CSE 3512 – Algorithm Design and Analysis
Lab 5
Randomized Quick Sort

1. Implement Quick Sort and Randomized Quick Sort algorithm. Analyze their performance by measuring the time taken to sort arrays of different sizes n = 10^2, 10^3 ,10^4 and 10^5. For each of these sizes consider:
   (i) Randomly generated files of integers in the range [1...n].
   (ii) Increasing files of integers 1, 2... n.
   (iii) Decreasing files of integers n, n − 1... 1.
   (iv) Files of uniform integers such as 5, 5, 5..... (n times).
2. Performance Analysis:
   (i) For each type of array and each array size, measure and record the time taken by both Quick Sort and Randomized Quick Sort to complete the sort. Plot the execution time against array size n, and observe the trend.
   (ii) Compare and discuss the performance of both algorithms across different array types and sizes.