EE4380 Microprocessor Design Project

Lab –1 Introduction to 8051 Programming

1. Compile and state the contents each ROM location for the following program
   (Goal: Usage of DB and ORG. How to include constants in program. How to use constants as a means of storing data)

```
        Org 200H
Dat1:   db “Hello”
Dat2:   db “World”
Dat3:   db 22, 56H, 10001100B, 32, 0F6H
```

2. Write a simple program to add a value 55H, five times
   (Goal: Show assembly program structure)
3. Show the stack, register and SP contents for each line of the following program
   (Goal: Stack concepts in 8051, simple Register transfer instructions and usage)

```
Org 0
Mov R0, #66H
Mov R1, #7FH
Mov R7, #5DH
Push 0
Push 7
Push 3
Clr A
Mov R3, A
Mov R7, A
Pop 7
Pop 3
Pop 0
```

4. Write code to perform a nested loop for 1000,000 times (Hint: 1000,000 = 100 *100 * 100)
   (Goal: conditional jumps, implementing for (;;){}, while (){} and do{}while() loops)
5. Write a delay routine to produce a variable delay in increments of 0.1seconds. The number of such increments is to be passed via register R0. Assume a cycle time of 1.085us.
   (Goal: Writing subroutines, argument passing, register protection, delay calculation)
6. Write a program to display the following sequence of numbers in the attached 7-segment LED display. 0,1,2,3,4,5,6,7,8,9. Assume the LED is memory mapped at the address 0xFFFFH
   (Goal: usage of memory mapped peripherals, delay loops, 7 seg displays)
7. Rewrite the program to display “hello USA”.
   (Goal: code memory usage)