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SIE 370 – Embedded Computer Systems

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Lab 2

Lab Report

1. Task Prototyping (Tinkercad Simulation)

Prototyping Task 1 – Brahms’s Lullaby Circuit ran very well in my simulated Tinkercad circuit after slightly modifying the code by copying in the note definitions from the pitches.h header file into the code environment in Tinkercad. The program ran every line correctly and the speaker outputted the correct lullaby sound. Prototyping Task 2 – Piezo Alarm Circuit also ran well without interruption with the provided code and slight modifications to reflect the corresponding Tinkercad circuit. Both Task 1 – Brahms’s Lullaby Circuit and Task 2 – Piezo Alarm Circuit pass the Acceptance Tests.

2. Task Experiment (Physical Arduino)

Lab Task 3 – Brahms’s Lullaby Circuit was straightforward in setting up. I reused the code from my Tinkercad simulation circuit. However, this time I used the #include directive in my Arduino sketch and the code then referenced the pitches.h header file in the Lab 2 file directory. After this slight code modification, the program ran and outputted the expected sound without interruption. Lab Task 4 – Piezo Alarm Circuit was straightforward in setting up as well and did not require much modification. The code was also copied in from Tinkercad and the only modification required for the task assignment to be completed successfully was the additional shutoffAlarm() function. To successfully implement this function into the code, I modified the activateAlarm() function by inverting all variable definitions to enable a shut off when the current state changed due to a push button press. Both Task 3 – Brahms’s Lullaby Circuit and Task 4 – Piezo Alarm Circuit pass the Acceptance Tests.