Jiovany Soliman [Student ID]

Chloe’ Miller 2031648

EE/CSE 371 Lab 1 Report: Parking Lot Occupancy Counter

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**Design Procedure**

For this Parking Lot Occupancy Counter system, we first decided to create a block diagram of the overall system according to the lab specifications (Fig. 1). By creating a block diagram, we were able to see how the modules were connected and what inputs and outputs were required for each, allowing us to split up the lab work effectively.

**A diagram of a car wiring

Description automatically generated**

***Figure 1:*** *Block diagram of overall parking lot occupancy system.*

The most important feature of the car detection module was its ability to detect two specific sequences from the outer and inner photosensors used to track cars entering and exiting the parking lot. An equally important feature of this module was its ability to disregard all other sequences from the photosensors, such as the sequence for pedestrians passing through. If an entering or exiting sequence was identified, the car detection module needed to signal that a car had either entered or exited the parking lot, or else the signals needed to remain unaffected.

We used a Moore machine to design the car detection module (Fig. 2). Although Moore machines react slower to inputs than Mealy machines, the parking lot occupancy system is assumed to be a slow system in which the inputs are not changing rapidly. Additionally, Moore machines are much easier to design, which was extremely advantageous when trying to design an FSM that can track two sequences while ignoring all others. Fig. 2 shows that 8 states were required to enable the Moore machine to track the enter and exit sequences, as well as restart the sequence tracking when any inputs did not match so that the enter and exit signals remained unaffected.

**A diagram of a diagram

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***Figure 2:*** *Moore machine state diagram of the car detection system.*

One of the most important features of the car counter module was…

[insert FSM or helpful code for car counter if you have it]

[insert figure description]

**Task #1**

**Task #2**

**Task #3**

**Tester Module**

**Overall System**

**Results**

**DE1\_SOC**

**Flow Summary**

**Experience Report**