ARRAY SEARCHING AND SORTING

AIM:- [A]: Create an array of size n and write a program to sort a given array by selection sort and bubble sort.

PROGRAM:

(SELECTION SORT)

```c
#include<stdio.h>


void main(){


  int array[10] = {10,50,90,60,30,70,20,80,40};

  int temp;


  printf("------------------------------\n");

  printf("Sorting by Selection sort:-\n");

  printf("------------------------------\n");

  printf("Before sorting the array is :-\n" );

  for (int  i = 0; i < 9; i++)

  {

     printf("%d\t",array[i] );

  }

  printf("\n");


  for(int i = 0; i < 8; i++){


     for (int j = i +1 ; j < 9; j++)

     {

       if(array[i] > array[j]){

          temp = array[i];

          array[i] = array[j];

          array[j] = temp;
```
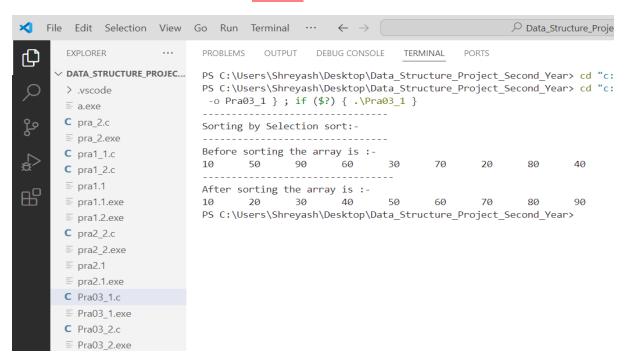
```
        }

    }


    }

    printf("--------------------------------\n");

    printf("After sorting the array is :-\n" );


    for (int  i = 0; i < 9; i++)

    {

        printf("%d\t",array[i] );

    }
}
```

OUTPUT

PROGRAM: (**BUBBLE SORT**)

```c
#include<stdio.h>


void main(){
```

```c
int array[10] = {10,50,90,60,30,70,20,80,40};

int temp;


printf("----------------------------\n");

printf("Sorting by Bubble sort:-\n");

printf("----------------------------\n");

printf("Before sorting the array is :-\n" );

for (int  i = 0; i < 9; i++)

{

   printf("%d\t",array[i] );

}

printf("\n");


for(int i = 0; i < 8; i++){


   for (int j = 0 ; j < 8-i; j++)

   {

     if(array[j] > array[j+1]){

        temp = array[j];

        array[j] = array[j+1];

        array[j+1] = temp;


     }

   }


}

printf("----------------------------\n");

printf("After sorting the array is :-\n" );


for (int  i = 0; i < 9; i++)
```

```
        {

            printf("%d\t",array[i] );

        }

    }
```

OUTPUT

[B]: Write a program to search any integer in your array using binary search concept.

PROGRAM:

```c
#include<stdio.h>


void main(){


    //Declaration of array and variables :-

    int low, high, mid, found = 0, search;

    int array[10] = {10,20,30,40,50,60,70,80,90};


    printf("\n");


    //Printing the sorted array :-

     for (int  i = 0; i < 9; i++)

    {
```

```c
        printf("%d\t",array[i] );
}


printf("\n");


//Calculation of mid
low  = 0;
high  = 8;
mid = (low + high)/2;


printf("----------------------------------------------------------------\n");
//Enter search element :-
printf("Enter the element which have to search:-\n");
scanf("%d", &search);


//Complete logic of BINARY SEARCH :-
for(int i = 0 ; i < 10; i++){


//If element is found :-
if(search == array[mid]){
    found = 1;
    printf("Element found at %d position.\n",mid + 1 );
    break;
};


//If element is greater than mid element :-
if(array[mid] < search){
    low = mid +1 ;
    mid = (low + high)/2;
}
```

//If element is smaller than mid element :-

if(array[mid] > search){

   high = mid - 1;

   mid = (low + high)/2;

  }

  }

}

OUTPUT

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS                                    ⟩_ Code + ∨  ▯ 🗑 ⋯ ∨ X


PS C:\Users\Shreyash\Desktop\Data_Structure_Project_Second_Year> cd "c:\Users\Shreyash\Desktop\Data_Structure_Project_Second_Year"
PS C:\Users\Shreyash\Desktop\Data_Structure_Project_Second_Year> cd "c:\Users\Shreyash\Desktop\Data_Structure_Project_Second_Year\" ; if ($?) { gcc
Pra03_3.c -o Pra03_3 } ; if ($?) { .\Pra03_3 }

10    20    30    40    50    60    70    80    90
----------------------------------------------------------------
Enter the element which have to search:-
40
Element found at 4 position.
PS C:\Users\Shreyash\Desktop\Data_Structure_Project_Second_Year> ▏
```