PROGRAMM.0ING_SET 2_QUESTIONS :

1) Check IP address:

The IP address must be in the form of string like A.B.C.D

The length of A, B, C, or D can't be greater than 3.

The value of A, B, C, and D should lie between 0 to 255. Following are the valid combinations of each number of an IP address.

Any one- or two-digit number.

Any 3-digit number beginning with 1.

Any 3-digit number beginning with 2 if the second digit is 0 through 4.

Any 3-digit number beginning with 25 if the third digit is 0 through 5.

Leading 0's is not allowed.

Example

Input: str = "172.16.254.1"

Output: True

Input: str = "000.123.12.23.28"

Output: False

Input: str = "I.Am.not.an.ip"

Output: False

2) Java program to find Armstrong number

Example:

input : 153

output : true

input : 111

output : false

Explanation:

1^3 + 5^3 + 3^3 =153

3) Program to count number of duplicate words in given string

input String :"Welcome to Java Session Session Session"

output :2

4) Java Program to reverse each word in String

input :hello world

output :olleh dlrow

5) Java Program to rotate(right) an array

input array:[1,2,3,4,5,6,7]

rotate:2

output :[3,4,5,6,7,1,2]

input array:[90,45,67,54,32,78]

rotate:1

output :[45,67,54,32,78,90]

6) Given a sentence of string, in that remove the palindrome words and print the remaining.

Input:

He did a good deed

Output:

He good

Input:

Hari speaks malayalam

Output:

Hari speaks

7) Given two strings, the task is to find if a string can be obtained by rotating another string can be obtained by rotating another string by n places.3

Examples:

Input:

String1 = "amazon" String2="azonam" rotateCount=2

Output:

Yes

Explanation :

Rotating string1 by 2 places in anti-clockwise given the string2

Input:

String1 = "amazon" String2="zonama" rotateCount=3

Output:

Yes

Explanation :

Rotating string1 by 3 places in clockwise given the string2

8) How to find all the leaders in an integer array in Java?

Write a Java program to find all the leaders in an integer array. An element is said to be a leader if all the elements on it's right side are smaller than it. Rightmost element is always a leader. For example, if {14, 9, 11, 7, 8, 5, 3} is the given array then {14, 11, 8, 5, 3} are the leaders in this array.

Output :

The leaders in [12, 9, 7, 14, 8, 6, 3] are :

3 6 8 14

The leaders in [8, 23, 19, 21, 15, 6, 11] are :

11 15 21 23

The leaders in [55, 67, 71, 57, 51, 63, 38] are :

38 63 71

The leaders in [21, 58, 44, 14, 51, 36, 23] are :

23 36 51 58

9) Harshad Number (Niven Number) Program :

Harshad number or niven number is a number which is divisible by the sum of its digits. For example, 21 is a Harshad number because 21 is divisible by the sum of its digits (2+1=3). An interviewer ask this type of logical programs in interview to test how do you implement logic in your code.

What Is Harshad Number Or Niven Number?

Harshad number or Niven number is a number which is divisible by the sum of its digits.

For example,

21 is a Harshad number because it is divisible by the sum of its digits.

21 –> sum of digits –> 2+1 = 3 and 21 is divisible by 3 –> 21/3 = 7.

111 is a Harshad number because it is divisible by the sum of its digits.

111 –> sum of digits –> 1+1+1 = 3 and 111 is divisible by 3 –> 111/3 = 37

153 is a Harshad number. It is divisible by the sum of its digits.

153 –> sum of its digits –> 1+5+3 = 9 and 153 is divisible by 9 –> 153/9 = 17

10) Reverse and add until you get a palindrome :

Write a Java program to take input number from the user, reverse it and add it to itself. If the sum is not a palindrome then repeat the procedure until you get a palindrome.

Example :

If 7325 is input number, then

7325 (Input Number) + 5237 (Reverse Of Input Number) = 12562

12562 + 26521 = 39083

39083 + 38093 = 77176

77176 + 67177 = 144353

144353 + 353441 = 497794 (Palindrome)

Input :

Enter Number :7325

Output:

7325 + 5237 = 12562

12562 + 26521 = 39083

39083 + 38093 = 77176

77176 + 67177 = 144353

144353 + 353441 = 497794

11) Reverse the string with preserving the position of spaces :

Write a Java program to reverse a string with preserving the position of spaces. For example, if “I Am Not String” is the given string then the reverse of this string with preserving the position of spaces is “g ni rtS toNmAI”.

Output :

I Am Not String —> g ni rtS toNmAI

JAVA JSP ANDROID —> DIOR DNA PSJAVAJ

1 22 333 4444 55555 —> 5 55 554 4443 33221

12) Diamond Pattern :

```
    A
   A B
  A B C
 A B C D
A B C D E
A B C D E F
A B C D E F G
A B C D E F
A B C D E
A B C D
A B C
A B
A
```

13) Disarium Number Program In Java

Write a Java program which checks whether given number is Disarium number or not. A number is said to be Disarium if it is equal to sum of its digits raised to the power of their respective position in the number.

135 is a Disarium number. Because, it is equal to sum of its digits raised to the power of their respective position.

135 = 11 + 32 + 53

135 = 1 + 9 + 125

135 = 135

14) Problem : Print All Substrings Of A String In Java

Write a Java program or function which prints all substrings of a given string. Your program should take input string from the user and print it's all possible substrings. For example, if "Java" is the input string then its all possible substrings are,

J

Ja

Jav

Java

a

av

ava

v

va

a

15) Pronic number program in Java

Write a Java program to check whether the given number is pronic or not. Pronic number is a number which is the product of two consecutive integers i.e n(n+1).

Pronic Number Examples :

Below are some examples of Pronic number.

2 = 1 x 2

6 = 2 x 3

12 = 3 x 4

20 = 4 x 5

30 = 5 x 6

42 = 6 x 7

56 = 7 x 8

72 = 8 x 9

90 = 9 x 10

Output 1 :

Enter a number :

342

342 is a pronic number

18 x 19 = 342

Output 2 :

Enter a number :

1406

1406 is a pronic number

37 x 38 = 1406

Output 3 :

Enter a number :

979

979 is not a pronic number

16) How to find saddle point of a matrix in Java?

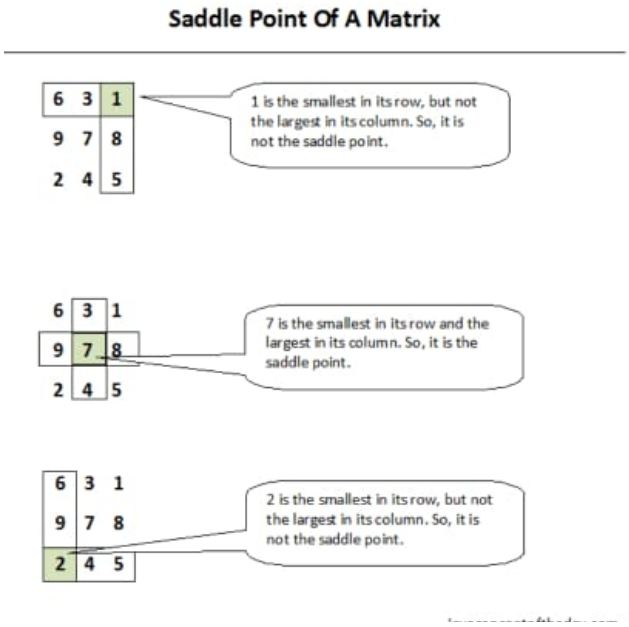
Saddle point of a matrix is an element in the matrix which is smallest in its row and largest in its column. For example,

6 3 1

9 7 8

2 4 5

In this matrix, 7 is the saddle point. Because it is the smallest in its row (2nd row) and largest in its column (2ndcolumn).



17) Selection Sort

18) Bubble sort

19) Insertion sort

20) Quick sort

21) Linear Search

22) Binary Search

23) Write a program in Java to print the elements of the matrix in Wave Order as shown below. (The matrix can have different numbers of rows and columns).

Input:

1 2 3

4 5 6

7 8 9

Output:

1 4 7

8 5 2

3 6 9

24) How to check whether one string is a rotation of another in Java?

Write a Java program to check whether one string is a rotation of another. For example, If “JavaJ2eeStrutsHibernate” is a string then some rotated versions of this string are “StrutsHibernateJavaJ2ee”, “J2eeStrutsHibernateJava“, “HibernateJavaJ2eeStruts“.

25) How to Convert Math number to equivalent readable word in java?

The format for writing numbers in words is like this

Unit,ten,hundred,thousand,million,billion,trillion,quadrillion,quintillion.

For example :

Input : 123456789

Output: One hundred twenty three million four hundred fifty six thousand seven hundred eighty nine

26) How to remove specific characters in the String?

To remove specific characters in the String .For example,

If the original string is "Alive is awesome" and the user inputs string to remove "alwsr" then it should print "ive i eome" as output .

If the original string is "Learning never stops" and the user inputs string to remove "estp" then the it should print "Larning nvr o" as output .

27) find the Determinant of
Input :
A = {1 2 3 }
{4 5 6 }
{7 8 9 }
Output:
1 [5(9) - 6(8)] - 2 [4(9) - 6(7)] + 3 [4(8) - 5(7)] =0

28) find the Transpose of Matrix
Input:

$$M = \begin{bmatrix} 2 & -9 & 3 \\ 13 & 11 & -17 \\ 3 & 6 & 15 \\ 4 & 13 & 1 \end{bmatrix}$$

Output:

$$M^T = \begin{bmatrix} 2 & 13 & 3 & 4 \\ -9 & 11 & 6 & 13 \\ 3 & -17 & 15 & 1 \end{bmatrix}$$

29) Multiply two strings
Input : num1 = “4154”
num2 = “51454”
Output : 213739916

30) In MS-Paint, when we take the brush to a pixel and click, the color of the region of that pixel is replaced with a new selected color. Following is the problem statement to do this task.
Given a 2D screen, location of a pixel in the screen and a color, replace color of the given pixel and all adjacent same colored pixels with the given color.
Example:

Input:
screen[M][N] = { {1, 1, 1, 1, 1, 1, 1, 1},
{1, 1, 1, 1, 1, 1, 0, 0},
{1, 0, 0, 1, 1, 0, 1, 1},
{1, 2, 2, 2, 2, 0, 1, 0},
{1, 1, 1, 2, 2, 0, 1, 0},
{1, 1, 1, 2, 2, 2, 2, 0},
{1, 1, 1, 1, 1, 2, 1, 1},
{1, 1, 1, 1, 1, 2, 2, 1},
};
x = 4, y = 4, newColor = 3
The values in the given 2D screen indicate colors of the pixels.
x and y are coordinates of the brush, newColor is the color that
should replace the previous color on screen[x][y] and all surrounding
pixels with same color.
Output:
Screen should be changed to following.
screen[M][N] = { {1, 1, 1, 1, 1, 1, 1, 1},
{1, 1, 1, 1, 1, 1, 0, 0},
{1, 0, 0, 1, 1, 0, 1, 1},
{1, 3, 3, 3, 3, 0, 1, 0},
{1, 1, 1, 3, 3, 0, 1, 0},
{1, 1, 1, 3, 3, 3, 3, 0},
{1, 1, 1, 1, 1, 3, 1, 1},
{1, 1, 1, 1, 1, 3, 3, 1},
};

31) Given two dates, find total number of days between them.
Input: dt1 = {10, 2, 2014} dt2 = {10, 3, 2015}
Output: 393

dt1 represents “10-Feb-2014” and dt2 represents “10-Mar-2015” The difference is 365 + 28
Input: dt1 = {10, 2, 2000} dt2 = {10, 3, 2000}
Output: 29
Note that 2000 is a leap year
Input: dt1 = {10, 2, 2000} dt2 = {10, 2, 2000}
Output: 0
Both dates are same
Input: dt1 = {1, 2, 2000}; dt2 = {1, 2, 2004};

Output: 1461
Number of days is 365*4 + 1

32) Given a matrix of 2D array of n rows and m columns. Print this matrix in ZIG-ZAG fashion as shown

in figure.

Example:

Input:

1 2 3

4 5 6

7 8 9

Output:

1 2 4 7 5 3 6 8 9

33) Remove the duplicates in the String.

Testcase 1:

Input: Java1234

Output: Javb1234 (Remove the second ‘a’ as it is duplicated)

Testcase 2:

Input: Python1223:

Output: Python1234 (Replace the second 2 with 3, and replace 3 with 4 as 3 is replaced for the duplicated

Testcase 3:

Input: aBuzZ9900

Output: aBuzC9012

(Replace the second ‘Z’ with ‘C’ as ‘a’ and ‘B’ are already there in the String. Replace with capital C as the letter to be replaced is capital Z. The second 9 turns out to be zero and the zero turns out to ‘1’ and the

second zero turns out to ‘2’)

34) Password Strength

Find the strength of the given password string based on the conditions

Four rules were given based on the type and no. of characters in the string.

Input : Qw!1 Output: Weak

Input: Qwertyuiop Output: Medium

Input: QwertY123 Output: Good

Input: Qwerty@123 Output: Strong

35) You are given an array prices where prices[i] is the price of a given stock on the day.

You want to maximize your profit by choosing a single day to buy one stock and choosing a different

day in the future to sell that stock.

Return the maximum profit you can achieve from this transaction. If you cannot achieve any

profit, return 0.

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

Output-1 : 5

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

Input-2 : prices = [7,6,4,3,1]

Output-2 : 0

36) A number is said to be twisted prime if it is a prime number and reverse of the number is also a

prime number.

Input : 97

Output : Twisted Prime Number

Explanation: 97 is a prime number and its reverse 79 is also a prime number.

37) Given an array of integers, compute the maximum value for each integer in the index, by either summing all the digits or multiplying all the digits. (Choose which operation gives the maximum value)

- Input:
- 5
- 120 24 71 10 59
- Output:
- 3 8 8 1 45

Explanation: For index 0, the integer is 120. Summing the digits will give 3, and whereas Multiplying the digits gives 0. Thus, maximum of this two is 3.

38) Given N. print the Latin Matrix (say N = 3). condition: must not use strings(aka character literals), arrays (both 1D and 2D), inbuilt functions(like rotate).

A B C

B C A

C A B

39) Given a 6 blocks, of different height h1, …, h6 . Make 2 towers using 3 Blocks for each tower in desired height h1, h2. Print the blocks to be used in ascending order

Input:

1 2 5 4 3 6

height of tower: 6 15

Output :

1 2 3 & 4 5 6

40) Print second frequently occurring number in given series

Example :

Input: 1 1 2 3 1 2 4

Output: 2

Explanation: 1 occurs 3 times, 2 occurs 2 times, 3 occurs 1 time and 4 occurs 1 time. Hence second frequently occurring number in given series is 2

41) Replace every element with the greatest element on right side

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Given an array of integers, replace every element with the next greatest element (greatest element on the

right side) in the array. Since there is no element next to the last element, replace it with -1. For example,

if the array is {16, 17, 4, 3, 5, 2}, then it should be modified to {17, 5, 5, 5, 2, -1}.

42) Given a Boolean matrix mat[M][N] of size M X N, modify it such that if a matrix cell mat[i][j] is 1 then ma

ke its adjacent cells as 0.

43) Equilibrium index of an array is an index such that the sum of elements at lower indexes is equal to the

sum of elements at higher indexes. For example, in an array A:

Example :

Input: A[] = {-7, 1, 5, 2, -4, 3, 0}

Output: 3

3 is an equilibrium index, because:

A[0] + A[1] + A[2] = A[4] + A[5] + A[6]

Input: A[] = {1, 2, 3}

Output: -1

44) Print whether the version is upgraded, downgraded or not changed according to the input given.

example:

Input : Version1 4.8.2 Version2 4.8.4

Output: upgraded,

Input : Version1 4.0.2 Version2 4.8.4

Output: downgraded

45) Q2. Print all possible subsets of the given array whose sum equal to given N.

example: Input: {1, 2, 3, 4, 5} N=6 Output: {1, 2, 3}, {1, 5}, {2, 4}

46) Reverse the words in the given String1 from the first occurrence of String2 in String1 by maintaining white Spaces.

example:

Input:

String1 = This is a test String only

String2 = st

Output: This is a only String test

47) calculate Maximum number of chocolates can eat and Number of wrappers left in hand.

Money: Total money one has to spend.

Price: price per chocolate.

wrappers: minimum number of wrappers for exchange choco: number of chocolate for wrappers.

Max visit: Maximum number of times one can visit the shop.(if zero consider it infinite)

example: input: Money:40 Price:1 wrappers:3 choco:1 Max visit:1 Output: total chocolate can eat: 53 wrappers left in hand:14

48) Print the word with odd letters – PROGRAM

Sample Output-

```
P       P
 R     R
  O  O
    G
  R  R
 A    A
M      M
```

49) Sample Input – Alternate Sorting

Input: {1, 2, 3, 4, 5, 6, 7}

output: {7, 1, 6, 2, 5, 3, 4}

50) Given an array of values persons[], each represents the weight of the persons. There will be infinite bikes available. Given a value K which represents the maximum weight that a bike accommodates. Along with that one more condition, a bike can carry two persons at a time. You need to find out the least number of times, the bike trips are made.

51) Assume there exists infinite grid, you're given initial position x, y. Inputs will be movements either L or R or U or D. After n inputs, you need to give the current position.

- Input:
- 4 5 //initial position x, y
- 9 //number of movements
- U L R R D D U L R //7 movements
- Output:

5 5

- Given a matrix NxN, you are initially in the 0, 0 position. The matrix is filled with ones and zeros. Value "one" represents the path is available, while "zero" represents the wall. You need to find the can you able to reach the (N-1)x(N-1) index in the matrix. You can move only along the right and down directions if there's "one" available.

- Input:
- 5 //N value
- 1 0 1 0 0
- 1 1 1 1 1
- 0 0 0 1 0

• 1 0 1 1 1

• 0 1 1 0 1

• Output:

Yes

52) Given an array of integers, compute the maximum value for each integer in the index, by either summing all the digits or multiplying all the digits. (Choose which operation gives the maximum value)

• Input:

• 5

• 120 24 71 10 59

• Output:

• 3 8 8 1 45

Explanation: For index 0, the integer is 120. Summing the digits will give 3, and whereas Multiplying the digits gives 0. Thus, maximum of this two is 3.

53) -1 represents ocean and 1 represents land find the number of islands in the given matrix.

Input: n*n matrix

1 -1 -1 1

-1 1 -1 1

-1 -1 1 -1

-1 -1 -1 1

Output: 2 (two islands that I have

bold in matrix at 1, 1 and 2, 2)

54) There is a circular queue of processes. Every time there will be certain no of process skipped and a particular start position. Find the safe position.

Input: Number of process:5

Start position:3

Skip: 2nd

Output: 1 will be the safest position

(Logic: 1 2 3 4 5 starting from 3, 5th process will be skipped

1 2 3 4 5 process 2 will be skipped

1 2 3 4 5 process 4 will be skipped

1 2 3 4 5 process 3 will be skipped, so safest process is 1.

55) Given N. print the following snake pattern (say N = 4). condition: must not use arrays (1D array or 2D

array like Matrix).

1 2 3 4

8 7 6 5

9 10 11 12

16 15 14 13

56) Given a number N. find the minimum count of numbers in which N can be represented as a sum of numbers x1, x2, … xn. where xi is number whose digits are 0s and 1s.

example

1) i/p : N = 33

o/p : count = 3. 33(11 + 11 + 11)

some other possibilities of 33 is (11 + 11 + 10 + 1), (11 + 10 + 10 + 1 + 1), (10 + 10 + 10 + 1 + 1 + 1)

57) Given an array of integers, write a program to re-arrange the array in the given form.

1st_largest, 1st_smallest, 2nd_largest, 2nd_smallest, 3rd_largest ……. etc.