**Experiment 18**

**Quick Sort**

**Date of Submission** 13-01-2021

**Aim:** Write a Java program that implements a Quick sort algorithm for sorting a list of names in ascending order.

**Concepts Used:** Arrays, Quick Sorting

**Algorithm Partition(arr, start,pivot)**

Steps:

Start

i = start

j = start-1

while i<pivot do

if arr[i]<arr[pivot]then

j++

swap(arr[i],arr[j])

endif

i++

endwhile

j = j+1

if(j!=pivot)

swap(arr[pivot],arr[j])

endif

stop

**Algorithm QuickSort(arr,start,end)**

Steps:

Start

if start<end

p = Partition(arr,start,end)

Quicksort(arr,start,pivot-1)

Quicksort(arr,pivot+1,end)

endif

**Program code:**

import java.util.Scanner;

class QuickSort{

public static void quickSort(String arr[], int s,int e){

if(s<e){

int q = partition(arr,s,e);

quickSort(arr,s,q-1);

quickSort(arr,q+1,e);

}

}

static int partition(String arr[], int s, int pivot){

String x = arr[pivot];

int i=s-1,j=s;

String temp;

for(;j<pivot;j++)

{

if(arr[j].compareTo(x)<=0){ //arr[j] <= arr[pivot] the switch

i++;

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

temp = arr[i+1];

arr[i+1]=arr[pivot];

arr[pivot] = temp;

return i+1;

}

public static void main(String args[]){

String[] arr = new String[100];

int i = 0;

Scanner sc = new Scanner(System.in);

System.out.print("Enter the number of elements: ");

int n = sc.nextInt();

sc.nextLine();

System.out.print("\nEnter the names to be sorted: ");

while(i<n && sc.hasNextLine()){

arr[i++] = sc.nextLine();

}

quickSort(arr,0,i-1);

System.out.print("The sorted array is : ");

for(int x=0;x<i;x++){

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

}

System.out.println("");

}

}

**Program output:**

