



## ***Lab. (9&10)***

### ***Loops***

*Answer the following questions*

- 1) Write a C++ program that reads a set of integers and then prints the sum of the even numbers.
- 2) Write a C++ program to count and print all numbers from LOW to HIGH by steps of STEP. Test with LOW=0 and HIGH=100 and STEP=5.
- 3) Write a C++ program to find and print the largest of N (N can be any number) numbers. Read numbers one by one.
- 4) Suppose you want to create the following multiplication table using C++ program:

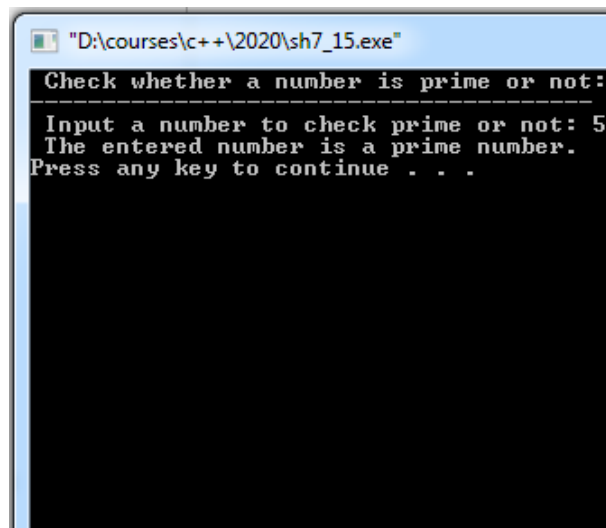
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50

5) Given a set of numbers, calculate their sum and the average value (mean) using C++

$$x = \frac{1}{n} \sum_{i=1}^n x_i$$

Where n is the number of numbers in the set

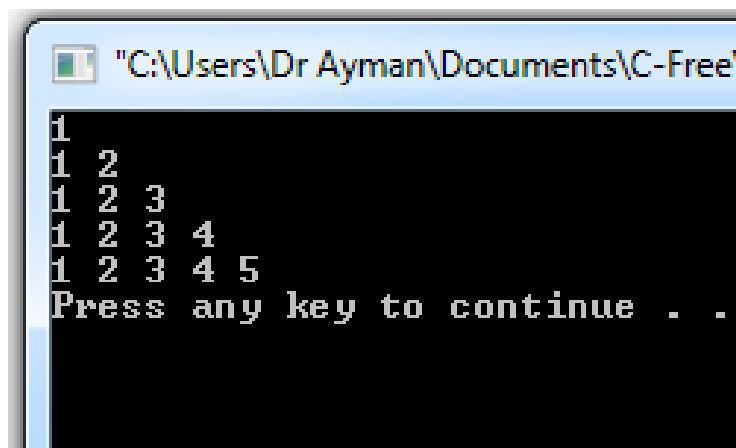
6) Write a C++ program that prompts the user to input a positive integer. It should then output a message indicating whether the number is a prime number



```
"D:\courses\c++\2020\sh7_15.exe"
Check whether a number is prime or not:
-----
Input a number to check prime or not: 5
The entered number is a prime number.
Press any key to continue . . .
```

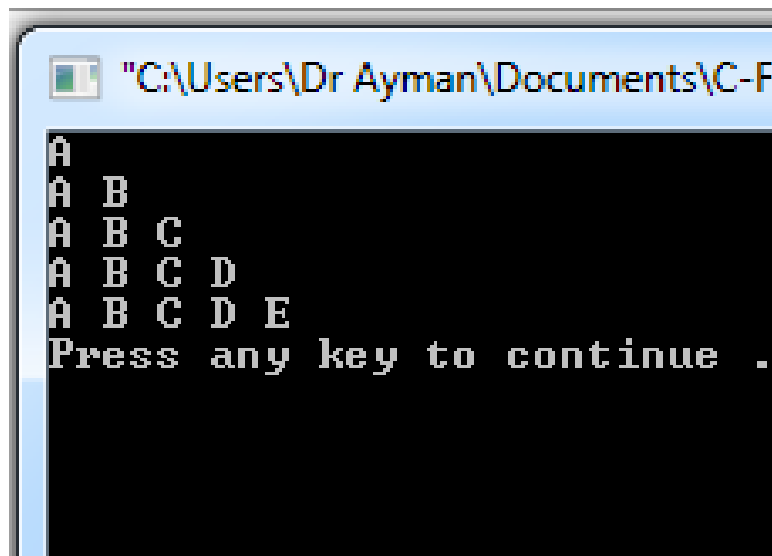
7) Write a C++ program to display integer from 1 to 15 except 7 and 13.

8) Write a C++ program to print half pyramid a using numbers.



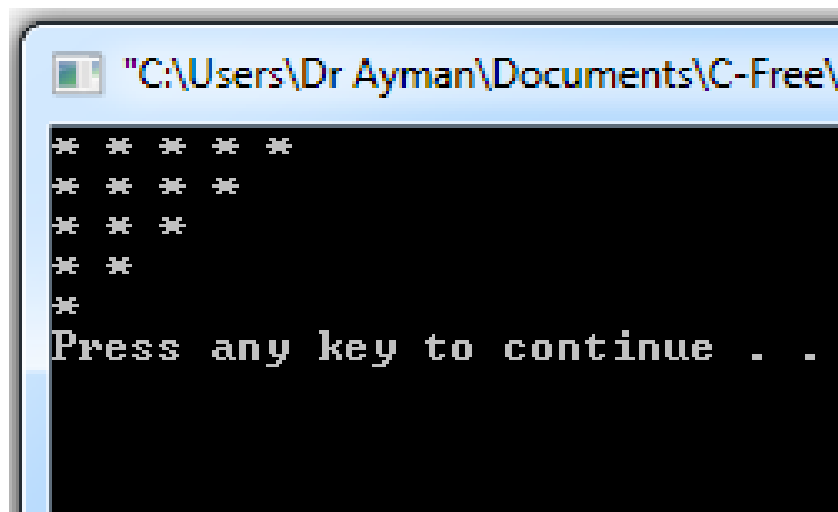
```
"C:\Users\Dr Ayman\Documents\C-Free\
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
Press any key to continue . .
```

9) Write a C++ program to print half pyramid using alphabets



```
"C:\Users\Dr Ayman\Documents\C-F
A
A B
A B C
A B C D
A B C D E
Press any key to continue .
```

10) Write a C++ program to print inverted half pyramid using \* and numbers



```
"C:\Users\Dr Ayman\Documents\C-Free\
** ** ** **
** ** **
** **
**
**
Press any key to continue . .
```

11) Write a program to calculate the sum of following series where n is input by user.

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{n}$$

12) Write a C ++ program to find power of a number using for loop.

13) Write a C ++ program to calculate factorial of a number.

- 14) Write a program in C++ to calculate the series  $(1) + (1+2) + (1+2+3) + (1+2+3+4) + \dots + (1+2+3+4+\dots+n)$ .

```

"D:\courses\c++\2020\sh7_10.exe"
enter number : 5
sum of 1=1
sum of 2=3
sum of 3=6
sum of 4=10
sum of 5=15
Press any key to continue
  
```

- 15) Write a program in C++ to display the cube of the number upto given an integer.

```

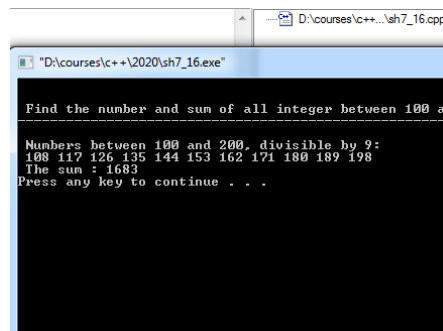
"D:\courses\c++\2020\sh7_14.exe"
Display the cube of the numbers upto a given integer:
Input the number of terms : 5
Number is : 1 and the cube of 1 is: 1
Number is : 2 and the cube of 2 is: 8
Number is : 3 and the cube of 3 is: 27
Number is : 4 and the cube of 4 is: 64
Number is : 5 and the cube of 5 is: 125
Press any key to continue . . .
  
```

- 16) Write a program in C++ to display the multiplication table vertically from 1 to n.

```

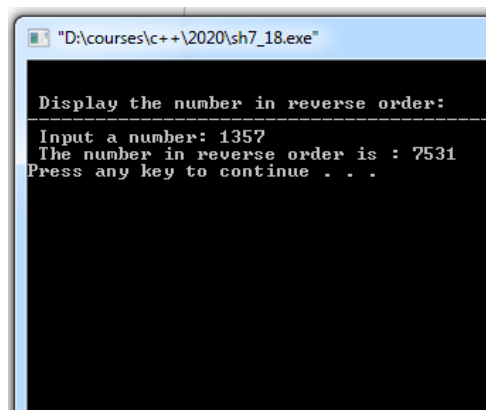
"D:\courses\c++\2020\sh7_6.exe"
Display the multipliaction table vertically from 1 to n:
Input the number upto 5: 5
Multiplication table from 1 to 5
1x1=1 2x1=2 3x1=3 4x1=4 5x1=5
1x2=2 2x2=4 3x2=6 4x2=8 5x2=10
1x3=3 2x3=6 3x3=9 4x3=12 5x3=15
1x4=4 2x4=8 3x4=12 4x4=16 5x4=20
1x5=5 2x5=10 3x5=15 4x5=20 5x5=25
1x6=6 2x6=12 3x6=18 4x6=24 5x6=30
1x7=7 2x7=14 3x7=21 4x7=28 5x7=35
1x8=8 2x8=16 3x8=24 4x8=32 5x8=40
1x9=9 2x9=18 3x9=27 4x9=36 5x9=45
1x10=10 2x10=20 3x10=30 4x10=40 5x10=50
Press any key to continue . . .
  
```

17) Write a program in C++ to find the number and sum of all integer between 100 and 200 which are divisible by 9



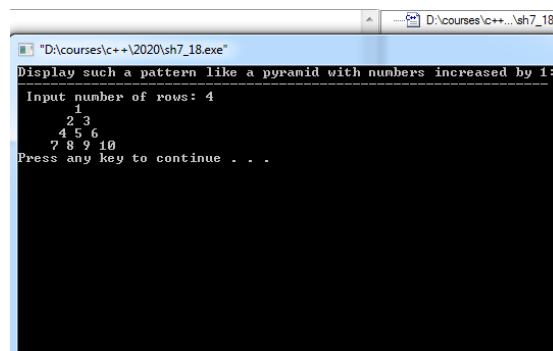
```
"D:\courses\c++\2020\sh7_16.exe"
Find the number and sum of all integer between 100 and 200 which are divisible by 9:
Numbers between 100 and 200, divisible by 9:
108 117 126 135 144 153 162 171 180 189 198
The sum : 1683
Press any key to continue . . .
```

18) Write a program in C++ to display the number in reverse order



```
"D:\courses\c++\2020\sh7_18.exe"
Display the number in reverse order:
Input a number: 1357
The number in reverse order is : 7531
Press any key to continue . . .
```

19) Write a program in C++ to make such a pattern like a pyramid with numbers increased by 1



```
"D:\courses\c++\2020\sh7_18.exe"
Display such a pattern like a pyramid with numbers increased by 1:
Input number of rows: 4
  1
 2 3
4 5 6
7 8 9 10
Press any key to continue . . .
```