University of Central Punjab

Faculty of Information Technology
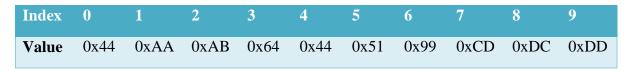
Computer Organization and Assembly Language (COAL)
Mid Term Exam Lab Fall 2021

Name: **Registration Number**

Total Marks:40   **Time Allowed: 1.5 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 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	0x44	0xAA	0xAB	0x64	0x44	0x51	0x99	0xCD	0xDC	0xDD

Let value 0x66→ 0110 0110 both nibbles are same

Let value 0xAB→ 1010 1011 both nibbles are not same

Result should be

Sum: dw 0x0264

Note: Your code must be generic.

Question # 2:   20 marks

Write a program which traverse an array of **word size** and check whether the given number is divisible by 4 or not. If it is divisible by 4 replace 1 at that position else place 0. Array contains 10 elements.
Note:
Use only bit manipulation instructions (Shifting, Rotation and bit masking) to check the condition.
Do not use Mul, Div instructions.
Example:
input: dw 4,13,16,21,24,30,32,40,48,8
After execution the output will be
input: dw 1,0,1,0,1,0,1,1,1,1

Note: Your code must be generic.