DSA Assignment: 13

Exp 13**:** Implementation of Menu driven Selection sort, Bubble sort, Insertion sort

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D10A Roll No: 60

AIM: In this experiment, we will implement Menu driven Selection sort, Bubble sort, Insertion sort.

CODE:

```c
#include <stdio.h>
#include <stdlib.h>
void display(int a[], int n);
void bubble_sort(int a[], int n);
void selection_sort(int a[], int n);
void insertion_sort(int a[], int n);

int main()
{
    printf("D10A_60_Shashwat Tripathi\n\n");
    int n, choice, i;
    char ch[20];
    printf("Enter no. of elements u want to sort : ");
    scanf("%d", &n);
    int arr[n];
    for (i = 0; i < n; i++)
    {
        printf("Enter %d Element : ", i + 1);
        scanf("%d", &arr[i]);
    }
    printf("Please select any option Given Below for Sorting : \n");
    while (1)
    {
    printf("\n1. Bubble Sort\n2. Selection Sort\n3. Insertion Sort\n4. Display
Array\n");
    printf("5. Exit the Program\n");
    printf("\nEnter your Choice : ");
    scanf("%d",&choice);
        switch(choice){
        case 1:
            bubble_sort(arr, n);
            break;
        case 2:
            selection_sort(arr, n);
            break;
        case 3:
            insertion_sort(arr, n);
            break;
        case 4:
            display(arr, n);
            break;
        case 5:
            break;
        default:
```

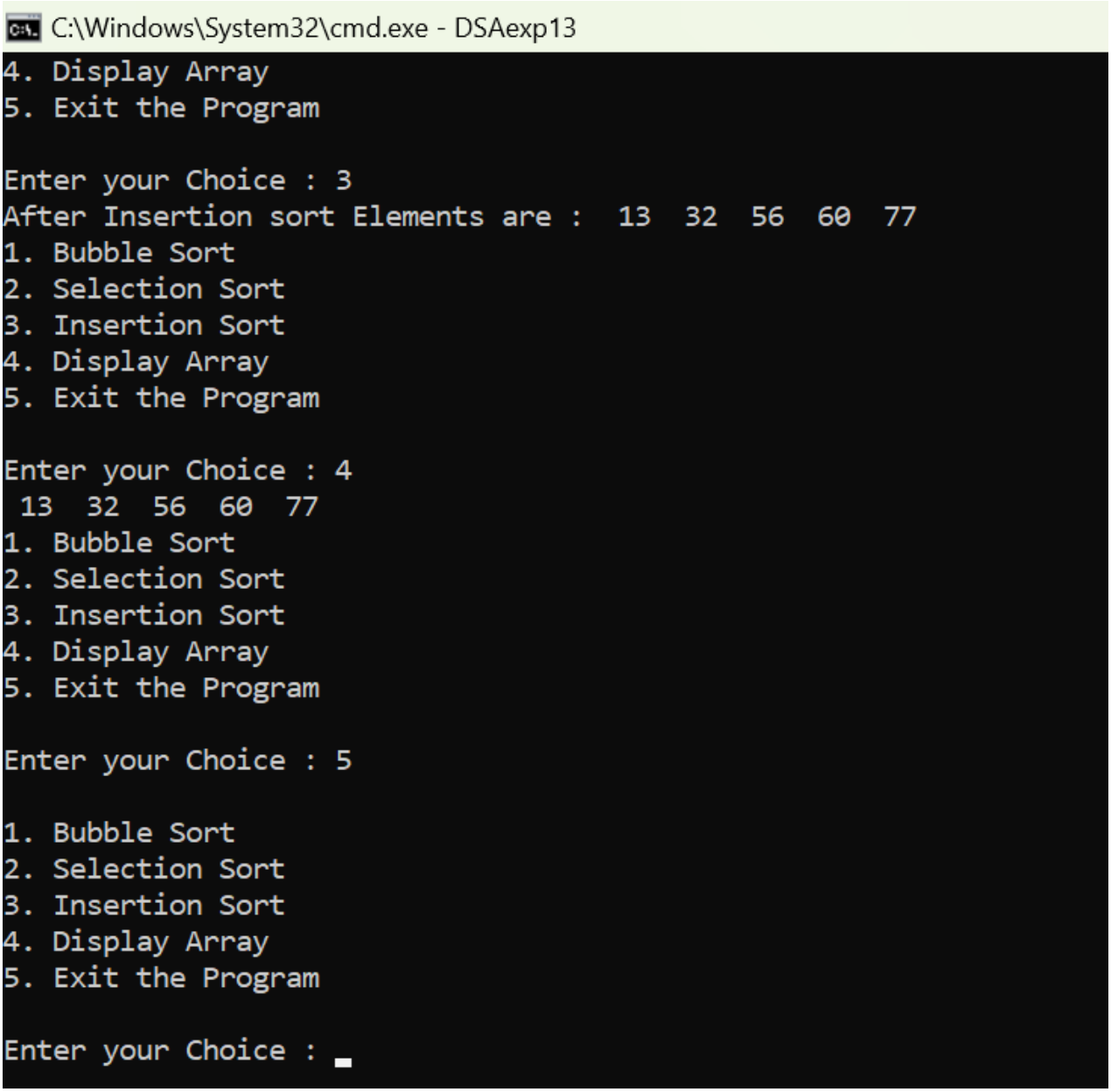
```
            printf("\nPlease Select only 1-5 option ----\n");
            break;
        }
    };
    return 0;
}

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

void bubble_sort(int arr[], int n)
{
    int i, j, temp;
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < n - i - 1; j++)
        {
            if (arr[j] > arr[j + 1])
            {
                temp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = temp;
            }
        }
    }
    printf("After Bubble sort Elements are : ");
    display(arr, n);
}

void selection_sort(int arr[], int n)
{
    int i, j, temp;
    for (i = 0; i < n - 1; i++)
    {
        for (j = i + 1; j < n; j++)
        {
            if (arr[i] > arr[j])
            {
                temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
    printf("After Selection sort Elements are : ");
    display(arr, n);
}

void insertion_sort(int arr[], int n)
{
    int i, j, min;
    for (i = 1; i < n; i++)
```

```
    {
        min = arr[i];
        j = i - 1;
        while (min < arr[j] && j >= 0)
        {
            arr[j + 1] = arr[j];
            j = j - 1;
        }
        arr[j + 1] = min;
    }
    printf("After Insertion sort Elements are : ");
    display(arr, n);
}
```

OUTPUT:

C:\Windows\System32\cmd.exe - DSAexp13

```
C:\Users\shweta\Documents\Shashwat\Notepad++\DSA>DSAexp13
D10A_60_Shashwat Tripathi

Enter no. of elements u want to sort : 5
Enter 1 Element : 13
Enter 2 Element : 56
Enter 3 Element : 32
Enter 4 Element : 60
Enter 5 Element : 77
Please select any option Given Below for Sorting :

1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program

Enter your Choice : 1
After Bubble sort Elements are :  13  32  56  60  77
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program

Enter your Choice : 2
After Selection sort Elements are :  13  32  56  60  77
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program

Enter your Choice : 3
After Insertion sort Elements are :  13  32  56  60  77
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program
```


C:\Windows\System32\cmd.exe - DSAexp13
4. Display Array
5. Exit the Program
Enter your Choice : 3
After Insertion sort Elements are : 13 32 56 60 77
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program
Enter your Choice : 4
13 32 56 60 77
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program
Enter your Choice : 5
1. Bubble Sort
2. Selection Sort
3. Insertion Sort
4. Display Array
5. Exit the Program
Enter your Choice :