

607 Project 1 - Data Analysis

Pricilla

2025-09-10

```
library(knitr)
library(ggplot2)
library(forcats)
library(dplyr)
```

```
##
## 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
```

In this project, you're given a text file with chess tournament results where the information has some structure. Your job is to create an R Markdown file that generates a .CSV file (that could for example be imported into a SQL database) with the following information for all of the players:

Load Tournament.txt from Github

https://raw.githubusercontent.com/prnakyzazze94/Data_607/refs/heads/main/Class%20Tournament.txt

```
# Read the file
lines <- readLines("https://raw.githubusercontent.com/prnakyzazze94/Data_607/refs/heads/main/Class%20Tou
print(lines)
```

```
## [1] "-----"
## [2] " Pair | Player Name |Total|Round|Round|Round|Round|Round|Round|Round| "
## [3] " Num | USCF ID / Rtg (Pre->Post) | Pts | 1 | 2 | 3 | 4 | 5 | 6 | 7 | "
## [4] "-----"
## [5] " 1 | GARY HUA |6.0 |W 39|W 21|W 18|W 14|W 7|D 12|D 4|"
## [6] " ON | 15445895 / R: 1794 ->1817 |N:2 |W |B |W |B |W |B |W |"
## [7] "-----"
## [8] " 2 | DAKSHESH DARURI |6.0 |W 63|W 58|L 4|W 17|W 16|W 20|W 7|"
## [9] " MI | 14598900 / R: 1553 ->1663 |N:2 |B |W |B |W |B |W |B |"
## [10] "-----"
## [11] " 3 | ADITYA BAJAJ |6.0 |L 8|W 61|W 25|W 21|W 11|W 13|W 12|"
## [12] " MI | 14959604 / R: 1384 ->1640 |N:2 |W |B |W |B |W |B |W |"
## [13] "-----"
```

##	[14]	"	4		PATRICK H SCHILLING		5.5	W	23 D	28 W	2 W	26 D	5 W	19 D	1 "
##	[15]	"	MI		12616049 / R: 1716	->1744	N:2	W	B	W	B	W	B	B	"
##	[16]	"	-----												
##	[17]	"	5		HANSHI ZUO		5.5	W	45 W	37 D	12 D	13 D	4 W	14 W	17 "
##	[18]	"	MI		14601533 / R: 1655	->1690	N:2	B	W	B	W	B	W	B	"
##	[19]	"	-----												
##	[20]	"	6		HANSEN SONG		5.0	W	34 D	29 L	11 W	35 D	10 W	27 W	21 "
##	[21]	"	OH		15055204 / R: 1686	->1687	N:3	W	B	W	B	B	W	B	"
##	[22]	"	-----												
##	[23]	"	7		GARY DEE SWATHELL		5.0	W	57 W	46 W	13 W	11 L	1 W	9 L	2 "
##	[24]	"	MI		11146376 / R: 1649	->1673	N:3	W	B	W	B	B	W	W	"
##	[25]	"	-----												
##	[26]	"	8		EZEKIEL HOUGHTON		5.0	W	3 W	32 L	14 L	9 W	47 W	28 W	19 "
##	[27]	"	MI		15142253 / R: 1641P17->1657P24		N:3	B	W	B	W	B	W	W	"
##	[28]	"	-----												
##	[29]	"	9		STEFANO LEE		5.0	W	25 L	18 W	59 W	8 W	26 L	7 W	20 "
##	[30]	"	ON		14954524 / R: 1411	->1564	N:2	W	B	W	B	W	B	B	"
##	[31]	"	-----												
##	[32]	"	10		ANVIT RAO		5.0	D	16 L	19 W	55 W	31 D	6 W	25 W	18 "
##	[33]	"	MI		14150362 / R: 1365	->1544	N:3	W	W	B	B	W	B	W	"
##	[34]	"	-----												
##	[35]	"	11		CAMERON WILLIAM MC LEMAN		4.5	D	38 W	56 W	6 L	7 L	3 W	34 W	26 "
##	[36]	"	MI		12581589 / R: 1712	->1696	N:3	B	W	B	W	B	W	B	"
##	[37]	"	-----												
##	[38]	"	12		KENNETH J TACK		4.5	W	42 W	33 D	5 W	38 H	D	1 L	3 "
##	[39]	"	MI		12681257 / R: 1663	->1670	N:3	W	B	W	B		W	B	"
##	[40]	"	-----												
##	[41]	"	13		TORRANCE HENRY JR		4.5	W	36 W	27 L	7 D	5 W	33 L	3 W	32 "
##	[42]	"	MI		15082995 / R: 1666	->1662	N:3	B	W	B	B	W	W	B	"
##	[43]	"	-----												
##	[44]	"	14		BRADLEY SHAW		4.5	W	54 W	44 W	8 L	1 D	27 L	5 W	31 "
##	[45]	"	MI		10131499 / R: 1610	->1618	N:3	W	B	W	W	B	B	W	"
##	[46]	"	-----												
##	[47]	"	15		ZACHARY JAMES HOUGHTON		4.5	D	19 L	16 W	30 L	22 W	54 W	33 W	38 "
##	[48]	"	MI		15619130 / R: 1220P13->1416P20		N:3	B	B	W	W	B	B	W	"
##	[49]	"	-----												
##	[50]	"	16		MIKE NIKITIN		4.0	D	10 W	15 H	W	39 L	2 W	36 U	"
##	[51]	"	MI		10295068 / R: 1604	->1613	N:3	B	W		B	W	B		"
##	[52]	"	-----												
##	[53]	"	17		RONALD GRZEGORCZYK		4.0	W	48 W	41 L	26 L	2 W	23 W	22 L	5 "
##	[54]	"	MI		10297702 / R: 1629	->1610	N:3	W	B	W	B	W	B	W	"
##	[55]	"	-----												
##	[56]	"	18		DAVID SUNDEEN		4.0	W	47 W	9 L	1 W	32 L	19 W	38 L	10 "
##	[57]	"	MI		11342094 / R: 1600	->1600	N:3	B	W	B	W	B	W	B	"
##	[58]	"	-----												
##	[59]	"	19		DIPANKAR ROY		4.0	D	15 W	10 W	52 D	28 W	18 L	4 L	8 "
##	[60]	"	MI		14862333 / R: 1564	->1570	N:3	W	B	W	B	W	W	B	"
##	[61]	"	-----												
##	[62]	"	20		JASON ZHENG		4.0	L	40 W	49 W	23 W	41 W	28 L	2 L	9 "
##	[63]	"	MI		14529060 / R: 1595	->1569	N:4	W	B	W	B	W	B	W	"
##	[64]	"	-----												
##	[65]	"	21		DINH DANG BUI		4.0	W	43 L	1 W	47 L	3 W	40 W	39 L	6 "
##	[66]	"	ON		15495066 / R: 1563P22->1562		N:3	B	W	B	W	W	B	W	"
##	[67]	"	-----												

##	[68]	"	22		EUGENE L MCCLURE		4.0	W	64 D	52 L	28 W	15 H	L	17 W	40 "
##	[69]	"	MI		12405534 / R: 1555	->1529	N:4	W	B	W	B		W	B	"
##	[70]	"	-----												
##	[71]	"	23		ALAN BUI		4.0	L	4 W	43 L	20 W	58 L	17 W	37 W	46 "
##	[72]	"	ON		15030142 / R: 1363	->1371		B	W	B	W	B	W	B	"
##	[73]	"	-----												
##	[74]	"	24		MICHAEL R ALDRICH		4.0	L	28 L	47 W	43 L	25 W	60 W	44 W	39 "
##	[75]	"	MI		13469010 / R: 1229	->1300	N:4	B	W	B	B	W	W	B	"
##	[76]	"	-----												
##	[77]	"	25		LOREN SCHWIEBERT		3.5	L	9 W	53 L	3 W	24 D	34 L	10 W	47 "
##	[78]	"	MI		12486656 / R: 1745	->1681	N:4	B	W	B	W	B	W	B	"
##	[79]	"	-----												
##	[80]	"	26		MAX ZHU		3.5	W	49 W	40 W	17 L	4 L	9 D	32 L	11 "
##	[81]	"	ON		15131520 / R: 1579	->1564	N:4	B	W	B	W	B	W	W	"
##	[82]	"	-----												
##	[83]	"	27		GAURAV GIDWANI		3.5	W	51 L	13 W	46 W	37 D	14 L	6 U	"
##	[84]	"	MI		14476567 / R: 1552	->1539	N:4	W	B	W	B	W	B		"
##	[85]	"	-----												
##	[86]	"	28		SOFIA ADINA STANESCU-BELLU		3.5	W	24 D	4 W	22 D	19 L	20 L	8 D	36 "
##	[87]	"	MI		14882954 / R: 1507	->1513	N:3	W	W	B	W	B	B	W	"
##	[88]	"	-----												
##	[89]	"	29		CHIEDOZIE OKORIE		3.5	W	50 D	6 L	38 L	34 W	52 W	48 U	"
##	[90]	"	MI		15323285 / R: 1602P6	->1508P12	N:4	B	W	B	W	W	B		"
##	[91]	"	-----												
##	[92]	"	30		GEORGE AVERY JONES		3.5	L	52 D	64 L	15 W	55 L	31 W	61 W	50 "
##	[93]	"	ON		12577178 / R: 1522	->1444		W	B	B	W	W	B	B	"
##	[94]	"	-----												
##	[95]	"	31		RISHI SHETTY		3.5	L	58 D	55 W	64 L	10 W	30 W	50 L	14 "
##	[96]	"	MI		15131618 / R: 1494	->1444		B	W	B	W	B	W	B	"
##	[97]	"	-----												
##	[98]	"	32		JOSHUA PHILIP MATHEWS		3.5	W	61 L	8 W	44 L	18 W	51 D	26 L	13 "
##	[99]	"	ON		14073750 / R: 1441	->1433	N:4	W	B	W	B	W	B	W	"
##	[100]	"	-----												
##	[101]	"	33		JADE GE		3.5	W	60 L	12 W	50 D	36 L	13 L	15 W	51 "
##	[102]	"	MI		14691842 / R: 1449	->1421		B	W	B	W	B	W	B	"
##	[103]	"	-----												
##	[104]	"	34		MICHAEL JEFFERY THOMAS		3.5	L	6 W	60 L	37 W	29 D	25 L	11 W	52 "
##	[105]	"	MI		15051807 / R: 1399	->1400		B	W	B	B	W	B	W	"
##	[106]	"	-----												
##	[107]	"	35		JOSHUA DAVID LEE		3.5	L	46 L	38 W	56 L	6 W	57 D	52 W	48 "
##	[108]	"	MI		14601397 / R: 1438	->1392		W	W	B	W	B	B	W	"
##	[109]	"	-----												
##	[110]	"	36		SIDDHARTH JHA		3.5	L	13 W	57 W	51 D	33 H	L	16 D	28 "
##	[111]	"	MI		14773163 / R: 1355	->1367	N:4	W	B	W	B		W	B	"
##	[112]	"	-----												
##	[113]	"	37		AMIYATOSH PWNANANDAM		3.5	B	L	5 W	34 L	27 H	L	23 W	61 "
##	[114]	"	MI		15489571 / R: 980P12->1077P17				B	W	W		B	W	"
##	[115]	"	-----												
##	[116]	"	38		BRIAN LIU		3.0	D	11 W	35 W	29 L	12 H	L	18 L	15 "
##	[117]	"	MI		15108523 / R: 1423	->1439	N:4	W	B	W	W		B	B	"
##	[118]	"	-----												
##	[119]	"	39		JOEL R HENDON		3.0	L	1 W	54 W	40 L	16 W	44 L	21 L	24 "
##	[120]	"	MI		12923035 / R: 1436P23->1413		N:4	B	W	B	W	B	W	W	"
##	[121]	"	-----												

```

## [122] " 40 | FOREST ZHANG |3.0 |W 20|L 26|L 39|W 59|L 21|W 56|L 22|"
## [123] " MI | 14892710 / R: 1348 ->1346 | |B |B |W |W |B |W |W |"
## [124] "-----"
## [125] " 41 | KYLE WILLIAM MURPHY |3.0 |W 59|L 17|W 58|L 20|X |U |U |"
## [126] " MI | 15761443 / R: 1403P5 ->1341P9 | |B |W |B |W | | | |"
## [127] "-----"
## [128] " 42 | JARED GE |3.0 |L 12|L 50|L 57|D 60|D 61|W 64|W 56|"
## [129] " MI | 14462326 / R: 1332 ->1256 | |B |W |B |B |W |W |B |"
## [130] "-----"
## [131] " 43 | ROBERT GLEN VASEY |3.0 |L 21|L 23|L 24|W 63|W 59|L 46|W 55|"
## [132] " MI | 14101068 / R: 1283 ->1244 | |W |B |W |W |B |B |W |"
## [133] "-----"
## [134] " 44 | JUSTIN D SCHILLING |3.0 |B |L 14|L 32|W 53|L 39|L 24|W 59|"
## [135] " MI | 15323504 / R: 1199 ->1199 | | |W |B |B |W |B |W |"
## [136] "-----"
## [137] " 45 | DEREK YAN |3.0 |L 5|L 51|D 60|L 56|W 63|D 55|W 58|"
## [138] " MI | 15372807 / R: 1242 ->1191 | |W |B |W |B |W |B |W |"
## [139] "-----"
## [140] " 46 | JACOB ALEXANDER LAVALLEY |3.0 |W 35|L 7|L 27|L 50|W 64|W 43|L 23|"
## [141] " MI | 15490981 / R: 377P3 ->1076P10 | |B |W |B |W |B |W |W |"
## [142] "-----"
## [143] " 47 | ERIC WRIGHT |2.5 |L 18|W 24|L 21|W 61|L 8|D 51|L 25|"
## [144] " MI | 12533115 / R: 1362 ->1341 | |W |B |W |B |W |B |W |"
## [145] "-----"
## [146] " 48 | DANIEL KHAIN |2.5 |L 17|W 63|H |D 52|H |L 29|L 35|"
## [147] " MI | 14369165 / R: 1382 ->1335 | |B |W | |B | |W |B |"
## [148] "-----"
## [149] " 49 | MICHAEL J MARTIN |2.5 |L 26|L 20|D 63|D 64|W 58|H |U |"
## [150] " MI | 12531685 / R: 1291P12->1259P17 | |W |W |B |W |B | | |"
## [151] "-----"
## [152] " 50 | SHIVAM JHA |2.5 |L 29|W 42|L 33|W 46|H |L 31|L 30|"
## [153] " MI | 14773178 / R: 1056 ->1111 | |W |B |W |B | |B |W |"
## [154] "-----"
## [155] " 51 | TEJAS AYYAGARI |2.5 |L 27|W 45|L 36|W 57|L 32|D 47|L 33|"
## [156] " MI | 15205474 / R: 1011 ->1097 | |B |W |B |W |B |W |W |"
## [157] "-----"
## [158] " 52 | ETHAN GUO |2.5 |W 30|D 22|L 19|D 48|L 29|D 35|L 34|"
## [159] " MI | 14918803 / R: 935 ->1092 |N:4 |B |W |B |W |B |W |B |"
## [160] "-----"
## [161] " 53 | JOSE C YBARRA |2.0 |H |L 25|H |L 44|U |W 57|U |"
## [162] " MI | 12578849 / R: 1393 ->1359 | | |B | |W | |W | |"
## [163] "-----"
## [164] " 54 | LARRY HODGE |2.0 |L 14|L 39|L 61|B |L 15|L 59|W 64|"
## [165] " MI | 12836773 / R: 1270 ->1200 | |B |B |W | |W |B |W |"
## [166] "-----"
## [167] " 55 | ALEX KONG |2.0 |L 62|D 31|L 10|L 30|B |D 45|L 43|"
## [168] " MI | 15412571 / R: 1186 ->1163 | |W |B |W |B | |W |B |"
## [169] "-----"
## [170] " 56 | MARISA RICCI |2.0 |H |L 11|L 35|W 45|H |L 40|L 42|"
## [171] " MI | 14679887 / R: 1153 ->1140 | | |B |W |W | |B |W |"
## [172] "-----"
## [173] " 57 | MICHAEL LU |2.0 |L 7|L 36|W 42|L 51|L 35|L 53|B |"
## [174] " MI | 15113330 / R: 1092 ->1079 | |B |W |W |B |W |B |"
## [175] "-----"

```

```
## [176] " 58 | VIRAJ MOHILE |2.0 |W 31|L 2|L 41|L 23|L 49|B |L 45|"
## [177] " MI | 14700365 / R: 917 -> 941 | |W |B |W |B |W | |B |"
## [178] "-----"
## [179] " 59 | SEAN M MC CORMICK |2.0 |L 41|B |L 9|L 40|L 43|W 54|L 44|"
## [180] " MI | 12841036 / R: 853 -> 878 | |W | |B |B |W |W |B |"
## [181] "-----"
## [182] " 60 | JULIA SHEN |1.5 |L 33|L 34|D 45|D 42|L 24|H |U |"
## [183] " MI | 14579262 / R: 967 -> 984 | |W |B |B |W |B | | |"
## [184] "-----"
## [185] " 61 | JEZZEL FARKAS |1.5 |L 32|L 3|W 54|L 47|D 42|L 30|L 37|"
## [186] " ON | 15771592 / R: 955P11-> 979P18 | |B |W |B |W |B |W |B |"
## [187] "-----"
## [188] " 62 | ASHWIN BALAJI |1.0 |W 55|U |U |U |U |U |U |"
## [189] " MI | 15219542 / R: 1530 ->1535 | |B | | | | | | |"
## [190] "-----"
## [191] " 63 | THOMAS JOSEPH HOSMER |1.0 |L 2|L 48|D 49|L 43|L 45|H |U |"
## [192] " MI | 15057092 / R: 1175 ->1125 | |W |B |W |B |B | | |"
## [193] "-----"
## [194] " 64 | BEN LI |1.0 |L 22|D 30|L 31|D 49|L 46|L 42|L 54|"
## [195] " MI | 15006561 / R: 1163 ->1112 | |B |W |W |B |W |B |B |"
## [196] "-----"
```

Filter only player lines information.

```
# Remove separator lines and blank lines
lines <- lines[!grepl("^-+|^\\s*$", lines)]

# Remove the two header lines
lines <- lines[-c(1, 2)]

# Separate into player + info lines
player_lines <- lines[seq(1, length(lines), by = 2)]
info_lines <- lines[seq(2, length(lines), by = 2)]
```

create df

```
results <- data.frame(
  PairNum = integer(),
  Name = character(),
  State = character(),
  USCF_ID = character(),
  PreRating = numeric(),
  PostRating = numeric(),
  TotalScore = numeric(),
  stringsAsFactors = FALSE
)
```

Player's Name, Player's State, Total Number of Points, Player's Pre-Rating, and Average Pre Chess Rating of Opponents For the first player, the information would be: Gary Hua, ON, 6.0, 1794, 1605

Extract all Player information, calculate Average(mean) and Prepare output data frame

```

# Extract all pre-ratings once (used for AvgOpponentRating)
pre_ratings <- sapply(info_lines, function(info) {
  rating_match <- regmatches(info, regexpr("R:\\s*\\d+", info))
  as.integer(gsub("R:\\s*", "", rating_match))
})

# Prepare output data frame
output <- data.frame(
  Player = character(),
  State = character(),
  Points = numeric(),
  PreRating = integer(),
  AvgOpponentRating = numeric(),
  PlayerNum = integer(),
  OpponentNums = character(),
  OpponentPreRatings = character(),
  stringsAsFactors = FALSE
)

# Loop through players
for (i in seq_along(player_lines)) {
  pl <- player_lines[i]
  info <- info_lines[i]

  # Extract clean player name (remove leading number and pipe)
  name <- trimws(gsub("^\\d+\\s*\\|\\s*", "", substr(pl, 5, 36)))

  # Extract points
  points_match <- regmatches(pl, regexpr("\\|\\s*[0-9]+\\.?[0-9]*\\s*\\|", pl))
  points <- as.numeric(gsub("[^0-9]", "", points_match))

  # Extract state (e.g., ON, MI)
  state_match <- regmatches(info, regexpr("\\b[A-Z]{2}\\b", info))
  state <- if (length(state_match) > 0) state_match else NA

  # Extract pre-rating
  rating_match <- regmatches(info, regexpr("R:\\s*\\d+", info))
  pre_rating <- as.integer(gsub("R:\\s*", "", rating_match))

  # Extract opponent indices from line 1 (rounds)
  rounds <- unlist(strsplit(pl, "\\|"))
  rounds <- rounds[4:length(rounds)] # skip first 3 parts
  opp_indices <- as.integer(gsub("[^0-9]", "", rounds))
  opp_indices <- opp_indices[!is.na(opp_indices)]

  # Calculate average opponent rating
  if (length(opp_indices) > 0) {
    opp_ratings <- pre_ratings[opp_indices]
    avg_opp_rating <- round(mean(opp_ratings, na.rm = TRUE), 0)
  } else {
    avg_opp_rating <- NA
  }
}

```

```

# Add row to output
output <- rbind(output, data.frame(
  Player = name,
  State = state,
  Points = points,
  PreRating = pre_rating,
  AvgOpponentRating = avg_opp_rating,
  stringsAsFactors = FALSE
))
}

# View output
print(output)

```

	Player	State	Points	PreRating	AvgOpponentRating
## 1	GARY HUA	ON	6.0	1794	1605
## 2	DAKSHESH DARURI	MI	6.0	1553	1469
## 3	ADITYA BAJAJ	MI	6.0	1384	1564
## 4	PATRICK H SCHILLING	MI	5.5	1716	1574
## 5	HANSHI ZUO	MI	5.5	1655	1501
## 6	HANSEN SONG	OH	5.0	1686	1519
## 7	GARY DEE SWATHELL	MI	5.0	1649	1372
## 8	EZEKIEL HOUGHTON	MI	5.0	1641	1468
## 9	STEFANO LEE	ON	5.0	1411	1523
## 10	ANVIT RAO	MI	5.0	1365	1554
## 11	CAMERON WILLIAM MC LEMAN	MI	4.5	1712	1468
## 12	KENNETH J TACK	MI	4.5	1663	1506
## 13	TORRANCE HENRY JR	MI	4.5	1666	1498
## 14	BRADLEY SHAW	MI	4.5	1610	1515
## 15	ZACHARY JAMES HOUGHTON	MI	4.5	1220	1484
## 16	MIKE NIKITIN	MI	4.0	1604	1386
## 17	RONALD GRZEGORCZYK	MI	4.0	1629	1499
## 18	DAVID SUNDEEN	MI	4.0	1600	1480
## 19	DIPANKAR ROY	MI	4.0	1564	1426
## 20	JASON ZHENG	MI	4.0	1595	1411
## 21	DINH DANG BUI	ON	4.0	1563	1470
## 22	EUGENE L MCCLURE	MI	4.0	1555	1300
## 23	ALAN BUI	ON	4.0	1363	1214
## 24	MICHAEL R ALDRICH	MI	4.0	1229	1357
## 25	LOREN SCHWIEBERT	MI	3.5	1745	1363
## 26	MAX ZHU	ON	3.5	1579	1507
## 27	GAURAV GIDWANI	MI	3.5	1552	1222
## 28	SOFIA ADINA STANESCU-BELLU	MI	3.5	1507	1522
## 29	CHIEDOZIE OKORIE	MI	3.5	1602	1314
## 30	GEORGE AVERY JONES	ON	3.5	1522	1144
## 31	RISHI SHETTY	MI	3.5	1494	1260
## 32	JOSHUA PHILIP MATHEWS	ON	3.5	1441	1379
## 33	JADE GE	MI	3.5	1449	1277
## 34	MICHAEL JEFFERY THOMAS	MI	3.5	1399	1375
## 35	JOSHUA DAVID LEE	MI	3.5	1438	1150
## 36	SIDDHARTH JHA	MI	3.5	1355	1388
## 37	AMIYATOSH PWNANANDAM	MI	3.5	980	1385
## 38	BRIAN LIU	MI	3.0	1423	1539

## 39	JOEL R HENDON	MI	3.0	1436	1430
## 40	FOREST ZHANG	MI	3.0	1348	1391
## 41	KYLE WILLIAM MURPHY	MI	3.0	1403	1248
## 42	JARED GE	MI	3.0	1332	1150
## 43	ROBERT GLEN VASEY	MI	3.0	1283	1107
## 44	JUSTIN D SCHILLING	MI	3.0	1199	1327
## 45	DEREK YAN	MI	3.0	1242	1152
## 46	JACOB ALEXANDER LAVALLEY	MI	3.0	377	1358
## 47	ERIC WRIGHT	MI	2.5	1362	1392
## 48	DANIEL KHAIN	MI	2.5	1382	1356
## 49	MICHAEL J MARTIN	MI	2.5	1291	1286
## 50	SHIVAM JHA	MI	2.5	1056	1296
## 51	TEJAS AYYAGARI	MI	2.5	1011	1356
## 52	ETHAN GUO	MI	2.5	935	1495
## 53	JOSE C YBARRA	MI	2.0	1393	1345
## 54	LARRY HODGE	MI	2.0	1270	1206
## 55	ALEX KONG	MI	2.0	1186	1406
## 56	MARISA RICCI	MI	2.0	1153	1414
## 57	MICHAEL LU	MI	2.0	1092	1363
## 58	VIRAJ MOHILE	MI	2.0	917	1391
## 59	SEAN M MC CORMICK	MI	2.0	853	1319
## 60	JULIA SHEN	MI	1.5	967	1330
## 61	JEZZEL FARKAS	ON	1.5	955	1327
## 62	ASHWIN BALAJI	MI	1.0	1530	1186
## 63	THOMAS JOSEPH HOSMER	MI	1.0	1175	1350
## 64	BEN LI	MI	1.0	1163	1263

```
# save to CSV
write.csv(output, "tournament_results.csv", row.names = FALSE)
```

Create an output2 DF with the player Num, player's PreRTG, Opponent Nums, Opponent's PreRTG and Average Opponent Rating.

```
# Create output data frame with player num and Opponent's rating and Opponents Num and Avg colm
output2 <- data.frame(
  PlayerNum = integer(),
  Player = character(),
  PreRating = integer(),
  OpponentNums = character(),
  OpponentPreRatings = character(),
  AvgOpponentRating = numeric(),
  stringsAsFactors = FALSE
)

# Extract all pre-ratings once
pre_ratings <- sapply(info_lines, function(info) {
  rating_match <- regmatches(info, regexpr("R:\\s*\\d+", info))
  as.integer(gsub("R:\\s*", "", rating_match))
})

# Loop through each player
for (i in seq_along(player_lines)) {
  pl <- player_lines[i]
  info <- info_lines[i]
```



```

# Extract player number
player_num <- as.integer(substr(pl, 1, 4))

# Extract player name
name <- trimws(gsub("^\\d+\\s*\\|\\s*", "", substr(pl, 5, 36)))

# Extract pre-rating
rating_match <- regmatches(info, regexpr("R:\\s*\\d+", info))
pre_rating <- as.integer(gsub("R:\\s*", "", rating_match))

# Extract opponent indices (from rounds)
rounds <- unlist(strsplit(pl, "\\|"))
rounds <- rounds[4:length(rounds)] # Skip name, points, etc.
opp_indices <- as.integer(gsub("[^0-9]", "", rounds))
opp_indices <- opp_indices[!is.na(opp_indices)]

# Get opponent pre-ratings
if (length(opp_indices) > 0) {
  opp_ratings <- pre_ratings[opp_indices]
  avg_opp_rating <- round(mean(opp_ratings, na.rm = TRUE), 0)
} else {
  opp_ratings <- NA
  avg_opp_rating <- NA
}

# Add row to output
output2 <- rbind(output2, data.frame(
  PlayerNum = player_num,
  Player = name,
  PreRating = pre_rating,
  OpponentNums = paste(opp_indices, collapse = ", "),
  OpponentPreRatings = paste(opp_ratings, collapse = ", "),
  AvgOpponentRating = avg_opp_rating,
  stringsAsFactors = FALSE
))
}

# View the output
kable(output2)

```

PlayerNum	Player	PreRating	OpponentNums	OpponentPreRatings	AvgOpponentRating
NA	GARY HUA	1794	39, 21, 18, 14, 7, 12, 4	1436, 1563, 1600, 1610, 1649, 1663, 1716	1605
NA	DAKSHESH DARURI	1553	63, 58, 4, 17, 16, 20, 7	1175, 917, 1716, 1629, 1604, 1595, 1649	1469
NA	ADITYA BAJAJ	1384	8, 61, 25, 21, 11, 13, 12	1641, 955, 1745, 1563, 1712, 1666, 1663	1564
NA	PATRICK H SCHILLING	1716	23, 28, 2, 26, 5, 19, 1	1363, 1507, 1553, 1579, 1655, 1564, 1794	1574
NA	HANSHI ZUO	1655	45, 37, 12, 13, 4, 14, 17	1242, 980, 1663, 1666, 1716, 1610, 1629	1501

PlayerNum	Player	PreRating	OpponentNums	OpponentPreRatings	AvgOpponentRating
NA	HANSEN SONG	1686	34, 29, 11, 35, 10, 27, 21	1399, 1602, 1712, 1438, 1365, 1552, 1563	1519
NA	GARY DEE SWATHELL	1649	57, 46, 13, 11, 1, 9, 2	1092, 377, 1666, 1712, 1794, 1411, 1553	1372
NA	EZEKIEL HOUGHTON	1641	3, 32, 14, 9, 47, 28, 19	1384, 1441, 1610, 1411, 1362, 1507, 1564	1468
NA	STEFANO LEE	1411	25, 18, 59, 8, 26, 7, 20	1745, 1600, 853, 1641, 1579, 1649, 1595	1523
1	ANVIT RAO	1365	16, 19, 55, 31, 6, 25, 18	1604, 1564, 1186, 1494, 1686, 1745, 1600	1554
1	CAMERON WILLIAM MC LEMAN	1712	38, 56, 6, 7, 3, 34, 26	1423, 1153, 1686, 1649, 1384, 1399, 1579	1468
1	KENNETH J TACK	1663	42, 33, 5, 38, 1, 3	1332, 1449, 1655, 1423, 1794, 1384	1506
1	TORRANCE HENRY JR	1666	36, 27, 7, 5, 33, 3, 32	1355, 1552, 1649, 1655, 1449, 1384, 1441	1498
1	BRADLEY SHAW	1610	54, 44, 8, 1, 27, 5, 31	1270, 1199, 1641, 1794, 1552, 1655, 1494	1515
1	ZACHARY JAMES HOUGHTON	1220	19, 16, 30, 22, 54, 33, 38	1564, 1604, 1522, 1555, 1270, 1449, 1423	1484
1	MIKE NIKITIN	1604	10, 15, 39, 2, 36	1365, 1220, 1436, 1553, 1355	1386
1	RONALD GRZEGORCZYK	1629	48, 41, 26, 2, 23, 22, 5	1382, 1403, 1579, 1553, 1363, 1555, 1655	1499
1	DAVID SUNDEEN	1600	47, 9, 1, 32, 19, 38, 10	1362, 1411, 1794, 1441, 1564, 1423, 1365	1480
1	DIPANKAR ROY	1564	15, 10, 52, 28, 18, 4, 8	1220, 1365, 935, 1507, 1600, 1716, 1641	1426
2	JASON ZHENG	1595	40, 49, 23, 41, 28, 2, 9	1348, 1291, 1363, 1403, 1507, 1553, 1411	1411
2	DINH DANG BUI	1563	43, 1, 47, 3, 40, 39, 6	1283, 1794, 1362, 1384, 1348, 1436, 1686	1470
2	EUGENE L MCCLURE	1555	64, 52, 28, 15, 17, 40	1163, 935, 1507, 1220, 1629, 1348	1300
2	ALAN BUI	1363	4, 43, 20, 58, 17, 37, 46	1716, 1283, 1595, 917, 1629, 980, 377	1214
2	MICHAEL R ALDRICH	1229	28, 47, 43, 25, 60, 44, 39	1507, 1362, 1283, 1745, 967, 1199, 1436	1357
2	LOREN SCHWIEBERT	1745	9, 53, 3, 24, 34, 10, 47	1411, 1393, 1384, 1229, 1399, 1365, 1362	1363
2	MAX ZHU	1579	49, 40, 17, 4, 9, 32, 11	1291, 1348, 1629, 1716, 1411, 1441, 1712	1507
2	GAURAV GIDWANI	1552	51, 13, 46, 37, 14, 6	1011, 1666, 377, 980, 1610, 1686	1222
2	SOFIA ADINA STANESCU-BELLU	1507	24, 4, 22, 19, 20, 8, 36	1229, 1716, 1555, 1564, 1595, 1641, 1355	1522
2	CHIEDOZIE OKORIE	1602	50, 6, 38, 34, 52, 48	1056, 1686, 1423, 1399, 935, 1382	1314
3	GEORGE AVERY JONES	1522	52, 64, 15, 55, 31, 61, 50	935, 1163, 1220, 1186, 1494, 955, 1056	1144

PlayerNum	Player	PreRating	OpponentNums	OpponentPreRatings	AvgOpponentRating
3	RISHI SHETTY	1494	58, 55, 64, 10, 30, 50, 14	917, 1186, 1163, 1365, 1522, 1056, 1610	1260
3	JOSHUA PHILIP MATHEWS	1441	61, 8, 44, 18, 51, 26, 13	955, 1641, 1199, 1600, 1011, 1579, 1666	1379
3	JADE GE	1449	60, 12, 50, 36, 13, 15, 51	967, 1663, 1056, 1355, 1666, 1220, 1011	1277
3	MICHAEL JEFFERY THOMAS	1399	6, 60, 37, 29, 25, 11, 52	1686, 967, 980, 1602, 1745, 1712, 935	1375
3	JOSHUA DAVID LEE	1438	46, 38, 56, 6, 57, 52, 48	377, 1423, 1153, 1686, 1092, 935, 1382	1150
3	SIDDHARTH JHA	1355	13, 57, 51, 33, 16, 28	1666, 1092, 1011, 1449, 1604, 1507	1388
3	AMIYATOSH PWNANANDAM	980	5, 34, 27, 23, 61	1655, 1399, 1552, 1363, 955	1385
3	BRIAN LIU	1423	11, 35, 29, 12, 18, 15	1712, 1438, 1602, 1663, 1600, 1220	1539
3	JOEL R HENDON	1436	1, 54, 40, 16, 44, 21, 24	1794, 1270, 1348, 1604, 1199, 1563, 1229	1430
4	FOREST ZHANG	1348	20, 26, 39, 59, 21, 56, 22	1595, 1579, 1436, 853, 1563, 1153, 1555	1391
4	KYLE WILLIAM MURPHY	1403	59, 17, 58, 20	853, 1629, 917, 1595	1248
4	JARED GE	1332	12, 50, 57, 60, 61, 64, 56	1663, 1056, 1092, 967, 955, 1163, 1153	1150
4	ROBERT GLEN VASEY	1283	21, 23, 24, 63, 59, 46, 55	1563, 1363, 1229, 1175, 853, 377, 1186	1107
4	JUSTIN D SCHILLING	1199	14, 32, 53, 39, 24, 59	1610, 1441, 1393, 1436, 1229, 853	1327
4	DEREK YAN	1242	5, 51, 60, 56, 63, 55, 58	1655, 1011, 967, 1153, 1175, 1186, 917	1152
4	JACOB ALEXANDER LAVALLEY	377	35, 7, 27, 50, 64, 43, 23	1438, 1649, 1552, 1056, 1163, 1283, 1363	1358
4	ERIC WRIGHT	1362	18, 24, 21, 61, 8, 51, 25	1600, 1229, 1563, 955, 1641, 1011, 1745	1392
4	DANIEL KHAIN	1382	17, 63, 52, 29, 35	1629, 1175, 935, 1602, 1438	1356
4	MICHAEL J MARTIN	1291	26, 20, 63, 64, 58	1579, 1595, 1175, 1163, 917	1286
5	SHIVAM JHA	1056	29, 42, 33, 46, 31, 30	1602, 1332, 1449, 377, 1494, 1522	1296
5	TEJAS Ayyagari	1011	27, 45, 36, 57, 32, 47, 33	1552, 1242, 1355, 1092, 1441, 1362, 1449	1356
5	ETHAN GUO	935	30, 22, 19, 48, 29, 35, 34	1522, 1555, 1564, 1382, 1602, 1438, 1399	1495
5	JOSE C YBARRA	1393	25, 44, 57	1745, 1199, 1092	1345
5	LARRY HODGE	1270	14, 39, 61, 15, 59, 64	1610, 1436, 955, 1220, 853, 1163	1206
5	ALEX KONG	1186	62, 31, 10, 30, 45, 43	1530, 1494, 1365, 1522, 1242, 1283	1406
5	MARISA RICCI	1153	11, 35, 45, 40, 42	1712, 1438, 1242, 1348, 1332	1414

PlayerNum	Player	PreRating	OpponentNums	OpponentPreRatings	AvgOpponentRating
5	MICHAEL LU	1092	7, 36, 42, 51, 35, 53	1649, 1355, 1332, 1011, 1438, 1393	1363
5	VIRAJ MOHILE	917	31, 2, 41, 23, 49, 45	1494, 1553, 1403, 1363, 1291, 1242	1391
5	SEAN M MC CORMICK	853	41, 9, 40, 43, 54, 44	1403, 1411, 1348, 1283, 1270, 1199	1319
6	JULIA SHEN	967	33, 34, 45, 42, 24	1449, 1399, 1242, 1332, 1229	1330
6	JEZZEL FARKAS	955	32, 3, 54, 47, 42, 30, 37	1441, 1384, 1270, 1362, 1332, 1522, 980	1327
6	ASHWIN BALAJI	1530	55	1186	1186
6	THOMAS JOSEPH HOSMER	1175	2, 48, 49, 43, 45	1553, 1382, 1291, 1283, 1242	1350
6	BEN LI	1163	22, 30, 31, 49, 46, 42, 54	1555, 1522, 1494, 1291, 377, 1332, 1270	1263

```
kable(output2[, c("Player", "OpponentNums", "AvgOpponentRating")])
```

Player	OpponentNums	AvgOpponentRating
GARY HUA	39, 21, 18, 14, 7, 12, 4	1605
DAKSHESH DARURI	63, 58, 4, 17, 16, 20, 7	1469
ADITYA BAJAJ	8, 61, 25, 21, 11, 13, 12	1564
PATRICK H SCHILLING	23, 28, 2, 26, 5, 19, 1	1574
HANSHI ZUO	45, 37, 12, 13, 4, 14, 17	1501
HANSEN SONG	34, 29, 11, 35, 10, 27, 21	1519
GARY DEE SWATHELL	57, 46, 13, 11, 1, 9, 2	1372
EZEKIEL HOUGHTON	3, 32, 14, 9, 47, 28, 19	1468
STEFANO LEE	25, 18, 59, 8, 26, 7, 20	1523
ANVIT RAO	16, 19, 55, 31, 6, 25, 18	1554
CAMERON WILLIAM MC LEMAN	38, 56, 6, 7, 3, 34, 26	1468
KENNETH J TACK	42, 33, 5, 38, 1, 3	1506
TORRANCE HENRY JR	36, 27, 7, 5, 33, 3, 32	1498
BRADLEY SHAW	54, 44, 8, 1, 27, 5, 31	1515
ZACHARY JAMES HOUGHTON	19, 16, 30, 22, 54, 33, 38	1484
MIKE NIKITIN	10, 15, 39, 2, 36	1386
RONALD GRZEGORCZYK	48, 41, 26, 2, 23, 22, 5	1499
DAVID SUNDEEN	47, 9, 1, 32, 19, 38, 10	1480
DIPANKAR ROY	15, 10, 52, 28, 18, 4, 8	1426
JASON ZHENG	40, 49, 23, 41, 28, 2, 9	1411
DINH DANG BUI	43, 1, 47, 3, 40, 39, 6	1470
EUGENE L MCCLURE	64, 52, 28, 15, 17, 40	1300
ALAN BUI	4, 43, 20, 58, 17, 37, 46	1214
MICHAEL R ALDRICH	28, 47, 43, 25, 60, 44, 39	1357
LOREN SCHWIEBERT	9, 53, 3, 24, 34, 10, 47	1363
MAX ZHU	49, 40, 17, 4, 9, 32, 11	1507
GAURAV GIDWANI	51, 13, 46, 37, 14, 6	1222
SOFIA ADINA STANESCU-BELLU	24, 4, 22, 19, 20, 8, 36	1522
CHIEDOZIE OKORIE	50, 6, 38, 34, 52, 48	1314
GEORGE AVERY JONES	52, 64, 15, 55, 31, 61, 50	1144
RISHI SHETTY	58, 55, 64, 10, 30, 50, 14	1260

Player	OpponentNums	AvgOpponentRating
JOSHUA PHILIP MATHEWS	61, 8, 44, 18, 51, 26, 13	1379
JADE GE	60, 12, 50, 36, 13, 15, 51	1277
MICHAEL JEFFERY THOMAS	6, 60, 37, 29, 25, 11, 52	1375
JOSHUA DAVID LEE	46, 38, 56, 6, 57, 52, 48	1150
SIDDHARTH JHA	13, 57, 51, 33, 16, 28	1388
AMIYATOSH PWNANANDAM	5, 34, 27, 23, 61	1385
BRIAN LIU	11, 35, 29, 12, 18, 15	1539
JOEL R HENDON	1, 54, 40, 16, 44, 21, 24	1430
FOREST ZHANG	20, 26, 39, 59, 21, 56, 22	1391
KYLE WILLIAM MURPHY	59, 17, 58, 20	1248
JARED GE	12, 50, 57, 60, 61, 64, 56	1150
ROBERT GLEN VASEY	21, 23, 24, 63, 59, 46, 55	1107
JUSTIN D SCHILLING	14, 32, 53, 39, 24, 59	1327
DEREK YAN	5, 51, 60, 56, 63, 55, 58	1152
JACOB ALEXANDER LAVALLEY	35, 7, 27, 50, 64, 43, 23	1358
ERIC WRIGHT	18, 24, 21, 61, 8, 51, 25	1392
DANIEL KHAIN	17, 63, 52, 29, 35	1356
MICHAEL J MARTIN	26, 20, 63, 64, 58	1286
SHIVAM JHA	29, 42, 33, 46, 31, 30	1296
TEJAS AYYAGARI	27, 45, 36, 57, 32, 47, 33	1356
ETHAN GUO	30, 22, 19, 48, 29, 35, 34	1495
JOSE C YBARRA	25, 44, 57	1345
LARRY HODGE	14, 39, 61, 15, 59, 64	1206
ALEX KONG	62, 31, 10, 30, 45, 43	1406
MARISA RICCI	11, 35, 45, 40, 42	1414
MICHAEL LU	7, 36, 42, 51, 35, 53	1363
VIRAJ MOHILE	31, 2, 41, 23, 49, 45	1391
SEAN M MC CORMICK	41, 9, 40, 43, 54, 44	1319
JULIA SHEN	33, 34, 45, 42, 24	1330
JEZZEL FARKAS	32, 3, 54, 47, 42, 30, 37	1327
ASHWIN BALAJI	55	1186
THOMAS JOSEPH HOSMER	2, 48, 49, 43, 45	1350
BEN LI	22, 30, 31, 49, 46, 42, 54	1263

```
kable(output2[, c("Player", "OpponentPreRatings", "AvgOpponentRating")])
```

Player	OpponentPreRatings	AvgOpponentRating
GARY HUA	1436, 1563, 1600, 1610, 1649, 1663, 1716	1605
DAKSHESH DARURI	1175, 917, 1716, 1629, 1604, 1595, 1649	1469
ADITYA BAJAJ	1641, 955, 1745, 1563, 1712, 1666, 1663	1564
PATRICK H SCHILLING	1363, 1507, 1553, 1579, 1655, 1564, 1794	1574
HANSHI ZUO	1242, 980, 1663, 1666, 1716, 1610, 1629	1501
HANSEN SONG	1399, 1602, 1712, 1438, 1365, 1552, 1563	1519
GARY DEE SWATHELL	1092, 377, 1666, 1712, 1794, 1411, 1553	1372
EZEKIEL HOUGHTON	1384, 1441, 1610, 1411, 1362, 1507, 1564	1468
STEFANO LEE	1745, 1600, 853, 1641, 1579, 1649, 1595	1523
ANVIT RAO	1604, 1564, 1186, 1494, 1686, 1745, 1600	1554
CAMERON WILLIAM MC LEMAN	1423, 1153, 1686, 1649, 1384, 1399, 1579	1468
KENNETH J TACK	1332, 1449, 1655, 1423, 1794, 1384	1506

Player	OpponentPreRatings	AvgOpponentRating
TORRANCE HENRY JR	1355, 1552, 1649, 1655, 1449, 1384, 1441	1498
BRADLEY SHAW	1270, 1199, 1641, 1794, 1552, 1655, 1494	1515
ZACHARY JAMES	1564, 1604, 1522, 1555, 1270, 1449, 1423	1484
HOUGHTON		
MIKE NIKITIN	1365, 1220, 1436, 1553, 1355	1386
RONALD GRZEGORCZYK	1382, 1403, 1579, 1553, 1363, 1555, 1655	1499
DAVID SUNDEEN	1362, 1411, 1794, 1441, 1564, 1423, 1365	1480
DIPANKAR ROY	1220, 1365, 935, 1507, 1600, 1716, 1641	1426
JASON ZHENG	1348, 1291, 1363, 1403, 1507, 1553, 1411	1411
DINH DANG BUI	1283, 1794, 1362, 1384, 1348, 1436, 1686	1470
EUGENE L MCCLURE	1163, 935, 1507, 1220, 1629, 1348	1300
ALAN BUI	1716, 1283, 1595, 917, 1629, 980, 377	1214
MICHAEL R ALDRICH	1507, 1362, 1283, 1745, 967, 1199, 1436	1357
LOREN SCHWIEBERT	1411, 1393, 1384, 1229, 1399, 1365, 1362	1363
MAX ZHU	1291, 1348, 1629, 1716, 1411, 1441, 1712	1507
GAURAV GIDWANI	1011, 1666, 377, 980, 1610, 1686	1222
SOFIA ADINA	1229, 1716, 1555, 1564, 1595, 1641, 1355	1522
STANESCU-BELLU		
CHIEDOZIE OKORIE	1056, 1686, 1423, 1399, 935, 1382	1314
GEORGE AVERY JONES	935, 1163, 1220, 1186, 1494, 955, 1056	1144
RISHI SHETTY	917, 1186, 1163, 1365, 1522, 1056, 1610	1260
JOSHUA PHILIP MATHEWS	955, 1641, 1199, 1600, 1011, 1579, 1666	1379
JADE GE	967, 1663, 1056, 1355, 1666, 1220, 1011	1277
MICHAEL JEFFERY	1686, 967, 980, 1602, 1745, 1712, 935	1375
THOMAS		
JOSHUA DAVID LEE	377, 1423, 1153, 1686, 1092, 935, 1382	1150
SIDDHARTH JHA	1666, 1092, 1011, 1449, 1604, 1507	1388
AMIYATOSH	1655, 1399, 1552, 1363, 955	1385
PWNANANDAM		
BRIAN LIU	1712, 1438, 1602, 1663, 1600, 1220	1539
JOEL R HENDON	1794, 1270, 1348, 1604, 1199, 1563, 1229	1430
FOREST ZHANG	1595, 1579, 1436, 853, 1563, 1153, 1555	1391
KYLE WILLIAM MURPHY	853, 1629, 917, 1595	1248
JARED GE	1663, 1056, 1092, 967, 955, 1163, 1153	1150
ROBERT GLEN VASEY	1563, 1363, 1229, 1175, 853, 377, 1186	1107
JUSTIN D SCHILLING	1610, 1441, 1393, 1436, 1229, 853	1327
DEREK YAN	1655, 1011, 967, 1153, 1175, 1186, 917	1152
JACOB ALEXANDER	1438, 1649, 1552, 1056, 1163, 1283, 1363	1358
LAVALLEY		
ERIC WRIGHT	1600, 1229, 1563, 955, 1641, 1011, 1745	1392
DANIEL KHAIN	1629, 1175, 935, 1602, 1438	1356
MICHAEL J MARTIN	1579, 1595, 1175, 1163, 917	1286
SHIVAM JHA	1602, 1332, 1449, 377, 1494, 1522	1296
TEJAS AYYAGARI	1552, 1242, 1355, 1092, 1441, 1362, 1449	1356
ETHAN GUO	1522, 1555, 1564, 1382, 1602, 1438, 1399	1495
JOSE C YBARRA	1745, 1199, 1092	1345
LARRY HODGE	1610, 1436, 955, 1220, 853, 1163	1206
ALEX KONG	1530, 1494, 1365, 1522, 1242, 1283	1406
MARISA RICCI	1712, 1438, 1242, 1348, 1332	1414
MICHAEL LU	1649, 1355, 1332, 1011, 1438, 1393	1363
VIRAJ MOHILE	1494, 1553, 1403, 1363, 1291, 1242	1391
SEAN M MC CORMICK	1403, 1411, 1348, 1283, 1270, 1199	1319

Player	OpponentPreRatings	AvgOpponentRating
JULIA SHEN	1449, 1399, 1242, 1332, 1229	1330
JEZZEL FARKAS	1441, 1384, 1270, 1362, 1332, 1522, 980	1327
ASHWIN BALAJI	1186	1186
THOMAS JOSEPH HOSMER	1553, 1382, 1291, 1283, 1242	1350
BEN LI	1555, 1522, 1494, 1291, 377, 1332, 1270	1263

```
#print(output[, c("Player", "OpponentPreRatings", "AvgOpponentRating")])
```

Plot top 5 and bottom 5 players based on Average Opponent Rating.

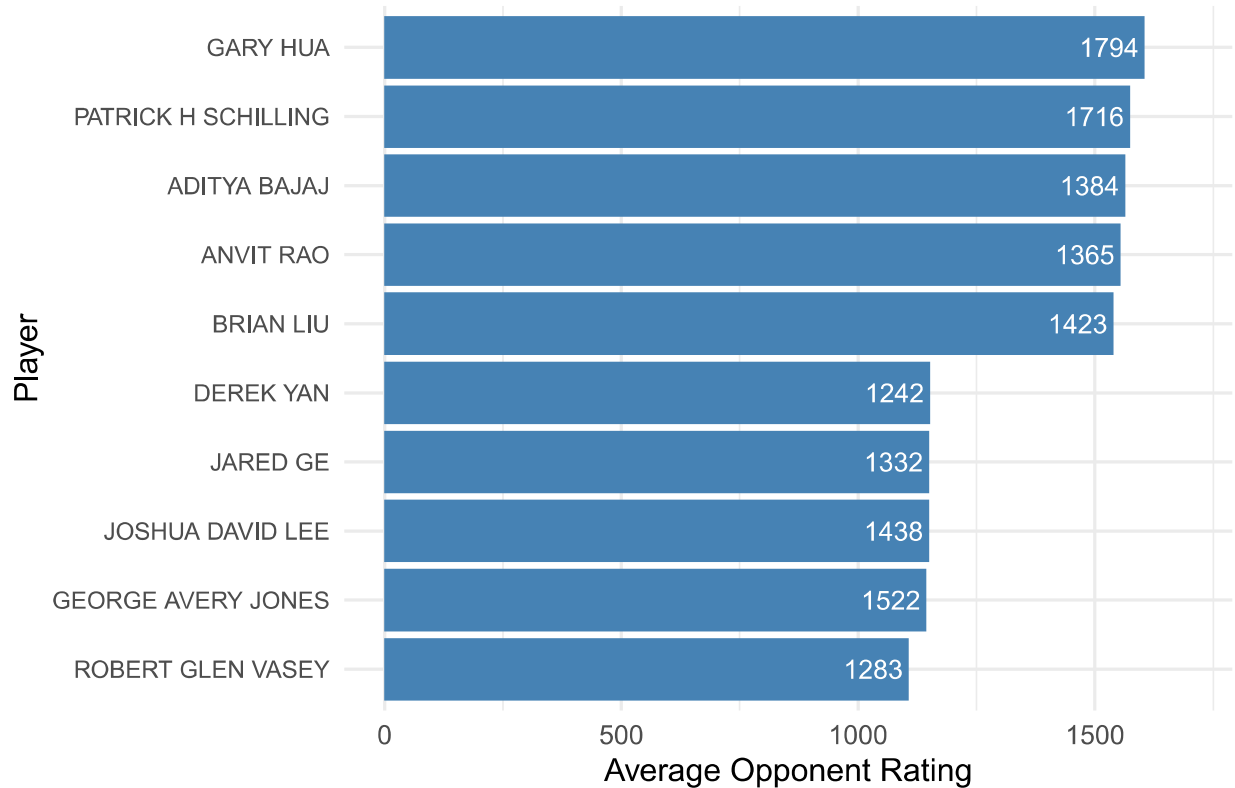
```
# Get top 5 and bottom 5 by AvgOpponentRating
top5 <- output[order(-output$AvgOpponentRating), ][1:5, ]
bottom5 <- output[order(output$AvgOpponentRating), ][1:5, ]

# Combine top and bottom
subset_output <- rbind(top5, bottom5)

# Reorder factor levels for plotting
subset_output$Player <- factor(subset_output$Player, levels = subset_output$Player[order(subset_output$AvgOpponentRating)])

# Plot
ggplot(subset_output, aes(x = Player, y = AvgOpponentRating)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  geom_text(aes(label = PreRating),
            hjust = 1.1, # move text inside bar, aligned right
            size = 3.5,
            color = "white") + # white text inside bar
  coord_flip() + # Horizontal bars
  labs(
    title = "Top 5 and Bottom 5 Players by Average Opponent Rating",
    x = "Player",
    y = "Average Opponent Rating"
  ) +
  theme_minimal(base_size = 12) +
  theme(
    axis.text.y = element_text(size = 9),
    plot.title = element_text(size = 14, face = "bold")
  ) +
  ylim(0, max(subset_output$AvgOpponentRating, na.rm = TRUE) + 100)
```

Top 5 and Bottom 5 Players by Average Opponent Rating



Gary Hua faced the strongest opponents, with an average opponent rating of 1605, followed closely by Patrick H. Schilling, who also competed against highly rated players. Both of these players encountered consistently tough competition.

In contrast, Derek Yan, Robert Glen Vasey, and Jared Ge faced weaker opponents on average, with much lower ratings compared to the top group.

This highlights an important insight: a strong player (high PreRating) might have an easier path if matched against weaker opponents, while a lower-rated player could face tougher challenges if paired against stronger opponents. This makes Average Opponent Rating a valuable measure of the difficulty level each player experienced.

For example, Anvit Rao entered with a PreRating of 1365, which is relatively low compared to others in the top group. Yet, his Average Opponent Rating of about 1554 shows that he was consistently paired against players who were significantly stronger than him on paper.