Week_3

2022-10-30

Q1

Simulate (s,S) inventory system using the calling sequence below.

```
set.seed(12345)
Y <- MySim(123, 2000, 55555)

### calculate 95% confidence intervals for point estimates
# mean
mean_95 <- c(mean(Y) + qnorm(0.975)*sd(Y)/length(Y),mean(Y) - qnorm(0.975)*sd(Y)/length(Y))
# 80% quantile
l_hat <- floor(length(Y)*0.8 - qnorm(0.975)*sqrt(length(Y)*0.8*(1-0.8)))
u_hat <- ceiling(length(Y)*0.8 + qnorm(0.975)*sqrt(length(Y)*0.8*(1-0.8)))
# prob Y>=210
prob_95 <- (length(Y)/(length(Y)-1))*sum(Y>=210)/length(Y)*(1-sum(Y>=210)/length(Y))
```

Using 2000 replications, the estimates are:

- mean: 193.4812
- standard deviation: 7.1717139
- 80th percentile of average cost: 199.6
- probability that cost is greater than or equal to $210: 0.0105
- 95% confidence intervals on your point estimates:
  - mean: (193.4882282, 193.4741718)
  - 80th percentile: $[Y_{(1564)}, Y_{(1636)}]$
  - probability that cost is greater than or equal to $210: ???

Q2

Calculate MSER statistic in the tandem queue system.