National University of Computer and Emerging Sciences

Assignment # 02

Programming Fundamentals

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Note: *The shapes must be drawn using nested loops only. You cannot simply **cout** the shapes. You can also use continue and break statements. You have to use all types of loop at least once.*

1. Write a program that asks the user to type the value of N and displays Fibonacci series up to N

i.e

If N=10

   0, 1, 1, 2, 3, 5, 8

2. Request the user to type numbers, each time printing its square, until the user enters -999.

3. Currency conversion. Write a program CurrencyConverter that asks the user to enter today's exchange rate between U.S. dollars and the euro. Then the program reads U.S. dollar values and converts each to euro values. Stop when the user enters -1.

   1 dollar=0.85

Here is a sample session:

How many euros is one dollar? 0.79447

Dollar value (-1 to quit): 100

100.00 dollar = 79.45 euro

Dollar value (-1 to quit): 20
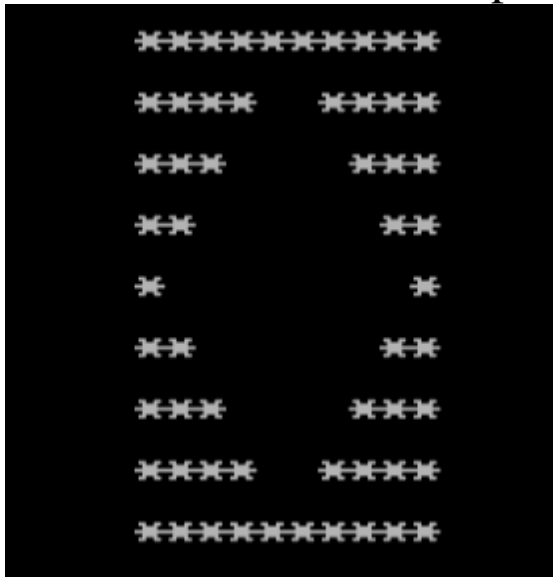
20.00 dollar = 15.89 euro
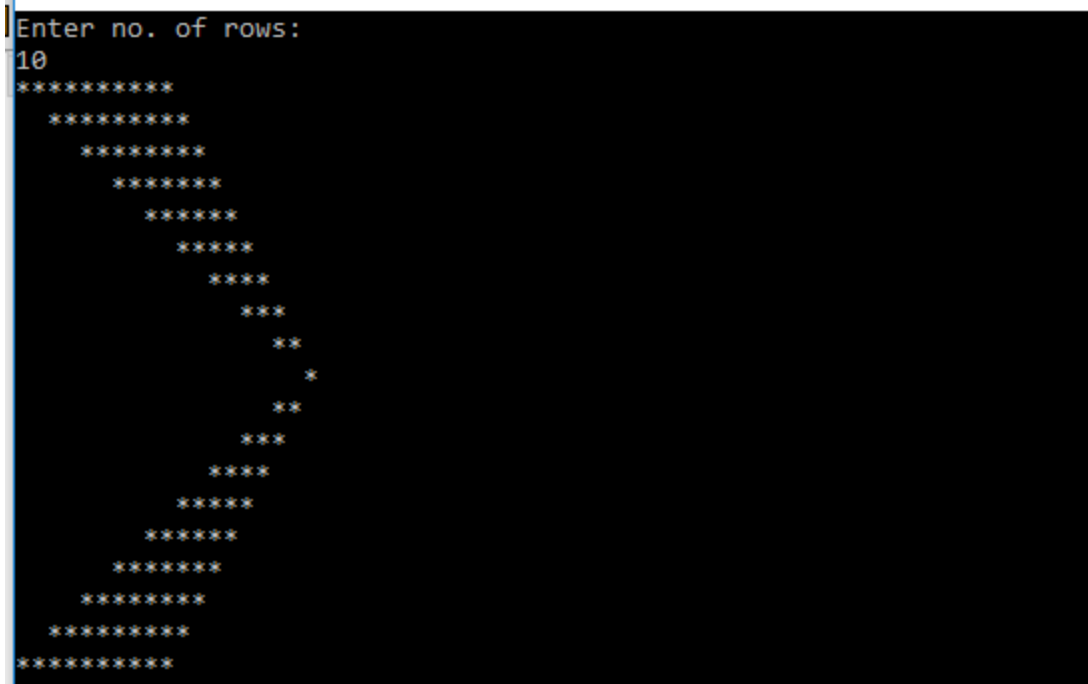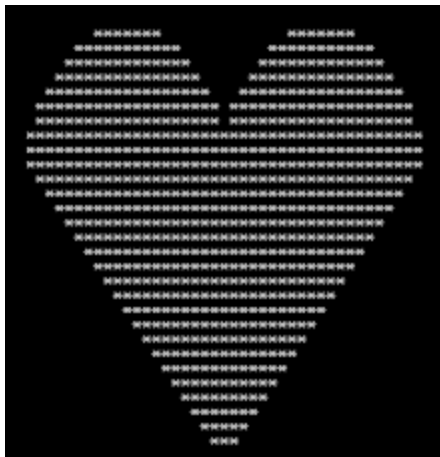
   Dollar value (-1 to quit): -1

4. Write a program that asks the user to enter an integer, then counts the digits and displays their total count at the end of the program.

If number=89121

OUTPUT: count=5

5. Write a menu driven program that asks the user if he/she wants to draw a heart and other shapes as given below, then depending on the option selected the program asks the user to enter the number of rows, base of the shape or other any value as shown in the outputs below.

```
Enter no. of rows:
10
**********
 *********
  ********
   *******
    ******
     *****
      ****
       ***
        **
         *
        **
       ***
      ****
     *****
    ******
   *******
  ********
 *********
**********
```

```
Enter Largest Alphabet Value(e.g C=3):7
ABCDEFGFEDCBA
ABCDEF FEDCBA
ABCDE   EDCBA
ABCD     DCBA
ABC       CBA
AB         BA
A           A

Process returned 0 (0x0)   execution time : 2.050 s
Press any key to continue.
```

```
No. of rows: 8
            1
         2   3
      4   5   6
   7   8   9  10
 11  12  13  14  15
 16  17  18  19  20  21
22  23  24  25  26  27  28
29  30  31  32  33  34  35  36
```

6. Factoring of integers. Write a program that asks the user for an integer and then prints out all its factors in increasing order. For example, when the user enters 150, the program should print:

2
3
5
5

7. Write a C++ code to check if a number is palindrome or not. (A number is a palindrome if its reverse is equal to the original number. i.e 343, 5667665 are palindrome)

8. Write a C++ program to print equilateral triangle or Pyramid star pattern series of n rows using for loop. How to print Pyramid star pattern series in C program. Logic to print pyramid star pattern series in C programming.

Example
Input
```
Input rows: 4
```
Output
```
   *
  ***
```

```
*****
*******
```

9. Write a C++ program to enter two numbers and perform all arithmetic operations by asking user what operation should be performed. (Note: Your program should handle exceptions.)

10.   Use while or do-while loop (Analyze the sequences first, you can ask user for the value till which he wants to print the series).

– To display the numbers 2, 4, 8, 16, 32, 64, …

– To display the numbers 9, 98, 997, …

– To display 1, 3, 2, 6, 3, 9, …

Which extra condition you have to check when using do-while loop for correct results?

11.1. C++ program to display integer from 1 to 10 except 6 and 9 using continue.

11.2. Terminate an infinite loop if the user enters 'a' using break statement.

12. Write a program that generates 100 random numbers between 0 and 1000. Print out the average and the maximum.

Bonus:

1. Terminate an infinite loop if the user enters 'a' using break statement.

2. Handle all the possible exceptions in your codes.

3. **Make the patterns move towards the right side of the screen.**

Guidelines

• A single violation of guideline will lead to Zero mark in your assignment.

- You will have maximum marks if you have done all of the tasks.
- You are encouraged to take help from Internet and books.
- Only ".doc" file should be uploaded on slate, Assignment would not be accepted via email, Facebook or USB flash drive etc.
- Do not zip your assignment it should be uploaded as individual file in following format. "RollNo_Assignment_No.doc"
- Paste all the required outputs, codes etc. in the single .doc file.
- Deadlines should be kept in mind no extension in assignment dates
- This is an individual assignment. PLAGARISM IS NOT ACCEPTABLE!
  - **Use given cover page format**
- Follow the instructions as it is, otherwise your assignment would not be accepted at all.

END ☺