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CO LAB

Practical File

Submitted By:

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2K19/A14/35

Program - 1

Aim:

Write a program to print 'Hello World'.

Theory:

Cout function is used to display message as well as value on the standard output device (screen).

Algo:

Just pass the string that you want to print on the screen within inverted commas (" ").

Code:

```
#include <iostream>
using namespace std;
int main (){

    cout << "Hello World";
    return 0;
}
```

Conclusion:

Hello World is printed on the screen.

new.cpp

```cpp
#include <iostream>
using namespace std;

int main(){
    cout<<"Hello World";
    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Hello World
C:\Users\saman\Desktop>
```

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Expt. No. 2 Page No.

Program - 2

Aim:

Write a program to add 2 numbers.

Theory:

Arithmetic operators are used for performing basic mathematical operations on operands.
+ gives addition of two operands.

Algo:

Adding 2 numbers by storing in a variable sum, like sum = a+b, and print sum.

Code:

```
# include <iostream>
using namespace std;
int main () {
        int a, b;
        cin >> a >> b;
        int sum;
        sum = a+b;
        cout << sum;
        return 0;
}
```

Conclusion: Sum of a and b is printed.

Teacher's Signature :

new.cpp

```cpp
#include <iostream>
using namespace std;

int main(){

    int a, b;
    cout<<"Enter first number: ";
    cin>>a;
    cout<<"Enter second number: ";
    cin>>b;

    cout<<"Sum is: "<<a+b;
    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter first number: 5
Enter second number: 20
Sum is: 25
C:\Users\saman\Desktop>
```

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Expt. No. 3 Page No.

Program-3

Aim:

Write a program to find greatest number from 3 inputs.

Theory:

if the boolean expression inside if statement evaluates to true, then its block of code is executed, otherwise else block of code will be executed.

logical AND represented as '&&' returns true when both the conditions under consideration are satisfied, otherwise it returns false.

Algo:

Comparing the numbers from input and print which one is greatest by using if and else statement.

Code:

```
# include <iostream>
using namespace std;
int main () {
```

Teacher's Signature :

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```
int num1, num2, num3;
cin >> num1 >> num2 >> num3;

if ( num1 > num2 && num1 > num3) {
        cout << "greatest is" << num1; }

else if ( num2 > num3 ) {
        cout << "greatest is " << num2; }

else {
        cout << "greatest is" << num3; }

return 0;
}
```

Conclusion :

greatest number out of 3 inputs is printed on the screen.

Teacher's Signature : _____

```cpp
#include <iostream>
using namespace std;

int main(){

    int num1, num2, num3;
    cout<<"Enter value for first number: ";
    cin>>num1;

    cout<<"Enter value for second number: ";
    cin>>num2;

    cout<<"Enter value for third number: ";
    cin>>num3;

    if(num1>num2 && num1>num3)
        cout<<"First number is greatest, which is = "<<num1;

    else if(num2>num3)

        cout<<"Second number is greatest, which is = "<<num2;
    else
        cout<<"Third number is greatest, which is = "<<num3;

    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter value for first number: 15
Enter value for second number: 10
Enter value for third number: 12
First number is greatest, which is = 15
C:\Users\saman\Desktop>
```

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Expt. No. 4 Page No.

Program-4

Aim:

Write a program to print factorial of a number.

Theory:

Loops in programming come into use when we need to repeatedly execute a block of statements.

```
for ( initializatn ; test condn ; updation counter){
        // statements to execute ; }
```

As factorial increase very rapidly with increasing number, (long long) data type can be used instead of int. Long Long int has size of 8 bytes which ranges from

-2^{63} to $(2^{63}-1)$.

Algo:

Looping the numbers from 1 to n and storing the multiplication of factorial with every number upto n.

Teacher's Signature :

Date _____

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Code :

```
# include <iostream>
using namespace std;
int main () {

    int n ;
    long long int factorial = 1;
    cin >> n ;

  for ( int i = 1 ; i <= n ; i++ ) {

        factorial = factorial * i ; }

  cout << factorial ;
  return 0 ;
}
```

Conclusion :

factorial of n is printed.

Teacher's Signature : _____

```cpp
#include <iostream>
using namespace std;

int main(){

    int n;
    long long factorial = 1;

    cout << "Enter a positive integer: ";
    cin >> n;

    for(int i = 1; i <=n; ++i){
        factorial *= i;
    }
    cout<<"Factorial of "<<n<<" is "<<factorial;

    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter a positive integer: 3
Factorial of 3 is 6
C:\Users\saman\Desktop>a.exe
Enter a positive integer: 5
Factorial of 5 is 120
C:\Users\saman\Desktop>a.exe
Enter a positive integer: 8
Factorial of 8 is 40320
C:\Users\saman\Desktop>a.exe
Enter a positive integer: 10
Factorial of 10 is 3628800
C:\Users\saman\Desktop>
```

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Expt. No. 5 Page No.

Program - 5.

Aim:

write a program to swap two numbers using temp variable.

Theory:

Swap funct^n is also built-in C++ library which swaps the value of 2 variables.
swap (a, b).

Algo:

The contents of first variable is copied into the temp variable. Then, the contents of second is copied to first and finally temp is copied back to second variable.

Code:

```
# include <iostream>
using namespace std;
int main() {

    int a=5, b=10, temp;
    temp=a;  a=b;
    b= temp;
    cout<< a << b; }
```

Conclusion:

Value of a & b is swapped.

Teacher's Signature :

```cpp
#include <iostream>
using namespace std;

int main(){

    int a=5, b=10, temp;
    cout<<"Before swapping:"<<endl;
    cout<<"a = "<<a<<", b = "<<b<<endl;

    temp = a;
    a = b;
    b = temp;

    cout<<"After swapping:"<<endl;
    cout<<"a = "<<a<<", b = "<<b<<endl;

    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Before swapping:
a = 5, b = 10
After swapping:
a = 10, b = 5

C:\Users\saman\Desktop>
```

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Program- 6

Aim:

Write a program to input uppercase letters and output in lowercase the same letters.

Theory:

Since ASCII value of 'A' is 65 and ASCII value of 'a' is 97. To change uppercase characters into lowercase characters, just add 32 in uppercase to convert it in lowercase.

So, 65 (A) + 32 = 97 (a) = equivalent to value of 'A' in lowercase.

Algo:

Take input a string of letters from user. Loop through every single character of the string and add 32 to every character, and then print the modified string.

Code:

```
# include <iostream>
# include < cstring>
using namespace std;
int main() {
```

Teacher's Signature :

Date _____

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```
string s;
cin>> s;

for ( int i=0; i<= s.length(); i++ ){

    if ( s[i] >= 65 && s[i] <= 92 ){

        s[i] = s[i] + 32; }  }

cout << s;
return 0;  }
```

Conclusion:

Output string is modified from uppercase letters to the lowercase letters.

Teacher's Signature : _____

```cpp
#include <iostream>
#include <cstring>
using namespace std;

int main(){
  string s;
  cout<<"Enter in UPPERCASE: ";
  cin>>s;

  for(int i=0; i<=s.length(); i++) {
    if(s[i]>=65 && s[i]<=92)
      s[i]=s[i]+32;
    }
    cout<<"The entered string in lowercase: "<<s;

    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter in UPPERCASE: CODING
The entered string in lowercase: coding
C:\Users\saman\Desktop>a.exe
Enter in UPPERCASE: HELLO
The entered string in lowercase: hello
C:\Users\saman\Desktop>a.exe
Enter in UPPERCASE: ADITYA
The entered string in lowercase: aditya
C:\Users\saman\Desktop>
```

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Program - 7

Aim:

Write a program to reverse a number and check if it is a palindrome or not.

Theory:

Palindrome is a word, phrase or sequence of number that reads the same backwards as forwards.

Algo:

isolate the last digit in number by using modulo operator.

Append the last digit to reverse, Remove last digit from number and iterate the process.

Code:

```
# include <iostream>
using namespace std;
int main () {
    int n, reverse = 0, num;
    cin>> n;   num = n;
    while ( num > 0) {
        int rem = num % 10;
        reverse = reverse * 10 + rem;
        num = num / 10;
    }
```

Teacher's Signature : _____

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```
if ( reverse == n) {
        cout << "is Palindrome" ; }
else
        cout << "not a palindrome";
```

Conclusion :

Output prints the number is a palindrome or not.

Teacher's Signature : _____

```cpp
#include <iostream>
using namespace std;

int main(){
    int n, reverse=0, num;
    cin>>n;
    num=n;

    while(num>0){
        int rem = num%10;
        reverse = reverse*10 + rem;
        num /= 10;
    }
    cout<<"Reversed num: "<<reverse
    <<" which is ";

    (reverse == n) ? cout<<"a Palindrome."
    : cout<<"not a Palindrome.";
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
456
Reversed num: 654 which is not a Palindrome.
C:\Users\saman\Desktop>a.exe
45654
Reversed num: 45654 which is a Palindrome.
C:\Users\saman\Desktop>a.exe
222222
Reversed num: 222222 which is a Palindrome.
C:\Users\saman\Desktop>a.exe
456454
Reversed num: 454654 which is not a Palindrome.
C:\Users\saman\Desktop>
```

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Program - 8

Aim :

Write a program to implement switch case with +, -, %, / operator.

Theory :

a switch ~~case~~ statement allows a variable to be tested for equality against a list of values. Each value is called a case, and the variable being switched on is checked for each switch case.

Algo :

the program takes an arithmetic operator +, -, *, / as character and two operands from the user. then it performs the calculation on the two operands depending ~~upon~~ the operator entered by the user.

Code :

```
int main () {
    char op ;
    int num1, num2 ;
```

Teacher's Signature : _____

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```
cin >> op;
switch(op){
    case '+':
        cin>> num1 >> num2
        cout << num1 + num2;
        break;
    case '-':
        cin>> num1 >> num2;
        cout << num1 - num2;
        break;
    case '*':
        cin >> num1 >> num2;
        cout << num1* num2;
        break;
    case '/':
        cin >> num1 >> num2;
        while (num2==0){
            cin >> num2; }
        cout << num1 / num2;
        break;
    case '%':
        cin >> num1 >> num2;
        cout << num1 % num2;
        break;
```

Conclusion: default: cout << "Error";

output prints required operation.

Teacher's Signature : _____

```cpp
#include<iostream>
using namespace std;
int main(){
    char op;
    int num1, num2;
    cout<<"Enter an operator to perform action: ";
    cin>>op;
    switch (op){
        case '+':
            cout<<"Enter two numbers: \n";
            cin>>num1>>num2;
            cout<<"Sum = "<<num1+num2;
            break;
        case '-':
            cout<<"Enter two numbers: \n";
            cin>>num1>>num2;
            cout<<"Subtraction = "<<num1-num2;
            break;
        case '*':
            cout<<"Enter two numbers: \n";
            cin>>num1>>num2;
            cout<<"Product = "<<num1*num2;
            break;
        case '/':
            cout<<"Enter Dividend: ";cin>>num1;
            cout<<"Enter Divisor: ";cin>>num2;
            while(num2 == 0){
            cout << "Divisor cannot be zero, Enter divisor once again: ";
            cin>>num2;
            } cout<<"Quotient = "<<num1/num2;
            break;
        case '%':
            cout<<"Enter two numbers: \n";
            cin>>num1>>num2;
            cout<<"Modulo = "<<num1%num2;
            break;
        default:
            cout<<"Error";
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter an operator to perform action: +
Enter two numbers:
12 18
Sum = 30
C:\Users\saman\Desktop>a.exe
Enter an operator to perform action: /
Enter Dividend: 12
Enter Divisor: 0
Divisor cannot be zero, Enter divisor once again: 3
Quotient = 4
C:\Users\saman\Desktop>a.exe
Enter an operator to perform action: *
Enter two numbers:
5 6
Product = 30
C:\Users\saman\Desktop>a.exe
Enter an operator to perform action: %
Enter two numbers:
12 10
Modulo = 2
C:\Users\saman\Desktop>
```

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Program - 9

Aim:

Write a program to print pyramid.

Theory:

Patterns can be printed using simple for loops. Manipulating the print statements, different number patterns, alphabet patterns or star patterns can be printed.

Algo:

First outer loop is used to handle number of rows and inner two nested loops is used to handle spaces in columns and print '*'.

Code:

```
# include <iostream>
using namespace std;
int main () {
    int n;
    cin >> n;
```

Teacher's Signature : _____

Date

Expt. No. Page No.

```
for ( int i=1; i<=n ; i++) {
        for ( int j=1; j<=n-i ; j++){
                cout << " " ; }

        for ( int k=0; k< 2*i-1 ; k++){
                cout << " * " ;

        cout << endl ;
    }
}
```

Conclusion :

output ~~out~~ prints the desired no. of rows pattern of pyramid.

Teacher's Signature :

```cpp
#include<iostream>
using namespace std;
int main(){

    int n;
    cout<<"Enter Rows: \n";
    cin>>n;

    for(int i=1; i<=n; i++){

        for(int j=1; j<=n-i; j++){
            cout<<"   ";
        }
        for(int k=0; k < 2*i-1; k++){
            cout<<" * ";
        }
        cout<<endl;
    }
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter Rows:
4
         *
       *  *  *
    *  *  *  *  *
 *  *  *  *  *  *  *

C:\Users\saman\Desktop>a.exe
Enter Rows:
8
                     *
                  *  *  *
               *  *  *  *  *
            *  *  *  *  *  *  *
         *  *  *  *  *  *  *  *  *
      *  *  *  *  *  *  *  *  *  *  *
   *  *  *  *  *  *  *  *  *  *  *  *  *
 *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

C:\Users\saman\Desktop>
```

Date 22/1/20

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Program - 10

Aim:

Write a program to implement bubble sort.

Theory:

Sorting is an algorithm that puts elements of a list in a certain order.

Algo:

Bubble sort is the simplest sorting algorithm that works by repeatedly swapping the adjacent element if they are in wrong order.

Code:

```
# include <iostream>
using namespace std;
int main (){
    int n;
    cin >> n;   int arr[n];
    for ( int i=0; i<n; i++){

        cin >> arr[i]; }
```

Teacher's Signature : _____

Date

Expt. No. Page No.

```
for( int i=0; i<n; i++){
    for( int j=0; j<n; j++){
        if( arr[j] > arr[j+1] ){
            swap( arr[j], arr[j+1] ) }
    }
}
for(int i=0; i<n; i++ ){
    cout<< arr[i] << " "; }
}
```

Conclusion:

Output prints the elements in the sorted increasing order.

Teacher's Signature :

```cpp
#include<iostream>
using namespace std;
int main(){

    int n;
    cout<<"Enter number of elements: ";
    cin>>n;
    int arr[n];
    cout<<"Enter elements to be sorted: ";

    for(int i=0; i<n; i++){
        cin>>arr[i];
    }
    cout<<"\nBefore Sorting: ";
    for(int i=0; i<n; i++){
        cout<<arr[i]<<" ";
    }

    for(int i=0; i<n; i++){
        for(int j=0; j<n; j++){
            if(arr[j]>arr[j+1]){
                swap(arr[j], arr[j+1]);
            }
        }
    }
    cout<<"\nAfter sorting: ";
    for(int i=0; i<n; i++){
        cout<<arr[i]<<" ";
    }
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe
Enter number of elements: 5
Enter elements to be sorted: 10 3 8 6 1

Before Sorting: 10 3 8 6 1
After sorting: 1 3 6 8 10
C:\Users\saman\Desktop>a.exe
Enter number of elements: 4
Enter elements to be sorted: 3 3 5 1

Before Sorting: 3 3 5 1
After sorting: 1 3 3 5
C:\Users\saman\Desktop>
```

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Program - 11

Aim:

Write a program to implement insertion sort.

Theory:

Insertion sort is a simple sorting algorithm that works the way we sort playing cards in our hands.

Algo:

Sort an array of size n. loop from i=1 to i=n-1. Pick element arr[i] and insert it into sorted sequence arr[0...i-1].

Code:

```
void InsertionSort (int arr[], int n){

    int i, key, j;
    for( i=1; i<n; i++) {

        key = arr[i];
        j = i-1;
        while ( j>=0 && arr[j]) {
            arr[j+1] = arr[j];
            j--; }
```

Teacher's Signature : _____

Date

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```
            arr[j+1] = Key; }
    }
```

Conclusion :

Array is sorted by using the function of insertion sort.

Teacher's Signature :

```c
#include<stdio.h>
#include<conio.h>
void main()
{
    int n, array[1000], c, d, t;

    printf("Enter number of elements\n");
    scanf("%d", &n);
    printf("Enter %d integers\n", n);
    for (c = 0; c < n; c++)
    {
        scanf("%d", &array[c]);
    }
    for (c = 1 ; c ≤ n - 1; c++)
    {
        d = c;
        while ( d > 0 && array[d] < array[d - 1])
        {
            t = array[d];
            array[d] = array[d - 1];
            array[d - 1] = t;
            d--;
        }
    }
    printf("Insertion Sorted list in ascending order:\n");
    for (c = 0; c ≤ n - 1; c++)
    {
        printf("%d\n", array[c]);
    }
    getch();
}
```

Command Prompt - a.exe

```
Microsoft Windows [Version 10.0.18363.836]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\saman>cd Desktop

C:\Users\saman\Desktop>a.exe
Enter number of elements
5
Enter 5 integers
10 8 6 1 4
Insertion Sorted list in ascending order:
1
4
6
8
10
```

Date

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Page No.

Program - 12

Aim:

Write a program to implement selection sort.

Theory:

Selection sort algorithm sorts an array by repeatedly finding the minimum element from unsorted part and putting it at the beginning.

Algo:

Two subarrays are maintained:

a) subarray which is already sorted.

b) remaining subarray which is unsorted.

In every iteration of selection sort, the minimum element (considering ascending order) from the unsorted subarray is picked and moved to the sorted subarray.

Code:

```
void SelectionSort ( int arr[], int n) {

    int i, j, min_idx;
```

Teacher's Signature :

Date _____

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```
for( i=0; i<n-1; i++ ){
        min-idx = i;
        for ( j= i+1; j<n; j++ ){
                if( arr [j] < arr [min-idx] ){
                        min-idx = j; }
                swap ( &arr[min-idx], &arr[i] )
}                }
```

Conclusion:

Array is sorted by using the function of selection sort.

Teacher's Signature : _____

```c
void selsort(int, int[]);
void main()
{
    int i, size, arr[50];

    printf("\nEnter no. of Elements:");
    scanf("%d", &size);
    printf("\nEnter Elements:");
    for (i = 1; i ≤ size; i++)
        scanf("%d", &arr[i]);

    printf("\nUnsorted data:\n");
    for (i = 1; i ≤ size; i++)
        printf("%d\t", arr[i]);

    selsort(size, arr);
}
void selsort(int n, int arr[])
{   int i, j, min, temp;
    printf("\nSorted List is:\n");
    for (i = 1; i ≤ n - 1; i++)
    {
        min = i;
        for (j = i + 1; j ≤ n; j++)
        {
            if (arr[j] < arr[min])
                min = j;
        }
        temp = arr[i];
        arr[i] = arr[min];
        arr[min] = temp;
    }
    for (i = 1; i ≤ n; i++)
        printf("%d\t", arr[i]);
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe

Enter no. of Elements:5

Enter Elements:10 5 4 9 1

Unsorted data:
10      5       4       9       1
Sorted List is:
1       4       5       9       10
C:\Users\saman\Desktop>
```

Date _____

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Program - 13

Aim:

Write a program to implement array of structures in C.

Theory:

An array of structures in C can be defined as the collection of multiple structures variable where each variable contains information about different entities.

Algo:

The array of structures in C are used to store information about multiple entities of different data types. Lets store information of 5 students and print it.

Code:

```
#include <stdio.h>
struct student {
    int rollno;
    char name[10];
};

int main () {
```

Teacher's Signature : _____

Date _____

Expt. No. _____ Page No. _____

```
int i;
struct student st[5];
printf(" Enter records of 5 students");
for ( i=0; i<5; i++){
        scanf("%d", &st[i].rollno);
        scanf("%s", &st[i].name);
    }
for( i=0; i<5; i++) {
        printf("Roll no: %d, Name: %s", st[i].rollno,
                                        st[i].name);
    }
return 0; }
```

Conclusion:

Roll no and name of the student is printed.

Teacher's Signature : _____

```c
#include<stdio.h>
#include<conio.h>

struct students {
    int rollno;
    char name[10];
};

void main() {
    int i;
    struct students st[5];
    printf("Enter Records of 5 students\n");
    for (i = 0; i < 5; i++) {
        scanf("%d", &st[i].rollno);
        scanf("%s", &st[i].name);
    }
    for (i = 0; i < 5; i++) {
        printf("Rollno: %d, Name: %s\n", st[i].rollno, st[i].name);
    }
    getch();
}
```

Command Prompt - a.exe

```
C:\Users\saman\Desktop>a.exe
Enter Records of 5 students1 aditya
2 daniel 3 drake 4 adam 5 reya
Rollno: 1, Name: aditya
Rollno: 2, Name: daniel
Rollno: 3, Name: drake
Rollno: 4, Name: adam
Rollno: 5, Name: reya
```

Date

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Program - 14

Aim:

Write a program to implement binary search.

Theory:

Search a sorted array by repeatedly dividing the search interval in half. Begin with an interval covering the whole array. If the value of the search key is less than the item in the middle of the interval, narrow the interval to the lower half, otherwise to the upper half.

Algo:

→ Compare x with the middle element.

→ If x matches with middle element, we return the mid-index.

→ Else if x is greater than mid-element, then x can only lie in right half subarray after the mid element. So we recur for right half.

→ Else if x is smaller, recur for the left half.

Code:

```
int binary search ( int arr[], int l, int r, int x){
```

Teacher's Signature :

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```
if ( r >= l){
        int mid = l + (r-l)/2 ;
        if ( ar[mid] == x )
                return mid ;
        if( ar[mid] > x)
                return binarysearch ( ar, l, mid-1 , x);
        return binary search ( ar, mid+1, r, x);
    }
return -1 ; }
```

Conclusion

Index is returned where the element is present by using binary search function.

Teacher's Signature :

```c
int array[10];
int i, j, n, temp, keynum;
int low, mid, high;
printf("Enter the size of array: \n");
scanf("%d", &n);
printf("Enter the elements one by one \n");
for (i = 0; i < n; i++) {
    scanf("%d", &array[i]);
}
for (i = 0; i < n; i++) {
    for (j = 0; j < (n - i - 1); j++) {
        if (array[j] > array[j + 1]) {
            temp = array[j];
            array[j] = array[j + 1];
            array[j + 1] = temp;
        }
    }
}
printf("Sorted array is ... \n");
for (i = 0; i < n; i++) {
    printf("%d\n", array[i]);
}
printf("Enter the element to be searched: \n");
scanf("%d", &keynum);
low = 1;
high = n;
do {
    mid = (low + high) / 2;
    if (keynum < array[mid])
        high = mid - 1;
    else if (keynum > array[mid])
        low = mid + 1;
} while (keynum ≠ array[mid] && low ≤ high);

if (keynum == array[mid]) {
    printf("SEARCH SUCCESSFUL \n");
    printf("Number Located at position:%d ", mid + 1);
}
else
    printf("SEARCH FAILED! \n Number not found.");
```

Command Prompt

```
C:\Users\saman\Desktop>gcc test.c

C:\Users\saman\Desktop>a.exe
Enter the size of array:
5
Enter the elements one by one
5 6 10 2 4
Sorted array is...
2
4
5
6
10
Enter the element to be searched:
4
SEARCH SUCCESSFUL
Number Located at position:2
C:\Users\saman\Desktop>
```

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Program - 15

Aim:

Write a program for sorting using function.

Theory:

Sorting is one of the most basic functions applied to data. It means arranging the data in a particular fashion, which can be increasing or decreasing.

Algo:

There is a builtin function in C++ stl by the name of sort(). It uses as sort(start address, end address).

Code:

```
int n; cin>>n;
int arr[n];
for (int i=0; i<n; i++){
        cin>> arr[i]; }
Sort (arr, arr+n);
cout<< " After sorting: ";
for ( int i=0; i<n; i++){
        cout<< arr[i] << " "; }
```

Conclusion: array is sorted by built-in sort.

Teacher's Signature :

```cpp
#include <bits/stdc++.h>
using namespace std;

int main()
{
    int arr[] = {1, 5, 8, 9, 6, 7, 3, 4, 2, 0};
    int n = sizeof(arr) / sizeof(arr[0]);

    sort(arr, arr + n);

    cout << "\nArray after sorting using "
         "default sort is : \n";
    for (int i = 0; i < n; ++i)
        cout << arr[i] << " ";

    return 0;
}
```

Command Prompt

```
C:\Users\saman\Desktop>a.exe

Array after sorting using default sort is :
0 1 2 3 4 5 6 7 8 9
C:\Users\saman\Desktop>
```

THANK YOU