Aakash Banik, IEOR. Roll: 16i190010

Report. Lab-2. Date:10.8.2016

Exercise-1.

Solution b:

First, we calculate the maximum and minimum values among the set of values. Now, we check, using a for loop, each of the elements between the min and max values, that how many times they appear in the given array by using another for-loop, which is nested inside the previous one. We define a variable 'count' which counts the no. of times a particular no. appears in the array. And if this no. is greater than zero, we print the no.

Solution c:

Ex1a:

the no. of elements in the array is: 25

the minimum value in the array is: 1

the maximum value in the array is: 6

The no of times 2 occurs is: 7

The no of times 3 occurs is: 3

The no of times 4 occurs is: 3

The no of times 5 occurs is: 2

the average value of the elements of the vector is: 3.4

the sd of the elements of a is: 1.83303027798

Ex1b:

the no. of elements in the array is: 50050

the minimum value in the array is: 1

the maximum value in the array is: 6

The no of times 2 occurs is: 7541

The no of times 3 occurs is: 10949

The no of times 4 occurs is: 10831

The no of times 5 occurs is: 7434

the average value of the elements of the vector is: 3.49606393606

the sd of the elements of a is: 1.56275151563

Ex1c:

the no. of elements in the array is: 40000

the minimum value in the array is: 1

the maximum value in the array is: 6

The no of times 2 occurs is: 8979

The no of times 3 occurs is: 14535

The no of times 4 occurs is: 12452

The no of times 5 occurs is: 2358

the average value of the elements of the vector is: 3.1248

the sd of the elements of a is: 0.963055014005

Solution d:

From the histogram, we can conclude that none of the matrices have uniformly distributed entries. The histogram of a uniformly distributed set of nos. approximately represents a rectangle.

Solution e:

From the histogram, the most likely distribution for ex1b and ex1c is Binomial distribution.

Exercise-2.

Solution b:

The no. of elements in b[] is: 6250

the minimum value in the array is: 1.0

the maximum value in the array is: 6.0

The average value of elements of b is: 3.50424

SD of the array b[] is: 0.848270017388

Solution c:

From the histogram we can conclude that the most likely distribution of array b is normal, since the values of the input matrix are floating point numbers and also the histogram is more or less symmetric and mesokurtic.

Solution d:

For m=4:

The no. of elements in b[] is: 6250

the minimum value in the array is: 1.0

the maximum value in the array is: 6.0

The average value of elements of b is: 3.50424

SD of the array b[] is: 0.848270017388

For m=5:

The no. of elements in b[] is: 5000

the minimum value in the array is: 1.0

the maximum value in the array is: 6.0

The average value of elements of b is: 3.50424

SD of the array b[] is: 0.76136589259

For m=6:

The no. of elements in b[] is: 4166

the minimum value in the array is: 1.16666666667

the maximum value in the array is: 6.0

The average value of elements of b is: 3.50420067211

SD of the array b[] is: 0.69574885877

For m=7:

The no. of elements in b[] is: 3571

the minimum value in the array is: 1.42857142857

the maximum value in the array is: 5.57142857143

The average value of elements of b is: 3.50426051126

SD of the array b[] is: 0.644148551027

For m=8:

The no. of elements in b[] is: 3125

the minimum value in the array is: 1.375

the maximum value in the array is: 5.5

The average value of elements of b is: 3.50424

SD of the array b[] is: 0.603781435952

So, we can conclude from the above observations, that:

i. the no. of elements in b[] is a decreasing function of m.
ii. the standard deviation of the array b[] is a decreasing function of m.
iii. the mean remains more or less const. with respect to m.