Project1

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Project Instruction

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: 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, 1605–1605 was calculated by using the pre-tournament opponents' ratings of 1436, 1563, 1600, 1610, 1649, 1663, 1716, and dividing by the total number of games played. If you have questions about the meaning of the data or the results, please post them on the discussion forum. Data science, like chess, is a game of back and forth... The chess rating system (invented by a Minnesota statistician named Arpad Elo) has been used in many other contexts, including assessing relative strength of employment candidates by human resource departments.

```
#load library
#install.packages("stringr")
#install.packages("RMySQL")
#install.packages('tinytex')
#tinytex::install_tinytex()
library("stringr")
library(RMySQL)
```

Loading required package: DBI

```
data1 <- "tournament.txt"
data1 <- readLines(data1)
data1</pre>
```

```
##
##
     [2] " Pair | Player Name
                                                      |Total|Round|Round|Round|Round|Round|Round|
##
     [3] " Num | USCF ID / Rtg (Pre->Post)
                                                      | Pts |
##
                                                                                                         4|"
##
     [5] "
               1 | GARY HUA
                                                      16.0 W
                                                                 39|W
                                                                       21|W
                                                                             18|W
                                                                                    14|W
                                                                                            7 | D
                                                                                                 12|D
##
     [6] "
              ON | 15445895 / R: 1794
                                          ->1817
                                                      |N:2
                                                           ١w
                                                                   lΒ
                                                                          ١W
                                                                                lΒ
                                                                                       ١W
                                                                                             lΒ
                                                                                                    ١W
                                                                                                          | "
##
     [8] "
                                                                               4|W
                                                                                                 20 | W
                                                                                                         7|"
##
               2 | DAKSHESH DARURI
                                                      16.0
                                                            l W
                                                                 63|W
                                                                       58|L
                                                                                    17|W
                                                                                           16|W
     [9]
             MI | 14598900 / R: 1553
##
                                          ->1663
                                                      |N:2
                                                                                       lΒ
##
##
    [11] "
              3 | ADITYA BAJAJ
                                                      |6.0 |L
                                                                  8|W
                                                                              25|W
                                                                                                 13 | W
                                                                                                        12|"
                                                                       61|W
                                                                                    21 | W
                                                                                           11|W
              MI | 14959604 / R: 1384
##
                                          ->1640
                                                      |N:2
                                                           l W
                                                                   lΒ
                                                                         l W
                                                                                ΙB
                                                                                      ١W
                                                                                             lΒ
                                                                                                    l W
```

##	ا [14]	' 4	PATRICK H SCHILLING	5.5	l W	23 D	28 W	2 W	26 D	5 W	19 D	1 "
##	[15]	-	12616049 / R: 1716 ->1744	N:2	l W	ΙB	l W	ΙB	l W	lΒ	lВ	j"
##	[16] '	'										"
##	[17] '	' 5 I	HANSHI ZUO	15.5	l W	45 W	37 D	12 D	13 D	4 W	14 W	17 "
##	[18] '	' MI	14601533 / R: 1655 ->1690	N:2	ΙB	l W	ΙB	l W	ΙB	l W	ΙB	"
##	[19] '	'										"
##	[20] '	' 6 I	HANSEN SONG	15.0	l W	34 D	29 L	11 W	35 D	10 W	27 W	21 "
##	[21] '	' OH I	15055204 / R: 1686 ->1687	N:3	l W	ΙB	١w	ΙB	ΙB	l W	ΙB	"
##	[22] '	'										"
##	[23] '	' 7	GARY DEE SWATHELL	15.0	W	57 W	46 W	13 W	11 L	1 W	9 L	2 "
##	[24] '	' MI	11146376 / R: 1649 ->1673	N:3	l W	ΙB	l W	ΙB	ΙB	l W	W	"
##	[25] '	'										"
##	[26] '	' 8	EZEKIEL HOUGHTON	15.0	W	3 W	32 L	14 L	9 W	47 W	28 W	19 "
##	[27] '	' MI	15142253 / R: 1641P17->1657P24	N:3	ΙB	١W	ΙB	l W	ΙB	١W	l W	"
##	[28] '	'										"
##	[29] '	' 9	STEFANO LEE	15.0	l W	25 L	18 W	59 W	8 W	26 L	7 W	20 "
##	[30] '	' ON I	14954524 / R: 1411 ->1564	N:2	l W	ΙB	l W	ΙB	l W	ΙB	ΙB	"
##	[OI]	'										"
##	[32] '	•	ANVIT RAO	15.0		16 L			31 D	6 W	25 W	18 "
##	[33]	' MI	14150362 / R: 1365 ->1544	N:3	l W	l W	ΙB	ΙB	l W	B	W	"
##		'										"
##	[35] '	•	CAMERON WILLIAM MC LEMAN	14.5		38 W		6 L	7 L	3 W	34 W	26 "
##	[36] '	-	12581589 / R: 1712 ->1696	N:3	ΙB	W	B	١W	ΙB	W	B	"
##	[01]	'	IZENNETH T. T.A.O.Z.			40.117					4 1 7	
##	[38] ' [39] '		KENNETH J TACK	4.5		42 W		5 W	38 H 	D	1 L	3 "
## ##	[40]	' MI	12681257 / R: 1663 ->1670	N:3	W	B	W	B		W	B	"
##	[41]	' 13	TORRANCE HENRY JR	14.5	l W	36 W	27 L	7 D	5 W	33 L	3 W	32 "
##	[42] '		15082995 / R: 1666 ->1662	N:3	IB	JO1W W	IB	B	W	W	IB	"
##	[43] '											"
##	[44] '	' 14	BRADLEY SHAW	14.5	۱w	54 W	44 W	8 L	1 D	27 L	5 W	31 "
##	[45] '		10131499 / R: 1610 ->1618	N:3	l W	lΒ	l W	l W	B	lΒ	١w	į"
##	[46] '	'										"
##	[47] '	' 15 I	ZACHARY JAMES HOUGHTON	14.5	D	19 L	16 W	30 L	22 W	54 W	33 W	38 "
##	[48] '	' MI	15619130 / R: 1220P13->1416P20	N:3	ΙB	ΙB	l W	l W	ΙB	ΙB	W	"
##	[49] '	'										"
##	[50] '		MIKE NIKITIN			10 W			39 L		36 U	"
##	[51] '	' MI	10295068 / R: 1604 ->1613	N:3	ΙB	l W	1	ΙB	l W	ΙB		"
##												"
##			RONALD GRZEGORCZYK									
##			10297702 / R: 1629 ->1610									
##												
##	[56]	18	DAVID SUNDEEN 11342094 / R: 1600 ->1600	14.0	I M	47 W	9 L	1 W	32 L	19 W	381L	10 "
##			11342094 / K: 1600 ->1600									
## ##			DIPANKAR ROY									
##	[60]	' 19 I	14862333 / R: 1564 ->1570	14.0	ען גזו	19 %	101M	ט∠ןט	∠0 W T.7	101	4 L	01"
##			14002333 / R: 1504 -/1570									
##			JASON ZHENG									9 "
##			14529060 / R: 1595 ->1569									
##												
##			DINH DANG BUI									
##			15495066 / R: 1563P22->1562									
##												

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

##	[122] [123] [124]			FOREST ZHANG 14892710 / R: 1348	->1346	3.0 	W B	20 L B	26 L W	39 W W	59 L B	21 W W	56 L W	22 " " "
## ##	[125] [126] [127]		-	KYLE WILLIAM MURPHY 15761443 / R: 1403P5	->1341P9	3.0 	W B	59 L W	17 W B	58 L W	20 X 	U 	U 	" "
## ##	[128] [129] [130]	"	-	JARED GE 14462326 / R: 1332	->1256	3.0 	L B	12 L W	50 L B	57 D B	60 D W	61 W W	64 W B	56 " "
## ##	[131] [132] [133]	"	-	ROBERT GLEN VASEY 14101068 / R: 1283	->1244	3.0 	L W	21 L B	23 L W	24 W W	63 W B	59 L B	46 W W	55 " "
## ##	[134] [135] [136]	" "_	-	JUSTIN D SCHILLING 15323504 / R: 1199	->1199 	3.0 	B 		14 L B	32 W B	53 L W	39 L B	24 W W	59 " "
## ##	[137] [138] [139]	" _	-	DEREK YAN 15372807 / R: 1242	->1191 	3.0 		5 L B	51 D W	60 L B	56 W W	63 D B	55 W W	58 " " "
## ##	[140] [141] [142]	"		JACOB ALEXANDER LAVAI 15490981 / R: 377P3		3.0 		35 L W	7 L B	27 L W	50 W B	64 W W	43 L W	23 " " "
## ##	[143] [144] [145]	" " "_		ERIC WRIGHT 12533115 / R: 1362	->1341 	2.5 			24 L W	21 W B	61 L W	8 D B	51 L W	25 " " "
##	[146] [147] [148]	"-		DANIEL KHAIN 14369165 / R: 1382	->1335 				63 H 		52 H 	L W	29 L B	35 " " "
##	[149] [150] [151]		-	MICHAEL J MARTIN 12531685 / R: 1291P12	2->1259P17 				20 D B	63 D W	64 W B	58 H 	U 	" " "
##	[152] [153] [154]		-	SHIVAM JHA 14773178 / R: 1056	->1111	2.5 			42 L W		46 H 		31 L W	30 " " "
	[155] [156] [157]		-	TEJAS AYYAGARI 15205474 / R: 1011	->1097 	 	B	W	45 L B	W	B	32 D W	W	"
## ##	[160]	"_	MI	ETHAN GUO 14918803 / R: 935		N:4	B 	W	B	W	B		B	"
## ##	[162] [163]	"_	MI	JOSE C YBARRA 12578849 / R: 1393	->1359 	 	 	B	 	W	 	W	 	" "
## ##	[165] [166]	"_	MI 	LARRY HODGE 12836773 / R: 1270	->1200 	 	B 	B 	W 	 	W 	B 	W 	"
## ##	[168] [169]	"_	MI	ALEX KONG 15412571 / R: 1186	->1163 	 	W 	B	W	B	 	W	B	" "
## ##	[171] [172]	"_	MI	MARISA RICCI 14679887 / R: 1153	->1140 	 	 	B	W	W	 	B	W	"
##	[174]	11	MI	MICHAEL LU 15113330 / R: 1092	->1079	1	ΙB	l W	l W	ΙB	l W	ΙB	- 1	"

```
## [176] "
       58 | VIRAJ MOHILE |2.0 |W 31|L 2|L 41|L 23|L 49|B
MI | 14700365 / R: 917 -> 941 | |W |B |W |B |W |
## [177] "
                                                         |B |"
## [178] "-----"
## [179] "
                               |2.0 |L 41|B |L 9|L 40|L 43|W 54|L 44|"
        59 | SEAN M MC CORMICK
       MI | 12841036 / R: 853 -> 878 | | | W | | | | B | | B | | W | | W | | B | | "
## [180] "
## [181] "-----"
        60 | JULIA SHEN
## [182] "
                              11.5 |L 33|L 34|D 45|D 42|L 24|H
        MI | 14579262 / R: 967 -> 984 | | W | B | B | W | B |
## [183] "
                                                         - | "
## [184] "-----"
                    |1.5 |L 32|L
## [185] "
        61 | JEZZEL FARKAS
                                          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] "-----"
        62 | ASHWIN BALAJI | 1.0 | W 55 | U | U | U | U | U | MI | 15219542 / R: 1530 ->1535 | B | | | | | |
                                                          |U |"
## [188] "
## [189] "
                                                          1 1"
## [190] "-----
        63 | THOMAS JOSEPH HOSMER | 1.0 | L 2 | L 48 | D 49 | L 43 | L 45 | H MI | 15057092 / R: 1175 ->1125 | W | B | W | B | B |
                                                          |U |"
## [191] "
## [192] "
                                                          ## [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 |B |B |"
                                         |W |B
                                     | W
## [196] "-----"
```

```
[1] " Pair | Player Name
##
                                              |Total|Round|Round|Round|Round|Round| "
##
    [2] " Num | USCF ID / Rtg (Pre->Post)
                                              | Pts | 1 | 2 | 3 | 4 | 5 | 6 | 7 | "
##
    [3] "
            1 | GARY HUA
                                              |6.0 |W 39|W 21|W 18|W 14|W 7|D 12|D
                                                                                          | "
##
    [4] "
           ON | 15445895 / R: 1794
                                    ->1817
                                              |N:2 |W
                                                        lΒ
                                                             l W
                                                                   ΙB
                                                                        l W
                                                                             ΙB
                                                                                   l W
##
    [5] "
            2 | DAKSHESH DARURI
                                              16.0 W
                                                       63|W 58|L
                                                                   4|W 17|W 16|W 20|W
                                                                                          71"
    [6] "
                                                                                         | | "
                                                                   ١w
##
           MI | 14598900 / R: 1553
                                    ->1663
                                              |N:2 |B
                                                        ١w
                                                             lΒ
                                                                        lΒ
                                                                              ١w
                                                                                   ΙB
    [7] "
##
            3 | ADITYA BAJAJ
                                              |6.0 |L
                                                        8|W
                                                             61|W
                                                                  25|W 21|W 11|W 13|W
    [8] "
           MI | 14959604 / R: 1384
                                                                                          | "
##
                                              |N:2 |W
                                                             ١w
                                                                   |B
                                                                         ١w
                                    ->1640
                                                        |B
                                                                               ΙB
                                                                                   ١w
##
    [9] "
            4 | PATRICK H SCHILLING
                                              |5.5 |W
                                                       23|D
                                                             28|W
                                                                    2|W
                                                                        26|D
                                                                               5|W 19|D
                                                                                          11"
##
   Γ10] "
           MI | 12616049 / R: 1716
                                              IN:2 IW
                                                                   lΒ
                                                                        ١w
                                                                                         | | "
                                    ->1744
                                                        lΒ
                                                             ١W
                                                                              lΒ
                                                                                     lΒ
   [11] "
                                                             37|D 12|D 13|D
            5 | HANSHI ZUO
                                              15.5 IW
                                                       45|W
                                                                               4|W 14|W
   [12] "
           MI | 14601533 / R: 1655
                                    ->1690
                                              |N:2 |B
                                                             |B
                                                                   l W
                                                                        |B
                                                                                         | | "
##
                                                        | W
                                                                               l W
                                                                                   |B
                                                             29|L 11|W 35|D 10|W 27|W
##
   Γ13] "
            6 | HANSEN SONG
                                              15.0 IW
                                                       34 I D
                                                                                         211"
##
   [14] "
            OH | 15055204 / R: 1686
                                    ->1687
                                              |N:3 |W
                                                       |B
                                                             l W
                                                                   |B
                                                                        |B
                                                                              | W
                                                                                   |B
                                                                                         | "
   [15] "
            7 | GARY DEE SWATHELL
                                              |5.0 |W
                                                       57|W
                                                             46|W
                                                                  13|W 11|L
                                                                               1 | W
                                                                                    9|L
                                                                                          2|"
   [16] "
            MI | 11146376 / R: 1649
                                                                   lΒ
                                                                         ΙB
                                                                                          | | "
##
                                    ->1673
                                              |N:3 |W
                                                        ΙB
                                                             l W
                                                                              l W
                                                                                    ١W
##
   [17] "
            8 | EZEKIEL HOUGHTON
                                              15.0 W
                                                        3 I W
                                                             32|L
                                                                  14|L
                                                                         9 I W
                                                                              47|W
                                                                                   28 I W
                                                                                         19|"
   [18] "
                                                                   ١W
                                                                                         | | "
##
            MI | 15142253 / R: 1641P17->1657P24
                                              |N:3 |B
                                                        ١W
                                                             lΒ
                                                                         lΒ
                                                                              ١W
                                                                                    ١W
   [19] "
            9 | STEFANO LEE
                                              |5.0 |W
                                                       25|L
                                                            18|W
                                                                  59|W
                                                                         8|W
                                                                             26|L
                                                                                    7 | W
                                                                                         20 | "
##
##
   [20] "
            ON | 14954524 / R: 1411
                                    ->1564
                                              |N:2 |W
                                                        lΒ
                                                             ١W
                                                                   lΒ
                                                                         ١W
                                                                              ΙB
                                                                                    ΙB
                                                                                         | | "
   [21] "
                                              15.0 ID
                                                            19|W
                                                                  55|W 31|D
                                                                              6|W 25|W
                                                                                         181"
##
            10 | ANVIT RAO
                                                       16|L
##
   [22] "
            MI | 14150362 / R: 1365
                                   ->1544
                                              |N:3 |W
                                                       ١w
                                                             lΒ
                                                                   lΒ
                                                                        l W
                                                                              lΒ
                                                                                    ١w
                                                                                         26|"
   [23] "
            11 | CAMERON WILLIAM MC LEMAN
                                              |4.5 |D
                                                       38|W 56|W
                                                                   6IL
                                                                         7lL
                                                                               31W 341W
##
##
   [24] "
            MI | 12581589 / R: 1712
                                  ->1696
                                              |N:3 |B
                                                       ١w
                                                             lΒ
                                                                   l W
                                                                         lΒ
                                                                               ١W
                                                                                    lΒ
                                                                                         | | "
                                                                        38|H
                                                                                          31"
##
   [25] "
            12 | KENNETH J TACK
                                              |4.5 |W
                                                       42|W 33|D
                                                                   5|W
                                                                              ۱D
                                                                                    1 | L
   [26] "
           MI | 12681257 / R: 1663 ->1670
                                             |N:3 |W
                                                            l W
                                                                   |B |
                                                                              ١W
                                                                                   |B
                                                                                         | | "
                                                       |B
                                              |4.5 |W 36|W 27|L
   [27] "
           13 | TORRANCE HENRY JR
                                                                  7|D 5|W 33|L
                                                                                    3|W 32|"
##
```

```
|"
##
     [28] "
               MI | 15082995 / R: 1666
                                              ->1662
                                                           |N:3
                                                                   lΒ
                                                                          ١W
                                                                                 lΒ
                                                                                        lΒ
                                                                                               l W
                                                                                                      ١W
                                                                                                              lΒ
                                                                                                            5|W
##
    [29] "
               14 | BRADLEY SHAW
                                                                       54|W
                                                                              44 I W
                                                                                       8IL
                                                                                              1ID
                                                                                                    27 I L
                                                                                                                  31 | "
                                                            14.5
                                                                   ١W
##
    [30] "
               MI | 10131499 / R: 1610
                                              ->1618
                                                           |N:3
                                                                   ١W
                                                                          ΙB
                                                                                 l W
                                                                                        | W
                                                                                               lΒ
                                                                                                      ΙB
                                                                                                              | W
                                                                                                                     | "
                  | ZACHARY JAMES HOUGHTON
    [31] "
                                                                                                                  381"
##
                                                           14.5
                                                                       19|L
                                                                              16|W
                                                                                      30|L
                                                                                             22 | W
                                                                                                    54|W
                                                                                                           33|W
                                                                   |D
##
    [32] "
                  | 15619130 / R: 1220P13->1416P20
                                                           |N:3
                                                                   |B
                                                                          ΙB
                                                                                 | W
                                                                                        | W
                                                                                               |B
                                                                                                      ΙB
                                                                                                              | W
                                                                                                                     | "
    [33] "
               16 | MIKE NIKITIN
                                                           14.0
                                                                       10|W
                                                                              15|H
                                                                                        | W
                                                                                             39|L
                                                                                                     2 | W
                                                                                                           36|U
                                                                                                                     | "
##
                                                                   |D
    [34] "
               MI | 10295068 / R: 1604
                                                                                                                     | "
##
                                              ->1613
                                                           IN:3
                                                                   lΒ
                                                                          ١W
                                                                                 -
                                                                                        lΒ
                                                                                               ١W
                                                                                                      lΒ
                                                                                                              5|"
    [35] "
               17 | RONALD GRZEGORCZYK
                                                                                      26|L
##
                                                           14.0
                                                                   | W
                                                                       48|W
                                                                              41|L
                                                                                              2 | W
                                                                                                    23 | W
                                                                                                           22|L
                                                                                                                    |"
##
     [36] "
               ΜI
                  | 10297702 / R: 1629
                                              ->1610
                                                           |N:3
                                                                   ١W
                                                                          lΒ
                                                                                 ١W
                                                                                        lΒ
                                                                                               ١W
                                                                                                      lΒ
                                                                                                              ١W
    [37] "
                                                                       47 | W
                                                                                       1 | W
                                                                                             32|L
                                                                                                    19|W
                                                                                                                  10|"
##
               18 | DAVID SUNDEEN
                                                           14.0
                                                                   l W
                                                                                9|L
                                                                                                           38|L
##
    [38] "
               MI | 11342094 / R: 1600
                                              ->1600
                                                           |N:3
                                                                   lΒ
                                                                          ١W
                                                                                 ΙB
                                                                                        ١W
                                                                                               lΒ
                                                                                                      ١W
                                                                                                              lΒ
                                                                                                                    | "
    [39] "
                                                                                                                   8|"
                  | DIPANKAR ROY
                                                           14.0
                                                                       15|W
                                                                              10|W
                                                                                      52|D
                                                                                             28 | W
                                                                                                    18|L
                                                                                                            4|L
##
               19
                                                                   |D
    [40] "
                                                                                                                    | "
##
               MI | 14862333 / R: 1564
                                              ->1570
                                                           |N:3
                                                                   ١W
                                                                          lΒ
                                                                                 ١W
                                                                                        lΒ
                                                                                               ١W
                                                                                                      ١W
                                                                                                              lΒ
    [41] "
                                                                                                                    9|"
               20 | JASON ZHENG
                                                                       40 | W
                                                                              49 | W
                                                                                      23 | W
                                                                                             41 | W
                                                                                                    28 | L
##
                                                           14.0
                                                                   |L
                                                                                                            2|L
##
    [42] "
               MI | 14529060 / R: 1595
                                              ->1569
                                                           |N:4
                                                                                        ΙB
                                                                                               l W
                                                                                                      ΙB
                                                                                                              l W
                                                                                                                    | "
                                                                   l W
                                                                         ΙB
                                                                                 ١W
                                                                                                                    6|"
##
    [43] "
               21 | DINH DANG BUI
                                                           14.0
                                                                   l W
                                                                       43|L
                                                                                1 | W
                                                                                      47|L
                                                                                              3|W
                                                                                                    40 | W
                                                                                                           39|L
    [44] "
               ON | 15495066 / R: 1563P22->1562
                                                           |N:3
                                                                   ΙB
                                                                                 ΙB
                                                                                        ١W
                                                                                               l W
                                                                                                      ΙB
                                                                                                              ١W
                                                                                                                     | "
##
                                                                          ١W
                                                                                                                  40|"
##
    [45] "
               22 | EUGENE L MCCLURE
                                                            14.0
                                                                   l W
                                                                       64 | D
                                                                              52|L
                                                                                      28 | W
                                                                                             15|H
                                                                                                      |L
                                                                                                           17 | W
    [46] "
               MI | 12405534 / R: 1555
                                                                                                                     | "
##
                                              ->1529
                                                           |N:4
                                                                   ١W
                                                                         |B
                                                                                 l W
                                                                                        ΙB
                                                                                                      ١W
                                                                                                              ΙB
                                                                                               Т
##
    [47] "
               23 | ALAN BUI
                                                           14.0
                                                                   ΙL
                                                                        4 | W
                                                                              43|L
                                                                                      20 | W
                                                                                             58|L
                                                                                                    17 | W
                                                                                                           37 I W
                                                                                                                  461"
##
    [48] "
               ON | 15030142 / R: 1363
                                              ->1371
                                                           1
                                                                   lΒ
                                                                         ١W
                                                                                 lΒ
                                                                                        ١W
                                                                                               lΒ
                                                                                                      ١W
                                                                                                              lΒ
                                                                                                                     1"
    [49] "
               24 | MICHAEL R ALDRICH
                                                           14.0
                                                                   |L
                                                                       28|L
                                                                              47 | W
                                                                                      43|L
                                                                                             25 | W
                                                                                                    60 | W
                                                                                                           44 | W
                                                                                                                  39|"
##
    [50] "
                                                                                                                     | "
               MI | 13469010 / R: 1229
##
                                              ->1300
                                                           |N:4
                                                                   |B
                                                                         l W
                                                                                 |B
                                                                                        ΙB
                                                                                               l W
                                                                                                      l W
                                                                                                              |B
     [51] "
                  | LOREN SCHWIEBERT
                                                                        9 I W
                                                                              53 I L
                                                                                       3 I W
                                                                                             24 I D
                                                                                                    34 I L
                                                                                                                  471"
##
               25
                                                           13.5
                                                                   ΙL
                                                                                                           10 | W
                                                                                                                     |"
    [52] "
               MI | 12486656 / R: 1745
##
                                              ->1681
                                                           |N:4
                                                                   lΒ
                                                                          ١W
                                                                                 ΙB
                                                                                        | W
                                                                                               lΒ
                                                                                                      ١W
                                                                                                              lΒ
##
    [53] "
               26 | MAX ZHU
                                                           13.5
                                                                   ١W
                                                                       49 I W
                                                                              40 I W
                                                                                      17 | L
                                                                                              4IL
                                                                                                     9ID
                                                                                                           32 | L
                                                                                                                  11|"
                                                                                                                     1"
    [54] "
##
               ON | 15131520 / R: 1579
                                              ->1564
                                                           |N:4
                                                                   ΙB
                                                                                 ΙB
                                                                                        | W
                                                                                               ΙB
                                                                                                      l W
                                                                                                              l W
                                                                         l W
    [55] "
               27 | GAURAV GIDWANI
                                                                              13|W
                                                                                      46|W
                                                                                             37 | D
                                                                                                            6 | U
                                                                                                                     | "
##
                                                           13.5
                                                                   l W
                                                                       51 | L
                                                                                                    14|L
    [56] "
##
               MI | 14476567 / R: 1552
                                                            |N:4
                                                                   | W
                                                                          ΙB
                                                                                 l W
                                                                                        ΙB
                                                                                               | W
                                                                                                      ΙB
                                                                                                             Ι
                                              ->1539
    [57] "
                                                                                                                  36|"
##
               28 | SOFIA ADINA STANESCU-BELLU
                                                           13.5
                                                                   l W
                                                                       24 | D
                                                                                4 | W
                                                                                      22 | D
                                                                                             19|L
                                                                                                    20 | L
                                                                                                            8 | D
                                                                                                                     | "
##
    [58] "
               MI | 14882954 / R: 1507
                                              ->1513
                                                           |N:3
                                                                   ١W
                                                                          ١W
                                                                                ΙB
                                                                                        ١W
                                                                                               lΒ
                                                                                                      lΒ
                                                                                                              l W
##
     [59] "
               29 | CHIEDOZIE OKORIE
                                                            13.5
                                                                   ١W
                                                                       50 | D
                                                                                6|L
                                                                                      38|L
                                                                                             34 | W
                                                                                                    52 | W
                                                                                                           48 I U
                                                                                                                     | "
                                                                                                                     1"
    [60] "
##
               MI | 15323285 / R: 1602P6 ->1508P12
                                                           |N:4
                                                                   lΒ
                                                                          ١W
                                                                                ΙB
                                                                                        l W
                                                                                               ١W
                                                                                                      lΒ
                                                                                                              Ι
    [61] "
               30 | GEORGE AVERY JONES
                                                                       52|D
                                                                                      15|W
                                                                                             55|L
                                                                                                                  50|"
##
                                                           13.5
                                                                   |L
                                                                              64|L
                                                                                                    31|W
                                                                                                           61|W
                                                                                                                     |"
     [62] "
##
               ON | 12577178 / R: 1522
                                              ->1444
                                                           l W
                                                                         ΙB
                                                                                 ΙB
                                                                                        l W
                                                                                               l W
                                                                                                      lΒ
                                                                                                              lΒ
##
    [63] "
               31 | RISHI SHETTY
                                                           13.5
                                                                  ΙL
                                                                       58 I D
                                                                              55 I W
                                                                                      64|L
                                                                                             10 | W
                                                                                                    30 I W
                                                                                                           50 I L
                                                                                                                  14|"
##
    [64] "
               MI | 15131618 / R: 1494
                                              ->1444
                                                           1
                                                                   lΒ
                                                                          ١W
                                                                                 lΒ
                                                                                        ١W
                                                                                               lΒ
                                                                                                      ١W
                                                                                                              lΒ
##
    [65] "
               32 | JOSHUA PHILIP MATHEWS
                                                           13.5
                                                                   ١W
                                                                       61|L
                                                                                8|W
                                                                                      44 | L
                                                                                             18|W
                                                                                                    51 | D
                                                                                                           26|L
                                                                                                                  13|"
##
     [66] "
               ON | 14073750 / R: 1441
                                              ->1433
                                                           |N:4
                                                                   | W
                                                                          ΙB
                                                                                 l W
                                                                                        ΙB
                                                                                               | W
                                                                                                      |B
                                                                                                              | W
                                                                                                                     | "
                                                                                                                  51|"
##
    [67] "
               33 | JADE GE
                                                           13.5
                                                                   | W
                                                                       60|L
                                                                              12|W
                                                                                      50 | D
                                                                                             36|L
                                                                                                    13|L
                                                                                                           15|W
    [68] "
               MI | 14691842 / R: 1449
                                                                                                                     | "
##
                                              ->1421
                                                           1
                                                                   |B
                                                                          l W
                                                                                 ΙB
                                                                                        | W
                                                                                               ΙB
                                                                                                      | W
                                                                                                              ΙB
                                                                                                                  52|"
    [69] "
               34 | MICHAEL JEFFERY THOMAS
                                                           13.5
                                                                  |L
                                                                        6 | W
                                                                              60|L
                                                                                      37 | W
                                                                                             29 | D
                                                                                                    25|L
                                                                                                           11 | W
##
                                                                                                                     |"
    [70] "
               MI | 15051807 / R: 1399
##
                                              ->1400
                                                           1
                                                                   lΒ
                                                                          ١W
                                                                                 lΒ
                                                                                        lΒ
                                                                                               ١W
                                                                                                      lΒ
                                                                                                              ١W
    [71] "
               35 | JOSHUA DAVID LEE
                                                           13.5
                                                                       46|L
                                                                              38|W
                                                                                      56|L
                                                                                                           52|W
                                                                                                                  481"
##
                                                                   |L
                                                                                              6|W
                                                                                                    57|D
    [72] "
               MI | 14601397 / R: 1438
##
                                              ->1392
                                                           1
                                                                   l W
                                                                          ١W
                                                                                 lΒ
                                                                                        ١W
                                                                                               lΒ
                                                                                                      lΒ
                                                                                                              l W
    [73] "
               36 | SIDDHARTH JHA
                                                                              57|W
                                                                                      51|D
                                                                                                                  28|"
##
                                                                       13|W
                                                                                             33|H
                                                                                                           16|D
                                                           13.5
                                                                   |L
                                                                                                      |L
                                                                                                                     | "
##
    [74] "
               MI | 14773163 / R: 1355
                                              ->1367
                                                           |N:4
                                                                   l W
                                                                          lΒ
                                                                                 ١W
                                                                                        lΒ
                                                                                               1
                                                                                                      l W
                                                                                                              lΒ
                                                                                                                  61|"
    [75] "
               37 | AMIYATOSH PWNANANDAM
                                                           13.5
                                                                   lΒ
                                                                          |L
                                                                                5 | W
                                                                                      34|L
                                                                                             27 | H
##
                                                                                                      ΙL
                                                                                                           23 | W
                                                                                                                     1"
##
    [76] "
               MI | 15489571 / R: 980P12->1077P17
                                                           1
                                                                   1
                                                                          lΒ
                                                                                 ١W
                                                                                        ١W
                                                                                               1
                                                                                                      lΒ
                                                                                                              l W
    [77] "
                                                                                                                  15|"
##
               38 | BRIAN LIU
                                                           13.0
                                                                  | D
                                                                       11|W
                                                                              35|W
                                                                                      29 | L
                                                                                             12|H
                                                                                                      |L
                                                                                                           18|L
##
    [78] "
               MI | 15108523 / R: 1423
                                              ->1439
                                                           |N:4
                                                                   ١W
                                                                          ΙB
                                                                                 l W
                                                                                        ١w
                                                                                                      ΙB
                                                                                                              ΙB
                                                                                                                     | "
    [79] "
                                                                                                                  24|"
##
               39 | JOEL R HENDON
                                                           13.0
                                                                   |L
                                                                        1 | W
                                                                              54|W
                                                                                      40|L
                                                                                             16|W
                                                                                                    44|L
                                                                                                           21 | L
##
    [80] "
               MI | 12923035 / R: 1436P23->1413
                                                           |N:4
                                                                   lΒ
                                                                          ١w
                                                                                 lΒ
                                                                                        ١W
                                                                                               lΒ
                                                                                                      ١W
                                                                                                              ١W
                                                                                                                     | "
    [81] "
##
               40 | FOREST ZHANG
                                                           13.0
                                                                  | W
                                                                       20|L
                                                                              26|L
                                                                                     39|W
                                                                                             59|L
                                                                                                    21|W
                                                                                                           56|L
                                                                                                                  221"
```

	[00] II	MT	L 44000740 / D 4040 >4046		LD	l D	1 7 7	1.77	LD	1.77	1.77	1.0
##	[82] "		14892710 / R: 1348 ->1346	10.0	B	B	W	W	B	W	W	"
##	[83] "		KYLE WILLIAM MURPHY	3.0	W	59 L	17 W	58 L	20 X	U	Į Ū	" "
##	[84] "		15761443 / R: 1403P5 ->1341P9	12.0	B	W	B	[W	COLD	(1) [1]	64111	•
##	[85] "	42 MT	•	3.0	L	12 L	50 L	57 D		61 W	64 W	56 "
##	[86] "	MI	•		B	W	B	B	W	W	B	"
##	[87] "	43 MT	•	3.0	L	21 L	23 L	24 W	63 W	59 L	46 W	55 "
##	[88]	MI	•	10.0	M	B	W	W	B	B	W	"
##	[89] "	44 MT	• • • • • • • • • • • • • • • • • • • •	3.0	B	L	14 L	32 W	53 L	39 L	24 W	59 "
##	[90] " [91] "	MI 45		 3.0	l I T	W	B 51 D	B	W 56 W	B 63 D	W 55 W	" 58
##	[91] "	45 MI		13.0	L	5 L B	91 U	60 L B		IB	55 W	90 "
## ##	[93] "	46		13.0	W W	35 L	7 L	27 L	W 50 W	64 W	43 L	23 "
##	[94] "		15490981 / R: 377P3 ->1076P10			351L	/ IL B			-	431L W	23 "
##	[94] "		15490981 / R: 377P3 =>1076P10 ERIC WRIGHT	 2.5	B	•	24 L	W 21 W	B 61 L	0 I D W	51 L	25 "
##	[96] "		ERIC WRIGHT 12533115 / R: 1362 ->1341	2.5	L W	18 W B	24 L W	ZIIW B		8 D B	911F	25 "
	[97] "		12555115 / K: 1562 ->1541 DANIEL KHAIN	1 2.5		•	63 H	I D	W 52 H	-	29 L	35 "
##	[98] "		14369165 / R: 1382	2.5	L	17 W W	03 1	IB	52 II 	L W	Z91L B	35 "
##	[99] "		14309105	1 2.5	B L	26 L	20 D	63 D	64 W		I U	"
##			12531685	12.5	W	201L W	201D B	W	IB	1 100		
##		50		12.5	L	29 W	42 L	33 W	46 H	 L	31 L	30 "
##			14773178	12.5	W	2 <i>9</i> W	421L	JS I W	40111	IB	JIIL W	JU "
##			TEJAS AYYAGARI	12.5	L	27 W	45 L	36 W	57 L	32 D	47 L	33 "
	[104] "	мт	15205474		IB	27 W	HB	30 W	B	321D W	- W	"
	[104]		ETHAN GUO	12.5	W		22 L	19 D	48 L	29 D	35 L	34 "
	[106] "		14918803 / R: 935 ->1092	N:4	IB	JOID W	B	W	IB	231D W	IB	"
	[107] "	53		12.0	H	L	25 H	L	44 U	l W	57 U	<u> </u>
	[108] "	MI		12.0		IB	20111	W	1110	l W		<u> </u>
	[109] "		LARRY HODGE	12.0	L	14 L	39 L	61 B	•	15 L	59 W	64 "
	[110] "	MI		1	B	B	W	1	I W	IB	W	"
	[111] "	55		12.0	L		31 L	10 L	30 B	D	45 L	43 "
	[112] "	MI		1	I W	B	IW	IB	1	I W	IB	"
	[113] "	56		12.0	H	L	11 L	35 W	45 H	L	40 L	42 "
	[114] "	MI		1	i	IB	IW	l W	1	IB	W	: "
	[115] "	57		12.0	L	7 L	36 W	42 L	51 L	35 L	53 B	į "
	[116] "	ΜI		i	ΙB	l W	l W	l B	l W	ΙB	i	į "
	[117] "		VIRAJ MOHILE	12.0	l W	31 L	2 L	41 L	23 L	49 B	ļL	45 "
##	[118] "	MI	14700365 / R: 917 -> 941	Ì	l W	ΙB	l W	ΙB	l W	ĺ	ΙB	"
##	[119] "	59	SEAN M MC CORMICK	12.0	L	41 B	L	9 L	40 L	43 W	54 L	44 "
	[120] "	MI		1	l W	ĺ	ΙB	ΙB	l W	l W	ΙB	"
	[121] "	60		11.5	ΙL	33 L	34 D	45 D	42 L	24 H	ΙŪ	"
##		MI	14579262 / R: 967 -> 984	1	l W	ΙB	ΙB	l W	ΙB	I	1	"
##	[123] "	61	JEZZEL FARKAS	11.5	ΙL	32 L	3 W	54 L	47 D	42 L	30 L	37 "
##	[124] "	ON	15771592 / R: 955P11-> 979P18	1	ΙB	l W	ΙB	l W	ΙB	l W	ΙB	"
##	[125] "	62	ASHWIN BALAJI	11.0	W	55 U	U	ĮΨ	ĮΨ	ĮΨ	ĮΨ	1"
##	[126] "	MI		1	ΙB	1	1	1	1	1	1	"
##	[127] "	63	THOMAS JOSEPH HOSMER	11.0	L	2 L	48 D	49 L	43 L	45 H	ΙŪ	"
##	[128] "	MI	15057092 / R: 1175 ->1125	1	l W	ΙB	l W	ΙB	ΙB	1	1	"
##	[129] "	64		11.0	L	22 D	30 L	31 D	49 L	46 L	42 L	54 "
##	[130] "	MI	15006561 / R: 1163 ->1112	1	ΙB	W	l W	ΙB	l W	ΙB	ΙB	"

Extract player's id

```
id_pattern <- "\\d{1,2}\\s(?=\\|)"
ply_id <- unlist(str_extract_all(unlist(chess_data), id_pattern))
ply_id

## [1] "1 " "2 " "3 " "4 " "5 " "6 " "7 " "8 " "9 " "10 " "11 " "12 "
## [13] "13 " "14 " "15 " "16 " "17 " "18 " "19 " "20 " "21 " "22 " "23 " "24 "
## [25] "25 " "26 " "27 " "28 " "29 " "30 " "31 " "32 " "33 " "34 " "35 " "36 "
## [37] "37 " "38 " "39 " "40 " "41 " "42 " "43 " "44 " "45 " "46 " "47 " "48 "
## [49] "49 " "50 " "51 " "52 " "53 " "54 " "55 " "56 " "57 " "58 " "59 " "60 "
## [61] "61 " "62 " "63 " "64 "</pre>
length(ply_id)
```

[1] 64

Extract player's name

```
#extract names of all players
name_pattern <- "([A-Z]+\\s){2,3}"
ply_names <- unlist(str_extract_all(unlist(chess_data), name_pattern))
ply_names <- ply_names[2:length(ply_names)]
ply_names</pre>
```

```
##
    [1] "GARY HUA "
                                     "DAKSHESH DARURI "
    [3] "ADITYA BAJAJ "
                                    "PATRICK H SCHILLING "
   [5] "HANSHI ZUO "
                                     "HANSEN SONG "
##
   [7] "GARY DEE SWATHELL "
                                     "EZEKIEL HOUGHTON "
##
   [9] "STEFANO LEE "
                                    "ANVTT RAO "
##
## [11] "CAMERON WILLIAM MC "
                                    "KENNETH J TACK "
## [13] "TORRANCE HENRY JR "
                                    "BRADLEY SHAW "
## [15] "ZACHARY JAMES HOUGHTON "
                                     "MIKE NIKITIN "
## [17] "RONALD GRZEGORCZYK"
                                    "DAVID SUNDEEN "
## [19] "DIPANKAR ROY "
                                    "JASON ZHENG "
## [21] "DINH DANG BUI "
                                     "EUGENE L MCCLURE "
## [23] "ALAN BUI "
                                     "MICHAEL R ALDRICH "
## [25] "LOREN SCHWIEBERT "
                                    "MAX ZHU "
## [27] "GAURAV GIDWANI "
                                    "SOFIA ADINA "
## [29] "CHIEDOZIE OKORIE "
                                     "GEORGE AVERY JONES "
## [31] "RISHI SHETTY "
                                     "JOSHUA PHILIP MATHEWS "
                                     "MICHAEL JEFFERY THOMAS "
## [33] "JADE GE "
## [35] "JOSHUA DAVID LEE "
                                     "SIDDHARTH JHA "
## [37] "AMIYATOSH PWNANANDAM "
                                     "BRIAN LIU "
                                    "FOREST ZHANG "
## [39] "JOEL R HENDON "
## [41] "KYLE WILLIAM MURPHY "
                                    "JARED GE "
## [43] "ROBERT GLEN VASEY "
                                    "JUSTIN D SCHILLING "
## [45] "DEREK YAN "
                                    "JACOB ALEXANDER LAVALLEY "
                                    "DANIEL KHAIN "
## [47] "ERIC WRIGHT "
```

```
## [49] "MICHAEL J MARTIN "
                                    "SHIVAM JHA "
## [51] "TEJAS AYYAGARI "
                                    "ETHAN GUO "
## [53] "JOSE C YBARRA "
                                   "LARRY HODGE "
## [55] "ALEX KONG "
                                    "MARISA RICCI "
## [57] "MICHAEL LU "
                                    "VIRAJ MOHILE "
## [59] "SEAN M MC "
                                    "JULIA SHEN "
## [61] "JEZZEL FARKAS "
                                    "ASHWIN BALAJI "
## [63] "THOMAS JOSEPH HOSMER "
                                    "BEN LI "
length(ply_names)
## [1] 64
```

Extract player's state

```
state_pattern <- "([A-Z]){2}\\s(?=\\|)"
states <- unlist(str_extract_all(unlist(chess_data), state_pattern))
head(states, 10)

## [1] "ON " "MI " "MI " "MI " "OH " "MI " "MI " "ON " "MI "
length(states)</pre>
```

[1] 64

Extract player's total number of points

```
points_pattern <- "\\d\\.\\d"
total_points <- unlist(str_extract_all(unlist(chess_data), points_pattern))
head(total_points,10)

## [1] "6.0" "6.0" "5.5" "5.5" "5.0" "5.0" "5.0" "5.0" "5.0"
length(total_points)</pre>
```

[1] 64

Extract player's pre-rating

```
pre_rating_pattern <- "(?<!\\>\\s)(?<=\\s{1,2}|\\s\\:)(\\d{3,4}(?=\\s|P))"
pre_rating <- unlist(str_extract_all(unlist(chess_data), pre_rating_pattern))
pre_rating</pre>
```

```
## [1] "1794" "1553" "1384" "1716" "1655" "1686" "1649" "1641" "1411" "1365"
## [11] "1712" "1663" "1666" "1610" "1220" "1604" "1629" "1600" "1564" "1595"
## [21] "1563" "1555" "1363" "1229" "1745" "1579" "1552" "1507" "1602" "1522"
## [31] "1494" "1441" "1449" "1399" "1438" "1355" "980" "1423" "1436" "1348"
## [41] "1403" "1332" "1283" "1199" "1242" "377" "1362" "1382" "1291" "1056"
## [51] "1011" "935" "1393" "1270" "1186" "1153" "1092" "917" "853" "967"
## [61] "955" "1530" "1175" "1163"
length(pre_rating)
## [1] 64
Calculate Average pre-rating
rounds_pattern <- "(\\d{1,2}|[[:space:]]{1})(?=\\|)"
player_opponents <- unlist(str_extract_all(unlist(chess_data), rounds_pattern))</pre>
player_opponents[player_opponents==" "] = 0
#length(player_opponents)
#player_opponents
round1 <- as.numeric(player opponents[seq(16, length(player opponents), 20)])
  [1] 39 63 8 23 45 34 57 3 25 16 38 42 36 54 19 10 48 47 15 40 43 64 4 28 9
## [26] 49 51 24 50 52 58 61 60 6 46 13 0 11 1 20 59 12 21 0 5 35 18 17 26 29
## [51] 27 30 0 14 62 0 7 31 41 33 32 55 2 22
round2 <- as.numeric(player_opponents[seq(17, length(player_opponents), 20)])</pre>
round2
   [1] 21 58 61 28 37 29 46 32 18 19 56 33 27 44 16 15 41 9 10 49 1 52 43 47 53
## [51] 45 22 25 39 31 11 36 2 0 34 3 0 48 30
round3 <- as.numeric(player_opponents[seq(18, length(player_opponents), 20)])</pre>
round3
## [1] 18  4  25  2  12  11  13  14  59  55  6  5  7  8  30  0  26  1  52  23  47  28  20  43  3
## [26] 17 46 22 38 15 64 44 50 37 56 51 34 29 40 39 58 57 24 32 60 27 21 0 63 33
## [51] 36 19 0 61 10 35 42 41 9 45 54 0 49 31
round4 <- as.numeric(player_opponents[seq(19, length(player_opponents), 20)])</pre>
round4
## [1] 14 17 21 26 13 35 11 9 8 31 7 38 5 1 22 39 2 32 28 41 3 15 58 25 24
## [26] 4 37 19 34 55 10 18 36 29 6 33 27 12 16 59 20 60 63 53 56 50 61 52 64 46
```

[51] 57 48 44 0 30 45 51 23 40 42 47 0 43 49

```
round5 <- as.numeric(player_opponents[seq(20, length(player_opponents), 20)])</pre>
round5
  [1] 7 16 11 5 4 10 1 47 26 6 3 0 33 27 54 2 23 19 18 28 40 0 17 60 34
## [26]
        9 14 20 52 31 30 51 13 25 57 0 0 0 44 21 0 61 59 39 63 64 8 0 58 0
## [51] 32 29 0 15 0 0 35 49 43 24 42 0 45 46
round6 <- as.numeric(player_opponents[seq(21, length(player_opponents), 20)])</pre>
## [1] 12 20 13 19 14 27 9 28 7 25 34 1 3 5 33 36 22 38 4 2 39 17 37 44 10
## [26] 32 6 8 48 61 50 26 15 11 52 16 23 18 21 56 0 64 46 24 55 43 51 29 0 31
## [51] 47 35 57 59 45 40 53 0 54 0 30 0 0 42
round7 <- as.numeric(player_opponents[seq(22, length(player_opponents), 20)])</pre>
round7
## [1] 4 7 12 1 17 21 2 19 20 18 26 3 32 31 38 0 5 10 8 9 6 40 46 39 47
## [26] 11 0 36 0 50 14 13 51 52 48 28 61 15 24 22 0 56 55 59 58 23 25 35 0 30
## [51] 33 34 0 64 43 42 0 45 44 0 37 0 0 54
player_opponents <- matrix(c(round1, round2, round3, round4, round5, round6, round7), nrow = 64, ncol =
#player opponents
avg_pre_rating = 0
for (i in 1:64)
{
 avg_pre_rating[i] <- round(mean(as.numeric(pre_rating[player_opponents[i,]]), na.rm = TRUE),0)</pre>
}
avg_pre_rating
## [1] 1605 1469 1564 1574 1501 1519 1372 1468 1523 1554 1468 1506 1498 1515 1484
## [16] 1386 1499 1480 1426 1411 1470 1300 1214 1357 1363 1507 1222 1522 1314 1144
## [31] 1260 1379 1277 1375 1150 1388 1385 1539 1430 1391 1248 1150 1107 1327 1152
## [46] 1358 1392 1356 1286 1296 1356 1495 1345 1206 1406 1414 1363 1391 1319 1330
## [61] 1327 1186 1350 1263
```

Creat table

tournament_table <- data.frame(ply_id,ply_names, states, total_points, pre_rating, avg_pre_rating)
head(tournament table)</pre>

```
ply_names states total_points pre_rating avg_pre_rating
     ply_id
##
## 1
                        GARY HUA
                                                   6.0
                                                              1794
         1
                                     ON
                                                                              1605
## 2
         2
                DAKSHESH DARURI
                                     ΜI
                                                   6.0
                                                                             1469
                                                              1553
                                                   6.0
## 3
         3
                   ADITYA BAJAJ
                                     MΙ
                                                              1384
                                                                             1564
## 4
         4 PATRICK H SCHILLING
                                     ΜI
                                                   5.5
                                                              1716
                                                                             1574
## 5
         5
                      HANSHI ZUO
                                     ΜI
                                                   5.5
                                                              1655
                                                                             1501
                    HANSEN SONG
## 6
         6
                                     OH
                                                   5.0
                                                              1686
                                                                             1519
```

Export data to CSV

```
write.csv(tournament_table, file = "TournamentTable.csv")
```

Connect to Mysql

```
db_user <- 'root'
db_password <- 'root'
db_name <- 'tournament'
db_host <- 'localhost'
db_port <- 3306
mydb <- dbConnect(MySQL(), user = db_user, password = db_password, dbname = db_name, host = db_host, podbListTables(mydb)</pre>
```

[1] "tournament"

dbReadTable(mydb, "tournament")

##		ply_id	ply_names	states	total_points	pre_rating
##	1	1	GARY HUA	ON	6.0	1794
##	2	2	DAKSHESH DARURI	MI	6.0	1553
##	3	3	ADITYA BAJAJ	MI	6.0	1384
##	4	4	PATRICK H SCHILLING	MI	5.5	1716
##	5	5	HANSHI ZUO	MI	5.5	1655
##	6	6	HANSEN SONG	OH	5.0	1686
##	7	7	GARY DEE SWATHELL	MI	5.0	1649
##	8	8	EZEKIEL HOUGHTON	MI	5.0	1641
##	9	9	STEFANO LEE	ON	5.0	1411
##	10	10	ANVIT RAO	MI	5.0	1365
##	11	11	CAMERON WILLIAM MC	MI	4.5	1712
##	12	12	KENNETH J TACK	MI	4.5	1663
##	13	13	TORRANCE HENRY JR	MI	4.5	1666
##	14	14	BRADLEY SHAW	MI	4.5	1610
##	15	15	ZACHARY JAMES HOUGHTON	MI	4.5	1220
##	16	16	MIKE NIKITIN	MI	4.0	1604
##	17	17	RONALD GRZEGORCZYK	MI	4.0	1629
##	18	18	DAVID SUNDEEN	MI	4.0	1600
##	19	19	DIPANKAR ROY	MI	4.0	1564
##	20	20	JASON ZHENG	MI	4.0	1595
##	21	21	DINH DANG BUI	ON	4.0	1563
##	22	22	EUGENE L MCCLURE	MI	4.0	1555
##	23	23	ALAN BUI	ON	4.0	1363
##	24	24	MICHAEL R ALDRICH	MI	4.0	1229
##	25	25	LOREN SCHWIEBERT	MI	3.5	1745
##	26	26	MAX ZHU	ON	3.5	1579
##	27	27	GAURAV GIDWANI	MI	3.5	1552
##	28	28	SOFIA ADINA	MI	3.5	1507
##	29	29	CHIEDOZIE OKORIE	MΙ	3.5	1602
##	30	30	GEORGE AVERY JONES	ON	3.5	1522
##	31	31	RISHI SHETTY	MI	3.5	1494

```
## 32
                  JOSHUA PHILIP MATHEWS
                                                                         1441
          32
                                               ON
                                                              3.5
## 33
          33
                                 JADE GE
                                               ΜT
                                                              3.5
                                                                         1449
                MICHAEL JEFFERY THOMAS
## 34
                                               ΜI
                                                                         1399
          34
                                                              3.5
## 35
          35
                       JOSHUA DAVID LEE
                                               ΜI
                                                             3.5
                                                                         1438
   36
##
          36
                           SIDDHARTH JHA
                                               ΜI
                                                              3.5
                                                                         1355
                   AMIYATOSH PWNANANDAM
## 37
          37
                                               ΜI
                                                              3.5
                                                                          980
## 38
          38
                               BRIAN LIU
                                               ΜI
                                                              3.0
                                                                         1423
## 39
          39
                           JOEL R HENDON
                                               ΜI
                                                                         1436
                                                              3.0
## 40
          40
                            FOREST ZHANG
                                               ΜI
                                                              3.0
                                                                         1348
## 41
          41
                    KYLE WILLIAM MURPHY
                                               ΜI
                                                              3.0
                                                                         1403
## 42
          42
                                JARED GE
                                               ΜI
                                                              3.0
                                                                         1332
          43
                      ROBERT GLEN VASEY
                                               ΜI
                                                                         1283
## 43
                                                              3.0
   44
                     JUSTIN D SCHILLING
                                               MI
##
          44
                                                              3.0
                                                                         1199
## 45
          45
                               DEREK YAN
                                               MI
                                                              3.0
                                                                         1242
## 46
          46
              JACOB ALEXANDER LAVALLEY
                                               ΜI
                                                              3.0
                                                                          377
## 47
          47
                             ERIC WRIGHT
                                               ΜI
                                                             2.5
                                                                         1362
## 48
          48
                            DANIEL KHAIN
                                               ΜI
                                                              2.5
                                                                         1382
## 49
          49
                       MICHAEL J MARTIN
                                               MI
                                                             2.5
                                                                         1291
## 50
          50
                              SHIVAM JHA
                                               ΜI
                                                              2.5
                                                                         1056
## 51
          51
                         TEJAS AYYAGARI
                                               ΜI
                                                              2.5
                                                                         1011
## 52
          52
                               ETHAN GUO
                                               ΜI
                                                              2.5
                                                                          935
## 53
          53
                           JOSE C YBARRA
                                               ΜI
                                                              2.0
                                                                         1393
## 54
                             LARRY HODGE
                                                                         1270
          54
                                               ΜI
                                                              2.0
## 55
          55
                               ALEX KONG
                                               ΜI
                                                              2.0
                                                                         1186
## 56
          56
                            MARISA RICCI
                                               ΜI
                                                              2.0
                                                                         1153
## 57
          57
                              MICHAEL LU
                                               ΜI
                                                              2.0
                                                                         1092
## 58
          58
                            VIRAJ MOHILE
                                               ΜI
                                                              2.0
                                                                          917
## 59
          59
                               SEAN M MC
                                               ΜI
                                                              2.0
                                                                          853
## 60
                              JULIA SHEN
                                               ΜI
                                                                          967
          60
                                                              1.5
## 61
                           JEZZEL FARKAS
                                               ON
          61
                                                              1.5
                                                                          955
## 62
          62
                           ASHWIN BALAJI
                                               MI
                                                              1.0
                                                                         1530
## 63
          63
                   THOMAS JOSEPH HOSMER
                                               MI
                                                              1.0
                                                                         1175
## 64
          64
                                  BEN LI
                                               ΜI
                                                              1.0
                                                                         1163
##
      avg_pre_rating
## 1
                  1605
## 2
                  1469
## 3
                  1564
## 4
                  1574
## 5
                  1501
## 6
                  1519
## 7
                  1372
## 8
                  1468
## 9
                  1523
## 10
                  1554
## 11
                  1468
## 12
                  1506
## 13
                  1498
## 14
                  1515
## 15
                  1484
## 16
                  1386
## 17
                  1499
## 18
                  1480
## 19
                  1426
## 20
                  1411
```

```
## 21
                 1470
## 22
                 1300
## 23
                 1214
## 24
                 1357
## 25
                 1363
## 26
                 1507
## 27
                 1222
## 28
                 1522
## 29
                 1314
## 30
                 1144
## 31
                 1260
## 32
                 1379
## 33
                 1277
## 34
                 1375
## 35
                 1150
## 36
                 1388
## 37
                 1385
## 38
                 1539
## 39
                 1430
## 40
                 1391
## 41
                 1248
## 42
                 1150
## 43
                 1107
## 44
                 1327
## 45
                 1152
## 46
                 1358
## 47
                 1392
## 48
                 1356
## 49
                 1286
## 50
                 1296
## 51
                 1356
## 52
                 1495
## 53
                 1345
## 54
                 1206
## 55
                 1406
## 56
                 1414
## 57
                 1363
## 58
                 1391
## 59
                 1319
## 60
                 1330
## 61
                 1327
## 62
                 1186
## 63
                 1350
## 64
                 1263
```

Load data to MySQL

```
dbSendQuery(mydb, "SET GLOBAL local_infile = true;")
```

<MySQLResult:71995960,0,2>

```
dbWriteTable(conn = mydb, name = 'tournament', value = as.data.frame(tournament_table), overwrite = TRU
```

[1] TRUE

Query from Mysql DB

```
sql <- "select * from tournament limit 5";
result <- dbGetQuery(mydb, sql);
knitr::kable(
  head(result),
  caption = "dbGetQuery result set [head]")</pre>
```

Table 1: dbGetQuery result set [head]

row_names	ply_id	ply_names	states	$total_points$	pre_rating	avg_pre_rating
1	1	GARY HUA	ON	6.0	1794	1605
2	2	DAKSHESH DARURI	MI	6.0	1553	1469
3	3	ADITYA BAJAJ	MI	6.0	1384	1564
4	4	PATRICK H SCHILLING	MI	5.5	1716	1574
5	5	HANSHI ZUO	MI	5.5	1655	1501