CS291A: Scalable Internet Services

gTrack: Track Prices of Games on Steam

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Abstract

gTrack is an organized game tracking website that allows users to access information related to different games available on one of the world's largest video game platform, Steam. Each game on Steam that is available on gTrack shows to a user information such as the genre of the game, backgrounds, emotes and cards associated with the game, as well as price history of the game. In addition to viewing information about a game, registered users of gTrack can also share their opinions about games by commenting and up-voting(or down-voting). Registered users also have the ability to communicate with other users on the website using the associated chatroom, gChat. On the other hand, unauthenticated users have access to the information about the games as well as viewing comments of other users. An administrator of the website reserves the right to add and delete any user/game. The purpose of this website is to enable users make a decision about purchasing/accessing a game from Steam by providing all the relevant information about the game in a succint manner.

Chapter 1

Introduction

Steam is the world's most popular PC game distribution platform that has 67 million monthly active players. Since January 2016, Steam has experienced a whooping 27 million first time purchasers. According to steamspy, there are currently $26,363$ games available on Steam. Each of these games fall under different categories and contains different features such as backgrounds, emotes and cards. Furthermore, the prices of these games also vary over the course of time. These information become important for a user wanting to purchase a game from Steam. However, such information are not always present in a clear and concise manner on the Steam website.

The idea behind gTrack is to have a dedicated website meant to serve interested users who would like to access a game on Steam. on gTrack, unauthenticated users get to see a list of all available games on Steam. Such user also get to see the ratings associated with the games. Once authenticated, users get to check necessary information such as price, genre, backgrounds, emotes and cards of the games. Users are also offered a search feature using which games could be sorted based on different categories. Additionally, users are allowed to comment on a game, see comments of other users about a game, up vote or down vote a game and interact with other users using a chat room. The sole purpose of this website is to deliver as much information about a game as possible to a user to facilitate her decision process while accessing/buying a game from Steam.

As Steam has a huge user base, it is practical to assume that a website such as gTrack would also draw attention of many such users. As such, scalability of the website with increasing number of users becomes a key issue. In this report, we first present some of the features available in our website. We then proceed to present the findings of various load tests we conducted to determine possible bottlenecks in our website. We present the results of various load tests and discuss the results in details.

Chapter 2

Webapp Description

The features available on gTrack can be depicted using a flowchart presented in Figure 1. The features include:

1. User Sign Up: Using bcrypt, we implemeted a secure user sign up process that lets an interested visitor of the website become a registered user. Uniqueness of e-mail identification is ensured to prevent different users signing up with the same e-mail address.

2. Accessing game information: Authenticated users are equipped to navigate through the website to search for games using different criteria. They are also presented with a detailed list of games that are present in Steam. Each game on this website contains relevant information about the game. A user can also view previous comments made by other users on a game and can make a comment him/herself. Authenticated users can also up or down vote a game and see the number of up and downvotes associated with a game.

3. Chatroom: Registered users can access the in website chat room, gChat to communicate with other users.

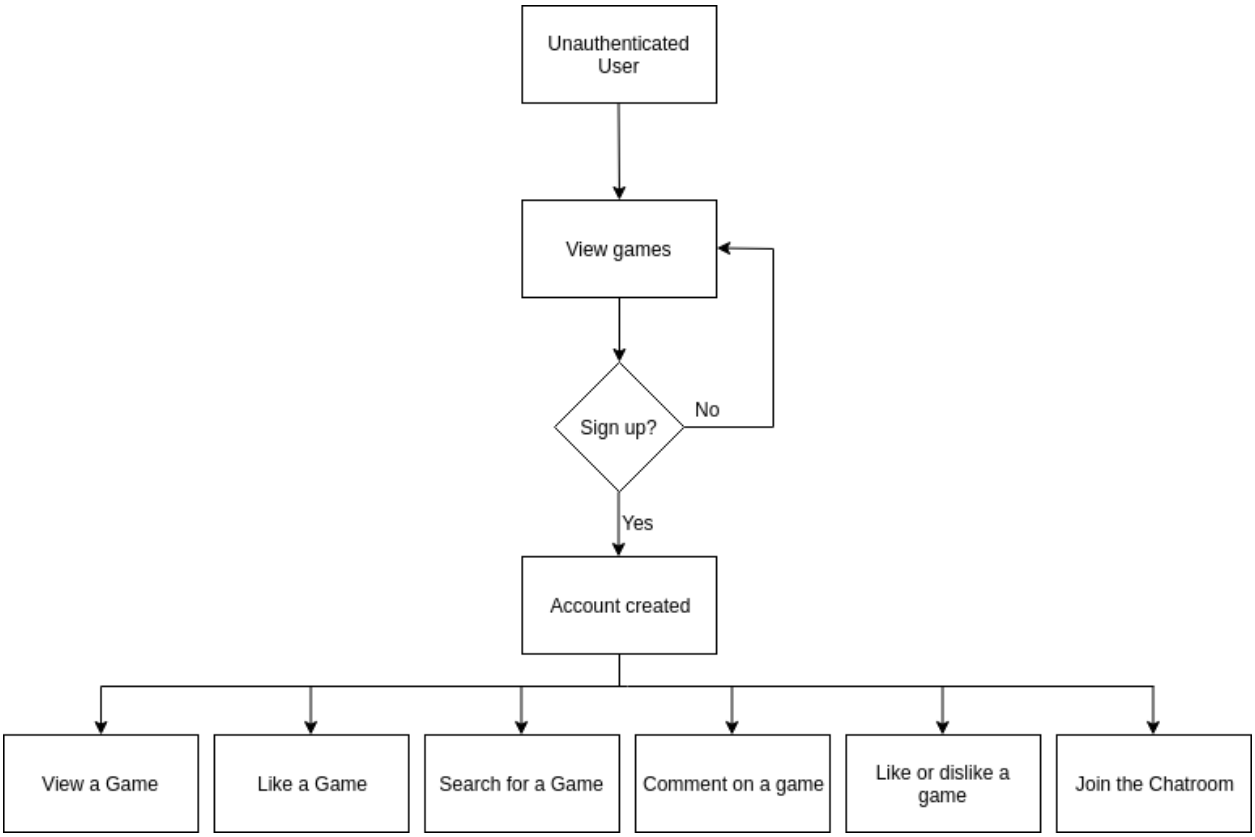

Figure 2.1: gTrack Flowchart

Chapter 3

Load Testing

3.1 Test Scenario: List all Games

In this scenario, a user logs in to our website, visits the list of games, and then logs out. We constructed tsung script having four phases, each being one minute in duration. The arrival rate in phase one was two users per second. The arrival rate was doubled in each subsequent phases. We ran this script first without having pagination on the list of games which contained more than 15000 entries. This showed us that near the end of phase one (i.e. near the end of the first minute) the mean duration of the requests spiked suddenly to 14 seconds. The duration started decreasing down to about 3.5 seconds at the start of the second phase and remained moderately constant throughout the second and third phase. Finally during the final phase the mean duration again spiked to eight minutes and in some cases ten. This is not unexpected as the number of users is much higher in the final phase. These mean durations were certainly higher than a user would expect. We presumed showing all of the games in the list was causing such long durations. Our presumption was supported when we ran the tsung script again. However, we paginated our games list this time. It showed us a near flat mean duration of fractions of a second all throughout the four phases. Figure 3.1 shows the comparison of the mean duration of requests for the current scenario with and without pagination.

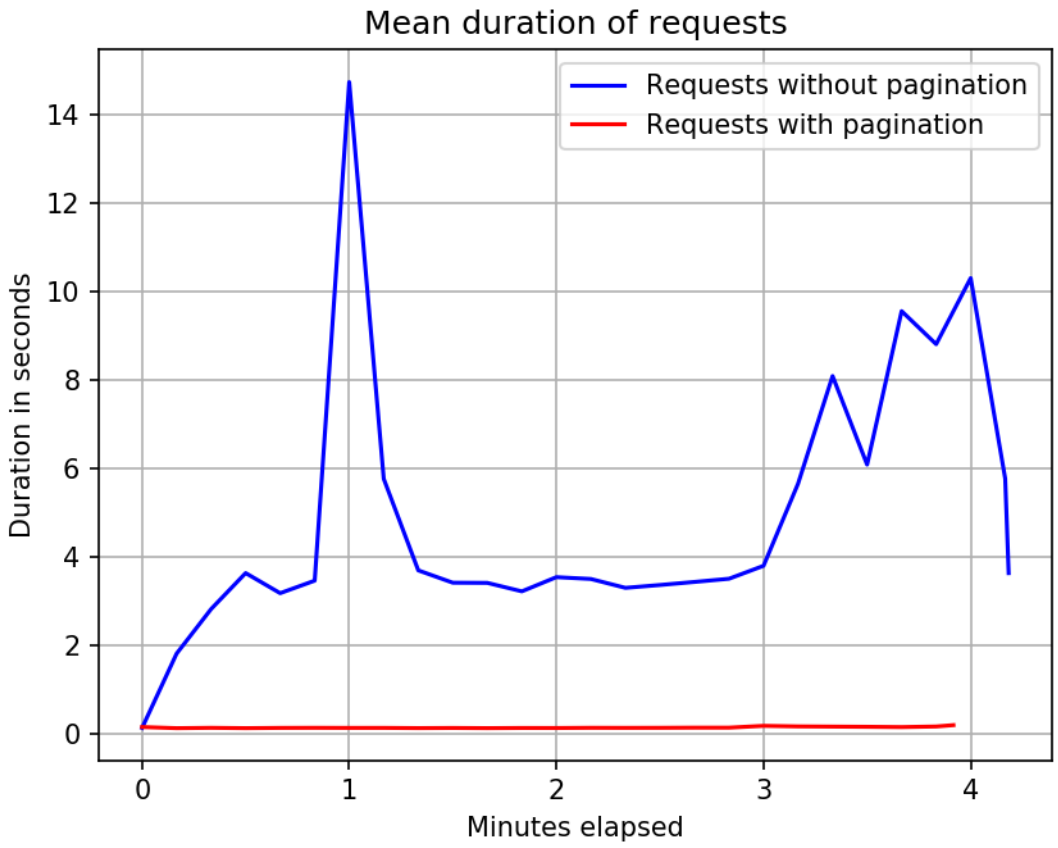

Figure 3.1: Mean duration of pages before and after pagination for scenario in Section 3.1

Chapter 4

Future Work

Chapter 5

Conclusion

Bibliography