

Kathmandu University

Dhulikhel, Kavre



Subject: COMP 202 [Data Structure and Algorithm – DSA]

Lab Work 05

Submitted By: **REEWAJ KHANAL**

Roll No.: **61**

Group: Computer Engineering

Level: 2nd Yr. / 1st Sem.

Submitted To: Rajani Chulyadyo

Department of Computer Science and Engineering

Output Screens:

```
[Running] cd "/Users/reewajkhanal.rk10/Desktop"
~~~~~
Loop 1
Array Length: 50
Time Consumed: 0.014 ms
~~~~~
Loop 2
Array Length: 100
Time Consumed: 0.018 ms
~~~~~
Loop 3
Array Length: 150
Time Consumed: 0.031 ms
~~~~~
Loop 4
Array Length: 200
Time Consumed: 0.042 ms
~~~~~
Loop 5
Array Length: 250
Time Consumed: 0.052 ms
~~~~~
Loop 6
Array Length: 300
Time Consumed: 0.068 ms
~~~~~
Loop 7
Array Length: 350
Time Consumed: 0.079 ms
~~~~~
Loop 8
Array Length: 400
Time Consumed: 0.095 ms
~~~~~
Loop 9
Array Length: 450
Time Consumed: 0.11 ms
~~~~~
Loop 10
Array Length: 500
Time Consumed: 0.125 ms

[Done] exited with code=0 in 1.071 seconds
```

Steps/Explanation

[Quick Sort – Implementation and Analyzation]:

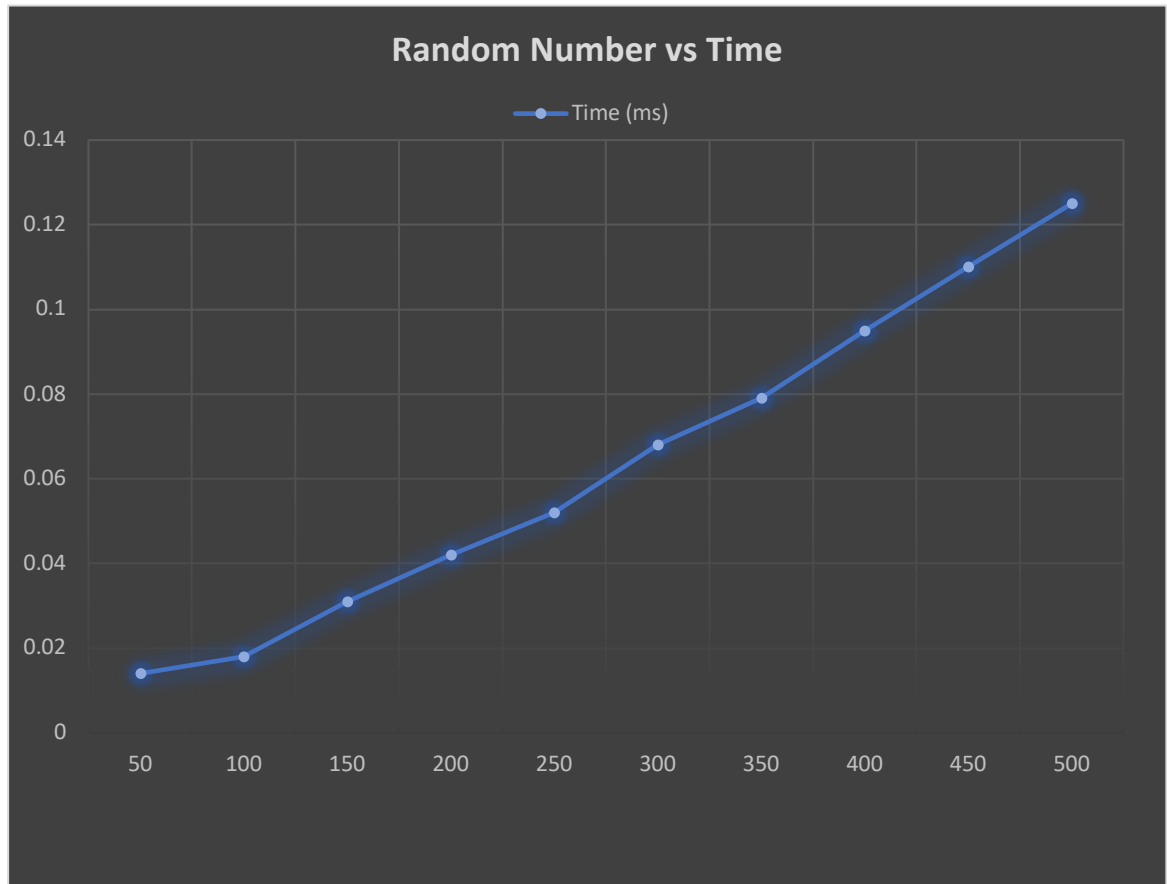
- vector array is used for creating dynamic array.
- pseudo random numbers are generated from `srand(time(0))`.
- quick sorting is done for 250 randomly generated data.
- randomization is minimized by mod 1000. [eg: `x%1000`]
- time difference for each loop is measured by `clock()` using `<ctime>` library.
- graph is plotted between time and random data.

Output screen of randomly generated data [250] for 1 loop:

```
[Running] cd "/Users/reewajkhanal.rk10/Desktop/dsalab5/" && g++ SortingMain.cpp -o SortingMain && "/Users/reewajkhanal.rk10/Desktop/dsalab5/SortingMain"
~~~~~
~~~~~
751 625 995 206 38 733 748 367 103 838 666 305 887 607 845 34 377 664 741 325 63 774 590 77 50 446 78 980 255 15 477 665 564 37 14 368 607 690 99
623 281 464 19 162 678 256 898 602 692 612
After sorting: 14 15 19 34 37 38 50 63 77 78 99 103 162 206 255 256 281 305 325 367 368 377 446 464 477 564 590 602 607 607 612 623 625 664 665
666 678 690 692 733 741 748 751 774 838 845 887 898 980 995
Array Length: 50
Time Consumed: 0.012 ms

[Done] exited with code=0 in 1.134 seconds
```

Graph between time and random numbers:



GitHub Repository Link:

<https://github.com/reewajkhanalrk10/dsalab5>