**Computer Organization and Assembly Language**

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| **Lab 05** | |
| **Topic** | * Arithmetic & Logical instructions * Selective bit setting/clearing/complimenting * Shifting and Rotations variations * Extended addition and subtraction |

**Part 2**

**Problem #1:**

**Let Ax=0xABCD;**

Set 2nd,7th,9th, 13th of ax.

then invert 1st , 5th, 8th, 10th and 14thbit of ax.

then clear the L.S.B and M.S.Bbit of ax.

**Problem #2:**

Write an assembly language program to count the number of ones in a higher byte of register ax. Let value in ax

**(Hint: You can use ROR,JMP,TEST,LOOP,JNZ)**

**Before execution**

AX=EF56

Counter =0

**After execution**

AX=EF56

Counter =7

**Problem #3:** Declare a byte type array of 10 element then write a program to count even and odd numbers in array and store even count in a variable “evenCount” and odd count in variable “oddCount”. Implement this problem **without updating** the actual values of the array elements.

Note: use logical operations….

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Value | 0xAB | 0x7E | 0xAA | 0xED | 0x4B | 0x44 | 0xAA | 0xCC | 0x15 | 0xEE |

**Problem #4:**

Write an assembly language program that will count the number of occurrences of 0x5 and save the result in variable “total”.

**Without Using CMP and SUB instructions.**

**Array1** (byte size)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Value | 0x5 | 0x9 | 0x5 | 0x4 | 0xA | 0xB | 0x5 | 0x9 |