

## Important Short Questions

**Q2. Give short answers of the following questions**

**Q1. Why array is used in programming?**

**Ans.** Array allows programmer to use a single variable name to represent a collection of same type of data. This reduces the program size, provides an easy way of handling list of numbers or strings and makes computer programming task simple and easy.

**Q2. Define an array**

**Ans.** An array is a collection of same type of elements stored in contiguous memory locations.

**Q3. What is the structure of an array?**

**Ans.** Array consists of contiguous memory locations and each cell represents an element of the array.

**Q4. Define index**

**Ans.** The number within the square brackets is called index and it is used to access a specific element of the array. The first element of the array always has the index 0.

**Q5. What is required to declare an array?**

**Ans.** To declare an array in C++ the type of the elements, the name of the array and the number of elements it is required to store need to be mentioned in the declaration statement.

**Q6. State the syntax to declare an array**

**Ans.** The following is the general form of declaration of array

**Datatype arrayname [arraysize];**

**Q7. Define sizeof() function**

**Ans.** The sizeof() function provides the number of bytes occupied to store values for data type named within the parenthesis. It is used to determine the amount of storage reserved for int, float, double, char etc data types.

**Q8. Define two dimensional array.**

**Ans.** A two dimensional array uses a single variable name to represent a collection of same type of data that is in the form of a table or matrix. It has two dimensional i.e. variable and horizontal dimensions. Vertical dimension represents rows and horizontal dimension represents columns. Two dimensional array provides an easy way of handling data that is stored in the form of table

**Q9. State the general form of declaration of two dimensional array.**

**Ans.** The following is the general form of declaration array

**Datatype arrayname [rowsize] [columnsize];**

**Q10. Define string**

**Ans.** String is a sequence of characters. In C++ character string is stored in a one dimensional array of char data type. Each element of character string holds one character.

**Q11. Define null character**

**Ans.** All the strings end with a special character, known as null character and it is represented by "\0". The null character is automatically appended at the end of string.

**Q12. How we declare a string?**

**Ans.** To declare a string in C++ the data type char, the name of string and the number of character it is required to store is mentioned in the declaration statement.

**Q13. State the general form of declaration statement?**

**Ans.** The following is the general form of declaration of string

**Char stringname [stringsize];**

**Q14. State the second method to initialize string variable**

**Ans.** Second method that is used to initialize a string variable is to type the contents within the curly brackets but without mentioning its size by leaving the square brackets empty.

**Q15. Which header file is used for string?**

**Ans.** To use strings in computer programs, it is essential to learn how string functions are used. The header file <String.h> is used when string functions are used in the program. C++ supports a large number of string handling functions in the standard library <String.h>

**Q16. Name some commonly used string functions**

**Ans.** the most commonly used string functions are described as follows

1. Cin.get() function
2. Strcpy() function
3. Strcat() function
4. Strcmp () function
5. Strlen() function

**Q17. State the use of cin.get() function**

**Ans.** cin.get() function is used to read a string from the keyboard that may contain blank spaces.

**Q18. State the general form of cin.get() function**

**Ans.** the general form of cin.get() function is

**Cin.get(strvar, strsize)'**

**Q19. State the use of Strcpy() function**

**Ans.** the Strcpy () function is used to copy contents of a string variable or string constant to another string variable.

**Q20. State the general form of Strcpy () function**

**Ans** the general form of Strcpy () function is

**Strcpy (string2, string1);**

**Q21. State the use of Strcat () function.**

**Ans.** the Strcat () function is used for concatenation or joining of two strings.

**Q22. State the general form of Strcat () function**

**Ans.** The general form of Strcat () function is

**Strcat (string1, string2);**

**Q23. State the use of Strlen () function**

**Ans.** The Strlen () function is used to return the length (the number of characters) of a string.

**Q24. State the general form of Strlen () function**

**Ans.** the general form of Strlen () function is

**Strlen (string);**

**Q25. State the use of strcmp() function**

**Ans.** the general form of strcmp () function is

**Strcmp(string1, string2);**

**Q27. Write a language program in C++ which accept the user's first and last name, and print them in reverse order with a space between them.**

**Ans. Program**

```
#include<iostream>
#include<string>
Using namespace std;
Int main ()
{
Cha frame [30], lname [30];
Cout << "Input First name";
Cin >> fname;
Cout << "Input last name:"
Cin >> lname;
Cout << "Name in reverse is: << lname << " << fname << endl;
    Cout << endl;
Return 0;
}
```

**Q28. Write a program in C++ to add two binary numbers**

**Ans. Program**

```
#include <iostream>
#include <math.h>
Using namespace std;
Int main ()
```

```
{  
Long bn1, bn2;  
Int i=0, r=0;  
Int sum [20];  
Cout<<"Input the 1st binary number:";  
Cin>>bn1;  
Cout<<"Input the 2nd binary number:";  
Cin>>bn2;  
While (bn1 !=0 || bn2 !=0)  
{  
Sum[i++]=(int)((bn1%10+bn2%10+r)%2);  
R=(int)((bn1%10+bn2%10+r)/2);  
Bn1=bn1/10;  
Bn2=bn2/10;  
}  
If (r!=0)  
{  
Sum[i++]=r;  
}  
--i;  
Cout<<"The sum of two binary numbers is:";  
While (i>=0)  
{
```

```
Cout<<(sum[i--]);
}
```

```
Cout<<("\n");
}
```

**Q29.** Write a C++ program to which reads a given integer n and prints a twin prime which has two maximum size along twin primes less than or equals to n.

**Ans. Program**

```
#include <iostream>

#include <cmath>

Using namespace std;

Int main ( )

{

Cost int num_primes=10005;

Bool primes[num_primes];

For (int i=2; i !=num_primes: ++i)

{

Primes [i]=true;

}

For (int i=2; i !=int (sqrt(num_primes)): ++i)

If (primes [i])

For (int j=2; i*j<num_primes: ++i)

{
```

```

Primes [i*]=false;
}
}
}
Int n;
Cout<<"Input an integer:\n";
Cin>>n;
Cout<<"Twin primes are:\n";
For (int i=n; i-2>=0; --i)
If (primes [i]&&primes [i-2])
{
Cout<<i-2<<" " <<i<<endl;
Break;
}
}
Return 0;
}

```

**Q30. Write a C++ program to check whether two straight lines AB and CD are orthogonal or not.**

**Ans. Program**

```

#include <iostream>

Using namespace std;

```

```
Int main (void)
{
Double x[4], y[4];
While (cin>>x[0],y[0])
For (int i=1, i<4, i++)
{
Cin>> x[i]>>y[i];
}
If (x[1]-x[0]*(x[3]-x[2])+(y[3]-y[2])*(y[1]-y[0])==0)
{
Cout<<"Yes, AB and CD are orthogonal: <<endl;
}
Else
{
Cout<<"Yes, AB and CD are not orthogonal" <<endl;
}
}
Return 0;
}
```

**Q31. Write a C++ program to input roll number, student name, and marks of three subjects (Physics, Chemistry and Information Technology) and calculate total marks, percentage and division of student**

**Ans. Program**

```
#include <iostream>

#include <string.h>

Using namespace std;

Int main ()

{

Int roll no, phy, che, it, total;

Float percentage;

Char name [20], div[10];

Cout<<"Input the Roll number of the student:";

Cin>>roll no;

Cout<<"Input the Name of the Student:";

Cin>>name;

Cout<<"Input the marks of Physics, Chemistry and Information Technology:";

Cin>>phy>>che>>it;

Total=phy+che+it;

Percentage=total/3.0;

If (percentage>=60)

Strcpy(div, "First");

Else

If (percentage<60&&percentage>=48)

Strcpy (div, "Second");

Else
```

```

If (percentage<48&&percentage>=36)
Strcpy (div, "Pass");
Else
Strcpy (div, "Fail");
Cout<<"Roll no"<<rollno<<end1<<"Name of Student"<<name<<end1;
Cout<<"Marks in Physics"<<phy<<end1;
Cout<<"Marks in Chemistry"<<che<<end1;
Cout<<"Marks in Information Technology"<<it<<end1;
Cout<<"Total Marks="<<total<<end1;
Cout<<"Percentage="<<percentage<<end1;
Cout<<"Division="<<div<<end1;
}

```

**Q32. Write a C++ program to find the smallest and second smallest elements in a given array integers**

**Ans. Program**

```

#include <iostream>

Using namespace std;

Int find_Second_Smallest (int array_num[ ], int n)
{
Int smallest_num, second_smallest_num;
If (array_num [0], array_num[1])
{

```

```
Smallest_num=array_num[0];
Second_smallest_num=array_num[1];
}
Else
P
Smallest_num=array_num[1];
Second_smallest_num=array_num[0];
}
For (int i=0; i<n; i++)
{
If (smallest_num>array_num[i])
{
Second_smallest_num=smallest_num;
Smallest_num=array_num[i];
}
Else if (array_num[i]<second_smallest_num)
{
Second_smallest_num=array_num[i];
}
}
Return second_smallest_num;
}
Int main () {
```

```
Int n=7;

Int array_num[7]=

{

5:

6:

7:

2:

3:

4:

12

};

Int s=sizeof(array_num)/sizeof(array_num[0]);

Cout<<"Original array:";

For (int i=0; i<s; i++)

Cout<<array_num[i]<<" ";

Int_second_smallest_num=find_second_smallest(array_num, n);

Cout<<"\nSecond smallest number:"<<second_smallest_num;

Return 0;

}
```

**Q33. Write a C++ program to update every array element by multiplication of next and previous values of a given array of integers.**

**Ans. Program**

```
#include <iostream>

Using namespace std;

Void replace_elements (int nums[ ], int n)

{

If (n<=1)

Return;

Int prev_element=nums [0];

Nums[0]=nums[0]*nums[1];

For (int i=1: i<n-1: i++)

{

Int curr_element=nums[i];

Nums[i]=prev_element*nums[i+1];

Prev_element=curr_element;

}

Nums[n-1]=prev_element*nums[n-1];

}

Int main ( )

{

Int nums[ ]={0,1,3,5,6,7,8,10};

Int n=sizeof(nums)/sizeof(nums[0]);

Cout<<" Original array:";

For (int i=0: i<n: i++)

Cout<<nums[i]<<" ";
```

```
Replace_elements(nums,n):  
Cout<<"\nNew array elements:";  
For (int i=0; i<n; i++)  
Cout<<nums[i]<<" ";  
Return 0  
}
```

**Q34. Write a C++ program to find and print all common elements in the three sorted arrays of integers**

**Ans. Program**

```
#include <iostream>  
Using namespace std;  
Int main ()  
{  
Int array1 [ ]= {1,5,7,8,9,11};  
Int array2 [ ]= {6,8,10,11,12,16};  
Int array3 [ ]= {1,3,5,6,8,10,11,17};  
Int s1 =sizeof(array1)/sizeof(array1[0]);  
Int s2 =sizeof(array2)/sizeof(array2[0]);  
Int s3 =sizeof(array3)/sizeof(array3[0]);  
Cout<<"Original arrays:";  
Cout<<"\nArray1:";  
For (int i=0; i<s1; i++)
```

```
Cout<<array1[i]<< " ";
Cout<<"\nArray2[i]<< " ";
For (int i=0; i<s1; i++)
Cout<<array3[i]<<" ";
Cout<<"\nCommon elements of the said sorted arrays:";
Int i=0; i=0;
While (i<s1&& j<s2&& k<s3)
If (array1[i]==array2[j]==array3[k])
{
Cout<<array1[i]<<" ";
I++;
J++;
K++;
}
Else if (array1[i]<array2[j])
I++;
Else if (array2[j]<array3[k])
J++;
Else
K++;
}
Return 0;
}
```

**Q35. Write a C++ program to find and print all unique elements of a given array of integers.**

**Ans. Program**

```
#include <iostream>

Using namespace std;

Int main ( )
{
Int array1[ ]={1,5,7,5,8,9,11,11,2,5,6};
Int s1=sizeof(array1)/sizeof(array1[0]);
Cout<<"Original array:";
For (int i=0; i<s1; i++)
Cout<<array1[i]<<" ";
Cout<<"\nCommon elements of the said array:";
For (int i=0; i<s1; i++)
{
Int j;
For (j=0; j<l; j++)
If (array1[i]==array1[j])
Break;
If (i==j)
Cout<<array1[i]<<" ";
}
Return 0;
```

```
)
```

**Q36. Write a C++ program to find the number of pairs of integers in a given array of whose sum is equal to a specified number**

**Ans. Program**

```
#include <iostream>

Using namespace std;

Int main ( )
{
Int array1[ ]={1,5,7,8,9,11,12};

Int s1=sizeof(array1)/sizeof(array1[0]);

Cout<<"Original array:";

For (int i=0; i<s1, i++)

Cout<<array1[i]<<" ";

Int l, sum=12, ctr=0;

Cout<<"\nArray pairs whose sum equal to 12:";

For (int i=0; i<s1; i++)

For (int j=i+1; j<s1; j++)

If (array1[i]+array1[j]==sum)

{

Cout<<"\n" <<array1[i]<<"," array1[j];

Ctr++;

}
```

```
Cout<<"\nNumber of pairs whose sum equal to 12:";
Cout<<ctr;
Return0;
}
```

**Q37. Write a C++ program to sort an array in ascending order**

**Ans. Program**

```
#include <iostream>
Using namespace std;
Int main ()
{
Int arr[100];
Int size, i, j, temp;
//Reading the size of the array
Cout<<"Enter size of array:";
Cin>>size;
//Reading elements of array
Cout<<"Enter elements in array:";
For (i=0, i<size, i++)
{
Cin>>arr[i];
}
//Sorting an array in ascending order
```

```
For (i=0; i<size: i++)
{
For (j=i+1; j<size: j++)
{
//If there is a smaller element found on right of the array then swap it.
If (arr[j]<arr[i])
{
Temp=arr[i];
Arr[i]=arr[j];
Arr[j]=temp;
}
}
}

//Printing the sorted array in ascending order
Cout<<"Elements of array in sorted ascending order:"<<endl;
For (i=0; i<size: i++)
{
Cout<<arr[i]<<endl;
}
Return 0;
}
```

**Q38. Write a C++ program to count number of each element in an array**

**Ans. Program**

```
#include <iostream>

Using namespace std;

Int main ( )
{
Int arr[100], frequency[100];
Int l, j, count, num;
//Enter size of array
Cout<<"Enter size of array:";
Cin>>num;
//Reading elements of array
Cout<<"Enter elements in array:";
For (i=0; i<num; i++)
{
Cin>>arr[i];
//Initially initialize frequency variable to -1
Frequency[i]=-1;
}
For (i=0; i<num; i++)
{
Cout=1;
For (j=i+1; j<num; j++)
{
```

```
//If duplicate element is found
If (arr[i]==arr[j])
{
Count++;
//Make sure not to count frequency of same element again
Frequency[j]=0;
}
}
//If frequency of current element is not counted
If (frequency[i]!=0)
{
Frequency[i]=count;
}
}
//Print frequency of each element
Cout<<"\nFrequency of all elements of array\n";
For (i=0; i<num; i++)
{
If (frequency[i]!=0)
{
Cout<<arr[i]<<"occurs" <<frequency[i]<<" times\n";
}
}
}
```

```
Return 0;
```

```
}
```

**Q39. Write a C++ program to count total duplicate elements in an array.**

**Ans. Program**

```
#include <iostream>
```

```
Using namespace std;
```

```
Int main ()
```

```
{
```

```
Int arr[100];
```

```
Int i, j, n, count=0;
```

```
//Reading size of the array
```

```
Cout<<"Enter size of the array":
```

```
Cin>>n;
```

```
//Reading elements if array
```

```
Cout<<"Enter elements in array":
```

```
For (i=0; i<n; i++)
```

```
{
```

```
Cin>>arr[i];
```

```
}
```

```
//Find all duplicate elements in array
```

```
For (i=0; i<n, i++)
```

```
{
```

```
For (j=i+1: j<n: j++)  
{  
//If duplicate element found then increment count by 1  
If (arr[i]==arr[j])  
{  
Cout++;  
Break;  
}  
}  
}  
Cout<<"\nTotal number of duplicate elements found in array: "<<count;  
Return 0;  
}
```

**Q40. Write a C++ program to concatenate two strings.**

**Ans. Program**

```
#include <iostream>  
#include <cstring>  
Using namespace std;  
Int main ()  
{  
Char s1[50], s2[50], result[100];  
Cout<<"Enter string s1:";
```

```
Cin.getline(s1, 50); //Reading first string from user
Cout<<"Enter string s2:";
Cin.getline(s2, 50); //Reading second string from user
Strcat(s1, s2); //Strcat is use to Concatenates two strings
Cout<<"String obtained on concatenation is:" <<s1<<endl;
Return 0;
}
```

**Q41. Write a C++ program to find string length.**

**Ans. Program**

```
#include <iostream>
Using namespace std;
Int main ( )
{
String str="Tech Study";
//you can also use str.lengthy()
Cout<<"String length=" <<str.size( );
Return 0;
}
```

**Q42. Write a C++ program to compare two strings using strcmp.**

**Ans. Program**

```
#include <iostream>
```

```
#include <string.h>

Using namespace std;

Int main ( )
{
Char str1[1000], str2[1000];

Cout<<"Enter the first string" <<endl;

Cin>>str1;

Cout<<"Enter the second string" <<endl;

Cin>>str2;

If (strcmp(str1, str2)==0)

Cout<<"Entered strings are equal" <<endl;

Else

Cout<<"Entered strings are not equal" <<endl;

Return 0;

}
```

**Q43. Write a program that reads ten numbers and print the smallest along with its index.**

**Ans. Program**

```
#include <iostream>

Using namespace std;

Int main ( )
{
```

```
Int array [10]:  
For (int i=0: i<10: i++)  
//Counts to 10 and prompts the user for a value and stores it  
{  
Cout<<"Enter value"<<i<<" :";  
Cin>>array[i];  
}  
Int smallest=array[0];  
Int i;  
For (i=0: i<10: i++)  
{  
If (smallest>array[i])  
{  
Smallest=array[i];  
}  
}  
Cout<<"The Smallest Number with its index is:"<<smallest<<endl;  
}
```

