



Bilkent University

Department of Computer Engineering

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# CS353-Database Management Systems Term Project

*Video Game Digital Distribution Service (i.e. Steam)*

## Proposal Report

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# **1 Introduction**

Online game selling platforms are commonly used by people to buy and download games on their computers. Before the development of these platforms, people needed to wait for the recently released games to come to their nearest retailer store to buy them. Considering gamers living apart from cities, they needed to wait for a long time to get these games or even these games do not come to their nearest retailer store. In addition to that, companies were creating a limited amount of boxed games that sometimes the count of these boxes was not enough for each gamer or sometimes these games leave on shelves without being sold to anyone. However, with the development of online game selling platforms, gamers have become able to buy newly released games without any overhead for waiting for that game to come to their nearest retailer store and download and play immediately as long as they have an internet connection.

Over the years, a great number of online game selling platforms were developed with many different innovations and designs. Some of them allow users to buy and download games on their computers and some of them allow their users to play any game they want if they pay monthly in a subscription.

Online game selling platforms are important for both gamers, developers and publishers in different manners. With online game selling platforms, gamers started to be able to buy and play their games anytime on any computer, individual developers started to have platforms to sell their games and publishers started to sell games faster without any concern.

# **2 Project Definition**

The digital video game distribution platform has different main features for different types of users. If the user is just a client, they can use the system to buy, comment and return games. If the user is a publisher, then they can publish games that they own for the clients. If the user is a developer, then they can easily release and update their games. Finally, if the user is a curator, then they can review and recommend games to the clients. In addition to these, users can easily create mods for the games they own and publish their modes on the platform. Any user who uses this platform can easily download these mods. Users can easily like and dislike games and

comments along with mods. In addition, users can follow curators to get detailed reviews and users can be friends with each other, play games together and see each other's activities.

As there are many users, video games to be bought, publishers to publish the games, developers to create and update games, curators to review games, comments to be left and mods to be created and downloaded and each of them need to be well structured and consistent in respect to their organization and quick accessibility without any corruption, a well-established database must be needed. There will be different roles and different relations in each structure that exists in the system. The data must be well managed and these relations must be well established, hence, a database system must be needed.

## **2.1 Why Database Management System is Needed?**

A video game digital distribution service consists of a great amount of data to maintain information about users, publishers, developers, video games and their relations among each other. In a distribution service like Steam, actions such as users buying and returning games, following curators, leaving comments, monitoring friend activity should be managed. Moreover, the publishing process of a video game through publisher and developer companies should be kept as data. Considering the vast amount of data and regulating the relations, a database management system is needed. With the help of a database system, both information storage and action regulation can be easily performed.

## **2.2 How Database Will be Used?**

The database system will be used to manage information according to the demands of users and companies. Based on different actions, database will be updated by creating new data and changing or deleting present data. The information about video games in store, review and suggestions of curators, comments of users, activities of friends will be provided. Along with the information, database will be used in order to manage actions of related elements and maintain a functional system.

### 3 Requirements

In this section, both functional and non-functional requirements of the project is discussed.

#### 3.1 Functional Requirements

The Steam Database System has 4 different end-user types: User, Curator, Publisher Company and Developer Company. For each type, they need to have authentication to perform their tasks.

##### *User*

- Users can buy games that are available in store.
- Users can return a video game they bought for a specific time period.
- Users can form a friendship.
- Users can follow curators and take suggestions.
- Users can see the activities of their friends.
- Users can leave comments on video games they bought.
- Users can like/dislike comments or video games.
- Users can build mods for specific video games and download mods that other users have created.

##### *Curator*

- Curators are users that have the authentication to have followers. All functionalities that users have are also available for curators.
- Curators can review video games and suggest games to their followers.
- Curators can leave comments on video games. Those comments will be pinned.

##### *Publisher Company*

- Publisher companies are the publishers of video games.
- Publisher companies can publish a game of developer companies.
- Publisher companies can give permission to video games of developer companies.

## *Developer Company*

- Developer companies are the developers of video games.
- Developer companies can update their published games directly.
- Developer companies need to ask permission from publisher companies.

## **3.2 Non-Functional Requirements**

### *3.2.1 Authentication & Security*

- All end-user types should sign up to the application and determine their password.
- In sign up process, the authentication process is dealt with SMS or email.
- Each type of user can sign in; however, they can only access different authentications whose limitations and permissions are specified.
- Each type of user cannot violate limitations and permissions.
- There are different types of user agreement for each type of user.

### *3.2.2 Usability*

- System provides different user interfaces for different types of users.
- In user interfaces, symbols and buttons which are commonly used in different applications should be used.

### *3.2.3 Reliability*

- System should not crash. If it crashes, the reason for the problem should be figured out and the system should be fixed.
- System should not access the credit cards' information of the user during the payment process.
- No information related to credit card and identity card such as TCK should not be stored in the database system.

### *3.2.4 Capacity*

- System should store information of all types of user for a large number of people.

## 4 Limitations

This section contains information about limitations of the Steam Database System.

### *User*

- Users can buy a game only once.
- Users can only return the games that they own in one week after buying the game.
- Users can only leave one comment for each game they own.
- Comments of users cannot be pinned to the top.
- Users can only like or dislike the games they own, not both.
- Users can see each other's activities only if they are friends with each other.
- Users cannot be followed by others, they can only have friends.
- The ID and nickname of each user must be unique.

### *Curator*

- Curators have all limitations of users except they can have followers.

### *Developer Company*

- Developers cannot update games of other developers.
- Developers need to have permission from publisher companies to get their game published.

### *Program*

- Each individual has to select their login type in order to be successfully authorized.
- Comments can only exist if there is a game and a buyer.
- Games can only be downloaded to computers.
- Name and mail of the individuals who use system must be unique (including Users, Publishers, Developers, Curators)

## 5 Conceptual Design

Below is the E/R diagram of the proposed video game digital distribution platform.

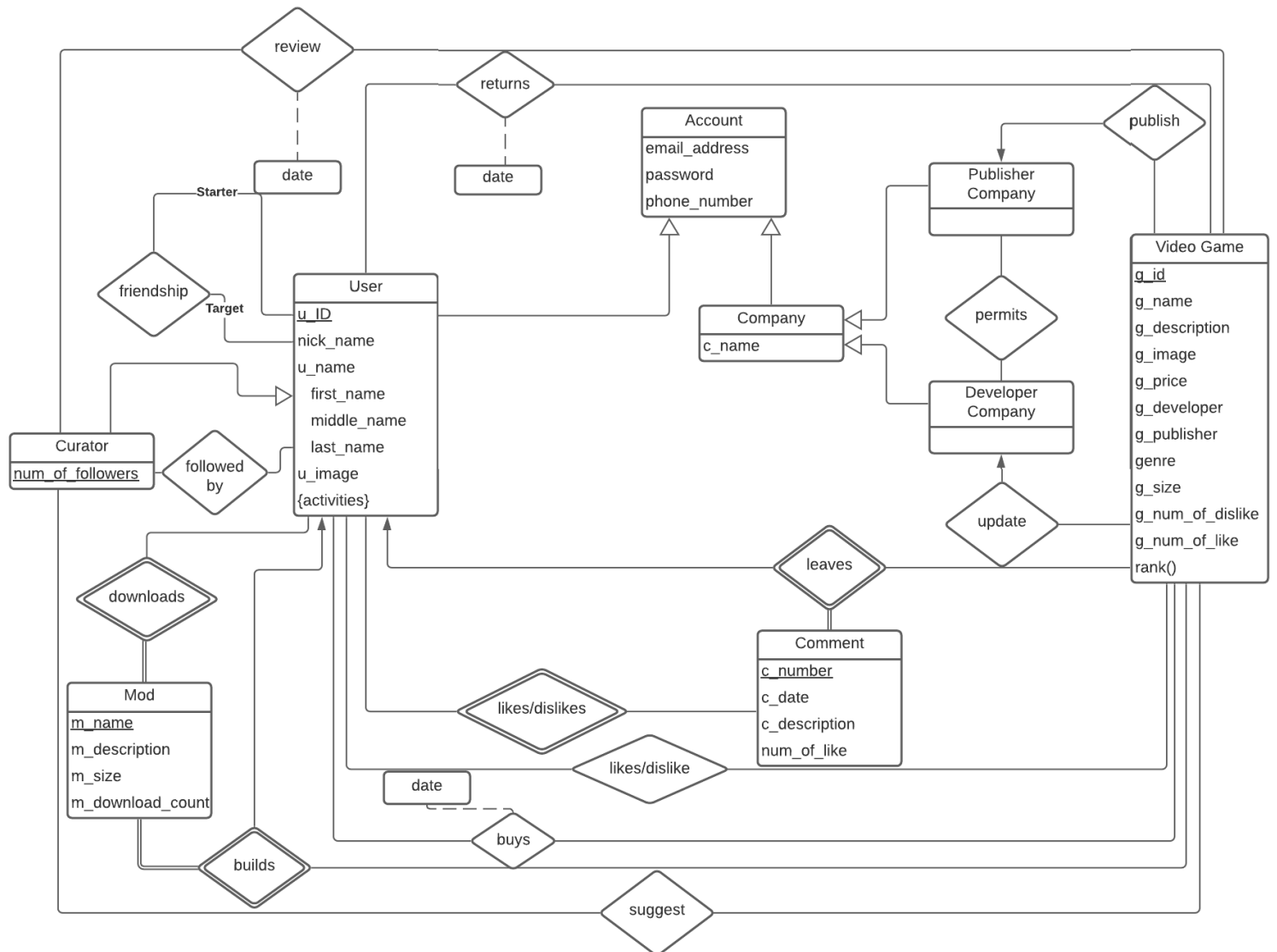


Figure 1: E/R Diagram of Database System

## 6 Website

The website of the project along with report and the repository that holds the source code can be found following:

<https://subfly.github.io/Stream-Site/#/>