

Name: Muhammad Maiz Nadeem
Reg. ID: SP21-BCS-052

Question 1:

Calculate the sum using loops:

1+4+7...148

Answer:

```
1      ORG 100H
2
3      .DATA
4
5          TERM      DW 0
6          SUM        DW 0
7
8      .CODE
9
10         MOV TERM, 1
11         MOV SUM, 0
12         MOV AX, 0
13
14         L1: ADD AX, TERM
15             ADD TERM, 3
16             CMP TERM, 149
17             JL L1
18
19         MOV SUM, AX
20
21         RET
```

Question 2:

Implement the following algo for division by repeated subtraction:

- Initialize quotient to 0
- WHILE dividend > divisor, DO
 - Increment quotient
 - subtract divisor from dividend
 - END_ WHILE

Write a sequence of instructions to divide AX by BX, and put the quotient in CX.

Answer:

```

1      ORG 100H
2
3      .DATA
4
5          QUOTIENT DW 0
6          DIVISOR  DW 5
7          DIVIDEND DW 25
8
9      .CODE
10
11          MOV AX, DIVIDEND
12
13      L1: INC QUOTIENT
14          SUB AX, DIVISOR
15          CMP AX, DIVISOR
16          JGE L1
17
18          MOV CX, QUOTIENT
19
20      RET

```

Question 3:

Read a character from CX and if it's upper case alphabet then put AX=1 , if it's a lower case alphabet then put AX=-1 else put AX=0.

Answer:

```

1      ORG 100H
2
3      .DATA
4
5      .CODE
6

```

```
7      MOV CX, 'a'
8      MOV AX, 0
9
10     CMP CX, 41h
11     JL NOT_ALPHABET
12
13     CMP CX, 5Ah
14     JL UPPER
15
16     CMP CX, 61h
17     JL NOT_ALPHABET
18
19     CMP CX, 7Ah
20     JL LOWER
21
22     CMP CX, 7Ah
23     JG NOT_ALPHABET
24
25
26     NOT_ALPHABET:  MOV AX, 0
27                    JMP EXIT
28
29     UPPER:        MOV AX, 1
30                    JMP EXIT
31
32     LOWER:        MOV AX, -1
33
34     EXIT:         RET
```