**PROGRAM 3**

**Sort a given set of N integer elements using Selection Sort technique and compute its time taken.Run the program for different values of N and record the time taken to sort.**

**Program:**

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

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

{

int temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

void selectionSort(int arr[], int i, int n)

{

int min = i;

for (int j = i + 1; j < n; j++)

{

if (arr[j] < arr[min]) {

min = j;

}

}

swap(arr, min, i);

if (i + 1 < n) {

selectionSort(arr, i + 1, n);

}

}

void printArray(int arr[], int n)

{

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

printf("%d\t ", arr[i]);

}

}

int main()

{

int i,n,arr[1000];

double time;

clock\_t start,end;

printf("Enter the total number of elements to be sorted:");

scanf("%d",&n);

printf("The elements to be sorted are:\n");

for(i=0;i<n;i++)

{

arr[i] = rand()%100;

printf("%d\t",arr[i]);

}

printf("\nThe sorted array is:\n");

start=clock();

selectionSort(arr, 0, n);

printArray(arr, n);

end=clock();

time = ((double)(end - start))/CLOCKS\_PER\_SEC;

printf("\nTime taken to sort the array by using Selection Sort is:%lf\n",time);

}

**Output:**



