



University of Central Punjab

Faculty of Information Technology

Computer Organization and Assembly Language (COAL)

Mid Term Exam Lab Spring 2021

Name:

Registration Number

Total Marks:50

Time Allowed: 2 hours

Instructions:

1. This is closed book and closed notes paper.
2. Only computer calculator is allowed.
3. Attempt all questions.
4. Submit the .asm files on UCP student portal of both questions with proper comments.

Good Luck

Question# 1:

20 marks

Write a program which sum those elements whose both nibbles (4bit) are not equal. Save the result in sum variable. Keep in view the following restrictions.

Let array of **byte** values with 10 elements.

Index	0	1	2	3	4	5	6	7	8	9
Value	0x45	0xAA	0xAB	0x64	0x44	0x51	0x99	0xCD	0xDC	0xDD

Let value 0x64 → 0110 0100 both nibbles are not same

Let value 0xAA → 1010 1010 both nibbles are same

Result should be

Sum: dw 0x034E

Note: your code must be generic.

Question # 2:

30 marks

Write a program which counts the **total number** of 1's and **total number** of 0's in the entire array. Save the result count for the **total number** of 1's in "Total_ones" variable and **total number** of 0's in "Total_zeros" variable. Assume array of byte size with 10 elements.

Use the following variables:

Sample_array: db 0x1B, 0xAA, 0x75, 0x63, 0x23, 0x00, 0x00, 0x01, 0x40, 0x9E

Total_ones: db 0

Total_zeros: db 0

Example:

Sample_array: db 0x1B, 0xAA, 0x75, 0x63, 0x23, 0x00, 0x00, 0x01, 0x40, 0x9E

Total_ones: db 27

Total_zeros: db 53

Note: Use Shifting or Rotation only and your code must be generic.