Alexandria University
Faculty of Engineering
Computer and Systems Engineering Dept.
CSE233: Computer Organization

Lab #6 Report

Debugger

Names:

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1. Problem Statement

This lab aims to help students practice hardware debugging using Virtual Micro by interfacing a latch button with the Arduino built-in LED. The LED should change its state only when the button state changes. A breakpoint must be placed at the line that increments a counter, and whenever the button toggles, the program should pause and print the LED state.

2. Code "GitHub Rebo"

GitHub:
https://github.com/Mohamed-Abdalla-Yassen/Computer-Organization-Projects.git
Arduino web editor:
https://app.arduino.cc/sketches/7b2f736a-124e-425d-b2a9-e6aa7f08c19b?view-mode=preview

3. Video "YouTube"

https://youtu.be/XjtX-Zz5YYM?si=3tLn19s8tcC1Fa15

4. Description & Challenges

This lab introduces the use of Virtual Micro for debugging an Arduino sketch by monitoring button state transitions, setting breakpoints, and observing variables during execution. The task requires understanding latch behavior, handling the effect of the initial button state, managing long loop delays, and ensuring correct Serial output when the program halts. It also involves detecting state changes accurately, addressing potential input fluctuations, and using the debugger to follow program flow, providing practical exposure to software-based debugging in embedded systems.