*National University of Computer and Emerging Sciences*

# Assignment # 2

# CS301 – COAL

# Fall 2021

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**Submission Guidelines:**

**Please read instructions carefully**

1. **Solve Assignment on A4 papers**
2. **Scan your Assignment (use CamScanner app)**
3. **Submit in pdf form on Google Classroom**
4. ***plagiarism is strictly prohibited***
5. **Assignment name should be your Section-Roll No.**
6. **Attempt all questions**
7. **Late submission is strictly not allowed**

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## Question No 1:

**Correct the errors in the following assembly code and explain why the original code is incorrect.**

```
.data
bVal BYTE 100
bVal2 BYTE ?
wVal WORD 2
dVal DWORD 5
.code
Mov 45, 45
Mov 45, ds
mov esi, wVal
mov eip, dVal
mov 25, bVal
mov bVal2, bVal
```

## Question No 2:

**Write an assembly code that exchanges values in an array and manipulates data in registers.**

```
.model small
.stack 100h
.data
DoubleArray dw 3,1,2
.code
Mov dx, @data
Mov ax, ds
Mov cx, DoubleArray
Xchg cx, [DoubleArray+4]
Mov dx, [DoubleArray+4]
Xchg dx, [DoubleArray+8]
Mov [DoubleArray+4], dx
Mov ah, 4ch
Int 21h
```

## Question No 3:

**Write assembly instructions to manipulate an array and perform addition operations. Identify errors if any.**

```
.data
myBytes BYTE 80h,66h,0A5h, 60
.code
Mov al, myBytes
Add al, [myBytes]
Add al, [myBytes+4]
Mov ax, myBytes
Add ax, [myBytes+1]
Add ax, [myBytes+2]
```

## Question No 4:

**Create an assembly program that calculates the sum of an array of bytes and stores the result in a 16-bit register. Use appropriate instructions and handle any errors that might occur.**

## Question No 5:

**Analyze the following assembly instructions for zero-extension operations and describe their functions:**

```
.code
Mov bx, 0A69Bh
Movzx eax, bx
movzx edx, bl
mov bl, 7Bh
movzx cx, bl
```

## Question No 6:

**Write assembly code that shifts bits of a 16-bit register by a certain number of positions. Use both logical and arithmetic shift instructions, and explain the difference between the two.**

## Question no 7:

**Create an assembly program that compares two values in memory and sets a flag based on the comparison result. Explain how the flags are affected by different comparisons.**