


```
In [1]: import pandas as pd
conference = pd.io.excel.read_excel('X:/17-05-05 iPython SQL/SCSS/NBA/Analytics_Attachment.xlsx')
conference
```

Out[1]:

	Team_Name	Division_id	Conference_id
0	Boston Celtics	Atlantic	East
1	Brooklyn Nets	Atlantic	East
2	New York Knicks	Atlantic	East
3	Philadelphia 76ers	Atlantic	East
4	Toronto Raptors	Atlantic	East
5	Chicago Bulls	Central	East
6	Cleveland Cavaliers	Central	East
7	Detroit Pistons	Central	East
8	Indiana Pacers	Central	East
9	Milwaukee Bucks	Central	East
10	Atlanta Hawks	Southeast	East
11	Charlotte Hornets	Southeast	East
12	Miami Heat	Southeast	East
13	Orlando Magic	Southeast	East
14	Washington Wizards	Southeast	East
15	Denver Nuggets	Northwest	West
16	Minnesota Timberwolves	Northwest	West
17	Oklahoma City Thunder	Northwest	West
18	Portland Trail Blazers	Northwest	West
19	Utah Jazz	Northwest	West
20	Golden State Warriors	Pacific	West
21	LA Clippers	Pacific	West
22	Los Angeles Lakers	Pacific	West
23	Phoenix Suns	Pacific	West
24	Sacramento Kings	Pacific	West
25	Dallas Mavericks	Southwest	West
26	Houston Rockets	Southwest	West
27	Memphis Grizzlies	Southwest	West
28	New Orleans Pelicans	Southwest	West
29	San Antonio Spurs	Southwest	West

```
In [2]: scores = pd.io.excel.read_excel('X:/17-05-05 iPython SQL/SCSS/NBA/Analytics_Attachment.xlsx', sheetname='2016_17_NBA_Scores')
scores['matchup'] = scores['Home Team'] + scores['Away Team']
scores
```

Out[2]:

	Date	Home Team	Away Team	Home Score	Away Score	Winner	matchup
0	2016-10-25	Cleveland Cavaliers	New York Knicks	117	88	Home	Cleveland CavaliersNew York Knicks
1	2016-10-25	Portland Trail Blazers	Utah Jazz	113	104	Home	Portland Trail BlazersUtah Jazz
2	2016-10-25	Golden State Warriors	San Antonio Spurs	100	129	Away	Golden State WarriorsSan Antonio Spurs
3	2016-10-26	Orlando Magic	Miami Heat	96	108	Away	Orlando MagicMiami Heat
4	2016-10-26	Indiana Pacers	Dallas Mavericks	130	121	Home	Indiana PacersDallas Mavericks
5	2016-10-26	Boston Celtics	Brooklyn Nets	122	117	Home	Boston CelticsBrooklyn Nets
6	2016-10-26	Toronto Raptors	Detroit Pistons	109	91	Home	Toronto RaptorsDetroit Pistons
7	2016-10-26	Milwaukee Bucks	Charlotte Hornets	96	107	Away	Milwaukee BucksCharlotte Hornets
8	2016-10-26	Memphis Grizzlies	Minnesota Timberwolves	102	98	Home	Memphis GrizzliesMinnesota Timberwolves
9	2016-10-26	New Orleans Pelicans	Denver Nuggets	102	107	Away	New Orleans PelicansDenver Nuggets
10	2016-10-26	Philadelphia 76ers	Oklahoma City Thunder	97	103	Away	Philadelphia 76ersOklahoma City Thunder
11	2016-10-26	Phoenix Suns	Sacramento Kings	94	113	Away	Phoenix SunsSacramento Kings
12	2016-10-26	Los Angeles Lakers	Houston Rockets	120	114	Home	Los Angeles LakersHouston Rockets
13	2016-10-27	Atlanta Hawks	Washington Wizards	114	99	Home	Atlanta HawksWashington Wizards
14	2016-10-27	Chicago Bulls	Boston Celtics	105	99	Home	Chicago BullsBoston Celtics
15	2016-10-27	Sacramento Kings	San Antonio Spurs	94	102	Away	Sacramento KingsSan Antonio Spurs

	Date	Home Team	Away Team	Home Score	Away Score	Winner	matchup
16	2016-10-27	Portland Trail Blazers	LA Clippers	106	114	Away	Portland Trail BlazersLA Clippers
17	2016-10-28	Toronto Raptors	Cleveland Cavaliers	91	94	Away	Toronto RaptorsCleveland Cavaliers
18	2016-10-28	Brooklyn Nets	Indiana Pacers	103	94	Home	Brooklyn NetsIndiana Pacers
19	2016-10-28	Detroit Pistons	Orlando Magic	108	82	Home	Detroit PistonsOrlando Magic
20	2016-10-28	Oklahoma City Thunder	Phoenix Suns	113	110	Home	Oklahoma City ThunderPhoenix Suns
21	2016-10-28	Miami Heat	Charlotte Hornets	91	97	Away	Miami HeatCharlotte Hornets
22	2016-10-28	Dallas Mavericks	Houston Rockets	98	106	Away	Dallas MavericksHouston Rockets
23	2016-10-28	Utah Jazz	Los Angeles Lakers	96	89	Home	Utah JazzLos Angeles Lakers
24	2016-10-28	New Orleans Pelicans	Golden State Warriors	114	122	Away	New Orleans PelicansGolden State Warriors
25	2016-10-29	Philadelphia 76ers	Atlanta Hawks	72	104	Away	Philadelphia 76ersAtlanta Hawks
26	2016-10-29	Charlotte Hornets	Boston Celtics	98	104	Away	Charlotte HornetsBoston Celtics
27	2016-10-29	New York Knicks	Memphis Grizzlies	111	104	Home	New York KnicksMemphis Grizzlies
28	2016-10-29	Cleveland Cavaliers	Orlando Magic	105	99	Home	Cleveland CavaliersOrlando Magic
29	2016-10-29	Chicago Bulls	Indiana Pacers	118	101	Home	Chicago BullsIndiana Pacers
...
1200	2017-04-09	Memphis Grizzlies	Detroit Pistons	90	103	Away	Memphis GrizzliesDetroit Pistons
1201	2017-04-09	Los Angeles Lakers	Minnesota Timberwolves	110	109	Home	Los Angeles LakersMinnesota Timberwolves

	Date	Home Team	Away Team	Home Score	Away Score	Winner	matchup
1202	2017-04-10	Philadelphia 76ers	Indiana Pacers	111	120	Away	Philadelphia 76ersIndiana Pacers
1203	2017-04-10	Boston Celtics	Brooklyn Nets	114	105	Home	Boston CelticsBrooklyn Nets
1204	2017-04-10	Miami Heat	Cleveland Cavaliers	124	121	Home	Miami HeatCleveland Cavaliers
1205	2017-04-10	Chicago Bulls	Orlando Magic	122	75	Home	Chicago BullsOrlando Magic
1206	2017-04-10	Milwaukee Bucks	Charlotte Hornets	89	79	Home	Milwaukee BucksCharlotte Hornets
1207	2017-04-10	Detroit Pistons	Washington Wizards	101	105	Away	Detroit PistonsWashington Wizards
1208	2017-04-10	Portland Trail Blazers	San Antonio Spurs	99	98	Home	Portland Trail BlazersSan Antonio Spurs
1209	2017-04-10	LA Clippers	Houston Rockets	125	96	Home	LA ClippersHouston Rockets
1210	2017-04-10	Golden State Warriors	Utah Jazz	99	105	Away	Golden State WarriorsUtah Jazz
1211	2017-04-11	Atlanta Hawks	Charlotte Hornets	103	76	Home	Atlanta HawksCharlotte Hornets
1212	2017-04-11	Minnesota Timberwolves	Oklahoma City Thunder	98	100	Away	Minnesota TimberwolvesOklahoma City Thunder
1213	2017-04-11	Dallas Mavericks	Denver Nuggets	91	109	Away	Dallas MavericksDenver Nuggets
1214	2017-04-11	Los Angeles Lakers	New Orleans Pelicans	108	96	Home	Los Angeles LakersNew Orleans Pelicans
1215	2017-04-11	Sacramento Kings	Phoenix Suns	129	104	Home	Sacramento KingsPhoenix Suns
1216	2017-04-12	Orlando Magic	Detroit Pistons	113	109	Home	Orlando MagicDetroit Pistons
1217	2017-04-12	Cleveland Cavaliers	Toronto Raptors	83	98	Away	Cleveland CavaliersToronto Raptors

	Date	Home Team	Away Team	Home Score	Away Score	Winner	matchup
1218	2017-04-12	Boston Celtics	Milwaukee Bucks	112	94	Home	Boston CelticsMilwaukee Bucks
1219	2017-04-12	New York Knicks	Philadelphia 76ers	114	113	Home	New York KnicksPhiladelphia 76ers
1220	2017-04-12	Miami Heat	Washington Wizards	110	102	Home	Miami HeatWashington Wizards
1221	2017-04-12	Chicago Bulls	Brooklyn Nets	112	73	Home	Chicago BullsBrooklyn Nets
1222	2017-04-12	Memphis Grizzlies	Dallas Mavericks	93	100	Away	Memphis GrizzliesDallas Mavericks
1223	2017-04-12	Houston Rockets	Minnesota Timberwolves	123	118	Home	Houston RocketsMinnesota Timberwolves
1224	2017-04-12	Oklahoma City Thunder	Denver Nuggets	105	111	Away	Oklahoma City ThunderDenver Nuggets
1225	2017-04-12	Indiana Pacers	Atlanta Hawks	104	86	Home	Indiana PacersAtlanta Hawks
1226	2017-04-12	Utah Jazz	San Antonio Spurs	101	97	Home	Utah JazzSan Antonio Spurs
1227	2017-04-12	LA Clippers	Sacramento Kings	115	95	Home	LA ClippersSacramento Kings
1228	2017-04-12	Golden State Warriors	Los Angeles Lakers	109	94	Home	Golden State WarriorsLos Angeles Lakers
1229	2017-04-12	Portland Trail Blazers	New Orleans Pelicans	100	103	Away	Portland Trail BlazersNew Orleans Pelicans

1230 rows × 7 columns

```
In [3]: import numpy as np
conference['Standings'] = np.linspace(1,30,30, dtype='int')
conference['Points'] = np.linspace(0,0,30, dtype='int')
conference['Played'] = np.linspace(0,0,30, dtype='int')
conference['Date Eliminated'] = ['Playoffs'] * 30
```



```

In [4]: def eliminated(index,row,east_or_west,home_or_away):
        if str(conference.loc[conference['Team_Name'] == row[home_or_away],['Date
        Eliminated']][0]['Date Eliminated']).split(' ')[4][:8] == 'Playoffs':
            # if Team is > 8th seed in conference
            if int(conference.loc[conference['Team_Name'] == row[home_or_away],['S
            tandings']][0]['Standings']) > 8:
                # Check to see if Team wins all remaining games and 8th seed loses
                all remaining games if Team will pass 8th seed
                obtainable_points = (82-int(conference.loc[conference['Team_Name']
                == row[home_or_away],['Played']][0]['Played'])*2 + int(conference.loc[conferenc
                e['Team_Name'] == row[home_or_away],['Points']][0]['Points']))
                # Count potential total points for 8th seed if they lose all futur
                e games
                eighth_OP = (int(conference.loc[(conference['Conference_id'] == ea
                st_or_west)&(conference['Standings'] == 8 ) ,['Points']][0]['Points']))
                # if team's obtainable points = 8th seed team's obtainable points,
                tie breaker

                if obtainable_points == eighth_OP:
                    #print(conference.loc[(conference['Conference_id'] == east_or_
                    west)&(conference['Standings'] == 8 )])
                    #print((conference.loc[conference['Team_Name'] == row[home_or_
                    away]]))
                    # Calculate the better winning percentage for games against ea
                    ch other (matchups)
                    home_meetings = scores[(scores.matchup == (scores['Away
                    Team']+scores['Home Team'])(index))]
                    away_meetings = scores[(scores.matchup == (scores['Home
                    Team']+scores['Away Team'])(index))]
                    OurTeam = int(home_meetings[home_meetings.Winner == 'Home']['H
                    ome Team'].count()) + int(away_meetings[away_meetings.Winner == 'Away']['Away
                    Team'].count())
                    eightteam = int(home_meetings[home_meetings.Winner == 'Away']
                    ['Away Team'].count()) + int(away_meetings[away_meetings.Winner == 'Home']['Ho
                    me Team'].count())
                    if (OurTeam - eightteam < 0):
                        conference.loc[conference['Team_Name'] ==
                        row[home_or_away],['Date Eliminated']] = row['Date']
                        # if not Team is eliminated. Add date to Eliminated field in Stand
                        ings Table
                    if obtainable_points < eighth_OP:

                        conference.loc[conference['Team_Name'] == row[home_or_away],
                        ['Date Eliminated']] = row['Date']

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In [5]: # for row in scores table
for index, row in scores.iterrows():
    # if Winner = Home then Home Team += 2 points
    if row['Winner'] == 'Home':
        conference.loc[conference['Team_Name'] == row['Home Team'], ['Points']]
        = conference.loc[conference['Team_Name'] == row['Home Team'], ['Points']] + 2
        # Update Standings for East Teams
        if conference.loc[conference['Team_Name'] == row['Home Team'], ['Conference_id']].values[0] == "East":
            updated_standings = conference.loc[conference['Conference_id'] ==
            'East'].sort_values('Points', ascending=False).reset_index(drop=True)
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        for teamindex, teamrow in updated_standings.iterrows():
            conference.loc[conference['Team_Name'] ==
teamrow['Team_Name'], ['Standings']] = int(np.where(updated_standings['Team_Nam
e'] == teamrow['Team_Name'])[0])+1
            # Update games played for both home and away teams
            conference.loc[conference['Team_Name'] == row['Home Team'], ['Playe
d']] = conference.loc[conference['Team_Name'] == row['Home Team'],
['Played']] + 1
            conference.loc[conference['Team_Name'] == row['Away Team'], ['Playe
d']] = conference.loc[conference['Team_Name'] == row['Away Team'],
['Played']] + 1
            if int(conference.loc[conference['Team_Name'] == row['Home Team'],
['Played']] ['Played']) > 41:
                eliminated(index, row, 'East', 'Home Team')
                if conference.loc[conference['Team_Name'] == row['Away Team'],
['Conference_id']].values[0] == "East":
                    eliminated(index, row, 'East', 'Away Team')
                else:
                    eliminated(index, row, 'West', 'Away Team')
            # Update Standings for West Teams
            else:
                updated_standings = conference.loc[conference['Conference_id'] ==
'West'].sort_values('Points', ascending=False).reset_index(drop=True)
                for teamindex, teamrow in updated_standings.iterrows():
                    conference.loc[conference['Team_Name'] ==
teamrow['Team_Name'], ['Standings']] = int(np.where(updated_standings['Team_Nam
e'] == teamrow['Team_Name'])[0])+1
                    # Update games played for both home and away teams
                    conference.loc[conference['Team_Name'] == row['Home Team'], ['Playe
d']] = conference.loc[conference['Team_Name'] == row['Home Team'],
['Played']] + 1
                    conference.loc[conference['Team_Name'] == row['Away Team'], ['Playe
d']] = conference.loc[conference['Team_Name'] == row['Away Team'],
['Played']] + 1
                    if int(conference.loc[conference['Team_Name'] == row['Home Team'],
['Played']] ['Played']) > 41:
                        eliminated(index, row, 'West', 'Home Team')
                        if conference.loc[conference['Team_Name'] == row['Away Team'],
['Conference_id']].values[0] == "East":
                            eliminated(index, row, 'East', 'Away Team')
                        else:
                            eliminated(index, row, 'West', 'Away Team')
                # else Away Team += 2 points
            else:
                conference.loc[conference['Team_Name'] == row['Away Team'], ['Points']]
= conference.loc[conference['Team_Name'] == row['Away Team'], ['Points']] + 2

            # Update Standings for East Teams
            if conference.loc[conference['Team_Name'] == row['Away Team'], ['Confer
ence_id']].values[0] == "East":
                updated_standings = conference.loc[conference['Conference_id'] ==
'East'].sort_values('Points', ascending=False).reset_index(drop=True)
                for teamindex, teamrow in updated_standings.iterrows():
                    conference.loc[conference['Team_Name'] ==
teamrow['Team_Name'], ['Standings']] = int(np.where(updated_standings['Team_Nam
e'] == teamrow['Team_Name'])[0])+1
                    # Update games played for both home and away teams

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        conference.loc[conference['Team_Name'] == row['Home Team'], ['Played']] = conference.loc[conference['Team_Name'] == row['Home Team'], ['Played']] + 1
        conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']] = conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']] + 1
        if int(conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']][0]) > 41:
            eliminated(index, row, 'East', 'Away Team')
            if conference.loc[conference['Team_Name'] == row['Home Team'], ['Conference_id']].values[0] == "East":
                eliminated(index, row, 'East', 'Home Team')
            else:
                eliminated(index, row, 'West', 'Home Team')
        # Update Standings for West Teams
        else:
            updated_standings = conference.loc[conference['Conference_id'] == 'West'].sort_values('Points', ascending=False).reset_index(drop=True)
            for teamindex, teamrow in updated_standings.iterrows():
                conference.loc[conference['Team_Name'] == teamrow['Team_Name'], ['Standings']] = int(np.where(updated_standings['Team_Name'] == teamrow['Team_Name'])[0]) + 1
            # Update games played for both home and away teams
            conference.loc[conference['Team_Name'] == row['Home Team'], ['Played']] = conference.loc[conference['Team_Name'] == row['Home Team'], ['Played']] + 1
            conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']] = conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']] + 1
            if int(conference.loc[conference['Team_Name'] == row['Away Team'], ['Played']][0]) > 41:
                eliminated(index, row, 'West', 'Away Team')
                if conference.loc[conference['Team_Name'] == row['Home Team'], ['Conference_id']].values[0] == "East":
                    eliminated(index, row, 'East', 'Home Team')
                else:
                    eliminated(index, row, 'West', 'Home Team')

```

In [6]: conference

Out[6]:

	Team_Name	Division_id	Conference_id	Standings	Points	Played	Date Eliminated
0	Boston Celtics	Atlantic	East	1	106	82	Playoffs
1	Brooklyn Nets	Atlantic	East	15	40	82	2017-03-08 00:00:00
2	New York Knicks	Atlantic	East	12	62	82	2017-03-29 00:00:00
3	Philadelphia 76ers	Atlantic	East	14	56	82	2017-03-29 00:00:00
4	Toronto Raptors	Atlantic	East	2	102	82	Playoffs
5	Chicago Bulls	Central	East	8	82	82	Playoffs
6	Cleveland Cavaliers	Central	East	3	102	82	Playoffs
7	Detroit Pistons	Central	East	10	74	82	2017-04-10 00:00:00
8	Indiana Pacers	Central	East	6	84	82	Playoffs
9	Milwaukee Bucks	Central	East	7	84	82	Playoffs
10	Atlanta Hawks	Southeast	East	5	86	82	Playoffs
11	Charlotte Hornets	Southeast	East	11	72	82	2017-04-08 00:00:00
12	Miami Heat	Southeast	East	9	82	82	Playoffs
13	Orlando Magic	Southeast	East	13	58	82	2017-03-29 00:00:00
14	Washington Wizards	Southeast	East	4	98	82	Playoffs
15	Denver Nuggets	Northwest	West	9	80	82	2017-04-11 00:00:00
16	Minnesota Timberwolves	Northwest	West	13	62	82	2017-04-03 00:00:00
17	Oklahoma City Thunder	Northwest	West	6	94	82	Playoffs

	Team_Name	Division_id	Conference_id	Standings	Points	Played	Date Eliminated
18	Portland Trail Blazers	Northwest	West	8	82	82	Playoffs
19	Utah Jazz	Northwest	West	4	102	82	Playoffs
20	Golden State Warriors	Pacific	West	1	134	82	Playoffs
21	LA Clippers	Pacific	West	5	102	82	Playoffs
22	Los Angeles Lakers	Pacific	West	14	52	82	2017-03-19 00:00:00
23	Phoenix Suns	Pacific	West	15	48	82	2017-03-23 00:00:00
24	Sacramento Kings	Pacific	West	12	64	82	2017-03-31 00:00:00
25	Dallas Mavericks	Southwest	West	11	66	82	2017-04-04 00:00:00
26	Houston Rockets	Southwest	West	3	110	82	Playoffs
27	Memphis Grizzlies	Southwest	West	7	86	82	Playoffs
28	New Orleans Pelicans	Southwest	West	10	68	82	2017-04-04 00:00:00
29	San Antonio Spurs	Southwest	West	2	122	82	Playoffs

```
In [7]: df = conference[['Team_Name', 'Date Eliminated']]
df.columns = ['Team', 'Date Eliminated']
for index, row in df.iterrows():
    if row[1] != "Playoffs":
        df.loc[index, 'Date Eliminated'] = str(row[1])[5:7] + '/' + str(row[1])
        [8:10] + '/' + str(row[1])[4:]

df
```



```
C:\Users\sarefeen\AppData\Local\Continuum\Anaconda3\lib\site-packages\pandas\
\core\indexing.py:141: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html#indexing-view-versus-copy
```

```
self._setitem_with_indexer(indexer, value)
```

```
C:\Users\sarefeen\AppData\Local\Continuum\Anaconda3\lib\site-packages\ipykernel\__main__.py:5: SettingWithCopyWarning:
```

```
A value is trying to be set on a copy of a slice from a DataFrame
```

```
See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html#indexing-view-versus-copy
```

Out[7]:

	Team	Date Eliminated
0	Boston Celtics	Playoffs
1	Brooklyn Nets	03/08/2017
2	New York Knicks	03/29/2017
3	Philadelphia 76ers	03/29/2017
4	Toronto Raptors	Playoffs
5	Chicago Bulls	Playoffs
6	Cleveland Cavaliers	Playoffs
7	Detroit Pistons	04/10/2017
8	Indiana Pacers	Playoffs
9	Milwaukee Bucks	Playoffs
10	Atlanta Hawks	Playoffs
11	Charlotte Hornets	04/08/2017
12	Miami Heat	Playoffs
13	Orlando Magic	03/29/2017
14	Washington Wizards	Playoffs
15	Denver Nuggets	04/11/2017
16	Minnesota Timberwolves	04/03/2017
17	Oklahoma City Thunder	Playoffs
18	Portland Trail Blazers	Playoffs
19	Utah Jazz	Playoffs
20	Golden State Warriors	Playoffs
21	LA Clippers	Playoffs
22	Los Angeles Lakers	03/19/2017
23	Phoenix Suns	03/23/2017
24	Sacramento Kings	03/31/2017
25	Dallas Mavericks	04/04/2017
26	Houston Rockets	Playoffs
27	Memphis Grizzlies	Playoffs
28	New Orleans Pelicans	04/04/2017
29	San Antonio Spurs	Playoffs

In [9]: `df.to_excel('final_submission.xlsx', index=False)`