Embedded Systems

Sheet 1

Introduction to Embedded Systems Programming

Q1:

Write embedded program that produces continuous pulses with duration of 2 seconds and duty cycle of 25%.

Q2:

Write embedded program that show a bouncing light between 4 LEDs connected to pins 4, 5, 6 and 7. The bouncing delay is 1 second.

Explanation: Bouncing light means that the light is moving between the LEDs in turn. At first it starts form left to right then go back from right to left and so on.

Q3:

Write embedded program that produce the prime values (1, 3, 5, 7…) through the serial communication. The program should send one value each second. The program should stop after producing 1000 value.

Q4:

Write embedded program that take from serial port two numbers (N and D) then produce a set of pulses equals to N. The pulses delay is D seconds and the duty cycle is 50%. If nothing sent form the serial port the system should do nothing. Also write a computer program that sends those values. Know that the serial communication should works in text mode and you must use "\n" to terminate the text messages.

Q6:

Write embedded program that calculate the square root of any given float value. The program should receive the values using serial communication. Also, write the computer program that sends this value and then prints the output.

Q7 (Exercise):

Write embedded program that takes following text commands and produce the appropriate result.

"sum 7.63 2.76 4.7 8.2 3.4 6.7 5.4 3.2\n"

"mul 7.63 2.76 4.7 8.2 3.4 6.7 5.4 3.2\n"

"average 7.63 2.76 4.7 8.2 3.4 6.7 5.4 3.2\n"