EE368 Spring 2018 Assignment 2

Due Date: Thursday, January 25, 2018 (in-class)

Q1. If an array holding a queue is not considered circular, then each *remove* operation must shift down every remaining element of a queue. An alternative method is to postpone shifting until *rear* equals the last index of the array. When that situation occurs and an attempt is made to insert an element into the queue, the entire queue is shifted down, so that the first element of the queue is in position 0 of the array. What are the advantages of this method over performing a shift at each *remove* operation? What are the disadvantages?

Q2. Given that jobs are serviced at a rate of 30 jobs per hour, determine the arrival rate in jobs per hour which will achieve the expected queue length to be 9.

Q3. Jobs arrive at the rate of 20 jobs per minute, and each job requires 2 seconds of service time, on the average. Determine the average waiting time in the queue. What is the probability that at a given time the system is not empty?

Q 4. Given that on the average 2 customers can be serviced per minute, determine the average arrival rate of the customers that achieves the average waiting time in the system (including the service time) to be 5 minutes per customer.