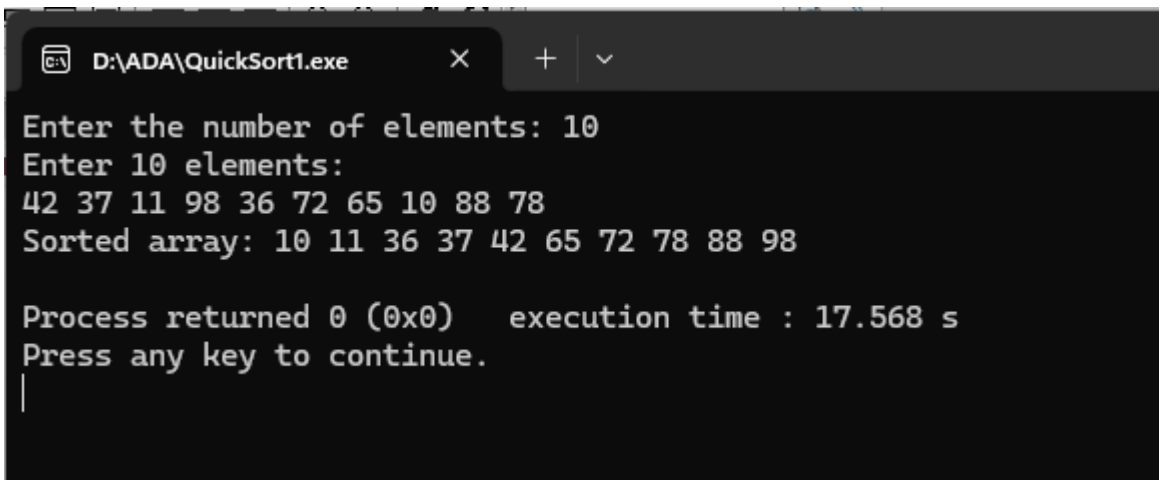
LAB 06:Quick Sort

Code:-

```
#include <stdio.h>

void swap(int arr[], int i, int j) {
    int temp = arr[i];
    arr[i] = arr[j];
    arr[j] = temp;
}

int partition(int arr[], int low, int high) {
    int pivot = arr[high];
    int i = low - 1;

    for (int j = low; j < high; j++) {
        if (arr[j] < pivot) {
            i++;
            swap(arr, i, j);
        }
    }
    swap(arr, i + 1, high);
    return i + 1;
}

void quickSort(int arr[], int low, int high) {
    if (low < high) {
        int pi = partition(arr, low, high);
        quickSort(arr, low, pi - 1);
        quickSort(arr, pi + 1, high);
    }
}
```

```
int main() {
    int n;
    printf("Enter the number of elements: ");
    scanf("%d", &n);

    int arr[n];
    printf("Enter %d elements:\n", n);
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    quickSort(arr, 0, n - 1);

    printf("Sorted array: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

Output:-



Column1	Column2
N values	Time Taken
500	0.00054
1500	0.004162
2500	0.011368
3500	0.022227
4500	0.039753
5500	0.057849
6500	0.077143
7500	0.104139
8500	0.130832
9500	0.162475
10500	0.199474
11500	0.238135
12500	0.29624
13500	0.331017
14500	0.378878