HOMEWORK 4 - Fall 2020

HOMEWORK 4 - GRADING KEY

1. **(17 points) Documentation and Coding Style**
   - Name, ID number and recitation at the top of ALL java files [2 points]
   - Precise and correct specifications. [5 points]
   - Indentation. [3 points]
   - Variable Names. [2 points]
   - Javadoc Style for Documentation. [5 points]

   Note: You only need to submit your java files. We will use the javadoc *.java command to create the javadoc files.

2. **(13 points) Source Code**
   - Program implements a queue class for the waiting list or uses Java API. If using Java API, the queue class must be subclass of the Java API class (if not a subclass, 4 points will be deducted). [13 points]

3. **(70 points) Program Correctness**
   - Program compiles without any error. [13 points]
   - Input/output:
     - Prompts the user for each simulation parameter [3 points]
     - Displays the total service time, packets arrived, average service time, and packets dropped [3 points]
   - Packets arrive at the correct probability [4 points]
   - Packet size is generated uniformly within the given range [4 points]
   - Packet is sent to the correct router after being dispatched [4 points]
   - Packets are dropped when the network is congested [4 points]
   - Packets are being accepted at the limited bandwidth [4 points]
   - Algorithm is implemented in the order described [3 points]
   - The following trends are reproduced by the simulation:
     - As router increases, average service time decreases and packet drop rate decreases [5 points]
     - As arrival probability increases, average service time increases and packet drop rate increases [5 points]
     - As packet size increases, average service time increases and packet drop rate increases [5 points]
     - As bandwidth increases, average service time decreases and packet drop rate decreases [5 points]
     - As buffer length increases, average service time increases and packet drop rate decreases [5 points]
   - Erroneous inputs are handled "gracefully" [3 points]