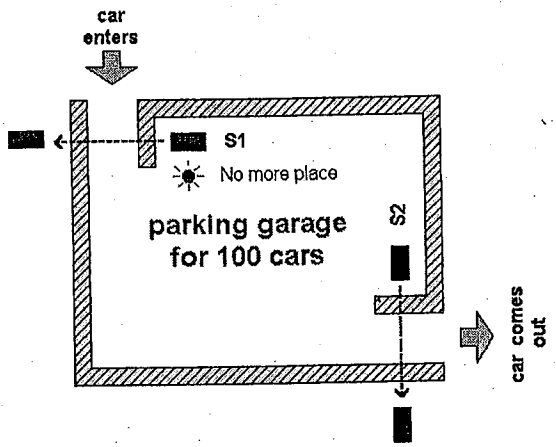
Uva Wellassa University, Sri Lanka
End Semester Examination – June/July 2010
SCT 372-1 Mini Project

Time: One (01) hour

Answer **all** questions

1.

You are required to design an automated parking garage that can control 100 cars at the maximum. Each time a car enters, the system automatically adds it to a total sum of other cars found in the garage. Each car that comes out will automatically be taken off. When 100 cars park, a signal will turn on signalizing that a garage is full and notifying other drivers not to enter because there is no space available. Outside of the garage there should be a display unit that displays number of cars parked inside the garage. Following figure shows the complete system.




i. Suggest a suitable sensor that can be used to detect cars entering or leaving. Give reasons for your selection.

(Marks 6)

ii. If you need to use a PIC16F877 micro-controller to count number of car passing through the sensor, explain how you can interface the above sensor to the micro-controller.

(Marks 6)

iii. Explain a micro-controller program for the above system using block diagram.

(Marks 8)

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iv. Discuss about the display unit that you are proposing to indicate number of cars occupied inside the garage. Give reasons for your selection.

(Marks 5)

v. If we want to charge vehicles owners Rs 10 for every 15 minutes of parking explain how you can automate the system to facilitate this new requirement.

(Marks 15)