Lab # 6

Task 1

Write a program which should take two operands (in decimal number system) and one operator from user and calculate the result and display it on console.

Valid operators for your program are:
+ Addition
- Subtraction
***** Multiplication
% Mod

After displaying the result your program should prompt for another expression until user enters 'x'.

Sample Execution

```
Enter operand 1: 12
Enter operand 2: 41
Enter operator: +
Answer is: 53
Enter operand 1: 6
Enter operand 2: 4
Enter operator: *
Answer is: 24
Enter operand 1: x
```

Task 2

Write an assembly language program which read an odd number from user using DecInput Procedure and a string of three characters. Then display the following pattern.

Sample output

i)

```
Enter an odd number: 11
Enter a three Characters String: abC
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * A B C * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
          * * * * * * * * * * *
```

Note: ***String Display in pattern is must be in upper case. And you are not allow to us AH,9 service to display the output you only use ah,2 service.***

Task 3: Reversing Digits Using Division and Multiplication

Write an 8086 assembly program to reverse the digits of a 16-bit number stored in AX. Store the reversed number in BX.

Hint:

Use DIV to extract each digit from the number by repeatedly dividing by 10.
Use MUL to build the reversed number by multiplying the current value of BX by 10 and adding the extracted digit.

Task 4 Detecting Prime Numbers

Write an 8086-assembly program that take a 16-bit decimal number from user and determines whether given number is prime. The logic should involve repeated division using the DIV instruction. If the number is prime.

Sample
i)
Enter number: 17
Number is prime

ii)
Enter number: 4536
Number is not prime

Task 5

write an 8086-assembly program which takes two fractions each represented by a numerator and a denominator and add them. Your program find the answer by calculating the LCM of denominator, adjusting numerators and doing appropriate addition operation. Finaly display the result

Sample

```
Enter numerator of first fraction: 1

Enter denominator of first fraction: 4

Enter numerator of second fraction: 2

Enter denominator of second fraction: 3

The result is: 11/12
```

[Hint]

Greatest common divisor [GCD] of two integers M and N, according to the following algorithm:

1. Divide M by N, getting quotient Q and remainder R.
2. If R=0, stop. N is the GCD of M and N.
3. If R<>0, replace M by N, N by R, and repeat step-1.

LCM =M x N / GCD