

FML-ASSIGNMENT-01

ANURODH-SINGH

2023-09-27

```
data <- read.csv("C:/Users/ASUS/Desktop/FML/ASSIGNMENTS/71 Centuries of Virat Kohli.csv")  
data
```

##	Score	Out.	Not Out	Against	Batting.Order	Inn.	Strike.Rate	
## 1	116		Out	Australia		6	2	NA
## 2	103		Out	New Zealand		5	2	NA
## 3	103		Out	England		5	2	NA
## 4	107		Out	Australia		5	2	NA
## 5	119		Out	South Africa		4	1	NA
## 6	105		Not Out	New Zealand		4	4	NA
## 7	115		Out	Australia		4	2	NA
## 8	141		Out	Australia		4	4	NA
## 9	169		Out	Australia		4	2	NA
## 10	147		Out	Australia		4	2	NA
## 11	103		Out	Sri Lanka		4	2	NA
## 12	200		Out	West Indies		4	1	NA
## 13	211		Out	New Zealand		4	1	NA
## 14	167		Out	England		4	1	NA
## 15	235		Out	England		4	2	NA
## 16	204		Out	Bangladesh		4	1	NA
## 17	103		Not Out	Sri Lanka		4	3	NA
## 18	104		Not Out	Sri Lanka		4	3	NA
## 19	213		Out	Sri Lanka		4	2	NA
## 20	243		Out	Sri Lanka		4	1	NA
## 21	153		Out	South Africa		4	2	NA
## 22	149		Out	England		4	2	NA
## 23	103		Out	England		4	3	NA
## 24	139		Out	West Indies		4	1	NA
## 25	123		Out	Australia		4	2	NA
## 26	254		Not Out	South Africa		4	1	NA
## 27	136		Out	Bangladesh		4	2	NA
## 28	107		Out	Sri Lanka		4	2	93.85
## 29	102		Not Out	Bangladesh		3	2	107.37
## 30	118		Out	Australia		3	2	97.52
## 31	105		Out	New Zealand		3	1	100.96
## 32	100		Not Out	Bangladesh		4	1	120.48
## 33	107		Out	England		4	1	115.05
## 34	112		Not Out	England		4	2	114.28
## 35	117		Out	West Indies		4	2	95.12
## 36	133		Not Out	Sri Lanka		4	2	154.65
## 37	108		Out	Sri Lanka		3	1	90.00
## 38	183		Out	Pakistan		3	2	123.64
## 39	106		Out	Sri Lanka		3	1	93.80
## 40	128		Not Out	Sri Lanka		3	2	107.56
## 41	102		Out	West Indies		3	1	122.89
## 42	115		Out	Zimbabwe		3	2	106.48
## 43	100		Not Out	Australia		3	2	192.30
## 44	115		Not Out	Australia		3	2	174.24
## 45	123		Out	New Zealand		3	2	110.81
## 46	136		Out	Bangladesh		3	2	111.47
## 47	127		Out	West Indies		3	1	111.40
## 48	139		Not Out	Sri Lanka		4	2	110.31
## 49	107		Out	Pakistan		3	1	84.90
## 50	138		Out	South Africa		3	1	98.57
## 51	117		Out	Australia		3	1	100.00
## 52	106		Out	Australia		3	2	115.21
## 53	154		Not Out	New Zealand		3	2	114.92
## 54	122		Out	England		3	2	116.19

## 55	111	Not Out	West Indies	3	2	96.52
## 56	131	Out	Sri Lanka	3	1	136.45
## 57	110	Not Out	Sri Lanka	3	2	94.82
## 58	121	Out	New Zealand	3	1	96.80
## 59	113	Out	New Zealand	3	1	106.60
## 60	112	Out	South Africa	3	2	94.11
## 61	160	Not Out	South Africa	3	1	100.62
## 62	129	Not Out	South Africa	3	2	134.37
## 63	140	Out	West Indies	3	2	130.84
## 64	157	Not Out	West Indies	3	1	121.71
## 65	107	Out	West Indies	3	2	89.91
## 66	104	Out	Australia	3	2	92.85
## 67	116	Out	Australia	3	1	96.67
## 68	123	Out	Australia	3	2	129.47
## 69	120	Out	West Indies	3	1	96.00
## 70	114	Not Out	West Indies	3	2	115.15
## 71	122	Not Out	Afganistan	1	1	200.00
##			Venue	Column1	H.A	Date
## 1			Adelaide Oval	Adelaide	Away	24-01-2012
## 2			M. Chinnaswamy Stadium	Bangalore	Home	31-08-2012
## 3			Vidarbha Cricket Association Stadium	Nagpur	Home	13-12-2012
## 4			M. A. Chidambaram Stadium	Chennai	Home	22-02-2013
## 5			Wanderers Stadium	Johannesburg	Away	18-12-2013
## 6			Basin Reserve	Wellington	Away	14-02-2014
## 7			Adelaide Oval	Adelaide	Away	09-12-2014
## 8			Adelaide Oval	Adelaide	Away	09-12-2014
## 9			Melbourne Cricket Ground	Melbourne	Away	26-12-2014
## 10			Sydney Cricket Ground	Sydney	Away	06-01-2015
## 11			Galle International Stadium	Galle	Away	12-08-2015
## 12			Sir Vivian Richards Stadium	North Sound	Away	21-07-2016
## 13			Holkar Stadium	Indore	Home	08-10-2016
## 14			ACA-VDCA Cricket Stadium	Visakhapatnam	Home	17-11-2016
## 15			Wankhede Stadium	Mumbai	Home	08-12-2016
## 16			Rajiv Gandhi International Cricket Stadium	Hyderabad	Home	09-02-2017
## 17			Galle International Stadium	Galle	Away	26-07-2017
## 18			Eden Gardens	Kolkata	Home	16-11-2017
## 19			Vidarbha Cricket Association Stadium	Nagpur	Home	24-11-2017
## 20			Feroz Shah Kotla Ground	Delhi	Home	02-12-2017
## 21			SuperSport Park	Centurion	Away	13-01-2018
## 22			Edgbaston Cricket Ground	Birmingham	Away	01-08-2018
## 23			Trent Bridge	Nottingham	Away	18-08-2018
## 24			Saurashtra Cricket Association Stadium	Rajkot	Home	04-10-2018
## 25			Perth Stadium	Perth	Away	14-12-2018
## 26			Maharashtra Cricket Association Stadium	Pune	Home	10-10-2019
## 27			Eden Gardens	Kolkata	Home	22-11-2019
## 28			Eden Gardens	Kolkata	Home	24-12-2009
## 29			Sher-e-Bangla Cricket Stadium	Dhaka	Away	11-01-2010
## 30			APCA-VDCA Stadium	Visakhapatnam	Home	20-10-2010
## 31			Nehru Stadium	Guwahati	Home	28-11-2010
## 32			Sher-e-Bangla Cricket Stadium	Dhaka	Away	19-02-2011
## 33			Sophia Gardens	Cardiff	Away	16-09-2011
## 34			Feroz Shah Kotla Ground	Delhi	Home	17-10-2011
## 35			APCA-VDCA Stadium	Visakhapatnam	Home	02-12-2011
## 36			Bellerive Oval	Hobart	Away	28-02-2012
## 37			Sher-e-Bangla Cricket Stadium	Dhaka	Away	13-03-2012
## 38			Sher-e-Bangla Cricket Stadium	Dhaka	Away	18-03-2012

## 39	MRIC Stadium	Hambantota	Away	21-07-2012
## 40	R. Premadasa Stadium	Colombo	Away	31-07-2012
## 41	Queen's Park Oval	Port of Spain	Away	05-07-2013
## 42	Harare Sports Club	Harare	Away	24-07-2013
## 43	Sawai Mansingh Stadium	Jaipur	Home	16-10-2013
## 44	VCA Stadium	Nagpur	Home	30-10-2013
## 45	McLean Park	Napier	Away	19-01-2014
## 46	Khan Shaheb Osman Ali Stadium	Fatullah	Away	26-02-2014
## 47	HPCA Stadium	Dharamshala	Home	17-10-2014
## 48	JSCA International Stadium	Ranchi	Home	16-11-2014
## 49	Adelaide Oval	Adelaide	Away	15-02-2015
## 50	M. A. Chidambaram Stadium	Chennai	Home	22-10-2015
## 51	Melbourne Cricket Ground	Melbourne	Away	17-01-2016
## 52	Manuka Oval	Canberra	Away	20-01-2016
## 53	Punjab Cricket Association IS Bindra Stadium	Mohali	Home	23-10-2016
## 54	Maharashtra Cricket Association Stadium	Pune	Home	15-01-2017
## 55	Sabina Park	Kingston	Away	06-07-2017
## 56	R. Premadasa Stadium	Colombo	Away	31-08-2017
## 57	R. Premadasa Stadium	Colombo	Away	03-09-2017
## 58	Wankhede Stadium	Mumbai	Home	22-10-2017
## 59	Green Park Stadium	Kanpur	Home	29-10-2017
## 60	Kingsmead Cricket Ground	Durban	Away	01-02-2018
## 61	Newlands Cricket Ground	Cape Town	Away	07-02-2018
## 62	SuperSport Park	Centurion	Away	16-02-2018
## 63	ACA Stadium	Guwahati	Home	21-10-2018
## 64	ACA-VDCA Cricket Stadium	Visakhapatnam	Home	24-10-2018
## 65	Maharashtra Cricket Association Stadium	Pune	Home	27-10-2018
## 66	Adelaide Oval	Adelaide	Away	15-01-2019
## 67	Vidarbha Cricket Association Stadium	Nagpur	Home	05-03-2019
## 68	JSCA International Stadium	Ranchi	Home	08-03-2019
## 69	Queen's Park Oval	Port of Spain	Away	11-08-2019
## 70	Queen's Park Oval	Port of Spain	Away	14-08-2019
## 71	Dubai International Cricket Stadium	Dubai	Away	08-09-2022

##	Result	Format	Man.of.the.Match	Captain	X
## 1	Lost	Test	No	No	NA
## 2	Won	Test	Yes	No	NA
## 3	Drawn	Test	No	No	NA
## 4	Won	Test	No	No	NA
## 5	Drawn	Test	No	No	NA
## 6	Drawn	Test	No	No	NA
## 7	Lost	Test	No	Yes	NA
## 8	Lost	Test	No	Yes	NA
## 9	Drawn	Test	No	No	NA
## 10	Drawn	Test	No	Yes	NA
## 11	Lost	Test	No	Yes	NA
## 12	Won	Test	No	Yes	NA
## 13	Won	Test	No	Yes	NA
## 14	Won	Test	Yes	Yes	NA
## 15	Won	Test	Yes	Yes	NA
## 16	Won	Test	Yes	Yes	NA
## 17	Won	Test	No	Yes	NA
## 18	Drawn	Test	No	Yes	NA
## 19	Won	Test	Yes	Yes	NA
## 20	Drawn	Test	Yes	Yes	NA
## 21	Lost	Test	No	Yes	NA
## 22	Lost	Test	No	Yes	NA

## 23	Won	Test	Yes	Yes	NA
## 24	Won	Test	No	Yes	NA
## 25	Lost	Test	No	Yes	NA
## 26	Won	Test	Yes	Yes	NA
## 27	Won	Test	No	Yes	NA
## 28	Won	ODI	No	No	NA
## 29	Won	ODI	Yes	No	NA
## 30	Won	ODI	Yes	No	NA
## 31	Won	ODI	Yes	No	NA
## 32	Won	ODI	No	No	NA
## 33	Lost (D/L)	ODI	No	No	NA
## 34	Won	ODI	Yes	No	NA
## 35	Won	ODI	Yes	No	NA
## 36	Won	ODI	Yes	No	NA
## 37	Won	ODI	Yes	No	NA
## 38	Won	ODI	Yes	No	NA
## 39	Won	ODI	Yes	No	NA
## 40	Won	ODI	Yes	No	NA
## 41	Won (D/L)	ODI	Yes	Yes	NA
## 42	Won	ODI	Yes	Yes	NA
## 43	Won	ODI	No	No	NA
## 44	Won	ODI	Yes	No	NA
## 45	Lost	ODI	No	No	NA
## 46	Won	ODI	Yes	Yes	NA
## 47	Won	ODI	Yes	No	NA
## 48	Won	ODI	No	Yes	NA
## 49	Won	ODI	Yes	No	NA
## 50	Won	ODI	Yes	No	NA
## 51	Lost	ODI	No	No	NA
## 52	Lost	ODI	No	No	NA
## 53	Won	ODI	Yes	No	NA
## 54	Won	ODI	No	Yes	NA
## 55	Won	ODI	Yes	Yes	NA
## 56	Won	ODI	Yes	Yes	NA
## 57	Won	ODI	No	Yes	NA
## 58	Lost	ODI	No	Yes	NA
## 59	Won	ODI	No	Yes	NA
## 60	Won	ODI	Yes	Yes	NA
## 61	Won	ODI	Yes	Yes	NA
## 62	Won	ODI	Yes	Yes	NA
## 63	Won	ODI	Yes	Yes	NA
## 64	Tied	ODI	Yes	Yes	NA
## 65	Lost	ODI	No	Yes	NA
## 66	Won	ODI	Yes	Yes	NA
## 67	Won	ODI	Yes	Yes	NA
## 68	Lost	ODI	No	Yes	NA
## 69	Won	ODI	Yes	Yes	NA
## 70	Won	ODI	Yes	Yes	NA
## 71	Won	T20I	Yes	No	NA

```
summary(data)
```

```
##      Score      Out.Not.Out      Against      Batting.Order
## Min.      :100.0    Length:71      Length:71      Min.      :1.000
## 1st Qu.:107.0    Class :character    Class :character    1st Qu.:3.000
## Median :119.0    Mode  :character    Mode  :character    Median :3.000
## Mean   :132.1
## 3rd Qu.:139.5
## Max.    :254.0
##
##      Inn.      Strike.Rate      Venue      Column1
## Min.      :1.000    Min.      : 84.90    Length:71    Length:71
## 1st Qu.:1.000    1st Qu.: 96.63    Class :character    Class :character
## Median :2.000    Median :108.94    Mode  :character    Mode  :character
## Mean   :1.732    Mean   :114.02
## 3rd Qu.:2.000    3rd Qu.:120.79
## Max.    :4.000    Max.    :200.00
##
##      H.A      Date      Result      Format
## Length:71      Length:71      Length:71      Length:71
## Class :character    Class :character    Class :character    Class :character
## Mode  :character    Mode  :character    Mode  :character    Mode  :character
##
##
##
## Man.of.the.Match    Captain      X
## Length:71      Length:71      Mode:logical
## Class :character    Class :character    NA's:71
## Mode  :character    Mode  :character
##
##
##
##
```

```
mean(data$Inn.)
```

```
## [1] 1.732394
```

```
median(data$Score)
```

```
## [1] 119
```

```
options(repos = c(CRAN = "https://cloud.r-project.org"))
install.packages("modeest")
```

```
## Installing package into 'C:/Users/ASUS/AppData/Local/R/win-library/4.3'
## (as 'lib' is unspecified)
```

```
## package 'modeest' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
## C:\Users\ASUS\AppData\Local\Temp\Rtmp63V5xp\downloaded_packages
```

```
library(modeest)
mlv(data$Inn.)
```

```
## [1] 2
```

```
sum(data$Batting.Order)
```

```
## [1] 250
```

```
sd(data$Batting.Order)
```

```
## [1] 0.714326
```

```
var(data$Batting.Order)
```

```
## [1] 0.5102616
```

```
max(data$Score)
```

```
## [1] 254
```

```
min(data$Score)
```

```
## [1] 100
```

```
str(data$Score)
```

```
## int [1:71] 116 103 103 107 119 105 115 141 169 147 ...
```

```
#Step3: Descriptive Statistics for Categorical Variables
```

```
table(data$Column1)
```

```
##
##      Adelaide      Bangalore      Birmingham      Canberra      Cape Town
##           5           1           1           1           1
##      Cardiff      Centurion      Chennai      Colombo      Delhi
##           1           2           2           3           2
##           Dhaka      Dharamshala      Durban      Fatullah      Galle
##           4           1           1           1           2
##      Guwahati      Hambantota      Harare      Hobart      Hyderabad
##           2           1           1           1           1
##           Indore      Jaipur      Johannesburg      Kanpur      Kingston
##           1           1           1           1           1
##           Kolkata      Melbourne      Mohali      Mumbai      Nagpur
##           3           2           1           2           4
##           Napier      North Sound      Nottingham      Perth      Port of Spain
##           1           1           1           1           3
##           Pune      Rajkot      Ranchi      Sydney      Visakhapatnam
##           3           1           2           1           4
##      Wellington      Dubai
##           1           1
```

```
str(data)
```

```
## 'data.frame': 71 obs. of 15 variables:
## $ Score : int 116 103 103 107 119 105 115 141 169 147 ...
## $ Out.Not.Out : chr "Out" "Out" "Out" "Out" ...
## $ Against : chr "Australia" "New Zealand" "England" "Australia" ...
## $ Batting.Order : int 6 5 5 5 4 4 4 4 4 4 ...
## $ Inn. : int 2 2 2 2 1 4 2 4 2 2 ...
## $ Strike.Rate : num NA NA NA NA NA NA NA NA NA NA ...
## $ Venue : chr "Adelaide Oval" "M. Chinnaswamy Stadium" "Vidarbha Cricket Assoc
iation Stadium" "M. A. Chidambaram Stadium" ...
## $ Column1 : chr " Adelaide" " Bangalore" " Nagpur" " Chennai" ...
## $ H.A : chr "Away" "Home" "Home" "Home" ...
## $ Date : chr "24-01-2012" "31-08-2012" "13-12-2012" "22-02-2013" ...
## $ Result : chr "Lost" "Won" "Drawn" "Won" ...
## $ Format : chr "Test" "Test" "Test" "Test" ...
## $ Man.of.the.Match: chr "No" "Yes" "No" "No" ...
## $ Captain : chr "No" "No" "No" "No" ...
## $ X : logi NA NA NA NA NA NA ...
```

#Transforming the variables

```
log(data$Score)
```



```
## [1] 4.753590 4.634729 4.634729 4.672829 4.779123 4.653960 4.744932 4.948760
## [9] 5.129899 4.990433 4.634729 5.298317 5.351858 5.117994 5.459586 5.318120
## [17] 4.634729 4.644391 5.361292 5.493061 5.030438 5.003946 4.634729 4.934474
## [25] 4.812184 5.537334 4.912655 4.672829 4.624973 4.770685 4.653960 4.605170
## [33] 4.672829 4.718499 4.762174 4.890349 4.682131 5.209486 4.663439 4.852030
## [41] 4.624973 4.744932 4.605170 4.744932 4.812184 4.912655 4.844187 4.934474
## [49] 4.672829 4.927254 4.762174 4.663439 5.036953 4.804021 4.709530 4.875197
## [57] 4.700480 4.795791 4.727388 4.718499 5.075174 4.859812 4.941642 5.056246
## [65] 4.672829 4.644391 4.753590 4.812184 4.787492 4.736198 4.804021
```

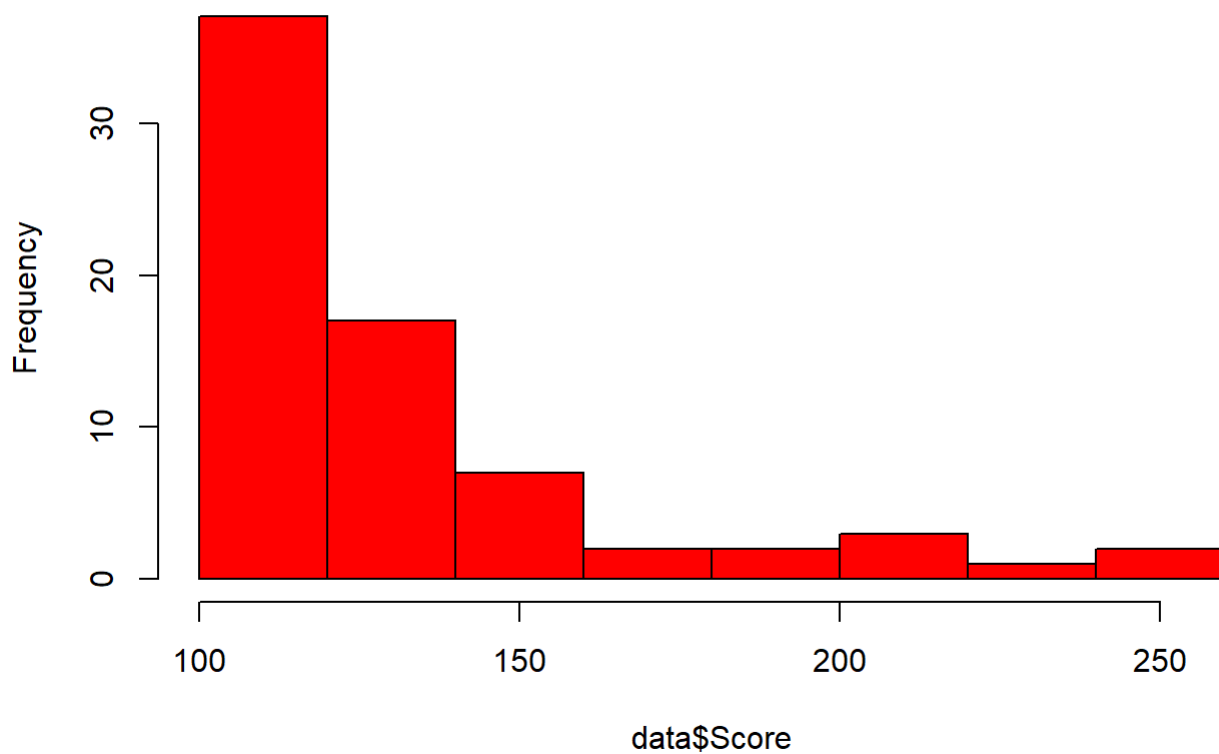
```
data3 <- data$Batting.Order- mean(data$Inn.)
data3
```

```
## [1] 4.2676056 3.2676056 3.2676056 3.2676056 2.2676056 2.2676056
## [7] 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056
## [13] 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056
## [19] 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056
## [25] 2.2676056 2.2676056 2.2676056 2.2676056 1.2676056 1.2676056
## [31] 1.2676056 2.2676056 2.2676056 2.2676056 2.2676056 2.2676056
## [37] 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056
## [43] 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056 2.2676056
## [49] 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056
## [55] 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056
## [61] 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056 1.2676056
## [67] 1.2676056 1.2676056 1.2676056 1.2676056 -0.7323944
```

#plotting the variable

```
hist(data$Score,col= "red",main = "PRESENTAION HISTOGRAM of runs scored")
```

PRESENTAION HISTOGRAM of runs scored



```
plot(data$Score,data$Inn.,main = "Plot", col="blue")
```

Plot

