VARIABLES & DATA TYPES QUESTIONS

Question 1 : In a program, input 3 numbers : A, B and C. You have to output the average of these 3 numbers.
(Hint : Average of N numbers is sum of those numbers divided by N)

Question 2: In a program, input the side of a square. You have to output the area of the square.
(Hint : area of a square is (side x side))

Question 3: Enter cost of 3 items from the user (using float data type) - a pencil, a pen and an eraser. You have to output the total cost of the items back to the user as their bill.
(Add on : You can also try adding 18% gst tax to the items in the bill as an advanced problem)

Question 4: What will be the type of result in the following Java code?

```
byte b = 4;
char c = 'a';
short s = 512;
int i = 1000;
float f = 3.14f;
double d = 99.9954;

result = (f * b) + (i % c) - (d * s);
```

(Hint : Look at the largest data type among these)

Question 5: **(Advanced)** Will the following statement give any error in Java?

int $ = 24;

Note - These questions are only to help you practice the concepts of this chapter. These are not designed to test your mathematical skills, just to understand logic building using Java.

shekharkrish13@gmail.com

OPERATORS QUESTIONS

Question : What will be the output of the following programs :

(i)

```
public class Test {
  public static void main(String[] args){
    int x = 2, y = 5;

    int exp1 = (x * y / x);
    int exp2 = (x * (y / x));

    System.out.print(exp1 + " , ");
    System.out.print(exp2);
  }
}
```

(ii)

```
public class Test {
  public static void main(String[] args) {
    int x = 200, y = 50, z = 100;
    if(x > y && y > z){
     System.out.println("Hello");
    }
   if(z > y && z < x){
     System.out.println("Java");
   }
   if((y+200) < x && (y+150) < z){
     System.out.println("Hello Java");
   }
  }
}
```

shekharkrish13@gmail.com

(iii)

```
public class Test {
  public static void main(String[] args){
     int x, y, z;
     x = y = z = 2;
     x += y;
     y -= z;
     z /= (x + y);
     System.out.println(x + " " + y + " " + z);
  }
}
```

(iv)

```
public class Test {
  public static void main(String[] args){
   int x = 9, y = 12;
   int a = 2, b = 4, c = 6;

   int exp = 4/3 * (x + 34) + 9 * (a + b * c) + (3 + y * (2 + a)) / (a + b*y);

   System.out.println(exp);
  }
}
```

(v)

```
public class Test {
  public static void main(String[] args){
    int x = 10, y = 5;

    int exp1 = (y * (x / y + x / y));
    int exp2 = (y * x / y + y * x / y);

    System.out.println(exp1);
    System.out.println(exp2);
  }
}
```

shekharkrish13@gmail.com

CONDITIONAL STATEMENTS QUESTIONS

Question 1 : Write a Java program to get a number from the user and print whether it is positive or negative.

Question 2 : Finish the following code so that it prints You have a fever if your temperature is above 100 and otherwise prints You don't have a fever.

```
public class Solution {
   public static void main(String[] args) {
       double temp = 103.5;
   }
}
```

Question 3 : Write a Java program to input week number(1-7) and print day of week name using switch case.

Question 4 : What will be the value of x & y in the following program:

```
public class Solution {
 public static void main(String args[]) {
   int a = 63, b = 36;
   boolean x = (a < b ) ? true : false;
   int y= (a > b ) ? a : b;
 }
}
```

Question 5 : Write a Java program that takes a year from the user and print whether that year is a leap year or not.

Hint:

shekharkrish13@gmail.com

shekharkrish13@gmail.com

LOOPS QUESTIONS

Question 1 : How many times 'Hello' is printed?

```
public class Solution {
   public static void main(String[] args){
      for(int i=0; i<5; i++) {
          System.out.println("Hello");
          i+=2;
      }
   }
}
```

Question 2 : Write a program that reads a set of integers, and then prints the sum of the even and odd integers.

Question 3 : Write a program to find the factorial of any number entered by the user.

(**Hint** : factorial of a number n = n * (n-1) * (n-2) * (n-3) * ..... * 1 and exists for positive numbers only. We write factorial as n!

So, factorial of 0! = 1, 1! = 1, 2! = 2, 3! = 6, 4! = 24 and so on.

Note - Please do not confuse factorial with NOT EQUAL TO operator, they are not the same)

Question 4 : Write a program to print the multiplication table of a number N, entered by the user.

Question 5 :

What is wrong in the following program?

```
public class Solution {
   public static void main(String args[]) {
       for(int i = 0; i <= 5; i++ ) {
           System.out.println("i = " + i );
       }
```

shekharkrish13@gmail.com

```
        System.out.println("i after the loop = " + i );
    }
}
```

APNA COLLEGE

shekharkrish13@gmail.com

FUNCTIONS QUESTIONS

Question 1 : Write a Java method to compute the average of three numbers..

Question 2 : Write a method named isEven that accepts an int argument. The method should return true if the argument is even, or false otherwise. Also write a program to test your method.

Question 3 : Write a Java program to check if a number is a palindrome in Java? (121 is a palindrome, 321 is not)

A number is called a palindrome if the number is equal to the reverse of a number e.g., 121 is a palindrome because the reverse of 121 is 121 itself. On the other hand, 321 is not a palindrome because the reverse of 321 is 123, which is not equal to 321.

Question 4 : READ & CODE EXERCISE

Search about(Google) & use the following methods of the Math class in Java:

a. Math.min( )
b. Math.max( )
c. Math.sqrt( )
d. Math.pow( )
e. Math.avg( )
f. Math.abs( )

Free reading resource (https://www.javatpoint.com/java-math)

Please feel free to look for more resources/websites on your own.

Question 5 :

Write a Java method to compute the sum of the digits in an integer.

(**Hint** : Approach this question in the following way :

a. Take a variable sum = 0
b. Find the last digit of the number
c. Add it to the sum
d. Repeat a & b until the number becomes 0)

APNA COLLEGE
shekharkrish13@gmail.com

APNA COLLEGE

ARRAYS - Assignment

Question 1: Given an integer array nums, return true if any value appears at least twice in the array, and return false if every element is distinct.

Example 1:

Input: nums = [1, 2, 3, 1]

Output: true

Example 2:

Input: nums = [1, 2, 3, 4]

Output: false

Example 3:

Input: nums = [1, 1, 1, 3, 3, 4, 3, 2, 4, 2]

Output: true

Constraints:

- 1 <= nums . lengtth <= 10^5
- -10^9 <= nums [i] <= 10^9

APNA COLLEGE

Question 2: There is an integer array nums sorted in ascending order (with distinct values).

Prior to being passed to your function, nums is possibly rotated at an unknown pivot index k (1 <= k < nums.length) such that the resulting array is [nums[k], nums[k+1], ..., nums[n-1], nums[0], nums[1], ..., nums[k-1]] (0-indexed). For example, [0,1,2,4,5,6,7] might be rotated at pivot index 3 and become [4,5,6,7,0,1,2].

Given the array nums after the possible rotation and an integer target, return *the index of* target *if it is in* nums*, or* -1 *if it is not in* nums.

You must write an algorithm with O(log n) runtime complexity.

Example 1:

Input: nums = [4, 5, 6, 7, 0, 1, 2], target = 0

Output: 4

Example 2:

Input: nums = [4, 5, 6, 7, 0, 1, 2], target = 3

Output: -1

shekharkrish13@gmail.com

Example 3:

Input: nums = [1], target = 0

Output: -1

Constraints:

- 1 <= nums . lengtth <= 5000
- -10^4 <= nums [i] <= 10^4
- All values of nums are unique.
- nums is an ascending array that is possibly rotated.
- -10^4 <= target <= 10^4

Question 3: You are given an array prices where prices[i] is the price of a given stock on the ith day.

Return *the maximum profit you can achieve from this transaction*. If you cannot achieve any profit, return 0.

Example 1:

Input: prices = [7, 1, 5, 3, 6, 4]

Output: 5

Explanation: Buy on day 2 (price = 1) and sell on day 5 (price = 6), profit = 6-1 = 5.

Note that buying on day 2 and selling on day 1 is not allowed because you must buy before you sell.

Example 2:

Input: Prices = [7, 6, 4, 3, 1]

Output: 0

Explanation: In this case, no transactions are done and the max profit = 0.

Constraints:

- 1 <= prices . length <= 10^5
- 0 <= prices [i] <= 10^4

APNA COLLEGE
shekharkrish13@gmail.com

APNA COLLEGE

Question 4: Given n non-negative integers representing an elevation map where the width of each bar is 1, compute how much water it can trap after raining.

Example 1:

Input: height = [0, 1, 0, 2, 1, 0, 1, 3, 2, 1, 2, 1]

Output: 6

Explanation: The above elevation map (black section) is represented by array [0,1,0,2,1,0,1,3,2,1,2,1]. In this case, 6 units of rain water (blue section) are being trapped.

Example 2:

Input: height = [4, 2, 0, 3, 2, 5]

Output: 9

Constraints:

- n == height . length
- 1 <= n <= 2 * 10^4
- 0 <= height [i] < = 10^5

Question 5: Given an integer array nums, return all the triplets [nums[i], nums[j], nums[k]] such that i != j, i != k, and j != k, and nums[i] + nums[j] + nums[k] == 0. Notice that the solution set must not contain duplicate triplets.

Example 1:

Input: nums = [-1, 0, 1, 2, -1, -4]

Output: [[-1, -1, 2] , [-1, 0, 1]]

shekharkrish13@gmail.com

Example 2:

Input: nums = [ ]

Output: [ ]

Example 3:

Input: nums = [0]

Output: [ ]

Constraints:

- 0 <= nums . length <= 3000
- -10^5 <= nums [i] <= 10^5

shekharkrish13@gmail.com

BASIC SORTING QUESTIONS

Question : Use the following sorting algorithms to sort an array in DESCENDING order :

a. Bubble Sort
b. Selection Sort
c. Insertion Sort
d. Counting Sort

You can use this array as an example : **[3, 6, 2, 1, 8, 7, 4, 5, 3, 1]**

shekharkrish13@gmail.com

2D ARRAYS QUESTIONS

Question 1 : Print the number of 7's that are in the 2d array.

Example :

Input - int[][] array = { {4,7,8},{8,8,7} };

Output - 2

Question 2 : Print out the sum of the numbers in the second row of the "nums" array.

Example :

Input - int[][] nums = { {1,4,9},{11,4,3},{2,2,3} };

Output - 18

Question 3 : Write a program to Find **Transpose** of a Matrix.

What is Transpose?

Transpose of a matrix is the process of **swapping the rows to columns**. For a 2x3 matrix,

Matrix

a11 a12 a13

a21 a22 a23

Transposed Matrix

a11 a21

a12 a22

a13 a23

APNA COLLEGE

shekharkrish13@gmail.com

STRINGS QUESTIONS

Question 1 : Count how many times lowercase vowels occurred in a String entered by the user.

Question 2 : What will be the output of the following code?

```
public class Solution {
   public static void main(String args[]) {
       String str = "ShradhaDidi";
       String str1 = "ApnaCollege";
       String str2 = "ShradhaDidi";
       System.out.println(str.equals(str1) + " " + str.equals(str2));
   }
}
```

Question 3 : What will be the output of the following code?

```
public class Solution {
 public static void main(String args[]) {
   String str = "ApnaCollege".replace("l", "");
   System.out.println(str);
 }
}
```

Question 4 : Determine if 2 Strings are **anagrams** of each other.

What are anagrams?

If two strings contain the same characters but in a different order, they can be said to be anagrams. Consider race and care. In this case, race's characters can be formed into a study, or care's characters can be formed into race. Below is a java program to check if two strings are anagrams or not.

Question 5 : Search and read about

a. intern( ) method in String
b. StringBuffer

shekharkrish13@gmail.com

BIT MANIPULATION QUESTIONS

NOTE - Some of these questions will teach you something new as some of these might be useful hacks (which can be difficult to think of on your own). Even if you are not able to come up with a solution on your own. Try to learn something new from these questions & write down the logic of the solution in your notes.

Question 1 : What is the value of x^x for any value of x?

Question 2 : Swap two numbers without using any third variable.

Question 3 : Add 1 to an integer using Bit Manipulation.
(**Hint** : try using Bitwise NOT Operator)

Question 4 : This question is based on a trick, please directly look at the solution.
Convert uppercase characters to lowercase using bits.

Question 5 : A Good read of hacks using bits (you can check this out in your free time) :
http://graphics.stanford.edu/~seander/bithacks.html

APNA COLLEGE
shekharkrish13@gmail.com

OOPS QUESTIONS

Question 1 : Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate methods for each operation whose real and imaginary parts are entered by the user.

Question 2 : What is the output of the following program?

```
class Automobile {
   private String drive() {
       return "Driving vehicle";
   }
}

class Car extends Automobile {
   protected String drive() {
       return "Driving car";
   }
}

public class ElectricCar extends Car {

   @Override
   public final String drive() {
       return "Driving electric car";
   }

   public static void main(String[] wheels) {
       final Car car = new ElectricCar();
       System.out.print(car.drive());
   }
}
```

A. Driving vehicle
B. Driving electric car
C. Driving car
D. The code does not compile

shekharkrish13@gmail.com

APNA COLLEGE

Question 3 : Look at the following code and choose the right option for the word:

```
// Shape.java
public class Shape {
   protected void display() {
       System.out.println("Display-base");
   }
}
// Circle.java
public class Circle extends Shape { <
   < access - modifier > void display() {
       System.out.println("Display-derived");
   }
}
```

a. Only protected can be used.
B. public and protected both can be used.
C. public, protected, and private can be used.
d. Only public can be used.

APNA COLLEGE

Question 4 : What is the output of the following program?

```
abstract class Car {
   static {
       System.out.print("1");
   }

   public Car(String name) {
       super();
       System.out.print("2");
   }

   {
       System.out.print("3");
   }
}

public class BlueCar extends Car {
   {
       System.out.print("4");
```

shekharkrish13@gmail.com

```
    }

    public BlueCar() {
        super("blue");
        System.out.print("5");
    }

    public static void main(String[] gears) {
        new BlueCar();
    }
}
```

A. 23451

B. 12354

C. 13245

D. The code does not compile.

Question 5 : Read up about basics of exception handling from here : https://www.w3schools.com/java/java_try_catch.asp

APNA COLLEGE
shekharkrish13@gmail.com

RECURSION (Basics) QUESTIONS

Question 1 : For a given integer array of size N. You have to find all the occurrences (indices) of a given element (Key) and print them. Use a recursive function to solve this problem.

Sample Input : arr[ ] = {3, 2, 4, 5, 6, 2, 7, 2, 2}, key = 2
Sample Output : 1 5 7 8

Question 2 :

You are given a number (eg - 2019), convert it into a String of english like
"two zero one nine". Use a recursive function to solve this problem.

NOTE - The digits of the number will only be in the range 0-9 and the last digit of a number can't be 0.

Sample Input : 1947
Sample Output : "one nine four seven"

Question 3 : Write a program to find **Length of a String** using Recursion.

Question 4 : We are given a string S, we need to find the count of all contiguous substrings starting and ending with the same character.

Sample Input 1 : S = "abcab"
Sample Output 1 : 7
There are 15 substrings of "abcab" : a, ab, abc, abca, abcab, b, bc, bca, bcab, c, ca, cab, a, ab, b
Out of the above substrings, there are 7 substrings : a, abca, b, bcab, c, a and b. So, only 7 contiguous substrings start and end with the same character.

Sample Input 2 : S = "aba"
Sample Output 2 : 4
The substrings are a, b, a and aba.

Question 5 : **TOWER OF HANOI** (Important!)

shekharkrish13@gmail.com

You have 3 towers and N disks of different sizes which can slide onto any tower. The puzzle starts with disks sorted in ascending order of size from top to bottom (i.e., each disk sits on top of an even larger one).

You have the following constraints:

(1) Only one disk can be moved at a time.
(2) A disk is slid off the top of one tower onto another tower.
(3) A disk cannot be placed on top of a smaller disk. Write a program to move the disks from the first tower to the
last using Stacks.

Let rod 1 = 'A', rod 2 = 'B', rod 3 = 'C'.
An **example** with 2 disks i.e. N=2:
Step 1 : Shift the first disk from 'A' to 'B'.

Step 2 : Shift the second disk from 'A' to 'C'.

Step 3 : Shift the first disk from 'B' to 'C'.

An **example** with 3 disks i.e. N=3 :
Step 1 : Shift the first disk from 'A' to 'C'.
Step 2 : Shift second disk from 'A' to 'B'.
Step 3 : Shift the first disk from 'C' to 'B'.

Step 4 : Shift the third disk from 'A' to 'C'.

Step 5 : Shift the first disk from 'B' to 'A'.
Step 6 : Shift second disk from 'B' to 'C'.
Step 7 : Shift the first disk from 'A' to 'C'.

shekharkrish13@gmail.com

APNA COLLEGE

The Approach here is :

- Shift 'n-1' disks from 'A' to 'B', using C.
- Shift the last disk from 'A' to 'C'.
- Shift 'n-1' disks from 'B' to 'C', using A.

shekharkrish13@gmail.com

Divide & Conquer QUESTIONS

Question 1 : Apply Merge sort to sort an array of Strings. (Assume that all the characters in all the Strings are in lowercase). (**EASY**)

Sample Input 1 : arr = { "sun", "earth", "mars", "mercury" }
Sample Output 1 : arr = { "earth", "mars", "mercury", "sun"}

Question 2 : Given an array nums of size n, return the majority element. (**MEDIUM**)

The majority element is the element that appears more than ⌊n / 2⌋ times. You may assume that the majority element always exists in the array.

Sample Input 1 : nums = [3,2,3]
Sample Output 1 : 3

Sample Input 2 : nums = [2,2,1,1,1,2,2]
Sample Output 2 : 2

Constraints (extra Conditions):

- n == nums.length
- 1 <= n <= 5 * 104
- -109 <= nums[i] <= 109

Question 3 : Given an array of integers. Find the Inversion Count in the array. (**HARD**)

Inversion Count: For an array, inversion count indicates how far (or close) the array is from being sorted. If the array is already sorted then the inversion count is 0. If an array is sorted in the reverse order then the inversion count is the maximum.
Formally, two elements a[i] and a[j] form an inversion if a[i] > a[j] and i < j.

Sample Input 1 : N = 5, arr[ ] = {2, 4, 1, 3, 5}
Sample Output 1 : 3, because it has 3 inversions - (2, 1), (4, 1), (4, 3).

shekharkrish13@gmail.com

Sample Input 2 : N = 5, arr[ ] = {2, 3, 4, 5, 6}
Sample Output 2 : 0, because the array is already sorted

Sample Input 3 : N = 3, arr[] = {5, 5, 5}
Sample Output 3 : 0, because all the elements of the array are the same & already in a sorted manner.

(**Hint** : A sorting algorithm will be used to solve this question.)
Note - This question is important. Even if you are not able to come up with the approach, please understand the solution.

shekharkrish13@gmail.com

TIME COMPLEXITY QUESTIONS

Question : Find the Time Complexity of the following:

a)

```
int i, j, k = 0;
        for (i = n / 2; i <= n; i++) {
            for (j = 2; j <= n; j = j * 2) {
                k = k + n / 2;
            }
        }
```

A. O(n)
B. O(N log N)
C. O(n^2)
D. O(n^2Logn)

b)

```
for(int i=0;i<n;i++)
            i*=k
```

Here, k is some constant value

A. O(n)
B. O(k)
C. O(logkn) (= logn of base k)
D. O(lognk) (= logk of base n)

c)

Algorithm A and B have a worst-case running time of O(n) and O(logn), respectively. Therefore, algorithm B always runs faster than algorithm A.

A. True
B. False

d) Find the time & space complexity of floorSqrt function in the following code to calculate square root of a number :

shekharkrish13@gmail.com

```java
class SqrtNum {

    static int floorSqrt(int x)
    {
        if (x == 0 || x == 1)
            return x;

        int i = 1, result = 1;

        while (result <= x) {
            i++;
            result = i * i;
        }
        return i - 1;
    }

    public static void main(String[] args)
    {
        int x = 11;
        System.out.print(floorSqrt(x));
    }
}
```

e) Find the time & space complexity of the following code:

```java
int a = 0;
for (int i = 0; i < n; ++i) {
    for (int j = n; j > i; --j) {
        a = a + i + j;
    }
}
```

shekharkrish13@gmail.com

BACKTRACKING QUESTIONS

Note - These are classical questions. Please positively solve them.

Question 1 :

Rat in a Maze

You are given a starting position for a rat which is stuck in a maze at an initial point (0, 0) (the maze can be thought of as a 2-dimensional plane). The maze would be given in the form of a square matrix of order N * N where the cells with value 0 represent the maze's blocked locations while value 1 is the open/available path that the rat can take to reach its destination. The rat's destination is at (N - 1, N - 1).

Your task is to find all the possible paths that the rat can take to reach from source to destination in the maze.

The possible directions that it can take to move in the maze are 'U'(up) i.e. (x, y - 1) , 'D'(down) i.e. (x, y + 1) , 'L' (left) i.e. (x - 1, y), 'R' (right) i.e. (x + 1, y).

(This problem is similar to Grid ways.)

Sample Input : int maze[][] = { { 1, 0, 0, 0 },
{ 1, 1, 0, 1 },
{ 0, 1, 0, 0 },
{ 1, 1, 1, 1 } };

shekharkrish13@gmail.com

Sample Output : 1 0 0 0
1 1 0 0
0 1 0 0
0 1 1 1

Question 2 :

Keypad Combinations

Given a string containing digits from 2-9 inclusive, print all possible letter combinations that the number could represent. You can print the answer in any order.

A mapping of digits to letters (just like on the telephone buttons) is given below. Note that 1 does not map to any letters.

Sample Input 1 : digits = "23"
Sample Output 1 : "ad", "ae", "af", "bd", "be", "bf", "cd", "ce", "cf"

Sample Input 2 : digits = "2"
Sample Output 2 : "a", "b", "c"

Sample Input 3 : digits = ""
Sample Output 3 : ""

shekharkrish13@gmail.com

APNA COLLEGE

Question 3 :

Knight's Tour

Given a N*N board with the Knight placed on the first block of an empty board. Moving according to the rules of chess, knights must visit each square exactly once. Print the order of each cell in which they are visited.

Sample Input 1 : N = 8

Sample Output 1 :

```
0  59  38  33  30  17   8  63
37  34  31  60   9  62  29  16
58   1  36  39  32  27  18   7
35  48  41  26  61  10  15  28
42  57   2  49  40  23   6  19
47  50  45  54  25  20  11  14
56  43  52   3  22  13  24   5
51  46  55  44  53   4  21  12
```

(**Hint** : Similar to N Queens)

APNA COLLEGE

shekharkrish13@gmail.com

ARRAYLIST QUESTIONS

Question 1 :

Monotonic ArrayList (EASY)

An Arraylist is monotonic if it is either monotone increasing or monotone decreasing.

An Arraylist nums is monotone increasing if for all i <= j, nums.get(i) <= nums.get(j). An Arraylist nums is monotone decreasing if for all i <= j, nums.get(i) >= nums.get(j).

Given an integer Arraylist nums, return true if the given list is monotonic, or false otherwise.

Sample Input 1 : nums = [1,2,2,3]
Sample Output 1 : true

Sample Input 2 : nums = [6,5,4,4]
Sample Output 2 : true

Sample Input 3 : nums = [1,3,2]
Sample Output 3 : false

Constraints :

- 1 <= nums.size() <= 105
- -105 <= nums.get(i) <= 105

Question 2 :

Lonely Numbers in ArrayList (MEDIUM)

You are given an integer arraylist nums. A number x is lonely when it appears only once, and no adjacent numbers (i.e. x + 1 and x - 1) appear in the arraylist.

Return all lonely numbers in nums. You may return the answer in any order.

Sample Input 1 : nums = [10,6,5,8]
Sample Output 1 : [10,8]
Explanation :
- 10 is a lonely number since it appears exactly once and 9 and 11 does not appear in nums.
- 8 is a lonely number since it appears exactly once and 7 and 9 does not appear in nums.

shekharkrish13@gmail.com

- 5 is not a lonely number since 6 appears in nums and vice versa.
Hence, the lonely numbers in nums are [10, 8].
Note that [8, 10] may also be returned.

Sample Input 2 : nums = [1,3,5,3]
Sample Output 2 : [1,5]
Explanation :
- 1 is a lonely number since it appears exactly once and 0 and 2 does not appear in nums.
- 5 is a lonely number since it appears exactly once and 4 and 6 does not appear in nums.
- 3 is not a lonely number since it appears twice.
Hence, the lonely numbers in nums are [1, 5].
Note that [5, 1] may also be returned.

Constraints :

- 1 <= nums.size() <= 105
- 0 <= nums.get(i) <= 106

Question 3 :

Most Frequent Number following Key (EASY)

You are given an integer Arraylist nums. You are also given an integer key, which is present in nums.

For every unique integer target in nums, count the number of times target immediately follows an occurrence of key in nums. In other words, count the number of indices i such that:

0 <= i <= nums.size() - 2,
nums.get(i) == key and,
nums.get(i+1) == target.
Return the target with the maximum count.

(Assumption - that the target with maximum count is unique.)

Sample Input 1 :nums = [1,100,200,1,100], key = 1
Sample Output 1 : 100
Explanation :
For target = 100, there are 2 occurrences at indices 1 and 4 which follow an occurrence of key.
No other integers follow an occurrence of key, so we return 100.

shekharkrish13@gmail.com

Sample Input 2 : nums = [2,2,2,2,3], key = 2
Sample Output 2 : 2
Explanation :
For target = 2, there are 3 occurrences at indices 1, 2, and 3 which follow an occurrence of key.
For target = 3, there is only one occurrence at index 4 which follows an occurrence of key.
target = 2 has the maximum number of occurrences following an occurrence of key, so we return 2.

Constraints :

- 2 <= nums.size() <= 1000
- 1 <= nums.get(i) <= 1000
- Assume that the answer is unique.

Hints : Count the number of times each target value follows the key in the arraylist.
Choose the target with the maximum count and return it.

Question 4 :

Beautiful ArrayList (MEDIUM)
An Arraylist nums of size n is beautiful if:

nums is a permutation of the integers in the range [1, n].
For every 0 <= i < j < n, there is no index k with i < k < j where 2 * nums.get(k) == nums.get(i) + nums.get(j).
Given the integer n, return any beautiful arraylist nums of size n. There will be at least one valid answer for the given n.

Sample Input 1 : n = 4
Sample Output 1 : [2,1,4,3]

Sample Input 2 : n = 5
Sample Output 2 : [3,1,2,5,4]

Constraints :

- 1 <= n <= 1000

shekharkrish13@gmail.com

Linked List Questions

Note - These are classical questions. Please positively solve them.

Question 1 :

Intersection of Two Linked Lists

In a system there are two singly linked list. By some programming error, the end node of one of the linked lists got linked to the second list, forming an inverted Y-shaped list. Write a program to get the point where two linked lists merge.

We have to find the intersection part in this system.

Question 2 :

Delete N Nodes After M Nodes of a Linked List

We have a linked list and two integers M and N. Traverse the linked list such that you retain M nodes then delete next N nodes, continue the same till end of the linked list. Difficulty Level: Rookie.

Sample Input 1 : M=2 N=2 LL: 1->2->3->4->5->6->7->8
Sample Output 1 : 1->2->5->6

Sample Input 2 : M=3 N=2 LL: 1->2->3->4->5->6->7->8->9->10
Sample Output 2 : 1->2->3->6->7->8

shekharkrish13@gmail.com

shekharkrish13@gmail.com

Question 3 :

Swapping Nodes in a Linked List

We have a linked list and two keys in it, swap nodes for two given keys. Nodes should be swapped by changing links. Swapping data of nodes may be expensive in many situations when data contains many fields. It may be assumed that all keys in the linked list are distinct.

Sample Input 1 : 1->2->3->4, x = 2, y = 4
Sample Output 1 : 1->4->3->2

Question 4 :

Odd Even Linked List

We have a Linked List of integers, write a function to modify the linked list such that all even numbers appear before all the odd numbers in the modified linked list. Also, keep the order of even and odd numbers same.

Sample Input 1 : 8->12->10->5->4->1->6->NULL
Sample Output 1 : 8->12->10->4->6->5->1->NULL

Sample Input 2 : 1->3->5->7->NULL
Sample Output 2 : `1->3->5->7->NULL`

Question 5 :

Merge k Sorted Lists

We have K sorted linked lists of size N each, merge them and print the sorted output.

Sample Input 1 : `k = 2, n = 2`

```
l1 = 1->3->NULL
l2 = 6->8->NULL
l3 = 9->10->NULL
```

Sample Output 1 : 1>3->6->8->9->10->NULL

APNA COLLEGE

shekharkrish13@gmail.com

Stack Questions

Question 1 :

Palindrome Linked List

We have a singly linked list of characters, write a function that returns true if the given list is a palindrome, else false.

Input : A->B->C->B->A

Output : Yes It is Palindrome

Question 2 :

Simplify Path

We hava an absolute path for a file (Unix-style), simplify it. Note that absolute path always begin with '/' (root directory), a dot in path represent current directory and double dot represents parent directory.

Sample Input 1 : /apnacollege/

Sample Output 1 : /apnacollege

Sample Input 1 : /a/..

Sample Output 1 : /

Question 3 :

Decode a string

We have an encoded string s and the task is to decode it. The pattern in which the strings are encoded is as follows.

Sample Input 1 : 2[cv]

Sample Output 1 : cvcv

Sample Input 2 : 3[b2[v]]L

Sample Output 2 : bvvbvvbvv

Question 4 :

shekharkrish13@gmail.com

Trapping Rain Water

We have an array of N non-negative integers arr[] representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.

Note: We have already solved this Question using Arrays but you have to now solve this using a Stack.

Sample Input 1 : [7 0 4 2 5 0 6 4 0 6]

Sample Output 1 : 25

shekharkrish13@gmail.com

Queue Questions

Question 1 :

Generate Binary Numbers

Given a number N. The task is to generate and print all binary numbers with decimal values from 1 to N.

Sample Input 1 : N =2
Sample Output 1 : 1 10

Sample Input 2 : 5.
Sample Output 2 : 1 10 11 100 101

Question 2 :

Connect n ropes with minimum cost

Given are N ropes of different lengths, the task is to connect these ropes into one rope with minimum cost, such that the cost to connect two ropes is equal to the sum of their lengths.

Sample Input 1 : N = 4, arr = [4 3 2 6]
Sample Output 1 : 29

Sample Input 2 : N = 2, arr = [1 2 3]
Sample Output 2 : 9

Question 3 :

Job Sequencing Problem

We have an array of jobs where every job has a deadline and associated profit if the job is finished before the deadline. It is also given that every job takes a single unit of time, so the minimum possible deadline for any job is 1. Maximize the total profit if only one job can be scheduled at a time.

Sample Input 1 :

JobID	Deadline	Profit
a	4	20
b	1	10
c	1	40
d	1	30

Sample Output 1 : c, a

shekharkrish13@gmail.com

Question 4 :

Reversing the first K elements of a Queue

We have an integer k and a queue of integers, we need to reverse the order of the first k elements of the queue, leaving the other elements in the same relative order.

Sample Input 1 : `Q = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100] ,k=5`

Sample Output 1 : Q = [50, 40, 30, 20, 10, 60, 70, 80, 90, 100]

Question 5 :

Maximum of all subarrays of size k

We have an array arr[] of size N and an integer K. Find the maximum for each and every contiguous subarray of size K.

Sample Input 1 : `N=9, K=3 arr= 1 2 3 1 4 5 2 3 6`

Sample Output 1 : 3 3 4 5 5 5 6

shekharkrish13@gmail.com

Greedy Questions

Question 1 :

Maximum Balanced String Partitions

We have balanced string str of size N with an equal number of L and R, the task is to find a maximum number X, such that a given string can be partitioned into X balanced substring. A string is called to be balanced if the number of 'L's in the string equals the number of 'R's.

Input : "LRRRRLLRLLRL"
Output : 3

Question 2 :

Kth largest odd number in a given range

We have two variables L and R, indicating a range of integers from L to R inclusive, and a number K, the task is to find Kth largest odd number. If K > number of odd numbers in the range L to R then return 0.

Sample Input 1 : L = -3, R = 3, K = 1
Sample Output 1 : 3

Question 3 :

Lexicographically smallest string of length N and sum K

We have two integers N and K. The task is to print the lexicographically smallest string of length N consisting of lower-case English alphabets such that the sum of the characters of the string equals to K where 'a' = 1, 'b' = 2, 'c' = 3, ... and 'z' = 26.

Sample Input 1 : N = 5, K = 42
Sample Output 1 : aamz

Sample Input 2 : N = 3, K = 25
Sample Output 2 : aaw

Question 4 :

Best Time to Buy and Sell Stock

Given an array prices[] of length N, representing the prices of the stocks on different days, the task is to find the maximum profit possible for buying and selling the stocks on different days using transactions where at most one transaction is allowed.

Note: Stock must be bought before being sold.

shekharkrish13@gmail.com

Sample Input 1 : `prices[] = {7, 6, 4, 3, 1}`
Sample Output 1 : 0

Sample Input 2 : `prices[] = {7, 1, 5, 3, 6, 4]`
Sample Output 2 : 5

Question 5 :

Split the given array into K sub-arrays

We have an Array[] of N elements and a number K. (1 <= K <= N) . Split the given array into K subarrays (they must cover all the elements). The maximum subarray sum achievable out of K subarrays formed must be the minimum possible. Find that possible subarray sum.

Sample Input 1 :Array[] = {1, 1, 2} K = 2
Sample Output 1 : 2

Sample Input 2 : `Array[] = {1, 2, 3, 4}, K = 3`
Sample Output 2 : 4

shekharkrish13@gmail.com

Binary Tree Questions

Question 1 :

Check if a Binary Tree is univalued or not

We have a binary tree, the task is to check if the binary tree is univalued or not. If found to be true, then print “YES”. Otherwise, print “NO”.

Sample Input 1 :

Sample Output 1 : false

Question 2 :

Invert Binary Tree

Mirror of a Tree: Mirror of a Binary Tree T is another Binary Tree M(T) with left and right children of all non-leaf nodes interchanged.

Input1 : fig. above

Output1 : Yes

shekharkrish13@gmail.com

Question 3 :

Delete leaf nodes with values as x

We have a binary tree and a target integer x, delete all the leaf nodes having value as x. Also, delete the newly formed leaves with the target value as x.

:

Question 4 :

Find All Duplicate Subtrees

We have a binary tree, find all duplicate subtrees. For each duplicate subtree, we only need to return the root node of any one of them. Two trees are duplicates if they have the same structure with the same node values.

Input1:

```
     1
    / \
   4   3
  /   / \
 3   4   3
    /
   3
```

Output1: 4-3 , 3

Question 5 :

Maximum Path Sum in a Binary Tree

We have a binary tree, find the maximum path sum. The path may start and end at any node in the tree.

Input1:

shekharkrish13@gmail.com

4
/ \
2 7

Output1: 13

Input2:

;

Output2: 42

shekharkrish13@gmail.com

BST Questions

Question 1 :

Range Sum of BST

We have a Binary Search Tree consisting of N nodes and two positive integers L and R, the task is to find the sum of values of all the nodes that lie in the range [L, R]..

Sample Input1::

```
        8
       / \
      5   11
     / \   \
    3   6   20
```

Sample Output1 : 11

Question 2 :

Find the closest element in Binary Search Tree

We have a binary search tree and a target node K. The task is to find the node with minimum absolute difference with given target value K.

```
        8
       / \
      5   11
     / \   \
    3   6   20
```

Sample Input 1 : 5
Sample Output 1 : 5 (difference is 0)

Sample Input 2 : .19
Sample Output 2 : 20 (difference is 1)

Question 3 :

Find k-th smallest element in BST

We have the root of a binary search tree and K as input, find Kth smallest element in BST.

shekharkrish13@gmail.com

```
        8
      /   \
     5     11
    / \     \
   3   6     20
```

Sample Input 1 : k=3
Sample Output 1 : 8

Sample Input 2 : k=5
Sample Output 2 : 5

Question 4 :

Two Sum BSTs

Given a BST, transform it into a greater sum tree where each node contains sum of all nodes greater than that node.

Sample Input 1 :

```
        5
      /   \
     3     7
    / \   / \
   2   4 6   8

        10
      /   \
     6     15
    / \   / \
   3   8 11   18

x = 16
```

Sample Output 1 : 3
The pairs are:
(5, 11), (6, 10) and (8, 8)

Question 5 :

Maximum Sum BST in Binary Tree

We have a binary tree, the task is to print the maximum sum of nodes of a sub-tree which is also a Binary Search Tree.

shekharkrish13@gmail.com

Sample Input 1 :

```
    5
   / \
  9   2
 /     \
 6      3
/ \
8  7
```

Sample Output 1 : 8

shekharkrish13@gmail.com

Heap Questions

Question 1 :

K'th largest element in a stream

We have an infinite stream of integers, find the k'th largest element at any point of time.

Input : stream[] = {10, 20, 11, 70, 50, 40, 100, 5, ...} k = 3
Output : {_, _, 10, 11, 20, 40, 50, 50, ...}

Question 2 :

Minimum time required to fill given N slots

We have an integer N which denotes the number of slots, and an array arr[] consisting of K integers in the range [1, N] repreand. Each element of the array are in the range [1, N] which represents the indices of the filled slots. At each unit of time, the index with filled slot fills the adjacent empty slots. The task is to find the minimum time taken to fill all the N slots..

Sample Input 1 : N = 5, K = 5, arr[] = {1, 2, 3, 4, 5}
Sample Output 1 : 1

Sample Input 1 : N = 6, K = 2, arr[] = {2, 6}
Sample Output 1 : 2

Question 3 :

Path With Minimum Effort

We have a two-dimensional grid, each cell of which contains an integer cost which represents a cost to traverse through that cell, we need to find a path from the top left cell to the bottom right cell by which the total cost incurred is minimum.

Sample Input 1 :

{ { 31, 100, 65, 12, 18 },
{ 10, 13, 47, 157, 6 },
{ 100, 113, 174, 11, 33 },
{ 88, 124, 41, 20, 140 },
{ 99, 32, 111, 41, 20 } }

Sample Output 1 : 327 (= 31 + 10 + 13 + 47 + 65 + 12 + 18 + 6 + 33 + 11 + 20 + 41 + 20)

Question 4 :

shekharkrish13@gmail.com

Minimum Operations to Halve Array Sum

We have an array Arr[], the task is to find out the minimum number of operations to make the sum of array elements lesser or equal to half of its initial value. In one such operation, it is allowed to half the value of any array element.

Sample Input 1 : `[1, 5, 8, 19]`

Sample Output 1 : 3

Question 5 :

Merge K Sorted Linked List

We have K linked lists each of size N and each list is sorted in non-decreasing order, merge them into a single sorted (non-decreasing order) linked list and print the sorted linked list as output.

Sample Input 1 :

```
K=3, N=3
list1=1->3->7->NULL
list2=2->4->8->NULL
list3=9->10->11->NULL
```

Sample Output 1 : 1->2->3->4->7->8->9->10->11

shekharkrish13@gmail.com

HASHING QUESTIONS

Question 1 :

Bottom View of a Binary Tree

The top view of a binary tree is the set of nodes visible when the tree is viewed from the top. Given a binary tree, print the top view of it. The output nodes can be printed in any order.

Sample Input :

```
        20
       /  \
      8    22
     / \    \
    5   3    25
       / \
      10  14
```

Sample Output : 5 10 3 14 25

Hint : Use the concept of Vertical Order

Question 2 :

Two Sum

Given an array of integers arr[ ]and an integer target, return indices of the two numbers such that they add up to target.

You may assume that each input would have exactly one solution, and you may not use the same element twice.

You can return the answer in any order.

Sample Input 1 : arr = [2, 7, 11, 15], target = 9

Sample Output 1 : [0, 1]

As arr[0] + arr[1] == 9, we return [0, 1].

Sample Input 2 : arr = [3,2,4], target = 6

Sample Output 2 : [1, 2]

Question 3 :

Sort by Frequency

shekharkrish13@gmail.com

Given a string s, sort it in decreasing order based on the frequency of the characters. The frequency of a character is the number of times it appears in the string.

Return the sorted string. If there are multiple answers, return any of them.

Sample Input 1 : s = "cccaaa"

Sample Output 1 : "aaaccc"

Both 'c' and 'a' appear three times, so both "cccaaa" and "aaaccc" are valid answers.

Note that "cacaca" is incorrect, as the same characters must be together.

Sample Input 2 : s = "tree"

Sample Output 2 :"eert"

'e' appears twice while 'r' and 't' both appear once.

So 'e' must appear before both 'r' and 't'. Therefore "eetr" is also a valid answer.

BONUS (LRU Cache) IMPORTANT

Please go on the platform and solve this question : https://leetcode.com/problems/lru-cache/

shekharkrish13@gmail.com

TRIES QUESTIONS

shekharkrish13@gmail.com

Question 1 : MEDIUM

Group Anagrams Together

Given an array of strings strs, group the anagrams together. You can return the answer in any order.

An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.

Sample Input 1 : strs = ["eat","tea","tan","ate","nat","bat"]
Sample Output 1 : [["bat"], ["nat", "tan"], ["ate", "eat", "tea"]]

Sample Input 2 : strs = [""]
Sample Output 2 : [[""]]

Sample Input 3 : strs = ["a"]
Sample Output 3 : [["a"]]

APNA COLLEGE

Question 2 : MEDIUM

Longest Word in Dictionary

Given an array of strings words representing an English Dictionary, return the longest word in words that can be built one character at a time by other words in words.

If there is more than one possible answer, return the longest word with the smallest lexicographical order. If there is no answer, return the empty string.

Note that the word should be built from left to right with each additional character being added to the end of a previous word.

Sample Input 1 : words = ["w","wo","wor","worl","world"]
Sample Output 1 : "world"
The word "world" can be built one character at a time by "w", "wo", "wor", and "worl".

Sample Input 2 : words = ["a","banana","app","appl","ap","apply","apple"]
Sample Output 2 : "apple"
Both "apply" and "apple" can be built from other words in the dictionary. However, "apple" is lexicographically smaller than "apply".

Graph-1 Questions

Question 1 :

Detect cycle in an undirected graph using BFS

We have an an undirected graph, how to check if there is a cycle in the graph? For example, the following graph has a cycle 1-0-2-1..

Input :

```
9 - 5 - 2
| /     |
1       4
```

Output : Yes

Question 2 :

Find Minimum Depth of a Binary Tree

We have a binary tree, find its minimum depth. The minimum depth is the number of nodes along the shortest path from the root node down to the nearest leaf node. For example, minimum height of below Binary Tree is 2.

Sample Input 1 :

```
        1
      /   \
     8     2
   /  \   /
  6    5 9
```

Sample Output 1 : 2

Question 3 :

Minimum time required to rot all oranges

We have a matrix of dimension m*n where each cell in the matrix can have values 0, 1 or 2 which has the following meaning:

0: Empty cell 1: Cells have fresh oranges 2: Cells have rotten oranges

We have to determine what is the minimum time required so that all the oranges become rotten. A rotten orange at index [i,j] can rot other fresh orange at indexes [i-1,j], [i+1,j], [i,j-1], [i,j+1] (up, down, left and right). If it is impossible to rot every orange then simply return -1.

shekharkrish13@gmail.com

Input: arr[][C] = { {2, 1, 0, 2, 1},
{0, 0, 1, 2, 1},
{1, 0, 0, 2, 1}};

Output:

All oranges cannot be rotten.

Explanation:

At 0th time frame:

{2, 1, 0, 2, 1}
{0, 0, 1, 2, 1}
{1, 0, 0, 2, 1}

At 1st time frame:

{2, 2, 0, 2, 2}
{0, 0, 2, 2, 2}
{1, 0, 0, 2, 2}

At 2nd time frame:

{2, 2, 0, 2, 2}
{0, 0, 2, 2, 2}
{1, 0, 0, 2, 2}
...

The 1 at the bottom left corner of the matrix is never rotten.

Question 4 :

Find the size of the largest region in the Boolean Matrix

We have a matrix where each cell contains either a '0' or a '1', and any cell containing a 1 is called a filled cell. Two cells are said to be connected if they are adjacent to each other horizontally, vertically, or diagonally. If one or more filled cells are also connected, they form a region. find the size of the largest region.

Input: M[][5] = { {0, 0, 1, 1, 0}, {0, 0, 1, 1, 0}, {0, 0, 0, 0, 0}, {0, 0, 0, 0 1} }

Output: 4

Question 5 :

Word Ladder

We have a dictionary, and two words 'start' and 'target' (both of same length). Find length of the smallest chain from 'start' to 'target' if it exists, such that adjacent words in the chain only differ by one character and each word in the chain is a valid word i.e., it exists in the dictionary. It may be assumed that the 'target' word exists in dictionary and length of all dictionary words is same.

shekharkrish13@gmail.com

Input:
Dictionary = {POON, PLEE, SAME, POIE, PLEA, PLIE, POIN},
start = TOON, target = PLEA
Output: 7

Explanation: TOON – POON – POIN – POIE – PLIE – PLEE – PLEA

shekharkrish13@gmail.com

Graph-02 Questions

Question 1 :

Mother Vertex

We have a Directed Graph, find a Mother Vertex in the Graph (if present). A Mother Vertex is a vertex through which we can reach all the other vertices of the Graph.

Input :

Output : 0

Question 2 :

Union-Find

Here implement Union-Find Algorithm to check whether an undirected graph contains cycle or not.

Sample Input 1 :

Sample Output 1 : Yes

Question 3 :

shekharkrish13@gmail.com

Find whether it is possible to finish all tasks or not

There are a total of n tasks you have to pick, labelled from 0 to n-1. Some tasks may have prerequisites, for example to pick task 0 you have to first pick task 1, which is expressed as a pair: [0, 1] Given the total number of tasks and a list of prerequisite pairs, is it possible for you to finish all tasks?.

Sample Input 1 : [[1, 0], [0, 1]]
Sample Output 1 : false

Sample Input 2 : [[1, 0]]
Sample Output 2 : true

Question 4 :

Alien Dictionary

We have a sorted dictionary of an alien language having N words and k starting alphabets of standard dictionary. Find the order of characters in the alien language. Many orders may be possible for a particular test case, thus you may return any valid order and output will be 1 if the order of string returned by the function is correct else 0 denoting incorrect string returned.

Sample Input 1 :

```
N = 3, K = 3
dict = {"caa","aaa","aab"}
```

Sample Output 1 : 1

Sample Input 2 :

```
N = 5, K = 4
dict = {"baa","abcd","abca","cab","cad"}
```

Sample Output 2 : 1

Question 5 :

Find number of closed islands

We have a binary matrix mat[][] of dimensions NxM such that 1 denotes land and 0 denotes water. Find the number of closed islands in the given matrix.

A closed island is known as the group of 1s that is surrounded by only 0s on all the four sides (excluding diagonals). If any 1 is at the edges of the given matrix then it is not considered as the part of the connected island as it is not surrounded by all 0's.

Sample Input 1 :

shekharkrish13@gmail.com

N = 3, M = 3
mat[][] = {{1, 0, 0},
{0, 1, 0},
{0, 0, 1}}
Sample Output 1 : 1

Sample Input 2 :

```
N = 5, M = 8
mat[][] = {{0, 0, 0, 0, 0, 0, 0, 1},
           {0, 1, 1, 1, 1, 0, 0, 1},
           {0, 1, 0, 1, 0, 0, 0, 1},
           {0, 1, 1, 1, 1, 0, 1, 0},
           {0, 0, 0, 0, 0, 0, 0, 1}}
```

Sample Output 2 : 2

shekharkrish13@gmail.com

DP Questions

shekharkrish13@gmail.com

Question 1 :

Tribonacci Numbers

The Tribonacci series is a generalization of the Fibonacci sequence where each term is the sum of the three preceding terms.

a(n) = a(n-1) + a(n-2) + a(n-3) with a(0) = a(1) = 0, a(2) = 1.

Input : 5
Output : 0, 0, 1, 1, 2

Input : 10
Output : 0, 0, 1, 1, 2, 4, 7, 13, 24, 44

Input : 20
Output : 0, 0, 1, 1, 2, 4, 7, 13, 24, 44, 81, 149, 274, 504, 927, 1705, 3136, 5768, 10609, 19513

Question 2 :

Print all combinations of balanced parentheses

Write a function to generate all possible n pairs of balanced parentheses..

Input: n=1
Output: {}

Input : n=2
Output: {}{} {{}}

Question 3 :

Maximum profit after buying and selling stocks with transaction fees

We have an array of positive integers containing the price of stocks and transaction fee, the task is to find the maximum profit and the difference of days on which you are getting the maximum profit.

Input: arr[] = {6, 1, 7, 2, 8, 4} transactionFee = 2
Output: 8 1

Input: arr[] = {7, 1, 5, 3, 6, 4} transactionFee = 1
Output: 5 1

Question 4 :

Longest Increasing Path in Matrix

We have a matrix of N rows and M columns. From m[i][j], we can move to m[i+1][j], if m[i+1][j] > m[i][j], or can move to m[i][j+1] if m[i][j+1] > m[i][j]. The task is to print the longest path length if we start from (0, 0).

Input : N = 4, M = 4

m[][] = { { 1, 2, 3, 4 },
{ 2, 2, 3, 4 },
{ 3, 2, 3, 4 },
{ 4, 5, 6, 7 } };

Output : 7

Longest path is 1 2 3 4 5 6 7.

Input : N = 2, M =2

m[][] = { { 1, 2 },
{ 3, 4 } };

Output :3

Longest path is either 1 2 4 or 1 3 4.

Question 5 :

Number of Parenthesis Combinations

Given N number of parenthesis (pair of opening and closing parenthesis), you have to count all the valid combinations of the parenthesis.

Input : N = 4

Output : 14

//Following 14 combinations

{

((()())), (()()()), (()())(), (()())(), (()()()), (()()())

(()())(), (())()(), (())()(), ()(()()),()()()(), ()()()

()()(()), ()()()()

}

shekharkrish13@gmail.com

Practice on Platform

Question 6 :

House Thief (MEDIUM)

https://leetcode.com/problems/house-robber/

Question 7 :

Longest Palindromic Subsequence (MEDIUM)

https://leetcode.com/problems/longest-palindromic-subsequence/

Question 8 :

Equal Subset Sum Difference (MEDIUM)

https://leetcode.com/problems/partition-equal-subset-sum/

Question 9 :

Mountain Array(Longest Bitonic Subsequence) (HARD)

https://leetcode.com/problems/minimum-number-of-removals-to-make-mountain-array/

Question 10 :

Box Stacking (HARD)

https://leetcode.com/problems/maximum-height-by-stacking-cuboids/

shekharkrish13@gmail.com