# COMP5416 Assignment 2

## Question 1

Assume that packets from each host arrive according to a Poisson process independently of other hosts. Find the minimum gateway buffer size (in octets) to ensure a packet loss probability of not more than 0.001 at the gateway for any utilization that does not exceed 90%.

As we know that the utilization should not exceed 90%, and the occupancy , since we already know that therefore in order to keep the occupancy less than 90%,  
therefore

Our simulation program was built based on the r\_ssq\_n.c program from week 9 tutorial. As we already know the inter arrival rate, mean packet length and transmission capacity, therefore the lost packet probability will be only decided by the minimum buffer size and the number of events (in our program it is generated randomly by the program ranging from 1000 to 100000).

For each buffer size, the program runs 100 times in order to calculate the mean probability and we have the following chart:

From the chart we can see that the first buffer size that can keep the packet loss less than 0.1% is 41KB and the probability of lost packet is 0.0131)%