Accelerometer

Gyro

Obstacle Sensor

Manual Stop

CPU

Brake

Steering

From the schematic given above, you are given the data of Accelerometer, Gyro and Obstacle Sensors for 1000000 samples.

Implement an optimized system to read & process all 3 sensors data in parallel along with Manual Stop button & steering inputs from keyboard, factoring in the below conditions,

1. Obstacle sensor data = 1, indicates an obstacle. Obstacle sensor data = 0, indicates no obstacle.
2. Manual Stop is fed through keyboard input “M”. When “M” is pressed, send signal to apply brake. Indicate brake applied by printing “BRAKE” on the terminal.
3. When obstacle is detected, indicate obstacle detection by printing “OBSTACLE DETECTED” on the terminal, along with respective accelerometer, gyro and timestamp info.
4. When both obstacle detected and Manual Stop is pressed, indicate by printing “STOPPED” on terminal and reset all data processing and start from first by reading first data.
5. Steering is fed via keys “W” (forward), “S” (Reverse), “A”(Left), “D”(Right). Listen to steering input and print the respective key’s action on the terminal. Example, print “Forward” when “W” is pressed.

Provide the following,

1. Complete C++ Source Code
2. Logs of running the full program
3. Time and Space Complexity Analysis for each part of the source code
4. Execution Latency