C Programming Topic Wise Questions

Table of Contents

Introduction to C Programming

Q1. A newbie in C write the below given program to print integer output help him with rewriting program.

```
#include<stdio.h>
void main ()
{
        int 1_one = 25;
        printf("%d",1_one);
}
```

Q2. Write a C program to take a one-line text as input in string s from user and print Hello, World! followed by input string provided by user.

Example

s=" Life is beautiful "

The required output is:

Hello, World!

Life is beautiful

Input:

Welcome to C programming.

Output:

Hello, World!

Welcome to C programming.

Q3. Write a C program to swap two numbers without using the third variable.

***Input**:*

Enter two numbers:

x=50

y=60

***Output**:*

x=60

y=50

Q4. Write a C program to add to number without using "+" operator.

***Input**:*

Enter two numbers:

20

40

***Output**:*

60

Variables in C

Q5. Write a C program to convert a string to an unsigned long integer.

***Input**: 25*

***Output:** 25*

Q6. Write a C program to convert float number to string.

In program it should print with %s

***Input**: 23.34*

Output:

The string for the num is 23.34

Conditional Execution in C (if else/switch)

If Else Case

Q11. Write a C program to print “Hello World” without using semicolon even once?

Hint: Think out of the box

Q12. Given an integer N and a pizza which can be cut into pieces, each cut should be a straight line going from the center of the pizza to its border. Also, the angle between any two cuts must be a positive integer. Two pieces are equal if their appropriate angles are equal.

The given pizza can be cut in following three ways:

- Cut the pizza into **N equal pieces**.
- Cut the pizza into **N pieces of any size**.
- Cut the pizza into **N pieces** such that **no two of them are equal**.

The task is to find if it is possible to cut the pizza in the above ways for a given value of **N**.
Print **1** if **possible** else **0** for all the cases i.e. print 111 if all the cases are possible.

Input: *N = 4*

Output*: 1 1 1*

Case 1: All four pieces can have angle = 90

Case 2: Same cut as Case 1

Case 3: 1, 2, 3 and 354 are the respective angles of the four pieces cut.

Input: *N = 7*

Output: *0 1 1*

Q13. Write a C program to count total number of notes in given amount

Input

Input amount: 575

Output

Total number of notes:

500: 1

100: 0

50: 1

20: 1

10: 0

5: 1

2: 0

1: 0

Switch Case

Q14. Write a C program to input an alphabet and check whether it is vowel or consonant using switch case.

Input

Input alphabet: c

Output

'c' is consonant

Q15. Write a C program to input hex number and convert it into binary using switch case.

Input

Input Hex Number: 1AC5

Output

Loops in C

For Loop

Q16. In the below code, change/add only one character and print '*' exactly 20 times.

```
void main (){

    int i, n = 20;

    for (i = 0; i < n; i--)

    printf ("*");

    getchar ();

}
```

Q17. Write a C program to get the sum of digit of given number in single statement line.

Input : *n = 687*

Output: *21*

Input : *n = 12*

Output*: 3*

Q18. Write a C program to create below pattern

Hint: Think out of the box

Q19. Write a C program to take row and column and print output pattern as shown

Input

Input rows: 5

Input columns: 5

Output

10001

01010

00100

01010

10001

Hint: Think out of the box

While Loop

Q20. Write a C Program to Check Whether a Number is Palindrome or Not

***Input**:*

12121

***Output**:*

True

***Input**:*

12121

***Output**:*

False

Q21. Write a C program to convert integer to roman.

Input

Enter a number: 1996

Output

mmxii

Arrays in C

Integer Array

Q22. Given an array nums with n objects colored red, white, or blue, sort them in-place so that objects of the same color are adjacent, with the colors in the order red, white, and blue.

We will use the integers 0, 1, and 2 to represent the color red, white, and blue, respectively.

Example 1:

Input: *nums = [2,0,2,1,1,0]*

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

Example 2:

Input: *nums = [2,0,1]*

Output: *[0,1,2]*

Example 3:

Input: *nums = [0]*

Output: *[0]*

Example 4:

Input: *nums = [1]*

Output: *[1]*

Q23. Write a C program to find the maximum amount of water that C program to find maximum amount of water that can be trapped within given set of bars. block height are given as input in an array and assuming each block of size 1m.

***Input 0**:*

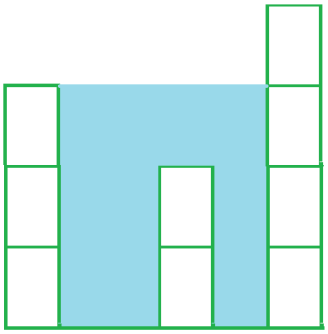
N = 4

arr [] = {7,4,0,9}

***Output 0**:*

10

***Explanation**:*



Bars for input {3, 0, 0, 2, 0, 4}
Total trapped water = 3 + 3 + 1 + 3 = 10

Water trapped by above

block of height 4 is 3 units and above

block of height 0 is 7 units. So, the

total unit of water trapped is 10 units.

***Input 1**:*

N = 3

arr [] = {6,9,9}

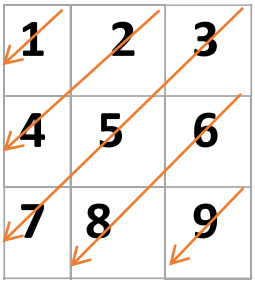
***Output 1**:*

0

***Explanation:** No water trapped*

Q24. Given a square matrix of size N*N, return an array of its anti-diagonals. For better understanding let us look at the image given below

Input:



Output:

1

2 4

3 5 7

6 9 8

9

Q25. Write a C program that, given an array A[] of n numbers and another number x, determines whether or not there exist two elements in S whose sum is exactly x.

Input: *arr[] = {0, -1, 2, -3, 1}*

sum = -2

Output: *-3, 1*

If we calculate the sum of the output,

1 + (-3) = -2

Input: *arr[] = {1, -2, 1, 0, 5}*

sum = 0

Output: *-1*

No valid pair exists.

Char Array

Q26. Write a C program to reverse a String in C

***Input**: ANU*

***Output**: UNA*

Q27. Write a C program to implement following string library operations on given string s1, s2 and character ch accordingly.

a. strlen
b. strcmp
c. strcpy
d. strcat
e. strstr
f. strchr

Q28. Write C program for the below pyramid string pattern.

Enter a string: PROGRAM

Enter number of rows: 5

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

Q29. Write a C program find the first occurrence of a character in a given string with the help of library function.

***Input**: str[] = 'This is a string' , ch =’a’*

***Output**: 9*

***Input**: str[] = 'My name is Anu', ch =’a’*

***Output** : 5*

Q30. Write a C program to check if strings are rotations of each other or not. Given a string s1 and a string s2, write a snippet to say whether s2 is a rotation of s1?

Input: *str1 =ABCD, str2= CDAB*

Output*: True*

Explanation: *ABCD and CDAB are rotation of each other*

Input*: str1 =ABCD, str2= ACBD*

Output*: False*

Q31. Write a C program to check if strings are anagrams of each other or not. Given a string s1 and a string s2, write a snippet to say whether s2 is an anagrams of s1?An anagram of a string is another string that contains the same characters, only the order of characters can be different. For example, “abcd” and “dabc” are an anagram of each other.

Input: *str1 =LISTEN, str2= SILENT*

Output*: True*

Input*: str1 =abcd, str2= pqrs*

Output*: False*

Q32. Write a C Program to Sort set of strings in alphabetical order string taken as input from user.

Input: *4*

Nanu

Manu

Tanu

Anu

Output:

Anu

Manu

Nanu

Tanu

Pointers in C

Integer Array using pointers

Q33. Write a program in C to store n elements in an array and print the elements using pointer

Input *the number of elements to store in the array :5*

Input 5 number of elements in the array :

element - 0 : 5

element - 1 : 7

element - 2 : 2

element - 3 : 9

element - 4 : 8

Expected Output *:*

The elements you entered are :

element - 0 : 5

element - 1 : 7

element - 2 : 2

element - 3 : 9

element - 4 : 8

Q34. Given a square matrix, turn it by 90 degrees in anti-clockwise direction without using any extra space.

Input:

1 2 3

4 5 6

7 8 9

Output:

3 6 9

2 5 8

1 4 7

Rotated the input matrix by

90 degrees in anti-clockwise direction*.*

Char Array using pointers

Q35. Write a C program to find the occurrence of the word and replace a word in a text by another given word.

Given three strings 'str', 'oldW' and 'newW'. The task is find all occurrences of the word 'oldW' and replace them with word 'newW'.

***Input**: str [] = " All is well",*

oldW [] = "is",

newW [] = "izzz"

***Output:** All izzz well*

Q36. Write a C program to compare two string using pointers (take two string s1 and s2 print equal if both the strings are equal else print not equal)

***Input:** s1 = "for", s2 = "formula"*

***Output:** not equal*

Explanation:

Strings are not equal

***Input:** s1 = "learn", s2 = "learn"*

***Output:** equal*

Explanation:

Strings are equal

Q37. Given a string s we need to tell minimum characters to be appended (insertion at end) to make a string palindrome.

Input: *s = "abede"*

Output*: 2*

*We can make string palindrome as "abede**ba**"*

*by adding **ba** at the end of the string.*

Input: *s = "aabb"*

Output*: 2*

*We can make string palindrome as "aabb**aa**"*

*by adding **aa** at the end of the string.*

Functions in C

Q38. Write a one-line C function to round floating point numbers

Input: 1.67

Output: 2

Q39. Write a C function to find the parity of an unsigned integer. Parity of a number refers to whether it contains an odd or even number of 1-bits. The number has "odd parity", if it contains odd number of 1-bits and is "even parity" if it contains even number of 1-bits.

Example:

Input*: n = 7*

Output:

parity = 1

Q40. Write a C program to print numbers from 1 to 100 without using a loop

Hint: Think out of the box

Q41. Write a C Program to illustrate the following global variables and local variables

Concept: Basic understanding

Function using integer array

Q42. Write a C function to find count of square in given a m x n rectangle.

Input: *m = 2, n = 2*

Output: 5

There are 4 squares of size 1x1 + 1 square of size 2x2.

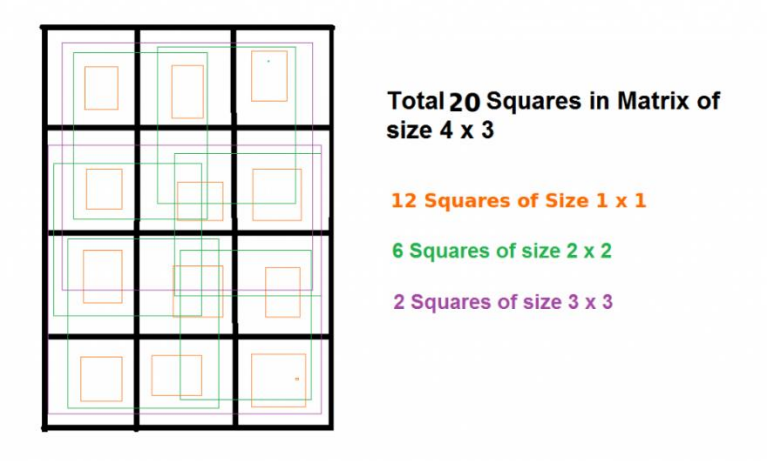
Input: *m = 4, n = 3*

Output: *20*

There are 12 squares of size 1x1 +

6 squares of size 2x2 +

2 squares of size 3x3



Q43. Write a C program to implement iterative Binary Search.
A iterative binary search function. It returns location of x in given array arr[l..r] if present, otherwise -1.

Enter number of elements*:*

5

Enter 5 integers:

1

9

22

24

46

Input:

*Enter the value to find**:***

24

Output:4

24 is present at index 4.

Input:

*Enter the value to find**:***

4

Output: -1

4 is not present.

Q44. Write a C function to find the count of the number of ways to reach from source to destination in a given a maze with obstacles, count number of paths to reach rightmost-bottommost cell from topmost-leftmost cell. A cell in given maze has value -1 if it is a blockage or dead end, else 0.
From a given cell, we are allowed to move to cells (i+1, j) and (i, j+1) only.

Input: *maze[R][C] = {{0, 0, 0, 0},*

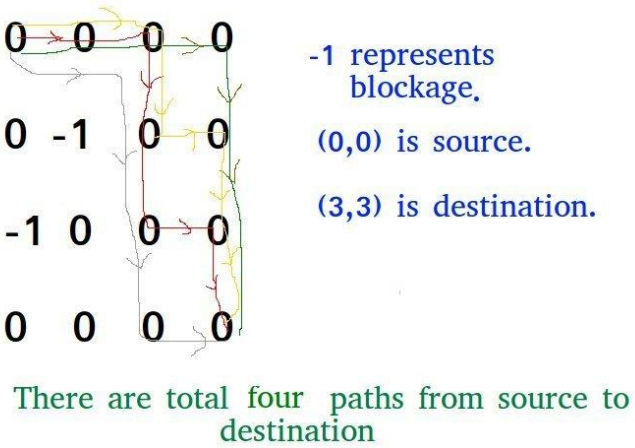
{0, -1, 0, 0},

{-1, 0, 0, 0},

{0, 0, 0, 0}};

Output: *4*

There are four possible paths as shown in below diagram.



Functions using char Array

Q45. Write a C program to implement strstr library function (take two string s1 and s2, if first string s1 is substring of second string s2 then return index number else it will return -1 if string is not matching)

Input: *s1 = "for", s2 = "formula"*

Output: *5*

Explanation:

String "for" is present as a substring

of s2.

Input: *s1 = "practice", s2 = "learn"*

Output: *-1.*

Explanation:

There is no occurrence of "practice" in

"learn"

Q46. Given two strings where first string may contain wild card characters and second string is a normal string. Write a function that returns true if the two strings match. The following are allowed wild card characters in first string.

** --> Matches with 0 or more instances of any character or set of characters.*

? --> Matches with any one character.

Example 1:

Input: *s = "aa", p = "a"*

Output: *false*

Explanation: *"a" does not match the entire string "aa".*

Example 2:

Input: *s = "aa", p = "*"*

Output: *true*

Explanation: *'*' matches any sequence.*

Example 3:

Input: *s = "cb", p = "? a"*

Output: *false*

Explanation: *'?' matches 'c', but the second letter is 'a', which does not match 'b'.*

Example 4:

Input: *s = "adceb", p = "*a*b"*

Output: *true*

Explanation: *The first '*' matches the empty sequence, while the second '*' matches the substring "dce".*

Example 5:

Input: *s = "acdcb", p = "a*c? b"*

Output: *false*

Q47. Write code to convert a given 4-digit number into words.

Input: *1234*

Output: *one thousand two hundred thirty four*

Q48. Write a C program given a string containing lowercase characters. The task is to print the maximum occurring character in the input string. If 2 or more characters appear the same number of times, print the lexicographically (alphabetically) lowest (first) character

Input: *test sample*

Output*: e*

't', 'e' and 's' appears 2 times, but 'e' is the lexicographically smallest character.

Input*: sample program*

Output*: a*

Q49. Given a string s input it from user, write a C function to find the length of the longest substring, it will return count and take input as given string

Example 1:

Input: s = "abcabcbb"

Output: 3

Explanation: The answer is "abc", with the length of 3.

Example 2:

Input: s = "bbbbb"

Output: 1

Explanation: The answer is "b", with the length of 1.

Example 3:

Input: s = "pwwkew"

Output: 3

Explanation: The answer is "wke", with the length of 3.

Notice that the answer must be a substring, "pwke" is a subsequence and not a substring.

Example 4:

Input: s = ""

Output: 0 without repeating characters

Q50. Write a program to Validate an IPv4 Address. IPv4 addresses are canonically represented in dot-decimal notation, which consists of four decimal numbers, each ranging from 0 to 255, separated by dots, e.g., 172.16.254.1

Input: *128.0.0.1*

Output: *valid*

Explanation:

This is a valid IP address.

Input: *"125.512.100.abc"*

Output: *Invalid*

Explanation:

invalid IP address with this string.

**********END**********