ANA 515 week4 Assignment2

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##Section 1: Description of the data

> The data is related to NBA Forecasts and is sourced from the https://github.com/fivethirtyeight/
> data/tree/master/nba-forecasts. It basically has 2 sets of data one from the 1946 and other is a
> bout the latest season data. The data is in CSV fromat and if it is converted into text file the
> n it can be delimited.

##Install the following packages install.packages("dplyr") install.packages("tidyverse") install.packages("knitr") install.packages("bslib") install.packages("utils")

##Section 2: Reading the data into R.

```
## get the dataset from GitHub/fivethirtyeight
url <- "https://projects.fivethirtyeight.com/nba-model/nba_elo_latest.csv"
nbaforecast <- read.csv(url)
```

##Section 3: Clean the data

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 4.2.3
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyr)
```

```
## Warning: package 'tidyr' was built under R version 4.2.3
```

```
library(knitr)
```

```
## Warning: package 'knitr' was built under R version 4.2.3
```

```
library(bslib)
```

```
## Warning: package 'bslib' was built under R version 4.2.3
```

```
##
## Attaching package: 'bslib'
```

```
## The following object is masked from 'package:utils':
##
##     page
```

```
library(utils)
nbaforecast2023<-filter(nbaforecast, season ==2023)
nbaforecast2023 <- rename (nbaforecast2023, c(year = season, team_a=team1, team_b = team2, final
rating = total_rating))
bosceltics <- filter(nbaforecast2023, team_a=="BOS" | team_b=="BOS")
bosceltics %>%
  select(c(date, year, team_a, team_b, score1, score2, quality,importance, finalrating))
```

```
##          date year team_a team_b score1 score2 quality importance finalrating
## 1  2022-10-18 2023    BOS    PHI    126    117      96        13          55
## 2  2022-10-21 2023    MIA    BOS    104    111      96        23          60
## 3  2022-10-22 2023    ORL    BOS    120    126      35         2          19
## 4  2022-10-24 2023    CHI    BOS    120    102      80        17          49
## 5  2022-10-28 2023    BOS    CLE    123    132      84        11          48
## 6  2022-10-30 2023    BOS    WAS    112     94      70         8          39
## 7  2022-11-02 2023    CLE    BOS    114    113      89        23          56
## 8  2022-11-04 2023    BOS    CHI    123    119      78        17          48
## 9  2022-11-05 2023    NYK    BOS    118    133      81        36          59
## 10 2022-11-07 2023    MEM    BOS    106    109      92        10          51
## 11 2022-11-09 2023    BOS    DET    128    112      46         1          24
## 12 2022-11-11 2023    BOS    DEN    131    112      92         8          50
## 13 2022-11-12 2023    DET    BOS    108    117      37         3          20
## 14 2022-11-14 2023    BOS    OKC    126    122      65         3          34
## 15 2022-11-16 2023    ATL    BOS    101    126      89        21          55
## 16 2022-11-18 2023    NOP    BOS    109    117      90        27          59
## 17 2022-11-21 2023    CHI    BOS    121    107      79        27          53
## 18 2022-11-23 2023    BOS    DAL    125    112      93        17          55
## 19 2022-11-25 2023    BOS    SAC    122    104      81        16          49
## 20 2022-11-27 2023    BOS    WAS    130    121      75        15          45
## 21 2022-11-28 2023    BOS    CHO    140    105      30         5          18
## 22 2022-11-30 2023    BOS    MIA    134    121      85        13          49
## 23 2022-12-02 2023    BOS    MIA    116    120      90        18          54
## 24 2022-12-04 2023    BRK    BOS     92    103      91        32          62
## 25 2022-12-05 2023    TOR    BOS    110    116      93        26          60
## 26 2022-12-07 2023    PHO    BOS     98    125      93        17          55
## 27 2022-12-10 2023    GSW    BOS    123    107      92        27          60
## 28 2022-12-12 2023    LAC    BOS    113     93      84        38          61
## 29 2022-12-13 2023    LAL    BOS    118    122      76        20          48
## 30 2022-12-16 2023    BOS    ORL    109    117      54         2          28
## 31 2022-12-18 2023    BOS    ORL     92     95      49         2          26
## 32 2022-12-21 2023    BOS    IND    112    117      76        12          44
## 33 2022-12-23 2023    BOS    MIN    121    109      81        24          53
## 34 2022-12-25 2023    BOS    MIL    139    118      91         9          50
## 35 2022-12-27 2023    BOS    HOU    126    102      51         0          26
## 36 2022-12-29 2023    BOS    LAC    116    110      90        19          55
## 37 2023-01-01 2023    DEN    BOS    123    111      92         9          51
## 38 2023-01-03 2023    OKC    BOS    150    117      42         3          23
## 39 2023-01-05 2023    DAL    BOS     95    124      90        15          53
## 40 2023-01-07 2023    SAS    BOS    116    121      33         1          17
## 41 2023-01-09 2023    BOS    CHI    107     99      80        18          49
## 42 2023-01-11 2023    BOS    NOP    125    114      84         8          46
## 43 2023-01-12 2023    BRK    BOS     98    109      90        12          51
## 44 2023-01-14 2023    CHO    BOS    106    122      70         4          37
## 45 2023-01-16 2023    CHO    BOS    118    130      61         3          32
## 46 2023-01-19 2023    BOS    GSW    121    118      91        30          61
## 47 2023-01-21 2023    TOR    BOS    104    106      80        29          55
## 48 2023-01-23 2023    ORL    BOS    113     98      60         5          33
## 49 2023-01-24 2023    MIA    BOS     98     95      89        25          57
## 50 2023-01-26 2023    BOS    NYK    117    120      83        27          55
## 51 2023-01-28 2023    BOS    LAL    125    121      71        18          45
```

## 52	2023-02-01	2023	BOS	BRK	139	96	81	6	44
## 53	2023-02-03	2023	BOS	PHO	94	106	76	16	46
## 54	2023-02-06	2023	DET	BOS	99	111	41	4	23
## 55	2023-02-08	2023	BOS	PHI	106	99	91	13	52
## 56	2023-02-10	2023	BOS	CHO	127	116	50	3	27
## 57	2023-02-12	2023	BOS	MEM	119	109	89	8	49
## 58	2023-02-14	2023	MIL	BOS	131	125	82	13	48
## 59	2023-02-15	2023	BOS	DET	127	109	42	2	22
## 60	2023-02-23	2023	IND	BOS	138	142	68	7	38
## 61	2023-02-25	2023	PHI	BOS	107	110	94	12	53
## 62	2023-02-27	2023	NYK	BOS	109	94	90	16	53
## 63	2023-03-01	2023	BOS	CLE	117	113	93	7	50
## 64	2023-03-03	2023	BOS	BRK	105	115	84	14	49
## 65	2023-03-05	2023	BOS	NYK	129	131	91	5	48
## 66	2023-03-06	2023	CLE	BOS	118	114	87	6	47
## 67	2023-03-08	2023	BOS	POR	115	93	69	11	40
## 68	2023-03-11	2023	ATL	BOS	125	134	88	40	64
## 69	2023-03-13	2023	HOU	BOS	111	109	24	1	13
## 70	2023-03-15	2023	MIN	BOS	102	104	89	58	74
## 71	2023-03-17	2023	POR	BOS	112	126	72	7	40
## 72	2023-03-18	2023	UTA	BOS	118	117	59	26	43
## 73	2023-03-21	2023	SAC	BOS	109	132	83	4	44
## 74	2023-03-24	2023	BOS	IND	120	95	73	5	39
## 75	2023-03-26	2023	BOS	SAS	137	93	30	0	15
## 76	2023-03-28	2023	WAS	BOS	130	111	68	6	37
## 77	2023-03-30	2023	MIL	BOS	99	140	95	22	59
## 78	2023-03-31	2023	BOS	UTA	122	114	35	3	19
## 79	2023-04-04	2023	PHI	BOS	103	101	95	17	56
## 80	2023-04-05	2023	BOS	TOR	97	93	86	64	75
## 81	2023-04-07	2023	BOS	TOR	121	102	87	13	50
## 82	2023-04-09	2023	BOS	ATL	120	114	46	3	25
## 83	2023-04-15	2023	BOS	ATL	112	99	93	86	90
## 84	2023-04-18	2023	BOS	ATL	119	106	93	71	82
## 85	2023-04-21	2023	ATL	BOS	130	122	93	38	66
## 86	2023-04-23	2023	ATL	BOS	121	129	93	94	94
## 87	2023-04-25	2023	BOS	ATL	117	119	93	25	59
## 88	2023-04-27	2023	ATL	BOS	120	128	93	100	97
## 89	2023-05-01	2023	BOS	PHI	115	119	96	100	98
## 90	2023-05-03	2023	BOS	PHI	121	87	99	100	100
## 91	2023-05-05	2023	PHI	BOS	102	114	98	100	99
## 92	2023-05-07	2023	PHI	BOS	116	115	98	100	99
## 93	2023-05-09	2023	BOS	PHI	103	115	98	100	99
## 94	2023-05-11	2023	PHI	BOS	86	95	98	100	99
## 95	2023-05-14	2023	BOS	PHI	112	88	98	100	99
## 96	2023-05-17	2023	BOS	MIA	116	123	97	100	99
## 97	2023-05-19	2023	BOS	MIA	105	111	97	100	99
## 98	2023-05-21	2023	MIA	BOS	128	102	97	100	99
## 99	2023-05-23	2023	MIA	BOS	99	116	97	100	99
## 100	2023-05-25	2023	BOS	MIA	110	97	97	100	99

```
## 101 2023-05-27 2023     MIA     BOS     103     104      97       100        99
## 102 2023-05-29 2023     BOS     MIA      84     103      97       100        99
```

Section 4: Characterstics of the data

This data set has 102 rows and 27 columns.

Section 5: Summary Staistics

```
        kable(str(bosceltics))
```

```
## 'data.frame':     102 obs. of  27 variables:
##  $ date          : chr  "2022-10-18" "2022-10-21" "2022-10-22" "2022-10-24" ...
##  $ year          : int  2023 2023 2023 2023 2023 2023 2023 2023 2023 2023 ...
##  $ neutral       : int  0 0 0 0 0 0 0 0 0 0 ...
##  $ playoff       : chr  "" "" "" "" ...
##  $ team_a        : chr  "BOS" "MIA" "ORL" "CHI" ...
##  $ team_b        : chr  "PHI" "BOS" "BOS" "BOS" ...
##  $ elo1_pre      : num  1658 1599 1359 1433 1651 ...
##  $ elo2_pre      : num  1582 1662 1672 1675 1524 ...
##  $ elo_prob1     : num  0.733 0.553 0.228 0.307 0.787 ...
##  $ elo_prob2     : num  0.267 0.447 0.772 0.693 0.213 ...
##  $ elo1_post     : num  1662 1589 1356 1457 1632 ...
##  $ elo2_post     : num  1578 1672 1675 1651 1543 ...
##  $ carm.elo1_pre : logi  NA NA NA NA NA NA ...
##  $ carm.elo2_pre : logi  NA NA NA NA NA NA ...
##  $ carm.elo_prob1: logi  NA NA NA NA NA NA ...
##  $ carm.elo_prob2: logi  NA NA NA NA NA NA ...
##  $ carm.elo1_post: logi  NA NA NA NA NA NA ...
##  $ carm.elo2_post: logi  NA NA NA NA NA NA ...
##  $ raptor1_pre   : num  1693 1641 1298 1479 1699 ...
##  $ raptor2_pre   : num  1642 1691 1676 1699 1505 ...
##  $ raptor_prob1  : num  0.671 0.541 0.146 0.311 0.819 ...
##  $ raptor_prob2  : num  0.329 0.459 0.854 0.689 0.181 ...
##  $ score1        : int  126 104 120 120 123 112 114 123 118 106 ...
##  $ score2        : int  117 111 126 102 132 94 113 119 133 109 ...
##  $ quality       : int  96 96 35 80 84 70 89 78 81 92 ...
##  $ importance    : int  13 23 2 17 11 8 23 17 36 10 ...
##  $ finalrating   : int  55 60 19 49 48 39 56 48 59 51 ...
```

```
        bosceSticsmin <- min(bosceltics[,27])
        bosceSticsmax <- max(bosceltics[,27])
        bosceSticsmean <- mean(bosceltics[,27])
        bosceSticsmissingvalue <- colSums(is.na(bosceltics))
```

Print Min Max and Mean for Final Rating of Boston Celtics

```
boscelticssummary <- tail(data.frame(boscelticsmin, boscelticsmax, boscelticsmean))
print(boscelticssummary)
```

```
##   boscelticsmin boscelticsmax boscelticsmean
## 1            13           100        54.4902
```

Print Missing Value sum by Column of Boston Celtics data

```
boscelticssummarymissingvalue <- data.frame(boscelticsmissingvalue)
print(boscelticssummarymissingvalue)
```

```
##                boscelticsmissingvalue
## date                                0
## year                                0
## neutral                             0
## playoff                             0
## team_a                              0
## team_b                              0
## elo1_pre                            0
## elo2_pre                            0
## elo_prob1                           0
## elo_prob2                           0
## elo1_post                           0
## elo2_post                           0
## carm.elo1_pre                     102
## carm.elo2_pre                     102
## carm.elo_prob1                    102
## carm.elo_prob2                    102
## carm.elo1_post                    102
## carm.elo2_post                    102
## raptor1_pre                         0
## raptor2_pre                         0
## raptor_prob1                        0
## raptor_prob2                        0
## score1                              0
## score2                              0
## quality                             0
## importance                          0
## finalrating                         0
```