EXPERIMENT NO. 11

```
//The Code Is As Follows :-

#include <stdio.h>

#define MAX 10                                  /* Define the maximum size
                                                   of the array*/

                                                /*Function prototype for
                                                   binary search*/

void binary(int *a);


int main()                                      // Main function

{

   printf("Name:-Rushi Daulatkar\n");            /*Print Name and Roll
                                                   number of coder.*/

   printf("Roll No. :-53\n");


   int arr[MAX], i;                             /*Declare an array and an
                                                   index variable.*/


                                                /* Prompt the user to enter
                                                   elements.*/

   printf("\nEnter %d Elements: ", MAX);

   for (i = 0; i < MAX; i++)

   {

      scanf("%d", &arr[i]);                     /* Read elements into the
                                                   array*/

   }
```

```
                                                    /*Call the binary search
                                                    function.*/
    binary(arr);
    return 0;
}


                                                    // Binary search function
void binary(int *a)
{
int num, low, high, mid, flag = 0;                  /* Declare variables for the
                                                    number to search, low and
                                                            high indices, mid index,
and                                                 a flag for search success.*/


                                                    /* Prompt the user to enter
                                                    the number to search.*/
    printf("\n Enter the number you want to search: ");
    scanf("%d", &num);


    low = 0;                                        // Initialize low index to 0
    high = MAX - 1;                                 /* Initialize high index to the
                                                    last index of the array.*/


                                                    // Perform binary search
    while (low <= high)
    {
```

```
mid = (low + high) / 2;                         // Calculate mid index


if (a[mid] == num)                              /*If the middle element is
                                                equal to the target number.*/
{
   printf("\n Search is Successful ");          /* Print search success
                                                message.*/
   flag = 1;                                    /* Set flag to indicate
                                                search success.*/
   printf("\n Element is present at position %d", mid); /*Print the position of
                                                        the element.*/
   break;                                       // Exit the loop
}
else
{
   if (a[mid] < num)                            /*If the middle element is
                                                less than the target
                                                number.*/
   {
      low = mid + 1;                            /*Update low index to
                                                search in the upper half.*/
   }
   else                                         /*If the middle element is
                                                greater than the target number.*/
   {
      high = mid - 1;                           /*Update high index to
                                                search in the lower half.*/
   }
}
```

```
    }

    if (flag == 0)                                  /*If flag is still 0, indicating
                                                    search failure.*/
    {
        printf("\n Search is unsuccessful: Element is not present"); /*Print search
                                                    failure message.*/
    }
}                                                   //END OF PROGRAM
```

OUTPUT:-

```
/tmp/LbuQW9SbdE.o
Name:-Rushi Daulatkar
Roll No. :-53

Enter 10 Elements: 10 20 30 40 50 60 69 70 80 90

 Enter the number you want to search: 69

 Search is Successful
 Element is present at position 6

=== Code Execution Successful ===
```

```
/tmp/z3T4otVqWi.o
Name:-Rushi Daulatkar
Roll No. :-53

Enter 10 Elements: 10 20 30 40 50 60 69 70 80 90

 Enter the number you want to search: 21

 Search is unsuccessful: Element is not present

=== Code Execution Successful ===
```