All the algorithms are executed independently for different input ranges of 1000,3000,7000,10000,20000,40000 and 50000.

For every range average time is considered by executing the algorithm 3 times with that range.

To ensure that the datasets remain same for all the algorithms, random.seed() function is used.

For example, for 1000 input range, 3 different datasets are used for average time and given to every algorithm. To ensure all 3 different datasets are common across all algorithm, seed used is 0, 1 and 2 respectively . This is taken care by the inner for-loop of j

A matrix of 5 X 7 is maintained representing 5 different Algorithms and 7 different input ranges, for storing the average time value for each input range.

The time stored is in seconds.

Each row of the matrix is then converted into list and plotted on the line graph for comparison and analysis

Heapsort is done by constructing a max heap and then while sorting placing the max element ie. the root at the end of the vector and the last element to 1st position and then heapifying from 1 to n-2