

GoSports Release 1 Individual Report - Sam DeFrancisco (sjdefran)

Python 3, mySql, sqlite3

4/4/2022

SE/COMS 319

Successful Implemented Story Cards

1. Connecting to the NBA_api

Solution: Connecting to the nba_api was pretty easy. Getting the endpoints to work correctly was not always easy. I ran into issues with timing out as well as receiving empty dataframes w/ the endpoints. Using `time.sleep()` from the time module helped with reconnecting after failed connections when used inside of a try except block.

- I've included an example of src code that gathers all game played from this season `game_logs()`. You can also see included what an import statment looks like using the `nba_api`.

Code: ex:

```
from nba_api.stats.endpoints import teamgamelog, scoreboardv2
# used for annoying parameters in the api
from nba_api.stats.library.parameters import SeasonType

# returns all games a team has played this year by teamID
def game_logs(teamID):
    gathered = False
    while gathered == False:
        try:
            print(f"\t{teamID} Start...")
            team_log = teamgamelog.TeamGameLog(season='2021',
                                                ↪ season_type_all_star=SeasonType.regular,\
                                                team_id=teamID, timeout=10)

            gathered = True # nice
            team_log = team_log.get_data_frames()[0]
            print(f"\t{teamID} Finished...")
        except:
            print('Game log retrieval error, sleeping and trying again')
            time.sleep(10)
```

2. Populating sqlldb using pandas.DataFrames

- Story Card: 'Creating database table for team league stats' & 'Creating database table for each team's full roster'

Solution: A few issues needed to be solved with the VM before my code would be able to run and connect to the mysql db. First using pip3 inside of python's site-packages on the VM to install required dependencies such as the NBA_api.

Next I had to figure out the right way to connect to the mysql db in python. I discovered sqlalchemy and mysql.connector.python modules and they did the trick in connecting. The nice part about pandas.DF's is the ability to export them straight to mysql as tables using to_sql().

I'm including an example of connecting to the db as well as exporting to mysql.

Code:

```
from sqlalchemy import create_engine
from sqlalchemy.types import VARCHAR

engine =
→ create_engine('mysql+mysqlconnector://team24:%s@localhost/nba_api_db' %
→ quote('team24comsVM@319'), echo=False)

# drop unneeded columns
roster_df =
→ roster_df.drop(columns=['PLAYER_ID', 'LEAGUE_ID', 'TEAM_ID', 'TEAM_ABBREVIATION']
# drop any rows with nan values, gets rid of players with no
→ 2021-2022 data
roster_df = roster_df.dropna()
# fix type for db again
roster_df[['GP', 'GS']] = roster_df[['GP', 'GS']].astype('i')
roster_df.index.name = 'name'
# send roster data frame to sql database, table called 'Team Name'
roster_df.to_sql(f"{roster}", con=engine, if_exists='replace',
→ dtype={'name': VARCHAR(50)})
```

Screen Shots

Figure 1: Example of league_team_stats as well as a roster for the Boston Celtics

mysql> select * from league_team_stats;

| name | TEAM_ID | YEAR | GP | WINS | LOSSES | WIN_PCT | CONF_RANK | DIV_RANK | FGM | FGA | FG_PCT | FG3M | FG3A | FG3_PCT | FTM | FTA | FT_PCT | OREB | DREB | REB | AST | PF | STL | TOV | BLK | PTS |
|------------------------|------------|---------|----|------|--------|---------|-----------|----------|------|------|--------|------|------|---------|------|------|--------|------|------|------|------|------|-----|------|-----|-------|
| Atlanta Hawks | 1610612737 | 2021-22 | 76 | 39 | 37 | 0.513 | 10 | 3 | 41.4 | 88.2 | 0.469 | 12.7 | 34.1 | 0.373 | 17.9 | 22.1 | 0.813 | 10 | 33.8 | 43.8 | 24.6 | 18.6 | 7.1 | 12 | 4.4 | 113.5 |
| Boston Celtics | 1610612738 | 2021-22 | 77 | 47 | 30 | 0.61 | 4 | 2 | 40.3 | 87.3 | 0.461 | 12.9 | 36.8 | 0.351 | 17.2 | 21 | 0.816 | 10.6 | 35.6 | 46.2 | 24.4 | 18.6 | 7.2 | 13.6 | 5.9 | 110.6 |
| Cleveland Cavaliers | 1610612739 | 2021-22 | 76 | 42 | 34 | 0.553 | 7 | 3 | 39.5 | 84.6 | 0.467 | 11.5 | 32.7 | 0.351 | 16.7 | 21.9 | 0.761 | 10.3 | 34 | 44.3 | 25.2 | 17.2 | 7.1 | 14.6 | 4.2 | 107.2 |
| New Orleans Pelicans | 1610612740 | 2021-22 | 76 | 33 | 43 | 0.434 | 9 | 3 | 40.1 | 87.8 | 0.456 | 10.7 | 32.2 | 0.332 | 18.1 | 22.9 | 0.788 | 11.8 | 33.7 | 45.4 | 25 | 19.8 | 8.2 | 14.1 | 4.1 | 108.9 |
| Chicago Bulls | 1610612741 | 2021-22 | 76 | 44 | 32 | 0.579 | 5 | 2 | 41.7 | 86.8 | 0.481 | 10.7 | 28.9 | 0.37 | 17.3 | 21.3 | 0.813 | 8.5 | 33.9 | 42.4 | 24 | 18.8 | 7.1 | 12.8 | 4.2 | 111.4 |
| Dallas Mavericks | 1610612742 | 2021-22 | 77 | 48 | 29 | 0.623 | 3 | 2 | 39.2 | 85.5 | 0.458 | 12.9 | 37.3 | 0.345 | 15.9 | 20.8 | 0.767 | 9.4 | 33.7 | 43.1 | 23.2 | 19.7 | 6.8 | 12.4 | 4 | 107.1 |
| Denver Nuggets | 1610612743 | 2021-22 | 77 | 46 | 31 | 0.597 | 5 | 1 | 41.4 | 86.1 | 0.481 | 12.7 | 35.9 | 0.354 | 16.4 | 20.7 | 0.794 | 9.2 | 34.9 | 44.1 | 27.6 | 19.8 | 7.2 | 14.5 | 3.7 | 112 |
| Golden State Warriors | 1610612744 | 2021-22 | 77 | 48 | 29 | 0.623 | 4 | 2 | 40.4 | 86.6 | 0.466 | 14.2 | 39.6 | 0.359 | 15.7 | 20.5 | 0.765 | 9.8 | 35.7 | 45.5 | 26.9 | 20.9 | 8.9 | 14.9 | 4.5 | 110.7 |
| Houston Rockets | 1610612745 | 2021-22 | 77 | 20 | 57 | 0.26 | 15 | 5 | 39.2 | 86.1 | 0.455 | 13.4 | 38.5 | 0.349 | 17.5 | 24.5 | 0.715 | 9.5 | 32.6 | 42.1 | 23.5 | 20.6 | 7.3 | 16.6 | 4.6 | 109.3 |
| Los Angeles Clippers | 1610612746 | 2021-22 | 76 | 37 | 39 | 0.487 | 8 | 3 | 39.6 | 87.3 | 0.454 | 12.3 | 33.8 | 0.365 | 15.3 | 19.4 | 0.79 | 9.1 | 34.7 | 43.8 | 23.6 | 18.6 | 7.4 | 13.8 | 4.9 | 106.8 |
| Los Angeles Lakers | 1610612747 | 2021-22 | 75 | 31 | 44 | 0.413 | 10 | 4 | 41.7 | 89 | 0.468 | 12.2 | 34.9 | 0.349 | 16 | 22 | 0.728 | 9.7 | 34.4 | 44.1 | 24.1 | 20.2 | 7.7 | 14.6 | 5.3 | 111.5 |
| Miami Heat | 1610612748 | 2021-22 | 77 | 49 | 28 | 0.636 | 1 | 1 | 39.4 | 85 | 0.464 | 13.3 | 35.7 | 0.374 | 17.2 | 21.2 | 0.81 | 10 | 33.9 | 44 | 25.5 | 20.6 | 7.4 | 14.6 | 3.3 | 109.3 |
| Milwaukee Bucks | 1610612749 | 2021-22 | 75 | 47 | 28 | 0.627 | 2 | 1 | 41.5 | 89.1 | 0.466 | 14.3 | 38.7 | 0.368 | 17.7 | 22.8 | 0.774 | 10.2 | 36.6 | 46.8 | 23.6 | 18.2 | 7.5 | 13.4 | 4 | 114.9 |
| Minnesota Timberwolves | 1610612750 | 2021-22 | 77 | 43 | 34 | 0.558 | 7 | 3 | 41.4 | 91 | 0.455 | 14.7 | 41.3 | 0.355 | 17.7 | 22.8 | 0.777 | 11.4 | 33.2 | 44.6 | 25.5 | 21.7 | 8.7 | 14.4 | 5.7 | 115.2 |
| Brooklyn Nets | 1610612751 | 2021-22 | 76 | 40 | 36 | 0.526 | 8 | 4 | 41.8 | 88.2 | 0.474 | 11.3 | 31.5 | 0.357 | 17.5 | 21.8 | 0.802 | 10.3 | 33.8 | 44.1 | 25.2 | 20.1 | 7.1 | 14 | 5.4 | 112.4 |
| New York Knicks | 1610612752 | 2021-22 | 77 | 34 | 43 | 0.442 | 11 | 5 | 37.6 | 86.2 | 0.437 | 13.1 | 36.8 | 0.356 | 18 | 24.2 | 0.745 | 11.6 | 34.6 | 46.2 | 21.6 | 20.5 | 6.9 | 13.4 | 4.8 | 106.4 |
| Orlando Magic | 1610612753 | 2021-22 | 77 | 20 | 57 | 0.26 | 15 | 5 | 38.2 | 88.3 | 0.433 | 12 | 36.4 | 0.329 | 15.7 | 19.9 | 0.79 | 9.2 | 35.1 | 44.3 | 23.6 | 19.9 | 6.8 | 14.6 | 4.5 | 104.2 |
| Indiana Pacers | 1610612754 | 2021-22 | 77 | 25 | 52 | 0.325 | 13 | 4 | 41.3 | 89.4 | 0.462 | 12 | 35.3 | 0.341 | 16.2 | 21.2 | 0.763 | 11.2 | 32.9 | 44.1 | 25.1 | 20.3 | 6.9 | 14.4 | 5.5 | 110.8 |
| Philadelphia 76ers | 1610612755 | 2021-22 | 75 | 46 | 29 | 0.613 | 3 | 1 | 39.1 | 84.7 | 0.461 | 11.4 | 31.6 | 0.359 | 19.3 | 23.6 | 0.819 | 8.5 | 33.8 | 42.4 | 23.2 | 19.4 | 7.5 | 12.3 | 5.3 | 108.9 |
| Phoenix Suns | 1610612756 | 2021-22 | 76 | 62 | 14 | 0.816 | 1 | 1 | 43.6 | 89.6 | 0.487 | 11.6 | 31.6 | 0.368 | 16.3 | 20.4 | 0.799 | 9.7 | 35.6 | 45.3 | 27.3 | 19.6 | 8.5 | 12.9 | 4.4 | 115.2 |
| Portland Trail Blazers | 1610612757 | 2021-22 | 76 | 27 | 49 | 0.355 | 13 | 4 | 38.9 | 87.5 | 0.444 | 12.8 | 36.9 | 0.347 | 16.8 | 22.1 | 0.761 | 10.7 | 32.8 | 43.5 | 22.9 | 20.9 | 7.9 | 14.3 | 4.5 | 107.4 |
| Sacramento Kings | 1610612758 | 2021-22 | 77 | 28 | 49 | 0.364 | 12 | 5 | 40.7 | 88.6 | 0.459 | 11.5 | 33.5 | 0.344 | 17.7 | 23 | 0.768 | 9.8 | 33.3 | 43.2 | 23.6 | 19 | 7.2 | 14.1 | 4.5 | 110.5 |
| San Antonio Spurs | 1610612759 | 2021-22 | 76 | 31 | 45 | 0.408 | 11 | 4 | 43.4 | 93.3 | 0.466 | 11.2 | 32 | 0.35 | 14.9 | 19.8 | 0.752 | 11.3 | 34.1 | 45.4 | 27.9 | 18.1 | 7.6 | 12.8 | 5 | 113 |
| Oklahoma City Thunder | 1610612760 | 2021-22 | 76 | 22 | 54 | 0.289 | 14 | 5 | 38.3 | 89.2 | 0.429 | 12.1 | 37.7 | 0.323 | 15.3 | 20 | 0.764 | 10.3 | 35.3 | 45.7 | 22.2 | 18.3 | 7.7 | 13.9 | 4.6 | 103.9 |
| Toronto Raptors | 1610612761 | 2021-22 | 76 | 44 | 32 | 0.579 | 6 | 3 | 40.7 | 91.3 | 0.446 | 12 | 34.1 | 0.352 | 16 | 21.2 | 0.754 | 13.4 | 32 | 45.4 | 22.1 | 19.8 | 8.9 | 12.5 | 4.7 | 109.4 |
| Utah Jazz | 1610612762 | 2021-22 | 76 | 45 | 31 | 0.592 | 6 | 2 | 40.6 | 86 | 0.471 | 14.7 | 40.4 | 0.363 | 17.6 | 22.7 | 0.774 | 10.6 | 35.4 | 45.9 | 22.3 | 19 | 7.1 | 14.1 | 4.9 | 113.3 |
| Memphis Grizzlies | 1610612763 | 2021-22 | 77 | 54 | 23 | 0.701 | 2 | 1 | 43.5 | 94.2 | 0.462 | 11.4 | 32.6 | 0.35 | 16.9 | 23 | 0.733 | 14.2 | 35.3 | 49.4 | 25.7 | 19.6 | 9.8 | 13.2 | 6.6 | 115.4 |
| Washington Wizards | 1610612764 | 2021-22 | 76 | 33 | 43 | 0.434 | 12 | 4 | 40.3 | 86 | 0.469 | 10.5 | 30.8 | 0.339 | 17.2 | 21.9 | 0.785 | 9.1 | 34.1 | 43.2 | 24.8 | 18.9 | 6.4 | 13.1 | 5.1 | 108.4 |
| Detroit Pistons | 1610612765 | 2021-22 | 76 | 20 | 56 | 0.263 | 14 | 5 | 38.1 | 88.6 | 0.43 | 11.1 | 34.2 | 0.326 | 17.1 | 21.9 | 0.781 | 11.1 | 32.1 | 43.1 | 23.1 | 22.1 | 7.7 | 14.3 | 4.8 | 104.5 |
| Charlotte Hornets | 1610612766 | 2021-22 | 77 | 40 | 37 | 0.519 | 9 | 2 | 42.5 | 91.7 | 0.464 | 13.9 | 38.4 | 0.362 | 15.9 | 21.6 | 0.739 | 11 | 33.8 | 44.8 | 27.8 | 19.9 | 8.6 | 13.1 | 4.9 | 114.8 |

30 rows in set (0.00 sec)

mysql> select * from 'Boston Celtics';

| name | SEASON_ID | PLAYER_AGE | GP | GS | MIN | FGM | FGA | FG_PCT | FG3M | FG3A | FG3_PCT | FTM | FTA | FT_PCT | OREB | DREB | REB | AST | STL | BLK | TOV | PF | PTS |
|---------------------|-----------|------------|----|----|------|-----|------|--------|------|------|---------|-----|-----|--------|------|------|-----|-----|-----|-----|-----|-----|------|
| Jayson Tatum | 2021-22 | 24 | 72 | 72 | 36.2 | 9.3 | 20.7 | 0.451 | 3 | 8.6 | 0.353 | 5.3 | 6.2 | 0.86 | 1.1 | 6.9 | 8 | 4.3 | 1 | 0.6 | 2.9 | 2.3 | 27 |
| Jaylen Brown | 2021-22 | 25 | 61 | 61 | 33.8 | 8.6 | 18.4 | 0.468 | 2.5 | 7.1 | 0.354 | 3.7 | 4.8 | 0.759 | 0.8 | 5.3 | 6.1 | 3.3 | 1 | 0.3 | 2.7 | 2.4 | 23.4 |
| Malik Fitts | 2021-22 | 24 | 12 | 0 | 3.8 | 0.3 | 1.1 | 0.231 | 0.3 | 0.7 | 0.375 | 0 | 0 | 0 | 0 | 1.1 | 1.1 | 0 | 0 | 0 | 0.2 | 0.3 | 0.8 |
| Derrick White | 2021-22 | 27 | 70 | 51 | 29.5 | 4.5 | 10.9 | 0.414 | 1.5 | 5 | 0.299 | 2.7 | 3.1 | 0.87 | 0.5 | 2.9 | 3.5 | 5 | 0.9 | 0.8 | 1.6 | 2.4 | 13.2 |
| Payton Pritchard | 2021-22 | 24 | 66 | 2 | 13.9 | 2.1 | 5.1 | 0.421 | 1.3 | 3.3 | 0.406 | 0.3 | 0.3 | 1 | 0.4 | 1.8 | 1.9 | 0.3 | 0.1 | 0.6 | 0.8 | 5.9 | |
| Grant Williams | 2021-22 | 23 | 72 | 20 | 24.1 | 2.7 | 5.6 | 0.475 | 1.4 | 3.3 | 0.415 | 1.1 | 1.2 | 0.898 | 0.8 | 2.7 | 3.5 | 1 | 0.5 | 0.7 | 0.8 | 2.4 | 7.8 |
| Nik Stauskas | 2021-22 | 28 | 8 | 0 | 4.9 | 0.6 | 1.8 | 0.357 | 0.5 | 1.3 | 0.4 | 0.5 | 0.8 | 0.667 | 0.1 | 0.3 | 0.4 | 0.3 | 0 | 0.1 | 0.1 | 2.3 | |
| Juwan Morgan | 2021-22 | 24 | 1 | 0 | 27 | 2 | 3 | 0.667 | 1 | 2 | 0.5 | 0 | 0 | 0 | 2 | 2 | 4 | 1 | 0 | 0 | 0 | 3 | 5 |
| Aaron Nesmith | 2021-22 | 22 | 48 | 3 | 11.1 | 1.3 | 3.5 | 0.386 | 0.5 | 2.1 | 0.248 | 0.4 | 0.5 | 0.792 | 0.3 | 1.5 | 1.8 | 0.4 | 0.4 | 0.1 | 0.5 | 1.3 | 3.6 |
| Daniel Theis | 2021-22 | 29 | 42 | 22 | 19.9 | 3 | 5.8 | 0.51 | 0.7 | 2.3 | 0.299 | 1 | 1.5 | 0.672 | 1.1 | 3.6 | 4.7 | 0.8 | 0.5 | 0.7 | 1 | 2.4 | 7.6 |
| Sam Hauser | 2021-22 | 24 | 22 | 0 | 5.3 | 0.8 | 1.7 | 0.459 | 0.7 | 1.5 | 0.455 | 0 | 0 | 0 | 0.2 | 0.7 | 0.9 | 0.2 | 0 | 0.1 | 0.1 | 0.3 | 2.2 |
| Marcus Smart | 2021-22 | 28 | 66 | 66 | 32.7 | 4.2 | 10.2 | 0.413 | 1.6 | 5 | 0.324 | 2.1 | 2.7 | 0.789 | 0.6 | 3.3 | 4 | 5.8 | 1.7 | 0.3 | 2.2 | 2.3 | 12.1 |
| Luke Kornet | 2021-22 | 26 | 11 | 0 | 5.4 | 0.5 | 1.5 | 0.353 | 0 | 0.3 | 0 | 0.2 | 0.4 | 0.5 | 0.7 | 0.6 | 1.4 | 0.4 | 0.2 | 0.1 | 0 | 0.5 | 1.3 |
| Al Horford | 2021-22 | 35 | 65 | 65 | 29 | 3.7 | 8.3 | 0.451 | 1.2 | 3.9 | 0.32 | 1.2 | 1.4 | 0.84 | 1.5 | 6.1 | 7.6 | 3.3 | 0.7 | 1.4 | 1 | 1.9 | 9.9 |
| Robert Williams III | 2021-22 | 24 | 61 | 61 | 29.6 | 4.4 | 6 | 0.736 | 0 | 0 | 0 | 1.1 | 1.5 | 0.722 | 3.9 | 5.7 | 9.6 | 2 | 0.9 | 2.2 | 1 | 2.2 | 10 |
| Brodrick Thomas | 2021-22 | 25 | 10 | 0 | 4.8 | 0.6 | 1.5 | 0.4 | 0.1 | 0.8 | 0.125 | 0.2 | 0.4 | 0.5 | 0.2 | 0.5 | 0.7 | 0.8 | 0 | 0.1 | 0.4 | 0.6 | 1.5 |

16 rows in set (0.00 sec)

mysql>

mysql> use player_stats_types

mysql> use team_stats_types

Copyright (C) Microsoft Corporation. All rights reserved.

Windows (CRLF) UTF-8

Level of prof. and contr. on next page

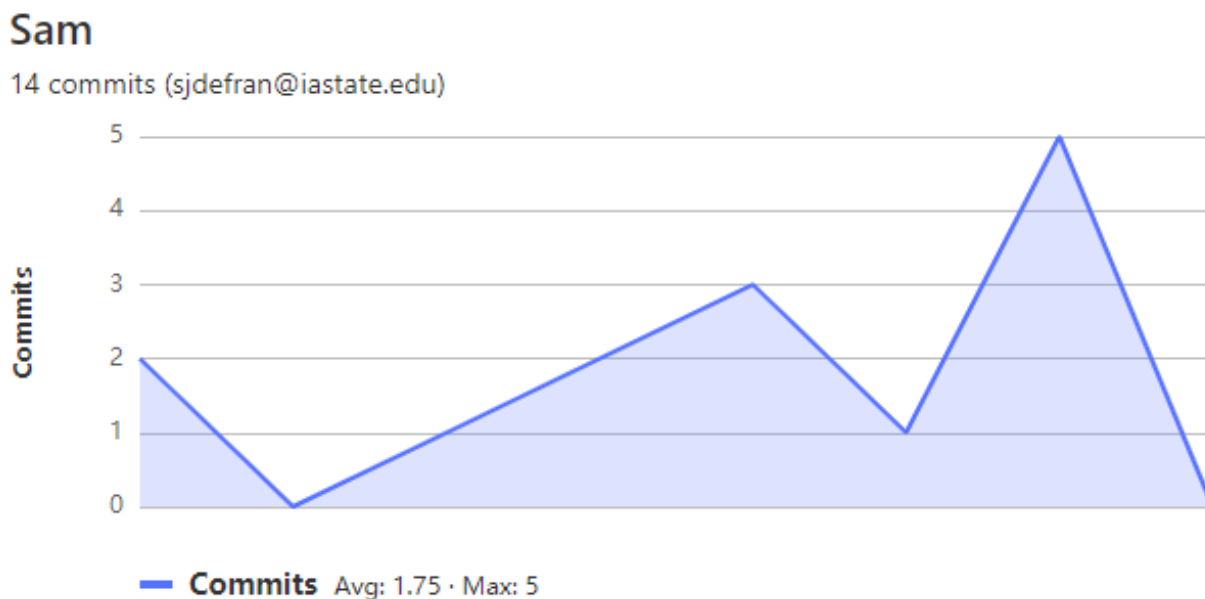
Level of Proficiency

This is not my first project working with python as I have created a few personal project using it. As for sql I had very limited expierence before this working with it but discovered how well pandas works with sql. Using linux I was a complete noob. Not that I had to do a ton of stuff inside of the command line but figuring it out took a little while. Now after this first sprint I feel already feel more comfortable with python, sql, and linux as an os.

We have decided in our next spring that we are going to be implementing a django back-end rather than using nodejs. I'm excited to learn about it as I have very no expierence. I will have to integrate my already existing scripts to work with django.

Contributions

Figure 2: Number of commits to gitlab



Programming languages used in this repository

Measured in bytes of code. Excludes generated and vendored code.

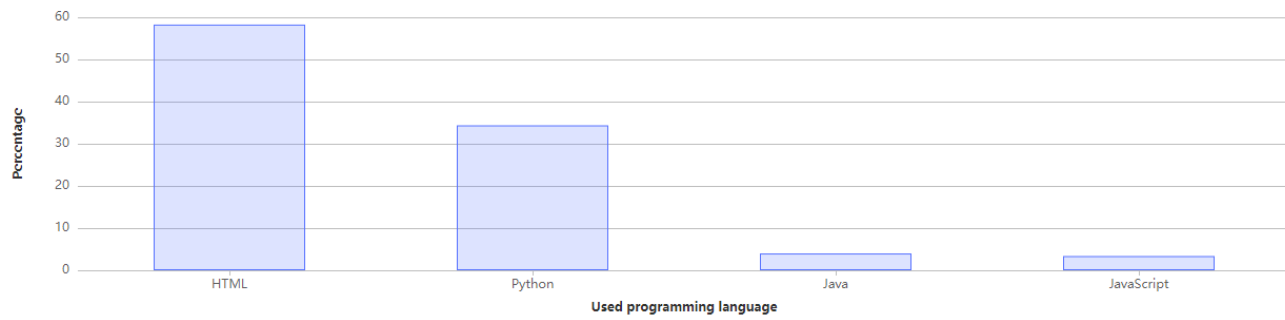


Figure 3: Languages Used

- HTML - 58%
- Python - 34%
- Java - 4%
- JavaScript - 4%