Team React: Are You Game?

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Github:

https://github.com/cdenq/web-dashboard-of-video-game-industry

Purpose:

Our project aimed at creating a data analysis prototype that can effectively scrape, fetch, and load various quantitative data related to the video game industry. Though this initial proof-of-concept creates a dashboard for only the top 5 video games on Steam, our aim is to maximize this project's scalability and flexibility. These two guiding principles heavily influenced our coding approach and technologies of choice.

Sources:

We used data from 4 sources:

- **Google Trends** allowed us to gather geographic and time series data for each game.
- **Steamcharts** allowed us to find data on how many players were playing the game and for how long
- **Twitch Views** allowed us to gather data on how many views each game received through the popular streaming service Twitch.tv
- **Yahoo Finance** allowed us to pull financial data for various companies that produce top video games across the industry

Data Munging (ETL + Flask):

Using various extraction techniques (web scraping, API, and direct download) we compiled individual data sets. The individual data sets which were cleaned using Python/Pandas and later uploaded into a combined MongoDB database. After a finalized database was created, we created a flask app to seed our dashboard with the data.

Coding Approach:

As mentioned in the Purpose, we wanted our dashboard to be scalable and flexible in order to create a prototype/template for future data. In order to achieve this, we leveraged Jinja templates for our HTML because it has placeholder variables and a flexible structure for more inputs. Additionally, we created 3 separate routes: Index (for the end user to initialize a new scrape), Dashboard (for the end user to select a video game and display visuals), and Data (to view the MongoDB in JSON format).

Additionally, our JavaScript was written in a way for the dashboard to respond dynamically to the end user's request. Based on the user's selection of the video game title in the dropdown, the graphs and data change. To achieve this, we leveraged a restyle function to get uniformity across all JavaScript files. These files feed into the main JavaScript which eventually is used to render the visuals.

Tools Used:

Python	**Beautiful Soup**	**Pandas**	**MongoDB**	**API Querying**	**Matplotlib**
Flask	**Plotly**	**Javascript**	**HTML**	**CSS**	**JSON**
Jinja	**Splinter**	**yFinance**	**pyMongo**	**numpy**	**jsonify**

Dashboard (HTML + JS):

- We generated 3 dynamically changing graphs per game, totaling 15. There were also 4 static graphs that captured a larger, landscape comparison

Graphs:

Twitch

- Bar chart reflecting streaming viewership for each game. Each game was compared to the viewership average of the top 5 games.

Google Trends

- Line Graph displaying google searches of each game over time.

Google GeoMaps

- Bubble Chart showing popularity based on search frequency of each game in different areas around the United States.

Steam

- Pie Chart showing playership such as hours played, peak number of players, and current number of players.

Gaming Stock Data

- Line Graph using Yahoo Finance reflecting stock changes over the last 5 years within the video game industry.

Graphs + Tentative Conclusions:

Video games play a significant, public-facing role (Google, Yahoo)

- Video games continue to play a significant role in the public eye through consistent searches on Google and significant corporate financial impacts
- Search relevancy both over time and geographically indicate the an overwhelming public exposure to some of the top games, occasionally having games consist of 100% of the Google's "Trending Searches" within the past 30 days
- Video-related news plays a big impact on financial speculation, as Yahoo finance data shows a sharp growth in Microsoft's stock after its acquisition of Activision and Bethesda.

Top games tend to stay top, suggesting resiliency (Steam, Twitch)

- Popular games tend to remain popular. Throughout the lifetime of our project, we saw specific games remain towards the top of Google searches, streaming views, and hours played
- Steam and Twitch show that the top games consistently dominate the highest number of views and plays according to Steam and Twitch

Limitations of Data:

- Some gaming companies, for example Valve who makes the game Rust, are private. So there was no stock data available.
- Although Steam is a popular gaming platform, it does not have all the games ever created. So unfortunately, our scope was narrowed to the data available
- Video games can be nested inside the entertainment and/or technology industry. The growth of video games is due to the growth of these two industries.
- We only scraped quantitative data. We did not scrape reviews, feedback, or game awards

Reflection:

Project Obstacles

- There were obviously many moving parts to this project. We had to break out all the tools we've learned throughout the bootcamp and make them all flow together. Although this was a challenge, in the end, it was very rewarding to see the final result
- Some parts of the project were sort of a "prerequisite" to later parts. For example, we could not test our JavaScript until the HTML portion was complete.

Takeaways:

- In using all the tools we've learned so far into one project, we got a good sense for all the various languages and system capabilities in one spot. Seeing how the languages and capabilities affect each other and flow was a beneficial learning experience.
- The video game industry is here to stay. It is no longer a niche sub-culture for people living in their parents' basement. It is expanding to many mediums including traditional consoles, mobile, VR, streaming, and much more.

Resources

Diff types of data visualizations (Python)

https://www.python-graph-gallery.com/

TwitchTracker

https://twitchtracker.com/statistics/games

Cloud Gaming Software

https://www.nvidia.com/en-us/geforce-now/

A source for Twitch gaming stats:

https://sullygnome.com/
https://newzoo.com/insights/rankings/top-10-countries-by-game-revenues/
https://www.similarweb.com/website/twitch.tv/

Twitch Dashboard (and API)

https://twitchtracker.com/
https://dappradar.com/rankings/category/games

Yahoo Stock Data

https://finance.yahoo.com/