Aya Mahmoud Attia
190AEB001

Homework One

To analyze the system and find the service, queue, and system loads, I used the R programming language. The code I created is as follows:

```
1    # Sum of elements in vector
2    vector_sum = sum(vector)
3
4    #number of elements in vector
5    vector_length = length(vector)
6
7    #Average System load
8    system_load = vector_sum/vector_length
9
10   jobs_in_service = sum(vector>0)
11   queue_length = vector_sum - jobs_in_service
12   #Average Queue load
13   queue_load = queue_length / vector_length
14
15   #Average Server load
16   service_load = jobs_in_service / vector_length
17
18   #plotting the vector
19   plot(vector, type = "S", xlim = c(0,18), xlab = "Time", ylab = "Total Number of Jobs in System", panel.first = grid())
20
21   #printing Final Results
22   system_load
23   queue_load
24   service_load
```

> system_load = 3.75
> queue_load = 2.916667
> service_load= 0.8333333
The analyzed vector = c(0,2,5,3,6,7,4,8,3,5,2,0)