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SI 507 Project Checkpoint

'Best Year' - An NBA Tool

OVERVIEW

The user inputs a single year or a range of years and the tool outputs a ranked list of the best players in that year(s) based on a in-house metric that combines regular and postseason stats, regular season awards, and playoff success. If time permits, the hope is to also add the ability to search a player and get a career score. This tool would attempt to answer "who had the better year/career."

PROJECT CODE

Github Repo - <https://github.com/RickyBlaine/NBA-Best-Year>

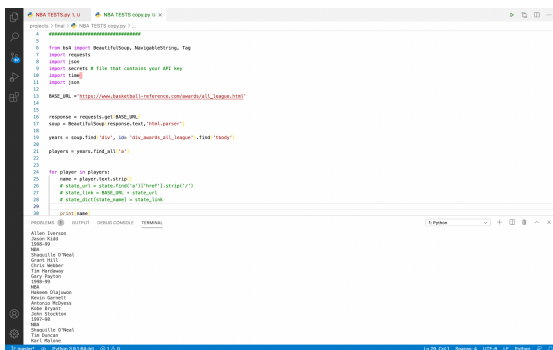
IMPORTED LIBRARIES

```
from bs4 import *
import requests
import time
import csv
import urllib
from csv import DictReader
from operator import itemgetter
from flask import Flask, render_template, request, redirect, url_for
import secrets
import time
```

DATA SOURCES

Scraping Multiple Pages on a site you have not before - (8 Points)

https://www.basketball-reference.com/awards/all_league.html



^^This is a picture of my scraping process from basketball-reference.com. I will scrap more pages from this site as they have very unique data including Player of The Week stats which could be very useful. Here I've pulled

the first team ALL NBA players from each year going back to 1950. This data so far just lists the players names and the year but soon I will take this and process it further and put it into position to be tabulated.

#

CSV or JSON file you haven’t used before with > 1000 records (2 Points)

<https://www.kaggle.com/drgilermo/nba-players-stats>

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This is turning my kaggle file into a dictionary to begin processing it.

DATABASE

Data Scraped and Processed for Players Per 100 Possessions and for Advanced Metrics (VORP,DBPM)

```
In [1214]: nba_poses.shape
Out[1214]: (10546, 17)

In [1215]: nba_poses.head(20)
Out[1215]:
```

	Player	year	Pos	Age	Tm	G	GS	MP	AST	PTS	DRB	MPG	PTS_100_SCORE	G_Score	AST_Score	100_100_Score
1688	Kareem Abdul-Jabbar	1980	C	32	LAL	82	3143	3.4	39.8	100	38.320268	13.945405	12	4.686552	30.241107	30.241107
1689	Tom Abernethy	1980	PF	25	GSW	67	1222	3.4	14.1	108	18.238806	6.408091	4	2.956522	13.305613	13.305613
1690	Alvin Adams	1980	C	25	PHO	75	2168	6.8	23.6	99	28.906667	10.727273	13	5.913043	28.640316	28.640316
1691	Trey Acreboard	1980	PG	31	BOS	80	2864	11.0	16.5	105	35.900000	8.408091	7	9.562217	24.974308	24.974308
1692	Dwaine Anderson	1980	C	21	CHI	26	563	3.4	7.2	107	21.08462	3.272727	5	2.956522	11.250490	11.250490
1693	Greg Ballard	1980	SF	25	WSB	82	2436	3.1	24.5	104	26.791707	11.536364	8	2.956522	21.833016	21.833016
1694	Mike Barton	1980	SF	28	IND	77	2320	5.5	17.9	107	30.29740	8.136364	5	4.762509	17.918972	17.918972
1695	Rick Barry	1980	SF	35	HOU	72	1816	7.0	22.6	108	25.22222	10.272727	4	6.086957	20.359684	20.359684
1704	Karl Benson	1980	C	25	TOT	73	1891	4.4	17.1	102	25.964110	7.727272	10	3.820287	21.988814	21.988814
1705	Karl Benson	1980	C	25	LAL	56	1389	4.3	16.6	100	24.82071	7.545455	12	3.797170	23.261605	23.261605
1706	Henry Bibby	1980	PG	30	PHI	82	2035	7.0	16.0	105	24.817073	7.681818	7	5.086957	20.788775	20.788775
1709	Larry Bird	1980	PF	25	BOS	82	2955	5.9	27.6	98	36.358685	12.545455	14	5.130435	31.675889	31.675889
1710	Otis Birdsong	1980	SG	24	KCK	82	2885	3.3	30.0	103	35.182627	13.636364	9	2.869565	25.050509	25.050509
1711	Ron Boone	1980	SG	33	TOT	81	2392	6.3	20.6	112	29.530864	9.363636	0	5.478261	14.841897	14.841897
1715	Ron Boone	1980	SG	33	UTA	75	2286	6.3	20.9	112	30.480000	9.500000	0	5.662174	15.107174	15.107174
1716	Tom Boswell	1980	PF	29	TOT	79	2077	3.8	21.0	111	29.781139	9.545455	1	3.304348	13.849802	13.849802
1718	Tom Boswell	1980	PF	26	UTA	61	1555	3.6	22.1	111	25.91803	10.045455	1	3.130435	14.75889	14.75889
1721	Dudley Bradley	1980	SG	22	IND	82	2027	5.7	15.6	102	24.718512	7.260609	10	4.965522	22.047431	22.047431
1722	Mike Bratz	1980	PG	24	PHO	82	1589	6.4	20.2	103	19.378549	9.181818	9	5.562217	23.747026	23.747026
1724	Ron Brewer	1980	SG	24	PHO	82	2915	3.7	22.2	107	34.320268	10.000000	5	3.217391	18.363800	18.363800

```
In [852]: nba
Out[852]:
```

Unnamed: 0	Year	Player	Pos	Age	Tm	G	GS	MP	PER	...	TRB	AST	STL	BLK	TOV	PF	PTS	MPG	PPG	year	
5010	5010	1978	Kareem Abdul-Jabbar	C	30.0	LAL	82.0	NAN	2265.0	29.2	...	801.0	268.0	103.0	185.0	208.0	182.0	1600.0	36.532258	25.806452	1978
5012	5012	1978	Alvin Adams	C	23.0	PHO	75.0	NAN	1914.0	17.7	...	565.0	225.0	86.0	63.0	234.0	242.0	1082.0	27.342857	15.437143	1978
5013	5013	1978	Dwaine Anderson	PG	30.0	KCK	77.0	NAN	2147.0	13.3	...	229.0	360.0	93.0	28.0	217.0	180.0	920.0	17.883117	11.948052	1978
5018	5018	1978	Eric Avett	SG	25.0	TOT	55.0	NAN	1085.0	10.3	...	83.0	196.0	39.0	9.0	143.0	123.0	496.0	19.727273	9.018182	1978
5019	5019	1978	Eric Avett	SG	25.0	NAN	21.0	NAN	409.0	8.2	...	33.0	68.0	17.0	1.0	55.0	37.0	174.0	19.476190	8.285714	1978
...	
24670	24670	2017	Marvin Williams	PF	30.0	CHO	76.0	76.0	2295.0	13.7	...	498.0	106.0	58.0	53.0	60.0	134.0	849.0	30.197368	11.171003	2017
24684	24684	2017	Nick Young	SG	31.0	LAL	60.0	60.0	1056.0	14.1	...	137.0	58.0	37.0	14.0	36.0	137.0	791.0	25.933333	13.183333	2017
24685	24685	2017	Thaddeus Young	PF	28.0	IND	74.0	74.0	2237.0	14.9	...	449.0	122.0	114.0	30.0	96.0	135.0	814.0	30.229730	11.000000	2017
24686	24686	2017	Cody Zeller	PF	24.0	CHO	62.0	58.0	1725.0	16.7	...	405.0	99.0	62.0	58.0	65.0	189.0	639.0	27.822581	10.306452	2017
24689	24689	2017	Paul Zipser	SF	22.0	CHI	44.0	18.0	843.0	6.9	...	125.0	36.0	15.0	16.0	40.0	78.0	240.0	19.159091	5.454545	2017

INTERACTION AND PRESENTATION

The Total Season Score (TSS) is a metric that tries to calculate how good a year treated a player. For example if LeBron James wanted to answer the question what was the best year of my career? He could consider using the Total Season Score Metric. It is a single score that combines Advanced Metrics for player performance like Points Per 100 Possessions, Value over Replacement(VOR), etc with more traditional signs of a great year like ALL NBA, and Winning NBA Finals MVP.

I’ve created a FLASK website to allow users to interact with the information. The Users are able to select any of the 40 years between 1980 and 2020 using a dropdown selection tool. Once they select a year they are routed to the page that shows the top 15 TSS players of that year along with the Finals MVP Season MVP, as well as the ALL NBA 1st and 2nd Team from those years.

DEMO VIDEO LINK -

<https://drive.google.com/file/d/1F5Np0R9a4Udo18zRUz05cJCOLIJL2bOI/view?usp=sharing>