Report :- Homework 2
Subject :- SPA

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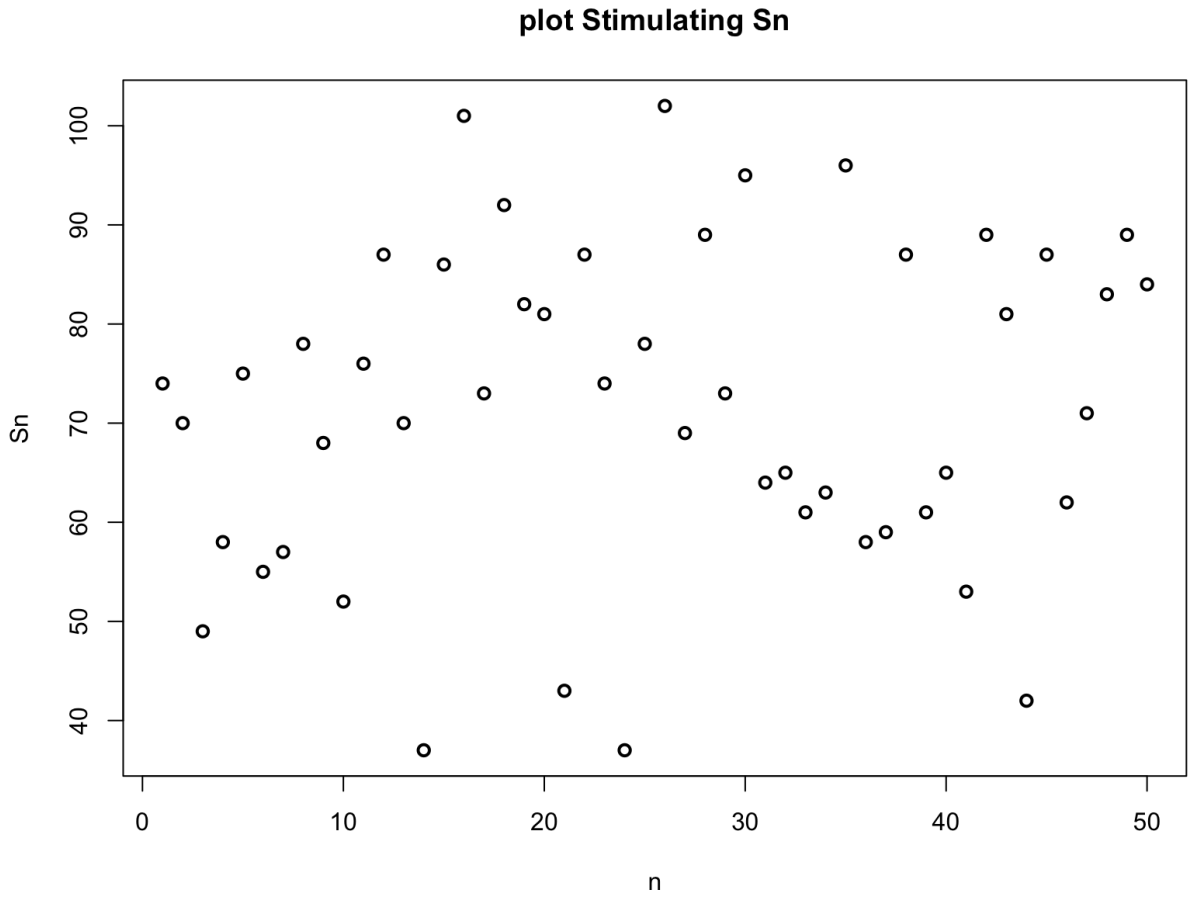
Question 1

A.

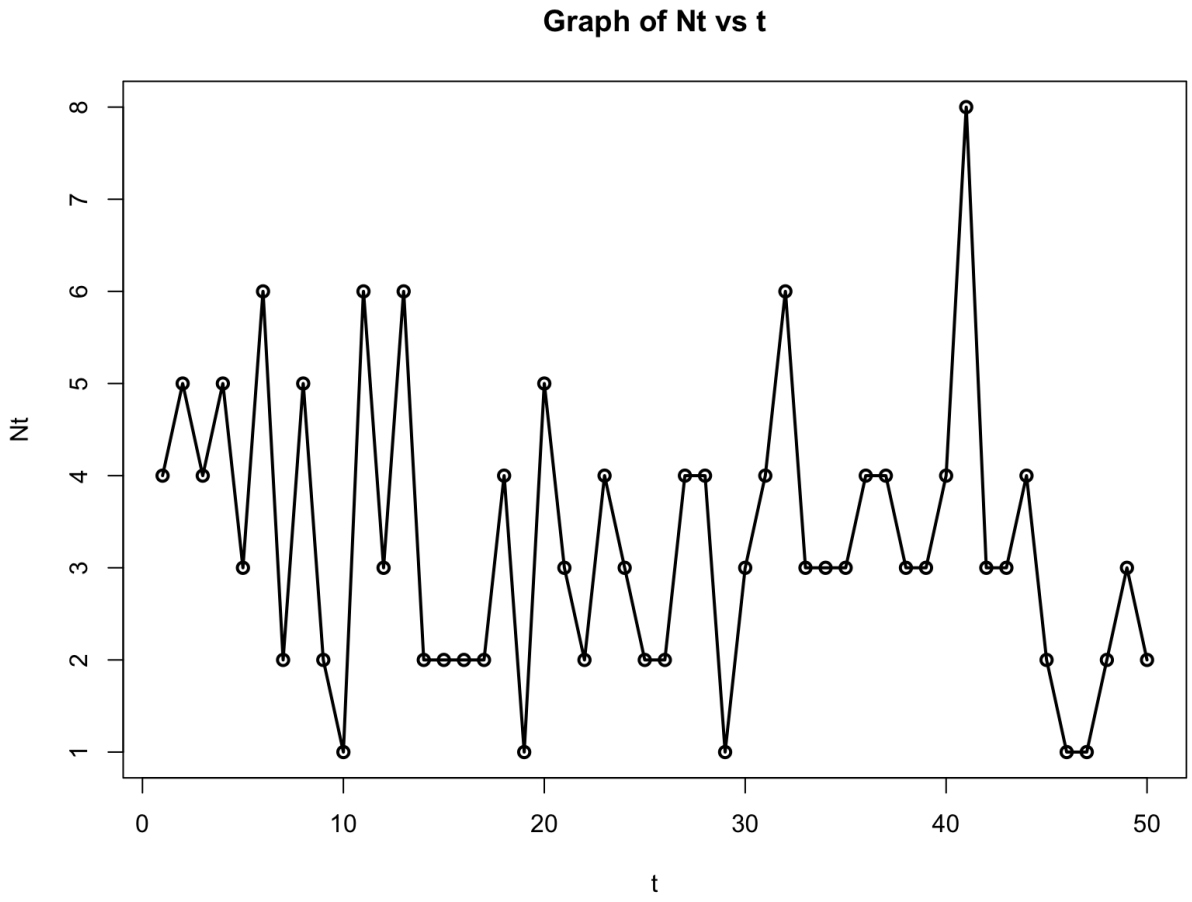
Stimulate Sum of interarrival times
Arguments taken.

1. number of observations= 50
2. size = number of successful trials = 18
3. prob = 0.2

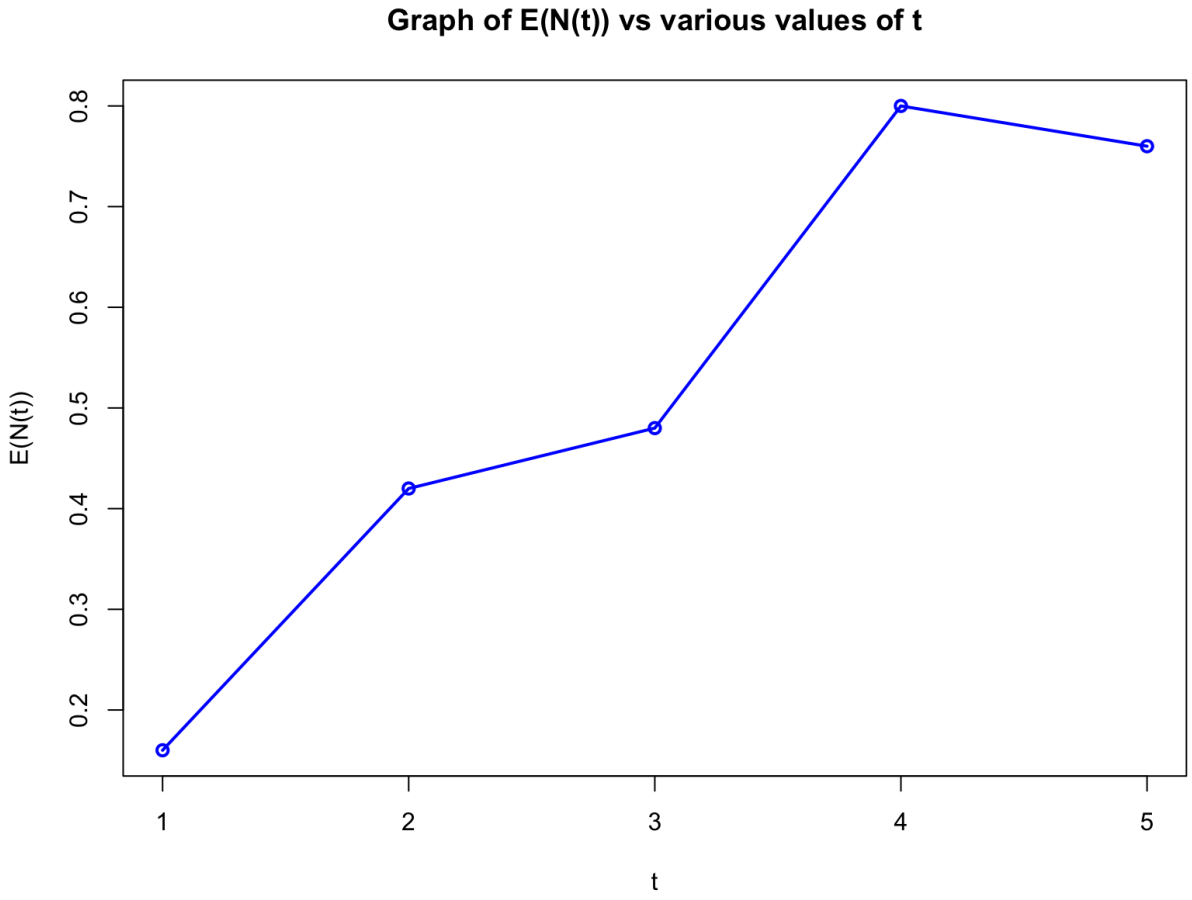
```
1
2  set.seed(69)
3
4  # number of observations= 50
5  # size = number of successful trials = 18
6  # prob = 0.2
7
8  Sn = rnbinom(50, 18, 0.2)
9
10 plot(Sn, type = 'p', lwd = 2, xlab = 'n', ylab = 'Sn')
11
```


plot Stimulating Sn
Sn
n
40
50
60
70
80
90
100
0
10
20
30
40
50

B.



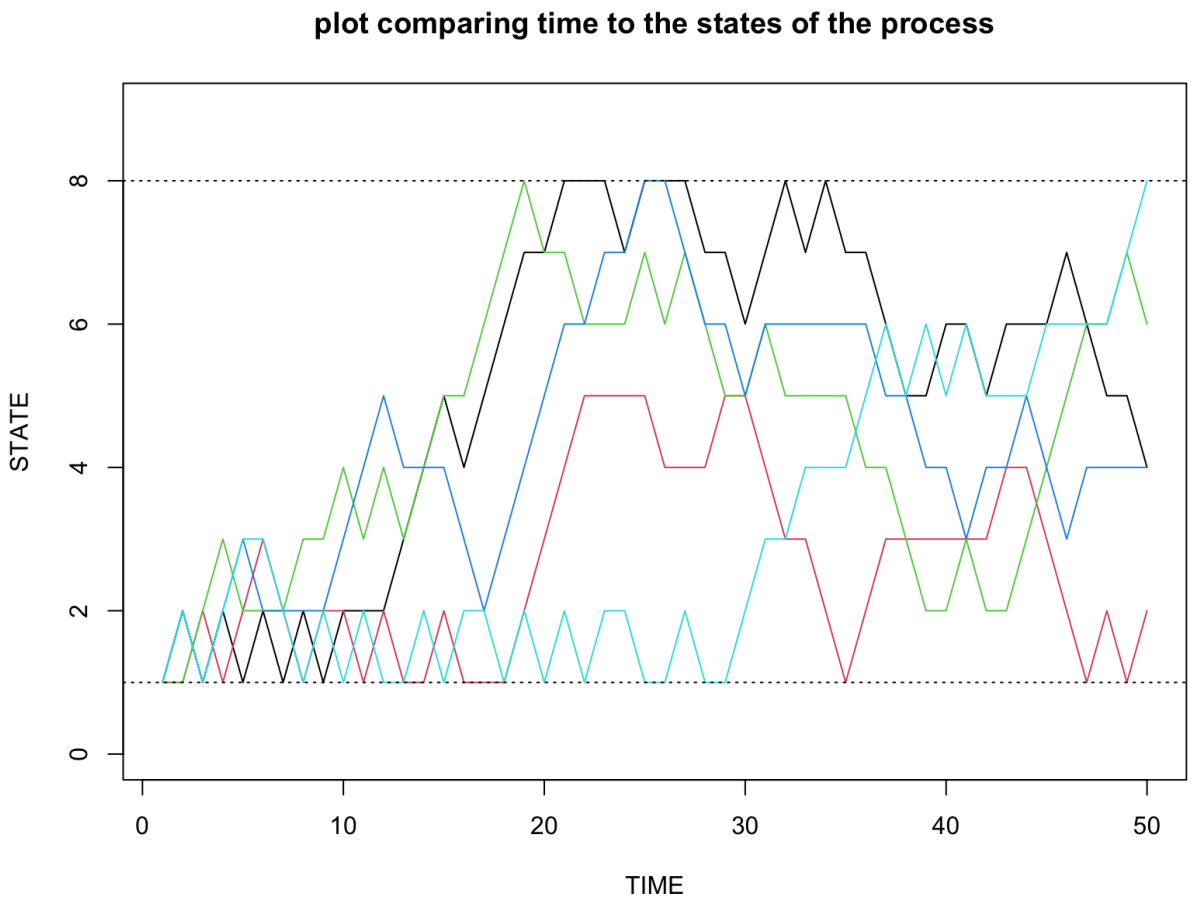
For stimulating the Nt, I have plotted a graph of Nt against t, as previously done in A as well. I have taken the sample size to be 50 and the the number of trials to be 18.



For stimulating the above graph, I have accordingly taken the means at values t = 1 , 2, 3, 4, 5

Question 2

A.



B.

For P^10

> print(P10)

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]
[1,]	0.151619841	0.28281597	0.22913174	0.16054463	0.09656387	0.04951820	0.02269302	0.007112737
[2,]	0.141407983	0.26618571	0.22168030	0.16284780	0.10503141	0.05962844	0.03187184	0.011346509
[3,]	0.114565869	0.22168030	0.19990178	0.16616708	0.12591238	0.08738505	0.05962844	0.024759098
[4,]	0.080272316	0.16284780	0.16616708	0.16296635	0.14852072	0.12591238	0.10503141	0.048281935
[5,]	0.048281935	0.10503141	0.12591238	0.14852072	0.16296635	0.16616708	0.16284780	0.080272316
[6,]	0.024759098	0.05962844	0.08738505	0.12591238	0.16616708	0.19990178	0.22168030	0.114565869
[7,]	0.011346509	0.03187184	0.05962844	0.10503141	0.16284780	0.22168030	0.26618571	0.141407983
[8,]	0.007112737	0.02269302	0.04951820	0.09656387	0.16054463	0.22913174	0.28281597	0.151619841

For P^20

> print(P20)

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]
[1,]	0.10831537	0.20908002	0.18810782	0.1582822	0.1258427	0.09721392	0.07773415	0.03542381
[2,]	0.10454001	0.20236928	0.18368113	0.1569752	0.1277481	0.10178841	0.08403078	0.03886708
[3,]	0.09405391	0.18368113	0.17123670	0.1531470	0.1329210	0.11456493	0.10178841	0.04860696
[4,]	0.07914112	0.15697524	0.15314697	0.1471824	0.1399638	0.13292098	0.12774808	0.06292133
[5,]	0.06292133	0.12774808	0.13292098	0.1399638	0.1471824	0.15314697	0.15697524	0.07914112
[6,]	0.04860696	0.10178841	0.11456493	0.1329210	0.1531470	0.17123670	0.18368113	0.09405391
[7,]	0.03886708	0.08403078	0.10178841	0.1277481	0.1569752	0.18368113	0.20236928	0.10454001
[8,]	0.03542381	0.07773415	0.09721392	0.1258427	0.1582822	0.18810782	0.20908002	0.10831537

For P^50

> print(P50)

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]
[1,]	0.07612503	0.1513198	0.1487134	0.1449471	0.1407669	0.1370008	0.1343947	0.06673227
[2,]	0.07565991	0.1504817	0.1481335	0.1447402	0.1409740	0.1375808	0.1352327	0.06719733
[3,]	0.07435670	0.1481335	0.1465085	0.1441603	0.1415540	0.1392058	0.1375808	0.06850041
[4,]	0.07247355	0.1447402	0.1441603	0.1433224	0.1423922	0.1415540	0.1409740	0.07038346
[5,]	0.07038346	0.1409740	0.1415540	0.1423922	0.1433224	0.1441603	0.1447402	0.07247355
[6,]	0.06850041	0.1375808	0.1392058	0.1415540	0.1441603	0.1465085	0.1481335	0.07435670
[7,]	0.06719733	0.1352327	0.1375808	0.1409740	0.1447402	0.1481335	0.1504817	0.07565991
[8,]	0.06673227	0.1343947	0.1370008	0.1407669	0.1449471	0.1487134	0.1513198	0.07612503