ANA 515 week4 Assignment2

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2023-06-15

##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("tidyverse") install.package

##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)</pre>
```

##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':
##
## The following objects are masked from 'package:base':
##
```

```
library(tidyr)
```

intersect, setdiff, setequal, union

##

```
## 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)</pre>
nbaforecast2023 <- rename (nbaforecast2023, c(year = season, team_a=team1, team_b = team2, final</pre>
rating = total_rating))
bosceltics <- filter(nbaforecast2023, team_a=="BOS" | team_b=="BOS")</pre>
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
##		2022-12-29		BOS	LAC	116	110	90	19	55
##	37	2023-01-01	2023	DEN	BOS	123	111	92	9	51
##		2023-01-03		OKC	BOS	150	117	42	3	23
##	39	2023-01-05		DAL	BOS	95	124	90	15	53
##	40	2023-01-07	2023	SAS	BOS	116	121	33	1	17
##	41	2023-01-09		BOS	CHI	107	99	80	18	49
##	42	2023-01-11		BOS	NOP	125	114	84	8	46
##	43	2023-01-12		BRK	BOS	98	109	90	12	51
##		2023-01-14		CHO	BOS	106	122	70	4	37
##		2023-01-16		CHO	BOS	118	130	61	3	32
##		2023-01-19		BOS	GSW	121	118	91	30	61
##		2023-01-21		TOR	BOS	104	106	80	29	55
##		2023-01-23		ORL	BOS	113	98	60	5	33
##		2023-01-24		MIA	BOS	98	95	89	25	57
##		2023-01-26		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 2023-02-06 2023 BOS PHO 94 106 76 16 46 ## 54 2023-02-06 2023 BOS PHO 99 1111 41 4											
## 54	##	52	2023-02-01	2023	BOS	BRK	139	96	81	6	44
## 55 2023-02-08 2023 BOS PHI 106 99 91 13 32 1 15 50 2023-02-10 2023 BOS CHO 127 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 27 116 50 3 3 48 48 48 48 48 48	##	53	2023-02-03	2023	BOS	PHO	94	106	76	16	46
## 56	##	54	2023-02-06	2023	DET	BOS	99	111	41	4	23
## 57 2023-02-12 2023 BOS MEM 119 109 89 8 8 49 ## 58 2023-02-14 2023 MIL BOS 131 125 82 13 48 ## 59 2023-02-14 2023 BOS DET 127 109 42 2 2 2 ## 60 2023-02-13 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 2023-02-27 2023 BOS CLE 117 113 93 7 56 ## 64 2023-03-03 2023 BOS CLE 117 113 93 7 56 ## 64 2023-03-03 2023 BOS BRK 105 115 84 14 49 ## 65 2023-03-03 2023 BOS RK 105 115 84 14 49 ## 66 2023-03-03-06 2023 BOS NYK 129 131 91 5 48 ## 66 2023-03-06 2023 BOS POR 115 93 69 11 40 ## 66 2023-03-06 2023 BOS POR 115 93 69 11 40 ## 66 2023-03-05 2023 BOS POR 115 93 69 11 40 ## 67 2023-03-15 2023 BOS POR 115 93 69 11 40 ## 68 2023-03-11 2023 ATL BOS 125 134 88 40 64 ## 67 2023-03-15 2023 MIN BOS 102 104 89 58 74 ## 71 2023-03-17 2023 POR BOS 111 109 24 1 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 2023-03-13 2023 WIN BOS 109 132 83 4 44 ## 74 2023-03-12 2023 BOS IND 120 95 73 5 39 ## 75 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 75 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-28 2023 WIA BOS 113 111 68 6 37 ## 77 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 39 ## 78 2023-03-24 2023 BOS IND 120 95 73 5 5 99 ## 78 2023-04-02 2023 BOS IND 120 99 93 86 6 99 ## 89 2023-05-01 2023 BOS IND 120 99 93 86 6 99 ## 89 2023-05-01 2023 BOS IND 120 114 99 93 94 94 94 94 94 94 94 94 94 94 94 94 94	##	55	2023-02-08	2023	BOS	PHI	106	99	91	13	52
## 58	##	56	2023-02-10	2023	BOS	CH0	127	116	50	3	27
## 59	##	57	2023-02-12	2023	BOS	MEM	119	109	89	8	49
## 60	##	58	2023-02-14	2023	MIL	BOS	131	125	82	13	48
## 61	##	59	2023-02-15	2023	BOS	DET	127	109	42	2	22
## 62	##	60	2023-02-23	2023	IND	BOS	138	142	68	7	38
## 63	##	61	2023-02-25	2023	PHI	BOS	107	110	94	12	53
## 64	##	62	2023-02-27	2023	NYK	BOS	109	94	90	16	53
## 65	##	63	2023-03-01	2023	BOS	CLE	117	113	93	7	50
## 66 2023-03-06 2023 CLE BOS 118 114 87 6 47 ## 67 2023-03-08 2023 BOS POR 115 93 69 11 ## 68 2023-03-11 2023 ATL BOS 125 134 88 40 64 ## 69 2023-03-13 2023 HOU BOS 111 109 24 1 ## 70 2023-03-15 2023 MNN 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 2023-03-12 2023 SAC BOS 109 132 83 4 44 ## 74 2023-03-21 2023 SAC BOS 109 132 83 4 44 ## 77 2023-03-22 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 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 BOS TOR 97 93 86 64 75 ## 80 2023-04-05 2023 BOS TOR 97 93 86 64 75 ## 81 2023-04-07 2023 BOS ATL 112 99 93 86 90 ## 82 2023-04-15 2023 BOS ATL 112 99 93 86 90 ## 84 2023-04-18 2023 BOS ATL 112 99 93 86 90 ## 85 2023-04-12 2023 BOS ATL 112 99 93 86 90 ## 86 2023-04-12 2023 BOS ATL 112 99 93 86 90 ## 87 2023-03-04-18 2023 BOS ATL 112 99 93 86 90 ## 88 2023-04-12 2023 BOS ATL 112 99 93 86 90 ## 88 2023-04-12 2023 BOS ATL 112 99 93 94 94 ## 87 2023-03-04-23 2023 BOS ATL 112 99 93 94 94 ## 87 2023-04-12 2023 BOS ATL 112 99 93 94 94 ## 87 2023-04-12 2023 BOS ATL 112 99 93 94 94 ## 88 2023-04-12 2023 BOS ATL 112 99 93 94 94 ## 89 2023-05-03 2023 BOS ATL 112 99 93 94 94 ## 87 2023-05-03 2023 BOS ATL 112 99 93 96 99 ## 89 2023-05-03 2023 BOS PHI 115 119 96 100 98 ## 99 2023-05-03 2023 BOS PHI 115 119 96 100 98 ## 99 2023-05-09 2023 BOS PHI 115 119 96 100 99 ## 99 2023-05-12 2023 BOS PHI 115 119 96 100 99 ## 99 2023-05-12 2023 BOS PHI 115 119 97 100 99 ## 99 2023-05-12 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-12 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-12 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-23 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-23 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-23 2023 MIA BOS 128 102 97 100 99	##	64	2023-03-03	2023	BOS	BRK	105	115	84		49
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## 68	##	66	2023-03-06	2023	CLE	BOS	118	114		6	
## 69	##	67	2023-03-08	2023	BOS	POR	115	93	69	11	40
## 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 2023-04-05 2023 BOS TOR 97 93 86 64 75 ## 81 2023-04-15 2023 BOS ATL 120 114 46 3 25 ## 82 2023-04-18 2023 BOS ATL 112 99 93 86 90 ## 84 2023-04-18 2023 BOS ATL 112 99 93 86 90 ## 84 2023-04-18 2023 BOS ATL 112 99 93 86 90 ## 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 BOS ATL 117 119 93 25 59 ## 88 2023-04-27 2023 BOS ATL 117 119 96 100 98 ## 99 2023-05-03 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-07 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-12 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 102 114 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 116 115 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 116 115 98 100 99 ## 99 2023-05-14 2023 BOS PHI BOS 116 115 98 100 99 ## 99 2023-05-17 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-21 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-21 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-21 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-21 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-22 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-22 2023 MIA BOS 99 116 97 100 99	##	68	2023-03-11	2023	ATL	BOS	125	134	88	40	64
## 71	##	69	2023-03-13	2023	HOU	BOS	111	109		1	13
## 72	##	70			MIN	BOS	102	104	89	58	74
## 73					POR		112	126			
## 74	##	72	2023-03-18	2023	UTA	BOS	118	117	59		43
## 75											
## 76					BOS	IND	120	95			39
## 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 2023-04-15 2023 BOS ATL 112 99 93 86 90 ## 85 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 15 119 96 100 98 ## 90 2023-05-05 2023 BOS PHI 121 87 99 100 100 ## 91 2023-05-05 2023 BOS PHI BOS 102 114 98 100 99 ## 92 2023-05-07 2023 BOS PHI BOS 116 115 98 100 99 ## 93 2023-05-11 2023 BOS PHI BOS 116 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 95 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-11 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 98 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 99 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 98 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 99 2023-05-12 2023 BOS PHI 112 89 97 100 99 ## 99 2023-05-12 2023 BOS MIA 105 111 97 100 99 ## 99 2023-05-12 2023 MIA BOS 128 102 97 100 99 ## 98 2023-05-21 2023 MIA BOS 128 102 97 100 99 ## 98 2023-05-21 2023 MIA BOS 99 116 97 100 99	##	75	2023-03-26	2023	BOS	SAS	137	93	30	0	15
## 78											
## 79	##	77			MIL	BOS	99	140			59
## 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 2023-05-11 2023 PHI BOS 116 115 98 100 99 ## 94 2023-05-11 2023 PHI BOS 86 95 98 100 99 ## 94 2023-05-11 2023 PHI BOS 86 95 98 100 99 ## 95 2023-05-12 2023 BOS PHI 112 88 98 100 99 ## 96 2023-05-12 2023 BOS MIA 105 111 97 100 99 ## 97 2023-05-12 2023 BOS MIA 105 111 97 100 99 ## 98 2023-05-22 2023 MIA BOS 128 102 97 100 99 ## 98 2023-05-22 2023 MIA BOS 99 116 97 100 99											
## 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 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 112 88 98 100 99 ## 95 2023-05-14 2023 BOS PHI 112 88 98 100 99 ## 96 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 97 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 ## 98 2023-05-23 2023 MIA BOS 99 116 97 100 99 ## 98 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 2023-05-07 2023 PHI BOS 116 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 95 2023-05-12 2023 BOS PHI 103 115 98 100 99 ## 96 2023-05-17 2023 BOS PHI 103 115 98 100 99 ## 97 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 ## 98 2023-05-21 2023 MIA BOS 99 116 97 100 99											
## 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 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 2023-05-05 2023 PHI BOS 102 114 98 100 99 ## 92 2023-05-07 2023 PHI BOS 116 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 94 2023-05-11 2023 BOS PHI 103 115 98 100 99 ## 95 2023-05-14 2023 BOS PHI 112 88 98 100 99 ## 95 2023-05-17 2023 PHI BOS 86 95 98 100 99 ## 96 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 96 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-17 2023 BOS MIA 116 123 97 100 99 ## 97 2023-05-19 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 99 116 97 100 99 ## 99 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 BOS PHI 103 115 98 100 99 ## 95 2023-05-14 2023 BOS PHI 112 88 98 100 99 ## 96 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 96 2023-05-17 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-19 2023 BOS MIA 116 123 97 100 99 ## 98 2023-05-21 2023 MIA BOS 128 102 97 100 99 ## 98 2023-05-23 2023 MIA BOS 99 116 97 100 99 ## 99 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 PHI 112 88 98 100 99 ## 97 2023-05-19 2023 BOS MIA 116 123 97 100 99 ## 98 2023-05-21 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-21 2023 MIA BOS 99 116 97 100 99 ## 99 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 ## 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 99 116 97 100 99 ## 98 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 PHI 112 88 98 100 99 ## 97 2023-05-19 2023 BOS MIA 116 123 97 100 99 ## 98 2023-05-21 2023 MIA BOS 128 102 97 100 99 ## 98 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 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 PHI 112 88 98 100 99 ## 97 2023-05-19 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											
## 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 2023-05-14 2023 BOS PHI 112 88 98 100 99 ## 97 2023-05-17 2023 BOS MIA 116 123 97 100 99 ## 98 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											
## 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 PHI 112 88 98 100 99 ## 97 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											
## 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											
## 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											
## 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											
## 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											
## 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											
## 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											
## 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											
## 98 2023-05-21 2023 MIA BOS 128 102 97 100 99 ## 99 2023-05-23 2023 MIA BOS 99 116 97 100 99											
## 99 2023-05-23 2023 MIA BOS 99 116 97 100 99											
"" 100 2023 03 25 2023 003 HIA 110 37 37 100											
	пπ	-00	_023 03-23	_023	203	. 117	110	٠,	J,		,,

```
## 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
                         $ neutral
                         0000000000...
##
                   : int
                         ... ... ... ...
##
   $ playoff
                  : chr
   $ team a
                         "BOS" "MIA" "ORL" "CHI" ...
##
                  : chr
                         "PHI" "BOS" "BOS" "BOS" ...
##
   $ team b
                   : chr
   $ elo1 pre
##
                   : num
                         1658 1599 1359 1433 1651 ...
##
   $ elo2 pre
                   : num
                         1582 1662 1672 1675 1524 ...
   $ elo prob1
##
                         0.733 0.553 0.228 0.307 0.787 ...
                   : num
   $ elo prob2
                         0.267 0.447 0.772 0.693 0.213 ...
##
                   : num
##
   $ elo1 post
                   : num 1662 1589 1356 1457 1632 ...
##
   $ elo2 post
                         1578 1672 1675 1651 1543 ...
                   : num
   $ carm.elo1 pre : logi
                         NA NA NA NA NA ...
##
   $ carm.elo2 pre : logi
                          NA NA NA NA NA ...
   $ carm.elo prob1: logi
##
                          NA NA NA NA NA ...
   $ carm.elo prob2: logi
                          NA NA NA NA NA ...
   $ carm.elo1 post: logi
                          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
##
                         1642 1691 1676 1699 1505 ...
                   : num
##
   $ 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 ...
```

```
boscelticsmin <- min(bosceltics[,27])
boscelticsmax <- max(bosceltics[,27])
boscelticsmean <- mean(bosceltics[,27])
boscelticsmissingvalue <- colSums(is.na(bosceltics))</pre>
```

Print Min Max and Mean for Final Rating of Boston Celtics

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

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

Print Missing Value sum by Column of Boston Celtics data

boscelticssummarymissingvalue <- data.frame(boscelticsmissingvalue)
print(boscelticssummarymissingvalue)</pre>

```
boscelticsmissingvalue
##
## date
                                         0
## year
## neutral
                                         0
## playoff
                                         0
## team a
                                         0
                                         0
## team b
## elo1 pre
                                         0
## elo2 pre
## elo_prob1
                                         0
                                         0
## elo prob2
## 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
```