

INTELLIGENT SOUND POLLUTION MONITORING SYSTEM FOR INDUSTRIAL MACHINES

ABSTRACT:

Our project addresses the unnoticed rise in sound pollution from machine malfunctions in industrial automation. Using a Raspberry Pi Pico W and an analog sound sensor, our Intelligent Sound Pollution Monitoring System detects abnormal sound levels, alerting engineers. The system employs an LCD-equipped pager, buzzer, and vibration motor for a comprehensive response to faults. Through embedded C code and advanced hardware, our project aims to contribute to a quieter, safer, and more sustainable industrial environment.

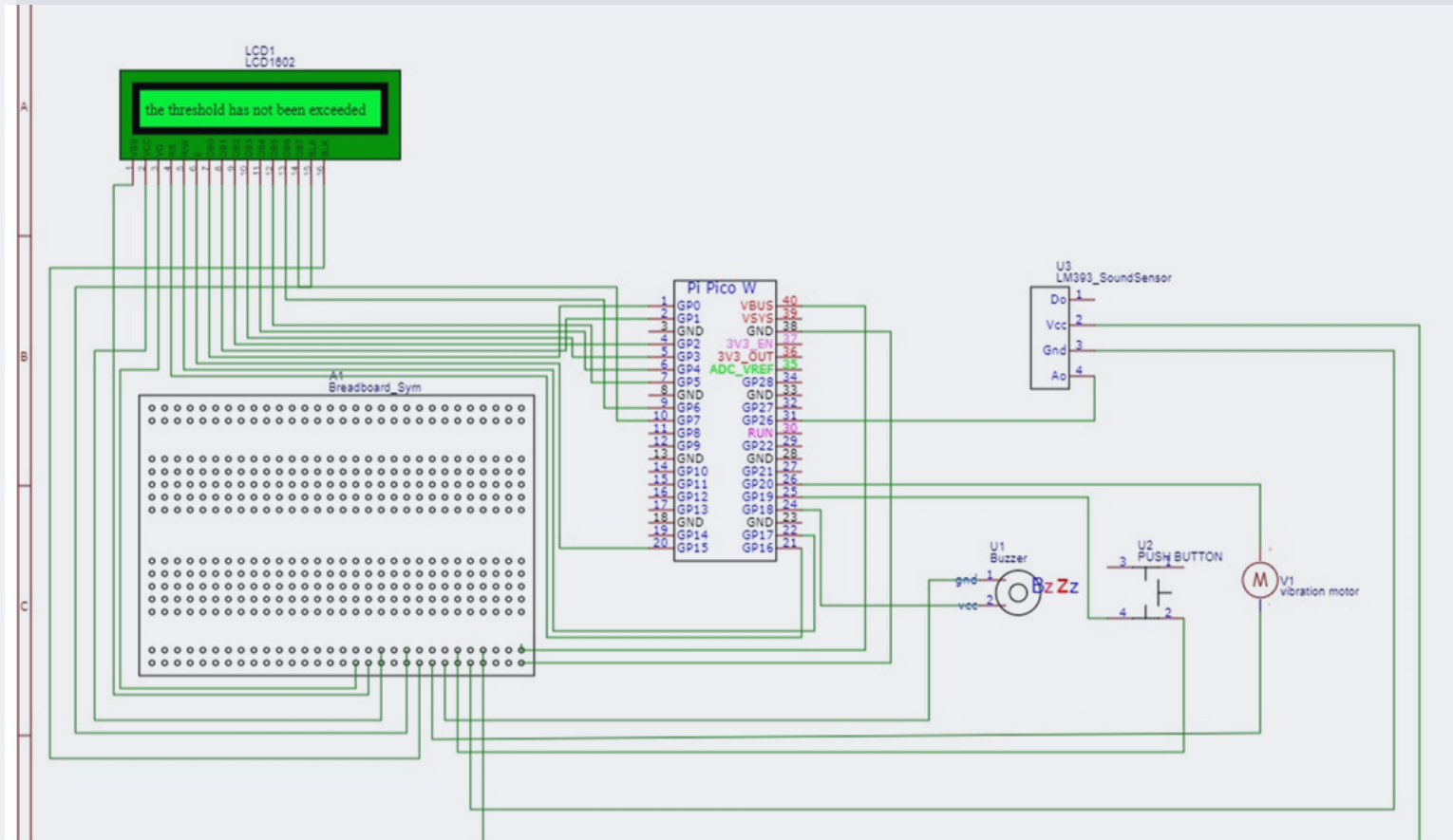
INTRODUCTION:

In the relentless pursuit of industrial efficiency, the impact of machine malfunctions on the environment often goes unnoticed. Unattended faults not only compromise the performance of machinery but can also contribute to rising sound pollution levels, posing a threat to both the working environment and surrounding communities. To address this issue, our project introduces an innovative solution— an Intelligent Sound Pollution Monitoring System powered by a Raspberry Pi Pico W.

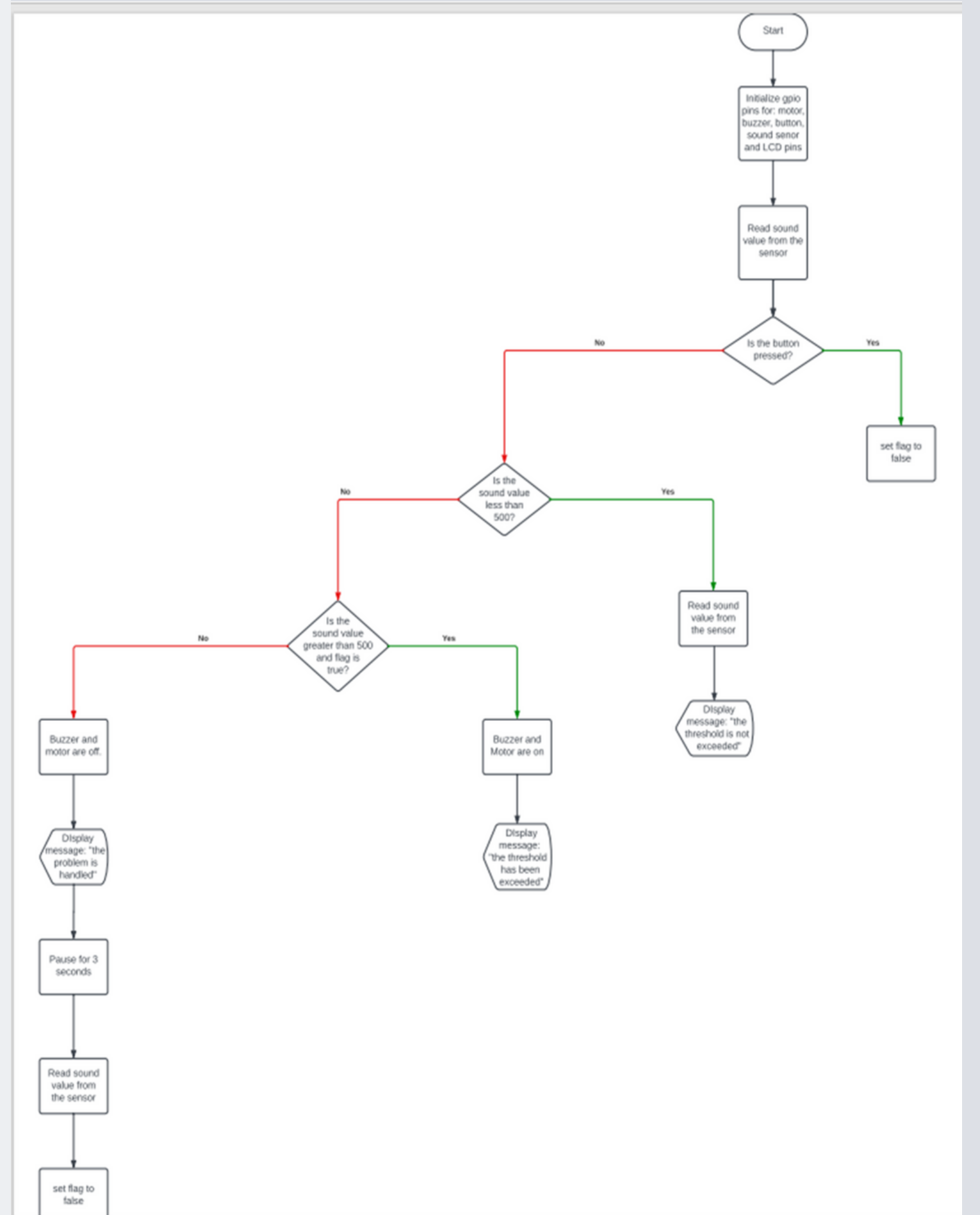
METHODOLOGY:

The hardware setup involves using an analog sound sensor to capture real-time sound data from industrial machines, connecting it along with a button to the Raspberry Pi Pico W for data acquisition and user interaction. Embedded C code on the Raspberry Pi Pico W analyzes sound data, establishes baseline levels, and sets dynamic thresholds. The alert mechanism integrates a pager with an LCD screen for detailed fault information, a buzzer for audible alerts, and a vibration motor for tactile feedback. A button allows manual stopping of alerts. A communication protocol ensures seamless information transfer, and an intuitive user interface on the LCD screen facilitates easy interpretation of fault data with user interaction capabilities.

WIRING DIAGRAM



CODE FLOW CHART



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