Princess Nourah Bint Abdulrahman University

College of Computer and Information Sciences

Computer Sciences Department

Course CS 207 T

Computer Architecture

PROJECT B

Second Semester, 2022

Design a Car Parking System Using Verilog Project

This project aims to implement a car park system. In the entrance of the parking, there is a sensor which is activated to detect a vehicle coming. Once the sensor is active, a password is requested to open the gate. If the password is entered correctly, the gate will open for the vehicle. If the password is entered incorrectly, the gate is still locked. When the current vehicle entered the car park, the exit sensor will detect it entered and the door will be locked. After that, another vehicle can come and it requires entering passwords to enter the park.

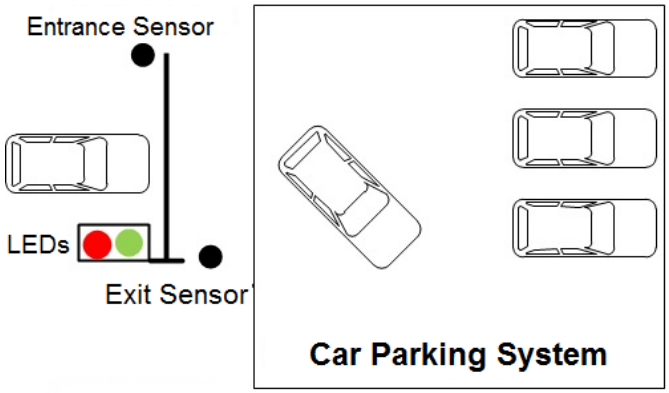

Figure 1: Car Parking System.

To solve the project problem do the following:

- Define the project aim and write the problem solution.
- Define all inputs and corresponding outputs.
- In this design four inputs signal (lock signal , reset signal, Entrance Sensor, and Exit Sensor) and 2 bit input (password).
- In this design two output signaling LEDs (Green LED, Red LED) and two 7 bits output 7-segment Display
- Use Verilog testbenches to verify the code and hardware design.

Instructions:

Grading:

- 10 Marks for each student.
- (Oral discussion 3 Marks, Code 4 Marks, and report evaluation 3 Marks)

Submission Date:

- The due date is Monday 11 April, 11:00 pm.
- 1 Mark will be deducted for each day of delay.
- The oral discussion will be in your lab class time in week 12. In the case of absenteeism, your grade will be zero.

Submission Details:

- The project submission includes a softcopy and report.
- Each group cannot exceed 5 students.
- The project report should be submitted through the given link by your lab instructor.
- Submitting by email is not acceptable.
- You have to submit the project file and report only **ONE** time.
- Plagiarism is not acceptable. Copied answers will graded as **ZERO** for both the groups' students.

Workspace Content:

- The workspace should be submitted as a complete folder.
- The workspace should be in archive file format (.zip) or (.rar) with title: Your Section-Your Project letter-Your Group Number, for example: 4C1-B-GROUP1.
- Write your section, group number and name, ID, and email for each student in the code as comments.
- Each students should defined her coding part by adding comments at each code part.

Report content:

- The project report should be written as following:

Cover Page
Table of Contents
1. The Project Aim
2. The Problem Solution.
    - 2. 1. Inputs and Outputs
    - 2. 2. Solution code
    - 2. 3. Testbenches code
3. Snapshots of the Solution Design
    - 3. 1. The code
    - 3. 2. The diagram.
    - 3. 3. The simulation trace
4. References

- Write your section, group number and name, ID, and email for each student in the cover page.
- The file should be in word document format (.docx) or (.pdf) with title: **Your Section-Your Project letter-Your Group Number**, for example: 4C1-B-GROUP1.