

Programming Fundamentals

Take-home assessment#1

Dated: 17-3-2020

BS-SE'19, Morning

Total Marks: 30

Deadline: Friday, 20-3-2020 11:59 pm

Submission guidelines:

Email your .cpp file at natalia@pucit.edu.pk. Your email must have a following subject otherwise your assignment will be discarded.

“A#1”

e.g.

A#1: BSEF19M001 is **not a valid** subject

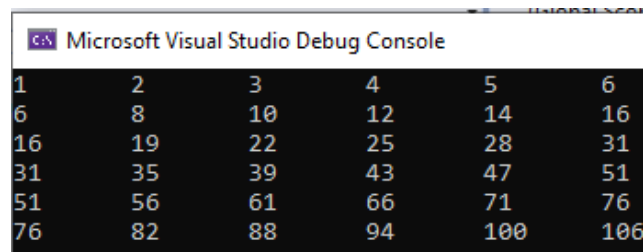
- The source code file should have the following naming convention: RollNumber.cpp. Files with invalid name will not be evaluated.
- Late submissions will not be entertained in any case

Task 1)

15 marks

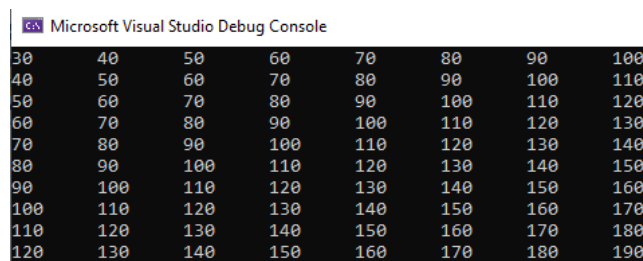
Write a program to print the following patterns. You must follow the following guidelines otherwise ZERO will be awarded.

- You **must not** use any conditional statement (if else or switch)
- You **must** use only two loops (nested)
- You might need to introduce variable(s) into your logic.



Microsoft Visual Studio Debug Console

1	2	3	4	5	6
6	8	10	12	14	16
16	19	22	25	28	31
31	35	39	43	47	51
51	56	61	66	71	76
76	82	88	94	100	106



Microsoft Visual Studio Debug Console

30	40	50	60	70	80	90	100
40	50	60	70	80	90	100	110
50	60	70	80	90	100	110	120
60	70	80	90	100	110	120	130
70	80	90	100	110	120	130	140
80	90	100	110	120	130	140	150
90	100	110	120	130	140	150	160
100	110	120	130	140	150	160	170
110	120	130	140	150	160	170	180
120	130	140	150	160	170	180	190

Microsoft Visual Studio Debug Console

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
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Note:

You are not allowed to use more than one variable or character in a single cout statement. E.g. you cannot do the following

```
Cout<<var1<<" "<<var1+1<<" "; OR
```

```
Cout<<var1<<" "<<var2<<" ";
```

But you can use variables and arithmetic expressions, like

```
Cout<<var1*var2<<" "; OR
```

```
Cout<<(var1*2)+var2<<" ";
```

Task 2)

15 marks

The Fibonacci numbers F_n are defined as follows. F_0 is 1, F_1 is 1, and

$$F_{i+2} = F_i + F_{i+1}$$

$i = 0, 1, 2, \dots$. In other words, each number is the sum of the previous two numbers. The first few Fibonacci numbers are 1, 1, 2, 3, 5, and 8. Your task is to find and print Fibonacci number for an input "n".