CSC 212 Tutorial #5
Queue & PQueue

Problem 1

Write the recursive static method *split* that splits a queue of n elements into two queues. The elements with odd orders (i.e. $1st, 3rd, 5th$ ...) should be put in the first queue and elements with even orders (i.e. $2nd, 4th, 6th$ ...) should be put in the second queue. The original queue should remain unchanged at the end of the method. The method signature is: **public static** `<T>` **void** `split(Queue<T> q, Queue<T> oq, Queue<T> eq)`.

Example 1.1. *Given the queue* (A, B, C, D, E)*,* split *results in* oq (A, C, E)*, and* eq (B, D).

Problem 2

Write the static method *merge* that merges two priority queues *pq1* and *pq2* in one priority queue *mq*. Assume *mq* is initially empty. The method signature is: **public static** `<T>` **void** `merge(PriorityQueue<T> mq, PriorityQueue<T> pq1, PriorityQueue<T> pq2)`.

Example 2.1. *Given* pq1*:* $[A, 10], [B, 5], [C, 2]$ *and* pq2*:* $[D, 8], [E, 3]$ merge *results in* mq*:* $[A, 10], [D, 8], [B, 5], [E, 3], [C, 2]$.

Problem 3

Write a static method *remove* that removes every element in the priority queue having priority less than p. The method signature is **public static** `<T>` **void** `remove (PriorityQueue<T> pq, int p)`.

Example 3.1. *Given* pq*:* $[A, 10], [D, 8], [B, 5], [E, 3], [C, 2]$ remove(pq, 5) *results in* pq*:* $[A, 10], [D, 8], [B, 5]$.