Newton School
Coding Club
Bhagwan Parshuram Institute of Technology

25 HARD

Day 1

Installation of Visual Studio Code

Link -: VS Code Installation for C++ in Windows | Step by step process explanation

Day 2

Intro To Programming - Flowcharts and Pseudocodes

Link -: Lecture 1: Intro to Programming & Flowcharts

Assignment -:

Make Flowcharts for the following -:

1. Input a year and find whether it is a leap year or not.
2. Take two numbers and print the sum of both.
3. Take a number as input and print the multiplication table for it.

Day 3

If - Else, While Loops (Flow Control)

Link -: Lecture 3: If-Else, While loop & Lots of Patterns (Part-1)

Assignment -:

Write C++ Programs for the following –:

1. Write a program to print whether a number is even or odd
2. Take in two numbers and an operator (+, -, *, /) and calculate the value. (Use if conditions)
3. Take 2 numbers as input and print the largest number.

To find out whether the given String is Palindrome or not.

FOLLOW FOR MORE

Day 4

Assignment -:

Write C++ Programs for the following –:

1. Area Of Circle C++ Program
2. Area Of Triangle
3. Area Of Rectangle Program
4. Area Of Isosceles Triangle
5. Volume Of Cylinder
6. Volume Of Pyramid

Day 5

Assignment -:

Write C++ Programs for the following –:

1. Addition Of Two Numbers
2. Fibonacci Series In C++
3. Input a number and print all the factors of that number (use loops).
4. Factorial Program In C++
5. Calculate Average Of N Numbers

Day 6

Assignment -:

Write C++ Programs for the following –:

1. Power of a Number
2. HCF Of Two Numbers Program
3. LCM Of Two Numbers
4. Check Leap Year Or Not
5. Sum Of Digits Of Number

Day 7

1. Switch Statements + Functions
2. Link -: Lecture 8: Switch Statement & Functions

Day 8

Assignment -:

1. Design a Calculator using switch statements

Day 9

Assignment -:

1. Define function to print the maximum and the minimum number respectively among three numbers entered by the user.
2. Define a function to find out whether a given number is even or odd.
3. A person is eligible to vote if his/her age is greater than or equal to 18. Define a function to find out if he/she is eligible to vote.
4. Write a program to print the sum of two numbers entered by user by defining your own function.

Day 10

Assignment -:

1. Define a function that returns the product of two numbers entered by user.
2. Write a program to print the circumference and area of a circle of radius entered by user by defining your own function.
3. Define a function to find out if a number is prime or not.
4. Write a function to find if a number is a palindrome or not. Take number as parameter.

Day 11 –:

i. Write a program that will ask the user to enter his/her marks (out of 100). Define a method that will display grades according to the marks entered as below:

Marks Grade
91-100 AA
81-90 AB
71-80 BB
61-70 BC
51-60 CD
41-50 DD
<=40 Fail

ii. Write a program to print the factorial of a number by defining a method named 'Factorial'. Factorial of any number n is represented by n! and is equal to 1 * 2 * 3 * .... * (n-1) *n. E.g.-

4! = 1 * 2 * 3 * 4 = 24
3! = 3 * 2 * 1 = 6
2! = 2 * 1 = 2
Also,
1! = 1
0! = 1

iii. Write a function that returns all prime numbers between two
iv. given numbers.

Write a function that returns the sum of first n natural numbers

Day 12

Pattern Problems

Link -: Lecture 4: Solving Pattern Questions (Part-2)

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Assignment -:

Print these patterns using loops:

- **Day 13**

1.
```
*****
*****
*****
*****
*****
```

2.
```
*
**
***
****
*****
```

3.
```
*****
****
***
**
*
```

4.
```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

5.
```
*
**
***
****
*****
****
***
**
*
```

6.
```
*
**
***
****
*****
```

7.
```
*****
****
***
**
*
```

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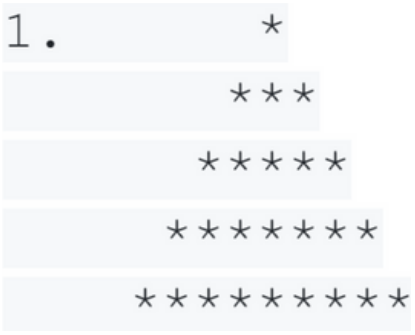
- **Day 14**

1.



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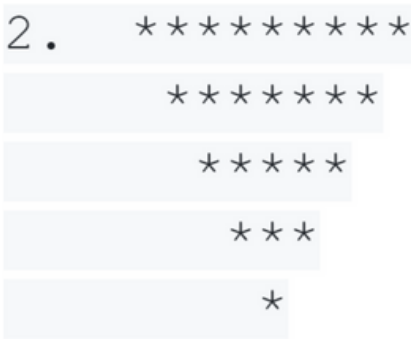
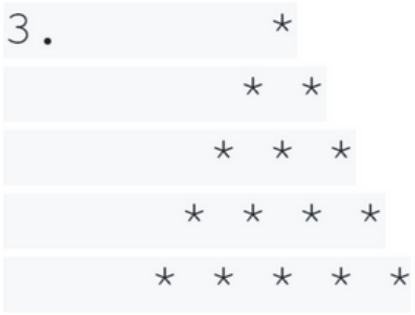


3.



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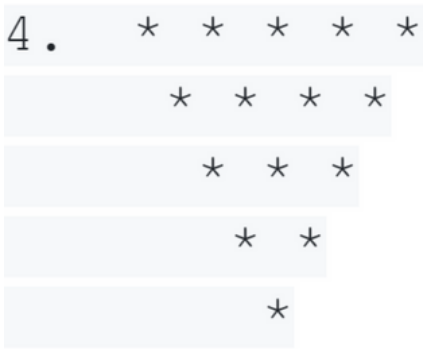

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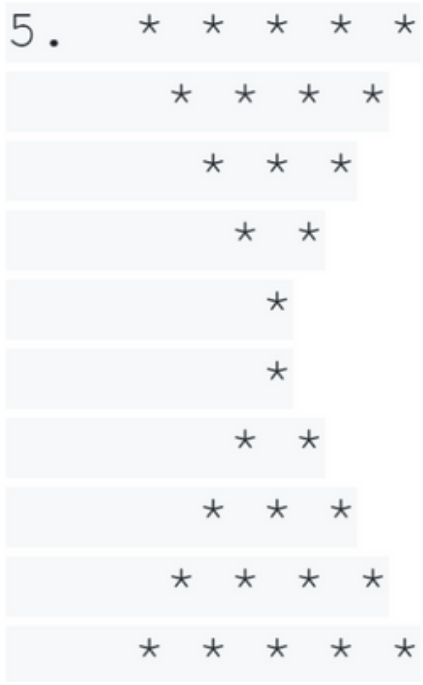

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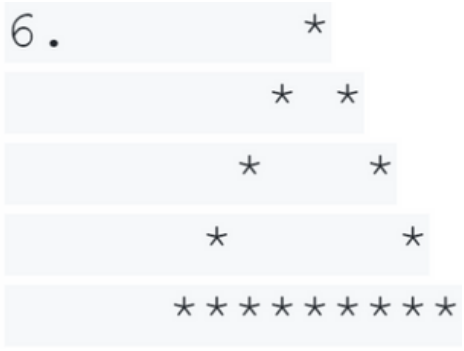

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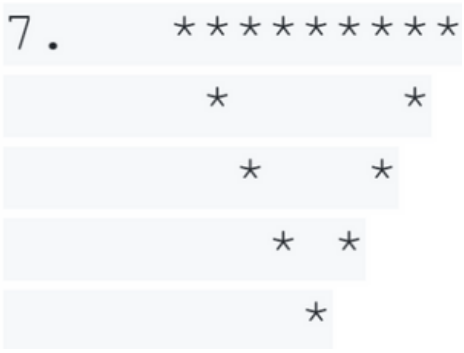

8.

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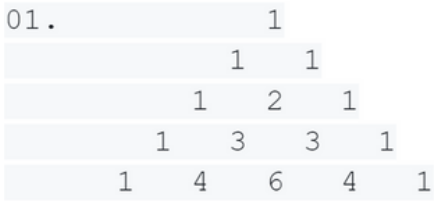
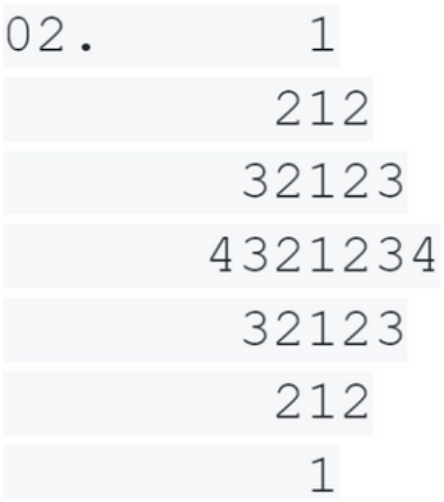
- **Day 15**

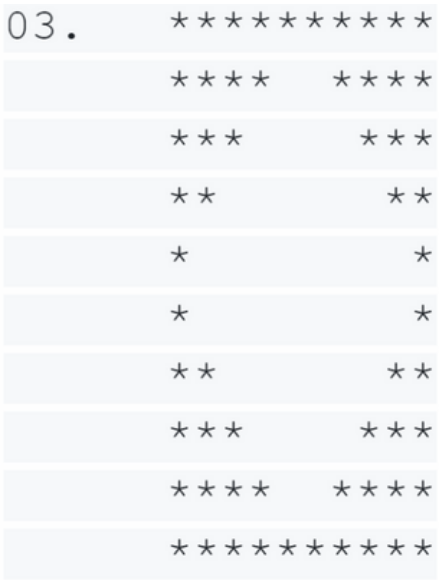
01.



02.



03.



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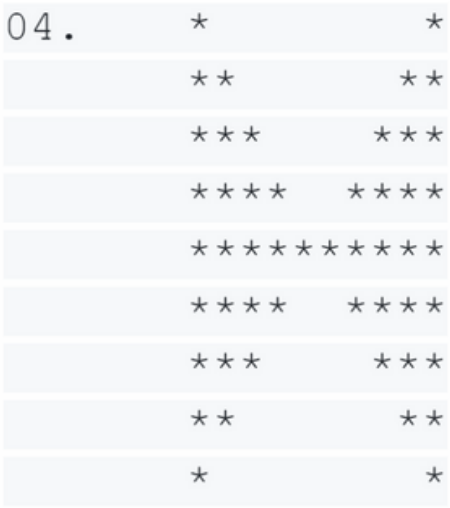

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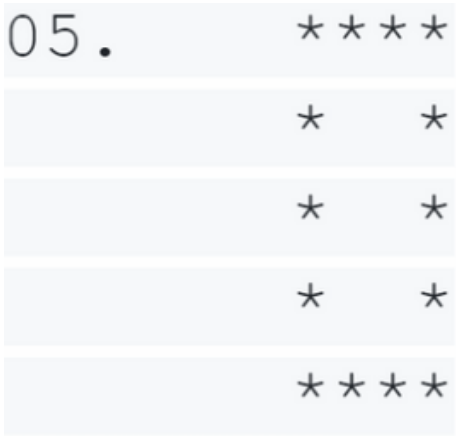

- **Day 16**

```
01.     1
        2  3
        4  5  6
        7  8  9  10
        11 12 13 14 15
```

```
02.       1
          0 1
          1 0 1
          0 1 0 1
          1 0 1 0 1
```

```
03.             1
              2 1 2
            3 2 1 2 3
          4 3 2 1 2 3 4
        5 4 3 2 1 2 3 4 5
```

```
04.       4 4 4 4 4 4 4
          4 3 3 3 3 3 4
          4 3 2 2 2 3 4
          4 3 2 1 2 3 4
          4 3 2 2 2 3 4
          4 3 3 3 3 3 4
          4 4 4 4 4 4 4
```

```
05.       E
          D E
          C D E
          B C D E
          A B C D E
```

```
06.     1 1 1 1 1 1
        2 2 2 2 2
        3 3 3 3
        4 4 4
        5 5
        6
```

```
07.       a
          B c
          D e F
          g H i J
          k L m N o
```

Day 17

Bitwise Operators, For Loops, Operator Precedence & Variable Scoping

Link -: Lecture 5: Bitwise Operators, For Loops, Operator Precedence & Variable Scoping

Assignment –:

1. Use all bitwise operators taught in the video and get familiar with it

Day 18 –:

Assignment -:

1. Check if an integer is even or odd
2. Detect if two integers have opposite signs or not.
3. Add 1 to an integer
4. Swap two numbers without using any third variable

Day 19 –:

Assignment -:

(Take k and number from the user)

1. Turn off k'th bit in a number.
2. Turn on k'th bit in a number.
3. Check if k'th bit is set for a number.
4.

Day 20

Introduction To Arrays in C++

Link -: Lecture 9: Introduction to Arrays in C++

Assignment:-

1. Build Array from Permutation
2. Concatenation of Array

Day 21

Assignment -:

1. Running Sum of 1d Array
2. Two Sum
3. Palindrome Number

Day 22

Introduction to 2-D Arrays in C++

Link -: Lecture 23: Introduction to 2D Arrays in C++ || LeetCode Questions

Assignment –:

1. Add to Array-Form of Integer
2. Maximum Population Year
3. Reshape the Matrix
4. Transpose Matrix

Day 23

1. Flipping an Image
2. Cells with Odd Values in a Matrix
3. Matrix Diagonal Sum
4. Find Numbers with Even Number of Digits

Day 24 –:

1. Spiral Matrix
2. Spiral Matrix II
3. Spiral Matrix III
4. Set Matrix Zeroes
5. Product of Array Except Self

Day 21

Assignment -:

1. Running Sum of 1d Array
2. Two Sum
3. Palindrome Number

Day 22

Introduction to 2-D Arrays in C++

Link -: Lecture 23: Introduction to 2D Arrays in C++ || LeetCode Questions

Assignment –:

1. Add to Array-Form of Integer
2. Maximum Population Year
3. Reshape the Matrix
4. Transpose Matrix

Day 23

1. Flipping an Image
2. Cells with Odd Values in a Matrix
3. Matrix Diagonal Sum
4. Find Numbers with Even Number of Digits

Day 24 –:

1. Spiral Matrix
2. Spiral Matrix II
3. Spiral Matrix III
4. Set Matrix Zeroes
5. Product of Array Except Self

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Day 25

1. Rotate Array
2. Sort Colors
3. House Robber
4. Find First and Last Position of Element in Sorted Array
5. Jump Game