Indian Institute of Technology Mandi
February-June 2014 Semester

CS202: Advanced Data Structure and Algorithms

Programming Assignment 2

Last date of submission: 14th March, 2014

1. Implement **Merge sort** and **Quick sort** algorithms using C++ programing language and sort the input sequence in ascending order.
2. Use the data sets with different input sizes given for the first assignment. Observe the running time for the above mentioned sorting algorithms for each of the data with different input sizes. Note down and compare the running time for both the algorithms. Also compare the running time with the running times for the sorting algorithms in first assignment.
3. Sort the data points in each of the data files in **ascending order** and save them as separate files. Use the data files containing data points in ascending order as input to the programs of each of the above mentioned sorting algorithms for ascending order and observe the running time. Compare the running time of both of the algorithms and also compare this running time with the running times for the sorting algorithms in first assignment.
4. Sort the data points in each of the data files in **descending order** and save them as separate files. Use the data files containing data points in descending order as input to the programs of each of the above mentioned sorting algorithms for ascending order and observe the running time. Compare the running time of both of the algorithms and also compare this running time with the running times for the sorting algorithms in first assignment.

Submit the report on the observations and resoning behind the obtained results on or before 14th March 2014. The report should be neat and clear. Use the uniform fonts for the different sections and main body of the report. The report should contain the pseudo-code of each of the algorithms and asymptotic best bast, worst and average case running time. Plot the graph showing the asymptotic running time for the different algorithms as a functon of input size (use the different input sizes provided to you). Plot the graph of observed running time of the different algorithms as a functon of input size. The should also contain comparision of different algorithms and the reasonings.