

PF Fall 2021 - Assignment 2

Submission Instructions:

- 1) You can email me (aamina.batool@lhr.nu.edu.pk) or your TA Salman (1181127@lhr.nu.edu.pk), if you have any query.
- 2) Plagiarism tool will be used to check if you have cheated off of internet or any other source. If someone's assignment is plagiarized, that student will be given F straight away so beware.
- 3) Make separate .cpp files for every question. Kindly name your .cpp files as Q1_21L-XXXX. (XXXX here would be replaced by your roll number).
- 4) Add cpp files of all the questions in a folder. Name your folder by including your roll number as 21L-XXXX-A2 (A2 here means assignment 2) and then compress the folder as .rar, and submit it.
- 5) And kindly note that write your roll no. in the format given above and not as L21-XXXX or 21-XXXX because it makes it hard to find the submission of specific student.
- 6) There is straight **20 Percent deduction** of marks for students who submit more than 1 folder.
- 7) If any student resubmits make sure they remove the folder they last submitted from drive, by clicking the cross that shows when you have attached a file at Submission folder.
- 8) You have to upload your assignments in google classroom. Don't forget to turn in after uploading your assignment.
- 9) The deadline for this assignment is **November 17, 2021, 11:59 pm**. No late submission will be accepted.

Question 1.

Write a C++ program with for loop to print this fencepost pattern. Such fencepost loops can be created by placing one post (i.e. |) outside your loop, and then alternating between wires (i.e. ==) and posts inside the loop.

If user inputs 4, then your output should be

|==|==|==|==|

If user inputs 5, then your output should be

|==|==|==|==|==|

Question 2.

Write a C++ program with for loop, which print following series and also calculates and prints sum of this series. Here **n** and **r** are integer numbers input by user.

$$1 + r + r_2 + r_3 + \dots + r_n$$

Question 3.

Write a C++ programs with for loop, which convert input number in base 10 decimal to base 2 binary.

Question 4.

Write a C++ programs with nested for loops, which print following shapes, size of shapes will vary based on input of user.

a. Hollow Rectangle Width and length.

if w=4, l=3

```
****
```

```
*  *
```

```
****
```

if W=3, l=4

```
***
```

```
*  *
```

```
*  *
```

```
***
```

if w=2, l=2

```
**
```

```
**
```

b. Hollow Triangle with Star Pattern

if input is 5

```
*****
```

```
*  *
```

```
*  *
```

```
*  *
```

```
*
```

if input is 4

```
****
```

```
*  *
```

```
*  *
```

```
*
```

c. 5 different Triangles 4 right angle and one equilateral.

if input length is 4 then output should be.

```
1
22
333
4444
4444
333
22
1
  1
  22
 333
4444
4444
 333
  22
  1
  1
 222
33333
4444444
```

Question 5.

Write a C++ program, which inputs numbers from user until he enters -1, and print all prime numbers input by user.

Question 6.

Ch5, Programming Exercise 2.

Question 7.

Ch5, Programming Exercises 8, 9, 10.