DS Assignment- 7

Implement the following sorting algorithms:

1) Bubble Sort

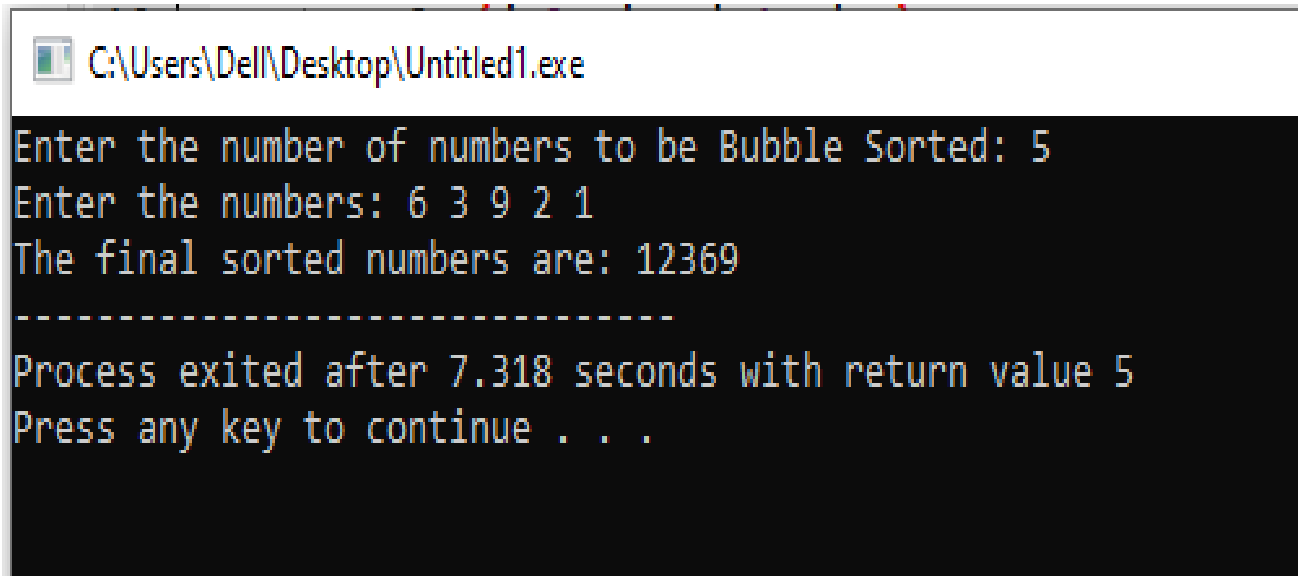
Source Code:

```
#include<stdio.h>
int main()
{
	int i,n,arr[100],temp,j,flag=0;
	printf("Enter the number of numbers to be Bubble Sorted: ");
	scanf("%d", &n);
	printf("Enter the numbers: ");
	for(i=0; i<n; i++)
	{
		scanf("%d", &arr[i]);
	}
```

```
for(i=0; i<=n-2; i++)
{
   flag=0;
      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;
                  flag=1;
            }
      }
      if(flag==0)
      {
            break;
      }
}
printf("The final sorted numbers are: ");
```

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

Output:



2) Merge Sort

Source Code:

```
#include<stdio.h>
#include<math.h>
#include<stdlib.h>
```

```
int main()
{
    int i=0,n,arr[100];
    printf("Enter the number of numbers to be Bubble Sorted: ");
    scanf("%d", &n);
    printf("Enter the numbers: ");
    for(i=0; i<n; i++)
    {
        scanf("%d", &arr[i]);
    }
    mergesort(arr,n);
    printf("The Sorted numbers are: ");
    for(i=0; i<n; i++)
    {
        printf("%d ", arr[i]);
    }
```

```
        return 0;
}

int mergesort(int arr[],int n)
{    int nl,nr,i,j,l[100],r[100];
    if(n<2)
    {
        return;
        }
        int mid=n/2;
        nl=mid;
        nr=n-mid;
        for(i=0; i<=mid-1; i++)
        {
              l[i]=arr[i];
        }
        for(i=mid; i<=n-1; i++)
```

```
    {
        r[i-mid]=arr[i];
    }
    mergesort(l,nl);
    mergesort(r,nr);
    merge(l,r,arr,nl,nr,n);
}
int merge( int l[], int r[], int arr[], int nl, int nr, int
n)
{   int i=0,j=0,k=0;
    while(i<nl && j<nr)
    {
        if(l[i]<=r[j])
        {
            arr[k]=l[i];
            k++;
            i++;
```

```
        }
        else
        {
            arr[k]=r[j];
            k++;
            j++;
        }
    }
    while(i<nl)
    {
        arr[k]=l[i];
        i++;
        k++;
    }
    while(j<nr)
    {
        arr[k]=r[j];
```

```
            j++;
            k++;
        }
}
```

Output:


```
Enter the number of numbers to be Bubble Sorted: 7
Enter the numbers: 8 4 6 2 4 1 9
The Sorted numbers are: 1 2 4 4 6 8 9
--------------------------------
Process exited after 15.95 seconds with return value 0
Press any key to continue . . .
```