

## DS PRACTICAL NO : 3

### [ ARRAY SEARCHING AND SORTING ]

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

#### [ SELECTION SORT ]

**Program :-** #include<stdio.h> int

```
main() {    int arr[5] = {10, 30, 50,  
40, 20};    int n = 5;    int i, j, pos,  
swap;
```

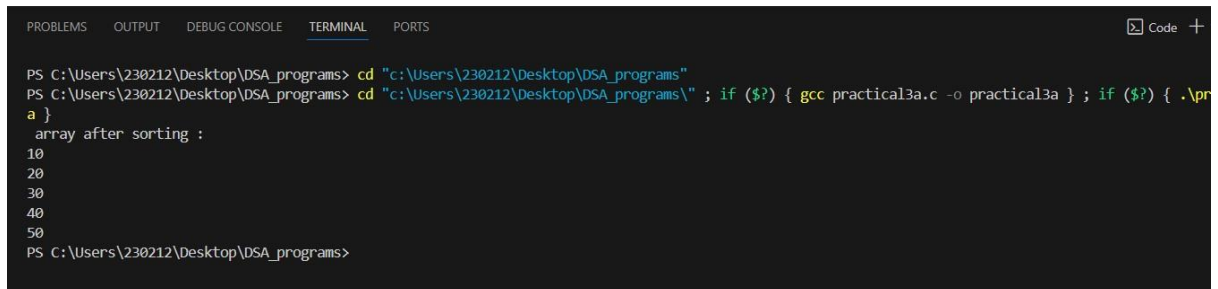
```
    for (i = 0; i < n - 1; i++) {  
pos = i;        for (j = i + 1; j <  
n; j++) {            if (arr[pos]  
> arr[j])                pos = j;  
        }  
        if (pos != i) {  
swap = arr[i];  
arr[i] = arr[pos];  
arr[pos] = swap;  
        }  
    }
```

```
    for (i = 0; i < n; i++) {  
        printf("%d\n", arr[i]);  
    }
```

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```
return 0;

}
```



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs"
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs\" ; if ($?) { gcc practical3a.c -o practical3a } ; if ($?) { .\pr
a }
array after sorting :
10
20
30
40
50
PS C:\Users\230212\Desktop\DSA_programs>
```

[ BUBBLE SORT ]

**Program :-** #include

<stdio.h>

```
int main() { int a[10] = {10, 30,
```

```
50, 40, 20}; int temp;
```

```
int i, j;
```

```
printf("Array before bubble sorting:\n");
```

```
for (i = 0; i < 5; i++) { printf("%d ", a[i]);
```

```
}
```

```
printf("\n");
```

```
for (i = 0; i < 5; i++) {
```

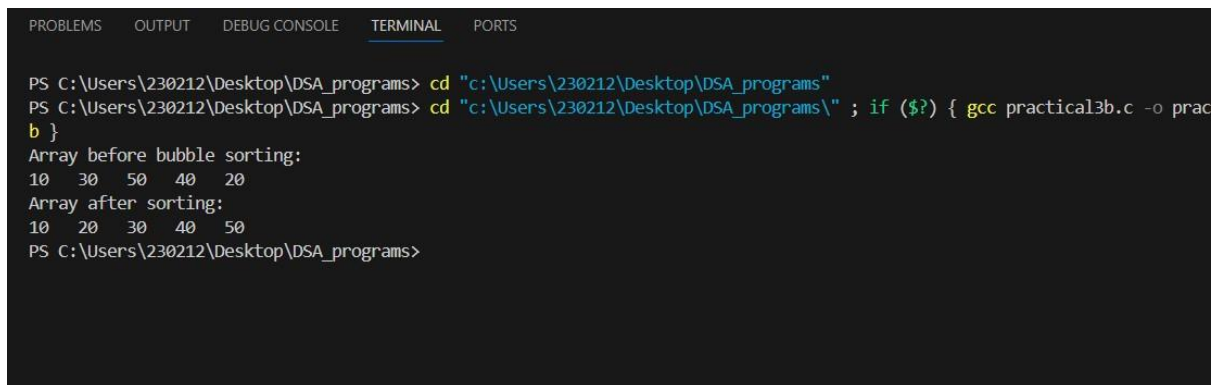
```
for (j = 0; j < 4; j++)
```

```
{ if (a[j] > a[j + 1])
```

```
{ temp = a[j];
```

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```
a[j] = a[j + 1];  
a[j + 1] = temp;  
    }  
}  
}  
  
printf("Array after sorting:\n");  
for (i = 0; i < 5; i++) {    printf("%d  
", a[i]);  
}  
  
printf("\n");  
  
return 0;  
}
```



The screenshot shows a terminal window with the following content:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
  
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs"  
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs\" ; if ($?) { gcc practical3b.c -o practical3b }  
Array before bubble sorting:  
10  30  50  40  20  
Array after sorting:  
10  20  30  40  50  
PS C:\Users\230212\Desktop\DSA_programs>
```

[B] : Write a program to search any integer in array by using binary search

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[ BINARY SEARCH ]

Program :-

```
#include<stdio.h> int
main()
{
    int a[10] = {10, 15, 20, 25, 30, 35, 40,45,50,55};
    int low, high, mid, target, found = 0;

    for(int i = 0; i < 7; i++) {
printf("%d ", a[i]);
    }
    printf("\n");

    low = 0;
    high = 6;

    printf("Enter the element you want to search: ");
    scanf("%d", &target);

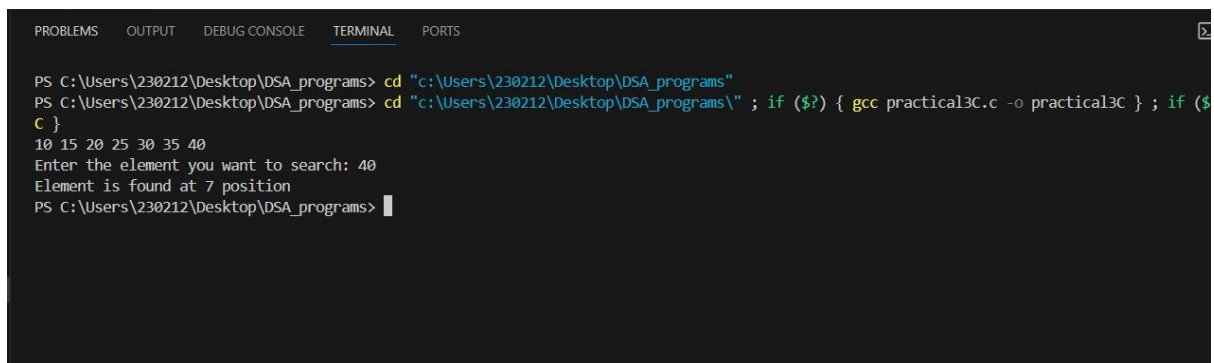
    while(low <= high) {
mid = (low + high) / 2;

        if(a[mid] == target) {            found = 1;
printf("Element is found at %d position\n", mid + 1);
break;

        } else if(a[mid] < target) {
low = mid + 1;
```

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```
    } else {  
high = mid - 1;  
    }  
}  
  
if(!found) {    printf("Element  
not found\n");  
}  
  
return 0;  
}
```



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs"  
PS C:\Users\230212\Desktop\DSA_programs> cd "c:\Users\230212\Desktop\DSA_programs\" ; if ($?) { gcc practical3C.c -o practical3C } ; if ($?  
C }  
10 15 20 25 30 35 40  
Enter the element you want to search: 40  
Element is found at 7 position  
PS C:\Users\230212\Desktop\DSA_programs> █
```

GITHUB LINK OF PRACTICAL NO 3 :

<https://github.com/AmolNagargoje04/Data-Structure-practical>