

Experiment 9

Objective: Implementation of Bubble, Selection, Insertion sort and Displaying output

Code:

```
#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()
```

```
{
```

```
    int n,choice,i;
```

```
    char ch[20];
```

```
    printf("Enter number of elements 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("\n*****MENU*****\n");
```

```
    while(1)
```

```
{  
    printf("\n1.Bubble Sort");  
    printf("\n2.Selection Sort");  
    printf("\n3.Insertion Sort");  
    printf("\n4.Display");  
    printf("\n5.Exit");  
    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:  
        return 0;  
    default:  
        printf("\nPlease select correct option");  
    }
```

```
    }  
}  
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("\nBubble sorted Elements are : \n");  
    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("\nSelection sorted Elements are : \n");  
    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("\nInsertion sorted Elements are : \n");

    display(arr,n);
}

```

Output:

```

Enter number of elements to sort: 5
Enter 1 Element: 34
Enter 2 Element: 54
Enter 3 Element: 23
Enter 4 Element: 13
Enter 5 Element: 21

*****MENU*****

1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 1

Bubble sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 2

Selection sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 3

Insertion sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort

```

```
Enter your Choice: 1
Bubble sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 2
Selection sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 3
Insertion sorted Elements are :
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 4
13 21 23 34 54
1.Bubble Sort
2.Selection Sort
3.Insertion Sort
4.Display
5.Exit
Enter your Choice: 5

...Program finished with exit code 0
Press ENTER to exit console.
```

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