Course Code: **CSE 3512**
Course Title: Algorithm Design and Analysis Sessional

Lab 2

Experiment

1. Implement heapsort algorithm and investigate its performance on arrays of sizes $n = 10^2$, 10^3, 10^4, 10^5, and 10^6. For each of these sizes consider:
   a. Randomly generated files of integers in the range [1...n].
   b. Increasing files of integers 1, 2... n.
   c. Decreasing files of integers n, n − 1... 1.

Home Assignment 1 (Due: 28th Oct, 2024)

1. Given an infinite stream of integers, return the element representing the k^{th} largest element in the stream. (Hint: Use Min-heap)
2. Suppose a hospital's emergency room is filled with individuals of various ages. Sort the patients efficiently so that the oldest patients receive care first. (Hint: Use Max-heap)
3. You are given k sorted arrays, each containing n integers. Write a function that efficiently merges these k sorted arrays into a single sorted array. (Hint: Use Min-heap)