

Lab 3 Report

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4 October 2022

An Aggie does not lie, cheat or steal.
Nor does an Aggie tolerate those who do.

Problem 1

```
[lai.huy]@compute ~/CSCE 312/Lab 3> (16:03:47 09/20/22)
:: make
rm -f *.out
gcc timing_framework.c -o main.out -lrt
./main.out
input signal: 0
output signal: 0
Timer Resolution = 1 nanoseconds
Calibrartion time = 0 seconds and 6420 nanoseconds
The measured code took 0 seconds and 443 nano seconds to run
```

Figure 1: Solution 1 Runtime

```
[lai.huy]@compute ~/CSCE 312/Lab 3> (16:06:56 09/20/22)
:: make
rm -f *.out
gcc timing_framework.c -o main.out -lrt
./main.out
input signal: 0
output signal: 0
Timer Resolution = 1 nanoseconds
Calibrartion time = 0 seconds and 4700 nanoseconds
The measured code took 0 seconds and 3897 nano seconds to run
```

Figure 2: Solution 2 Runtime

```
[lai.huy]@compute ~/CSCE 312/Lab 3> (16:09:11 09/20/22)
:: make
rm -f *.out
gcc timing_framework.c -o main.out -lrt
./main.out
input signal: 0
output signal: 0
Timer Resolution = 1 nanoseconds
Calibrartion time = 0 seconds and 6100 nanoseconds
The measured code took 0 seconds and 847 nano seconds to run
```

Figure 3: Personal Solution Runtime

In general, switch case is a more efficient in comparison to if else statements. However this only applies if the number if cases are small and involve comparison to integer types.

Optimization of my solution should involve the addition of switch case statement as they offer more efficiency.

Problem 2

In the context of electro-mechanical switches, SPST means Single Pole Single Throw and NO means Normally Open.

[Logisim File](#)

Problem 3

Assuming when the I/O Enable switch is off, the circuit maintains its current state, the timing diagram is as follows.

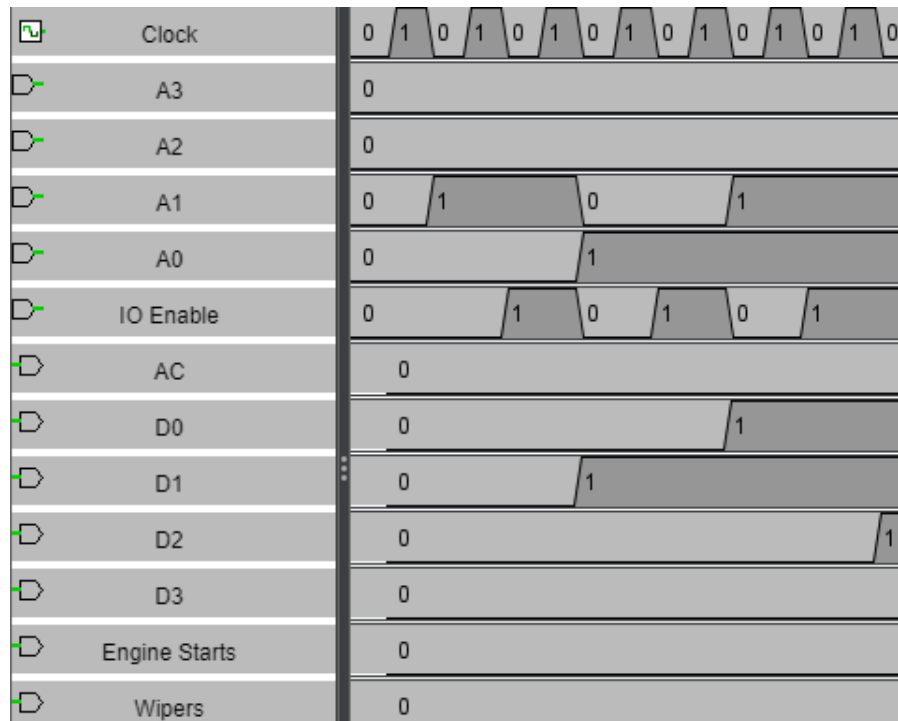


Figure 4: Timing Diagram

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