MoeenUl Islam – 21MCA0269

MAT5007 –APPLIED STATISTICAL METHODS

LAB ASSESSMENT 1

1	Write the R-code to find mean, median and mode for the following distribution:

Xi	9	10	11	12	13	14	15	16
Freq=fi	2	5	12	17	14	6	3	1

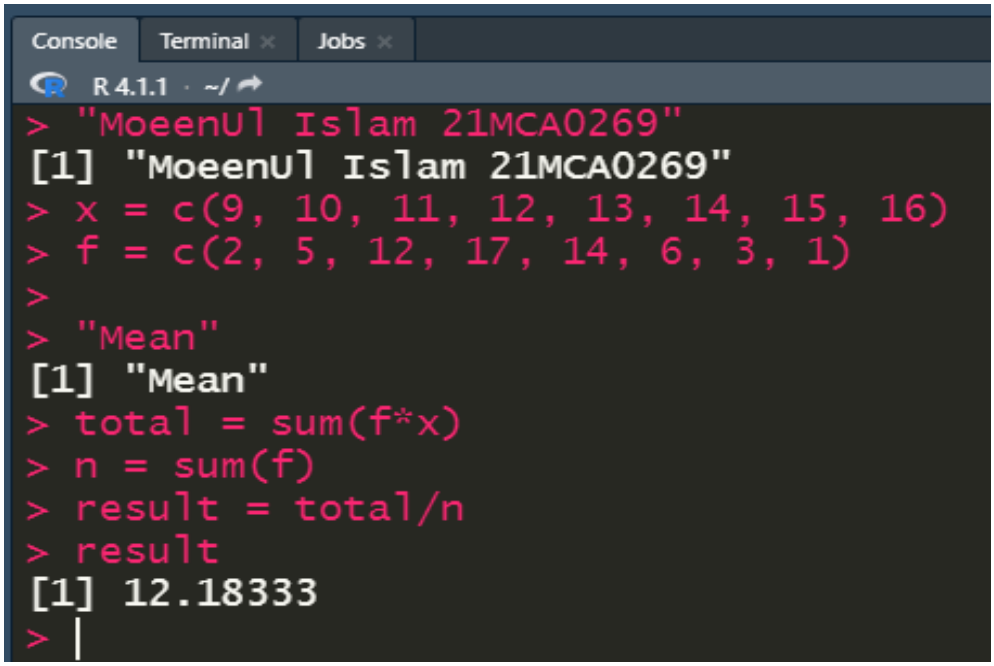
2	Write the R-code to find mean, median and mode for the following distribution:

X:	20–25	25–30	30–35	35–40	40–45	45–50	50–55	55–60	60–65
f:	35	165	215	185	145	105	75	65	45

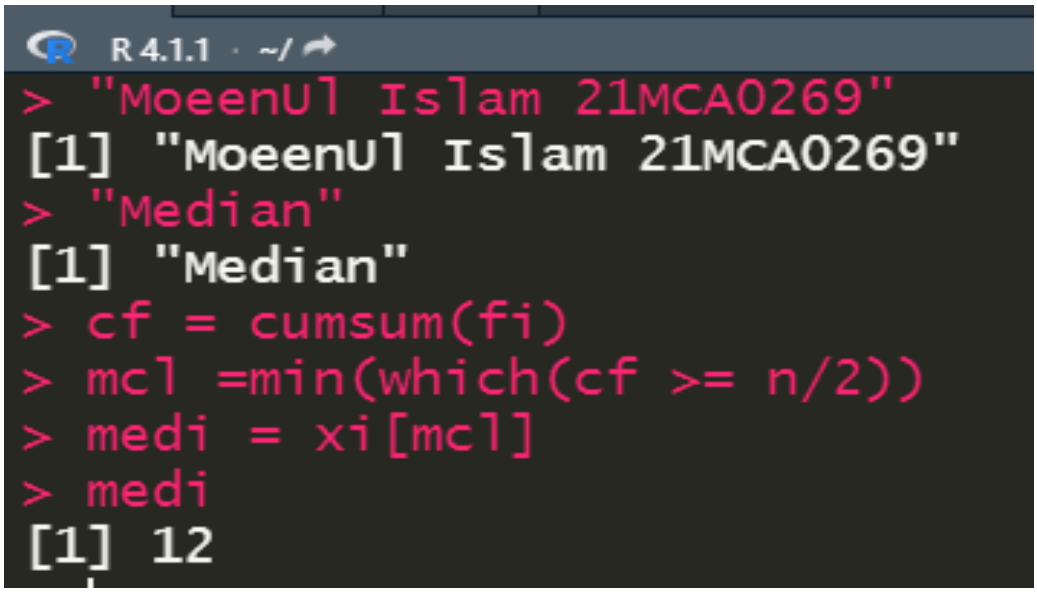
3	Find range, mean deviation from mean, standard deviation and variance for the following data: 1.03, 1.12,2.01,1.87,1.55,1.11,1.23,1.65

Question-1:

MEAN:



MEDIAN:


R 4.1.1 · ~/
> "MoeenUl Islam 21MCA0269"
[1] "MoeenUl Islam 21MCA0269"
> "Median"
[1] "Median"
> cf = cumsum(fi)
> mcl =min(which(cf >= n/2))
> medi = xi[mcl]
> medi
[1] 12

MODE:


> "Moeen Ul Islam"
[1] "Moeen Ul Islam"
> "Mode"
[1] "Mode"
> mode = (3*medi) - (2*Mean)
> mode
[1] 11.63333

2	Write the R-code to find mean, median and mode for the following distribution:

X:	20–25	25–30	30–35	35–40	40–45	45–50	50–55	55–60	60–65
f :	35	165	215	185	145	105	75	65	45

QUESTION 2:

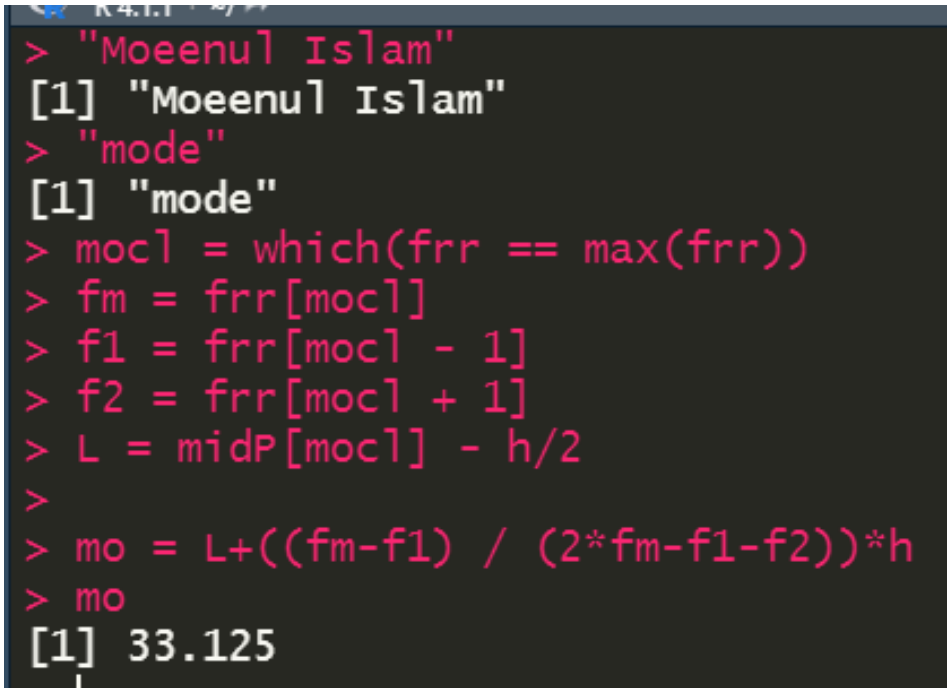
MEAN:

```
> "moeen Ul Islam"
[1] "moeen Ul Islam"
> "mean"
[1] "mean"
> midP <- seq(22.5, 62.5, 5)
> midP
[1] 22.5 27.5 32.5 37.5 42.5 47.5 52.5 57.5 62.5
> frr <- c(35, 165, 215, 185, 145, 105, 75, 65, 45)
> m = sum((midP*frr)/sum(frr))
> m
[1] 39.50483
```

MEDIAN:

```
> "moeen Ul Islam"
[1] "moeen Ul Islam"
> "median"
[1] "median"
> cf <- cumsum(frr)
> N <- sum(frr)
> mcl = min(which(cf >= N/2))
> h = 5
> l = midP[mcl] - h/2
> f = frr[mcl]
> c = cf[mcl - 1]
>
> med = l + (((N/2) - c)/f) * h
> med
[1] 37.77027
```

MODE:


> "Moeenul Islam"
[1] "Moeenul Islam"
> "mode"
[1] "mode"
> mocl = which(frr == max(frr))
> fm = frr[mocl]
> f1 = frr[mocl - 1]
> f2 = frr[mocl + 1]
> L = midP[mocl] - h/2
>
> mo = L+((fm-f1) / (2*fm-f1-f2))*h
> mo
[1] 33.125

3	Find range, mean deviation from mean, standard deviation and variance for the following data: 1.03, 1.12,2.01,1.87,1.55,1.11,1.23,1.65

QUESTION 3:

RANGE:

```
> "Moeenul Islam"
[1] "Moeenul Islam"
> "Range"
[1] "Range"
> d <- c(1.03, 1.12, 2.01, 1.87, 1.55, 1.11, 1.23, 1.65)
> range(d)
[1] 1.03 2.01
```

VARIANCE:

```
> "Moeenul Islam"
[1] "Moeenul Islam"
> "variance"
[1] "variance"
> x <- c(1.03, 1.12, 2.01, 1.87, 1.55, 1.11, 1.23, 1.65)
> xm <- mean(x)
>
> v <- var(d)
> va = sum((x-xm) * (x-m))/(length(x) - 1)
> va
[1] 0.1413125
```

STANDARD DEVIATION:

```
> "standard deviation"
[1] "standard deviation"
> v <- var(d)
> sd <- sqrt(v)
> sd
[1] 0.3759155
```

MEAN DEVIATION:

```
> "Moeenul islam"
[1] "Moeenul islam"
> "mean deviation"
[1] "mean deviation"
> md = sum((abs(x-xm))/length(x))
> md
[1] 0.32375
```