**Roll No…………….. Total No. of Pages:……**

**FUNDAMENTALS OF C PROGRAMMING**

**Time allowed: 90 Minutes Max. Marks: 40**

**General Instructions:**

* **Follow the instructions given in each section.**
* **Make sure that you attempt the questions in order.**

**SECTION-A (10\*1 mark=10 marks)**

***(All questions are compulsory)***

Q1 What is the purpose of the strcat() function in C language?

A) To concatenate two strings \*(Correct option)

B) To compare two strings

C) To reverse a string

D) None of the above

Q2 What is the purpose of the break statement in C language?

A) To exit a loop \*(Correct option)

B) To continue a loop

C) To transfer control to another part of the program

D) None of the above

Q3 What is the purpose of the void pointer in C language?

A) To hold the address of any data type \*(Correct option)

B) To hold the value of any data type

C) To compare two pointers

D) None of the above

Q4 What is the purpose of the call by reference in C language?

A) To pass the value of an argument to a function

B) To pass the address of an argument to a function \*(Correct option)

C) To pass a pointer to a function

D) None of the above

Q5 What is an array in C language?

A) A collection of variables of the same data type \*(Correct option)

B) A collection of variables of different data types

C) A single variable

D) None of the above

Q6 What is the purpose of the & operator in C language?

A) To get the address of a variable \*(Correct option)

B) To get the value of a variable

C) To compare two variables

D) None of the above

Q7 What is the purpose of the \* operator in C language?

A) To get the value stored at an address \*(Correct option)

B) To get the address of a variable

C) To compare two variables

D) None of the above

Q8 Can you change the size of an array once it has been declared in C language?

A) Yes

B) No \*(Correct option)

C) Can be changed while passing to other functions

D) Cannot be changed only when passing to other functions

Q9 What is the purpose of the for loop in C language when working with arrays?

A) To access elements of an array

B) To compare elements of an array

C) All of the Above \*(Correct option)

D) None of the above

Q10 Can you store elements of different data types in an array in C language?

A) Yes

B) No \*(Correct option)

C) Only Character array can store ‘Double’ type values

D) Only Integer array can store a string

**SECTION-B (5\*2 mark=10 marks)**

***(All questions are compulsory)***

11.Can you nest a for loop inside a while loop in C?

a) Yes \*(Correct option)

b) No

c) Only if the inner loop is a while loop

d) Only if the inner loop is a for loop

12. What is the purpose of the void keyword in C?

a) To specify that a function does not return a value \*(Correct option)

b) To declare a variable as void

c) To declare a pointer as void

d) To specify that a function returns a void value

13. What is the syntax for declaring a pointer in C?

a) pointer\_name;

b) &pointer\_name;

c) \*pointer\_name; \*(Correct option)

d) pointer\_name \*;

14.What will be the output of the following code?

int arr[2][2] = {{1, 2}, {3, 4}};

printf("%d", \*\*arr + \*(\*(arr+1)+1));

a) 4

b) 5 \*(Correct option)

c) 6

d) 7

15.What will be the output of the following code?

char name[10] = "Hit";

char \*ptr = name;

printf("%c", \*ptr+3);

a) 'H'

b) 'e'

c) 'K' \*(Correct option)

d) "llo"

**SECTION-C(Coding Question) (2x5 marks=5 marks)**

Q16 Chaitanya has an array A. He wants to find how many integers x, present in the array such that the number of integers less than x in the array equals to x.

**Input:**

The first line contains an integer N giving the size of the array.

Second line has an integer array A of size N

**Constraints:**

1<=**n**<=10^5

0<= **A[i]** <=50

**Output:**

Print number of x in the array.

Sample test Cases

|  |  |  |
| --- | --- | --- |
|  | Input | Output |
| STC1 | 5  1 2 4 5 0 | 1 |
| STC2 | 4  2 1 3 3 | 2 |

**Solution 16:**

#include<stdio.h>

int solve(int n, int a[],int b[])

{

for(int i=0;i<51;i++)

{

int count=0;

for(int j=0;j<n;j++)

{

if(a[j] < i)

{

count++;

}

}

b[i] = count;

}

int ans=0;

for(int i=0;i<51;i++)

{

if(b[i] ==i)

{

ans++;

}

}

return ans;

}

int main()

{

int b[51];

for(int i=0;i<51;i++)

{

b[i] = -1;

}

int n,j;

scanf("%d",&n);

int a[n];

for(int i=0;i<n;i++)

{

scanf("%d",&a[i]);

}

int ans = solve(n,a,b);

printf("%d",ans);

return 0;

}

**Test Cases**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Input | 5  13 22 23 49 50 | 3  1 1 2 | 10  0 1 1 1 1 1 1 1 1 6 |
| Output | 0 | 1 | 8 |

Q17. Suppose you have given a string, your job is to count the occurrence of any character in the given string.

**Input:**

a string

a character of the given string

**Constraints:**

1 <= r <= 10

1 <= c <= 10

**Output:**

Occurrence of given character in a string

Example -

Enter a string: we are chitkara

Enter a character to find its frequency: a

Frequency of a = 3

**Solution**

#include <stdio.h>

int main() {

char str[1000], ch;

int count = 0;

printf("Enter a string: ");

fgets(str, sizeof(str), stdin);

printf("Enter a character to find its frequency: ");

scanf("%c", &ch);

for (int i = 0; str[i] != '\0'; ++i) {

if (ch == str[i])

++count;

}

printf("Frequency of %c = %d", ch, count);

return 0;

}

**Test Cases**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Input | Enter a string: anoop  Enter a character to find its frequency: o | Enter a string: anoop  Enter a character to find its frequency: x | Enter a string: 12341  Enter a character to find its frequency: 1 |
| Output | Frequency of o = 2 | Frequency of x = 0 | Frequency of 1 = 2 |

**SECTION-D (Coding Question)(1x10 mark=10 mark)**

Q18 **Problem Statement: A string is obtained as input from the user and all the characters other than the alphabets are removed from the string and the output string containing only the alphabets is displayed.**

**Sample Input**

**We23lc333om@#e**

**Sample Output**

**Welcome**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test Case 1 | Test Case 2 | Test Case 3 |
| Input | Univer90\*()sity | Chi123\*()tkara | Wel32439(\*come |
| Output | University | Chitkara | Welcome |

**#Solution**

#include<stdio.h>

int main()

{

char input[150];

int i, j;

gets(input);

for (i = 0; input[i] != '\0'; ++i)

{

while (!((input[i] >= 'a' && input[i] <= 'z') || (input[i] >= 'A' && input[i] <= 'Z') || input[i] == '\0'))

{

for (j = i; input[j] != '\0'; ++j)

{

input[j] = input[j + 1];

}

input[j] = '\0';

}

}

puts(input);

return 0;

}