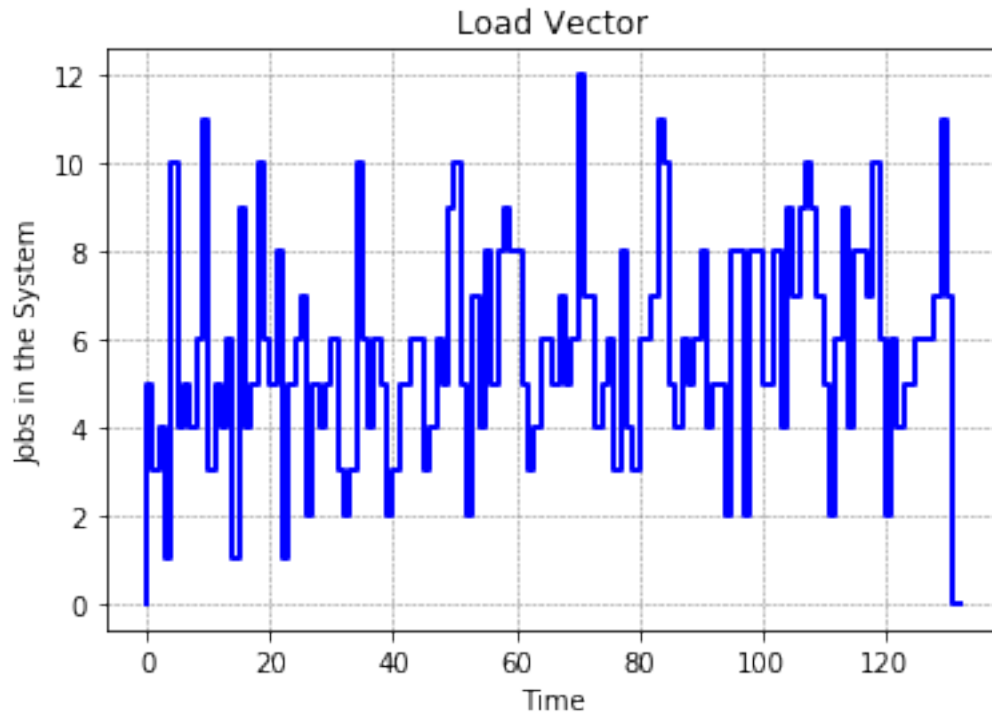# MidTermExam1

March 5, 2019

0.1 Python code

```python
In [3]: import matplotlib.pyplot as plt
        import numpy as np

In [4]: y = np.array([0,5,3,4,1,10,4,5,4,6,11,3,5,4,6,1,9,4,5,10,6,5,8,
                      1,5,6,7,2,5,4,5,6,3,2,3,10,6,4,6,5,2,3,5,5,6,6,3,
                      4,6,5,9,10,5,2,7,4,8,5,8,9,8,8,5,3,4,6,6,5,7,5,6,
                      12,7,7,4,5,6,3,8,4,3,6,6,7,11,10,5,4,6,5,6,8,4,5,
                      5,2,8,8,2,8,8,5,5,8,4,9,7,9,10,9,7,5,2,6,9,4,8,8,
                      7,10,6,2,6,4,5,5,6,6,6,7,11,7,0])
        x = np.linspace(0, len(y)-1, len(y))

In [9]: plt.step(x, y,'-',lw=2,c="blue")
        plt.xlabel("Time")
        plt.ylabel("Jobs in the System")
        plt.title("Load Vector")
        plt.grid(color='gray', linestyle='--', linewidth=.5)
        plt.show()
```

Load Vector

```
In [10]: mean = np.mean(y)
         print(mean)
```

5.71428571429
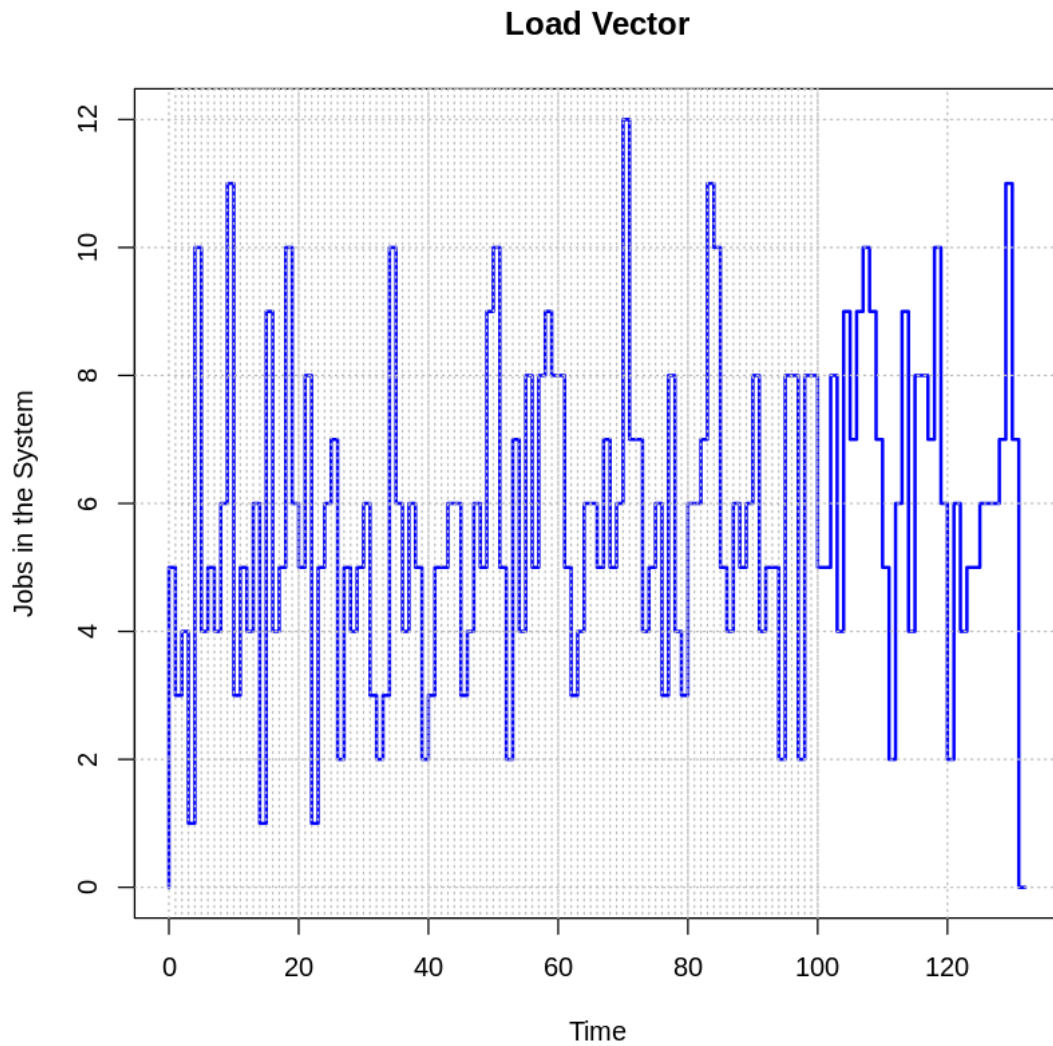
```
In [11]: std = np.std(y)
         print(std)
```

2.4420237773

0.2   R code

```
In [12]: y<- c(0,5,3,4,1,10,4,5,4,6,11,3,5,4,6,1,9,4,5,10,6,5,8,
            1,5,6,7,2,5,4,5,6,3,2,3,10,6,4,6,5,2,3,5,5,6,6,3,
            4,6,5,9,10,5,2,7,4,8,5,8,9,8,8,5,3,4,6,6,5,7,5,6,
            12,7,7,4,5,6,3,8,4,3,6,6,7,11,10,5,4,6,5,6,8,4,5,
            5,2,8,8,2,8,8,5,5,8,4,9,7,9,10,9,7,5,2,6,9,4,8,8,
            7,10,6,2,6,4,5,5,6,6,6,7,11,7,0)
         x<- c(0:(length(y)-1))

In [18]: plot(x,y,col="blue",main="Load Vector","S",xlab="Time",
            ylab="Jobs in the System",lwd=2)
         grid(col = "gray", lty = "dotted",equilogs = TRUE)
         axis(side=3, at=(1:100), tck=1, lty="dotted",col="gray",labels=FALSE)
```

2

Load Vector

In [19]: *#mean <- sum(y)/length(y)*
         mean <- **mean**(y)
         mean

5.71428571428571

In [20]: *#std <- sqrt(sum(((y-mean)^2))/(length(y)))*
         std <- sd(y)
         std

2.45125641430227