

1. Create a stopwatch program that allows users **to measure and display elapsed time**.
2. **Provide** a user interface with **intuitive buttons** for starting, stopping, and resetting the timer.
3. **Display** the **elapsed time** on the user interface, ensuring it is formatted appropriately for easy readability.

Flowchart:

Start
    Display Stopwatch Interface
    Initialize Elapsed Time to Zero
    Display Elapsed Time
    While Start Button is not Pressed
    Wait for User Interaction
Start Timer
    While Stop Button is not Pressed
    Update Elapsed Time
    Display Elapsed Time
    Wait for User Interaction
Stop Timer
    If Reset Button is Pressed
    Reset Elapsed Time to Zero
    Display Elapsed Time
End

Algorithm:

1. Display the stopwatch interface.
2. Initialize the elapsed time variable to zero.
3. Display the elapsed time on the stopwatch interface.
4. Wait for the user to press the start button.
5. Start the timer.
6. Enter a loop until the stop button is pressed:
   - Update the elapsed time by a small unit (e.g., milliseconds).
   - Display the updated elapsed time on the stopwatch interface.
   - Wait for the user to press the stop button.
7. Stop the timer.
8. If the user presses the reset button:
   - Reset the elapsed time variable to zero.
   - Display the elapsed time on the stopwatch interface.
9. End the program.