EE 337: Advanced Assembly Programming
Lab 4

28^{th} August, 2019

This set of experiments has the following objectives:

- Familiarization with pt-51 board.
- Familiarization of breaking down a problem into subproblems and using subroutines to solve a problem.

1 Lab work

1.1 Problem: Read nibble and pack nibbles

Accept the most significant nibble and least significant nibble of a byte from the user, using 4 switches (P1.3 P1.0) and store the value to the location 4EH and 4FH. Also combine the numbers at 4EH and 4FH into a 8 bit number and store the result at 50H.(10 points)
readNibble:

```
; First configure P1.3-P1.0 as input
; Set pins P1.7-P1.4(LEDs) (indication that routine is ready to accept input)
; wait for 5 sec during which user can give input
; Clear pins P1.7-P1.4
; wait for one sec
; read the input on P1.3-P1.0 (nibble)
; show the read value on pins P1.7-P1.4(LEDs)
;wait for 5 sec
```

The following code is to verify that the user input is right

```
; USER sets all switches if I/P is verified.  (0FH)
; Follow the above-mentioned procedure to accept a nibble
; If the nibble reads 0FH, USER input is verified.
; Else, User has to input the nibble again.
RET
```

packNibbles:

```
; Combine the two nibbles and store the byte to 50H.
RET
```

main:

```
call readNibble; Read the MSB from the user and store in into locations 4EH
call readNibble; Read the LSB from the user and store in into locations 4FH
call packNibbles;
end
```

1.2 Check - Sum Display

Write a program to display checksum byte on LEDs. Accept 2 byte data from user using **readNibble** subroutine and display it's checksum byte on LED with delay of 2 sec, i.e., show upper nibble first then after 2 sec show the lower nibble. (5 points)