

Experimet – 1

```
import java.util.*;

public class Main {

    public static void printArray(int arr[]){

        System.out.println();

        for(int i=0;i<arr.length;i++){

            System.out.print(arr[i]+" ");

        }

        System.out.println();

    }

    public static void quickSort(int arr[],int si,int ei){

        if(si>=ei){

            return;

        }

        int mid=pivotIndex(arr,si,ei);

        quickSort(arr,si,mid-1);

        quickSort(arr,mid+1,ei);

    }

    public static int pivotIndex(int arr[],int si,int ei){

        int pi=ei;

        int j=si-1;

        int i=si;

        for( i=si;i<=ei;i++){

            if(arr[i]<=arr[pi]){

                j++;

            }

        }

        return j;

    }

}
```

```
        int temp=arr[j];
        arr[j]=arr[i];
        arr[i]=temp;
    }
}
return j;
}

public static void main(String[] args) {
    System.out.println("enter size:");
    // int n = sc.nextInt();
    int arr[]={30,10,32,80,15,50,40};
    printArray(arr);
    quickSort(arr,0,arr.length-1);
    printArray(arr);
}
}
```

OUTPUT:

enter size:

30 10 32 80 15 50 40

10 15 30 32 40 50 80

Experiment -2

```
import java.util.*;

public class Main {
    public static void printArray(int arr[]){
        System.out.println();
        for(int i=0;i<arr.length;i++){
            System.out.print(arr[i]+" ");
        }
        System.out.println();
        System.out.println();
    }
    public static void mergeSort(int arr[],int si,int ei){
        if(si>=ei){
            return;
        }
        int mid=(si+ei)/2;
        mergeSort(arr,si,mid);
        mergeSort(arr,mid+1,ei);
        merge(arr,si,mid,ei);
    }
    public static void merge(int arr[],int si,int mid,int ei){
        int i=si;
        int j=mid+1;
        int k=-1;
        int temp[]=new int[ei-si+1];

        while(i<=mid && j<=ei){
            if(arr[i]>arr[j]){
                k++;
                temp[k]=arr[j];
                j++;
            }else{
                k++;
                temp[k]=arr[i];
                i++;
            }
        }
        while(i<=mid){
```

```

    k++;
    temp[k]=arr[i];
    i++;
}
while(j<=ei){
    k++;
    temp[k]=arr[j];
    j++;
}

for(i=si,k=0;i<=ei && k<temp.length;k++,i++){
    arr[i]=temp[k];
}

}
public static void main(String[] args) {
    System.out.println("Hello, World!");

    int arr[]={3,4,1,6,5,2};
    printArray(arr);
    mergeSort(arr,0,arr.length-1);
    printArray(arr);
}
}

```

OUTPUT:

3 4 1 6 5 2

1 2 3 4 5 6