

Experiment 2

Name: Jaswinderpal Singh

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2. Aim: Generate a vector of given observations Using R, compute first four central order moments, skewness and kurtosis.

Calculations:

```
v = c(56,61,57,77,62,75,63,55,64,60,
      60,57,61,57,67,62,69,67,68,59,
      65,72,65,61,68,73,65,62,75,80)
v

## [1] 56 61 57 77 62 75 63 55 64 60 60 57 61 57 67 62 69 67 68 59 65 72 65 61 68
## [26] 73 65 62 75 80

# Compute first 4 central moments, skewness, kurtosis
vbar = mean(v)
(m1 = sum(v-vbar)/length(v)) # first central moment

## [1] 9.473903e-16

(m2 = sum((v-vbar)^2)/length(v)) # second central moment

## [1] 42.04556

(m3 = sum((v-vbar)^3)/length(v)) # third central moment

## [1] 165.4113

(m4 = sum((v-vbar)^4)/length(v)) # fourth central moment

## [1] 4498.346

#skewness
sk = (m3^2)/(m2^3)
sk #positively skewed

## [1] 0.3681034

#kurtosis
ku = m4/(m2^2) - 3
ku #platy-kurtic

## [1] -0.4554402
```

3. Aim: Generate a random sample of 100 observations between 1 to 10 and count the frequency of each factor i.e. 1 to 10 using R. Also draw Bar-plot of the generated frequency table

Calculations:

```
d = sample(c(1:10),100,replace=T)
d # Random Sample

## [1] 3 3 2 2 4 1 6 1 7 6 6 5 1 5 6 9 7 6 3 5 10 7 2 1 5
## [26] 4 7 8 7 1 1 7 6 3 10 4 9 8 2 3 1 2 3 1 4 6 3 4 2 10
## [51] 5 5 6 5 4 4 8 7 3 8 9 4 7 9 10 3 5 3 9 8 5 9 7 4 7
## [76] 8 8 8 8 1 6 7 6 9 3 8 2 6 5 5 1 5 6 1 9 9 1 2 3 3

table(d) # Counting frequency

## d
## 1 2 3 4 5 6 7 8 9 10
## 12 8 13 9 12 12 11 10 9 4

barplot(table(d), col="green4")
```

