



Bilkent University

Department of Computer Engineering

Database Systems Project

CS - 353 - Section 1

Video Game Digital Distribution Service - Adex Final Report

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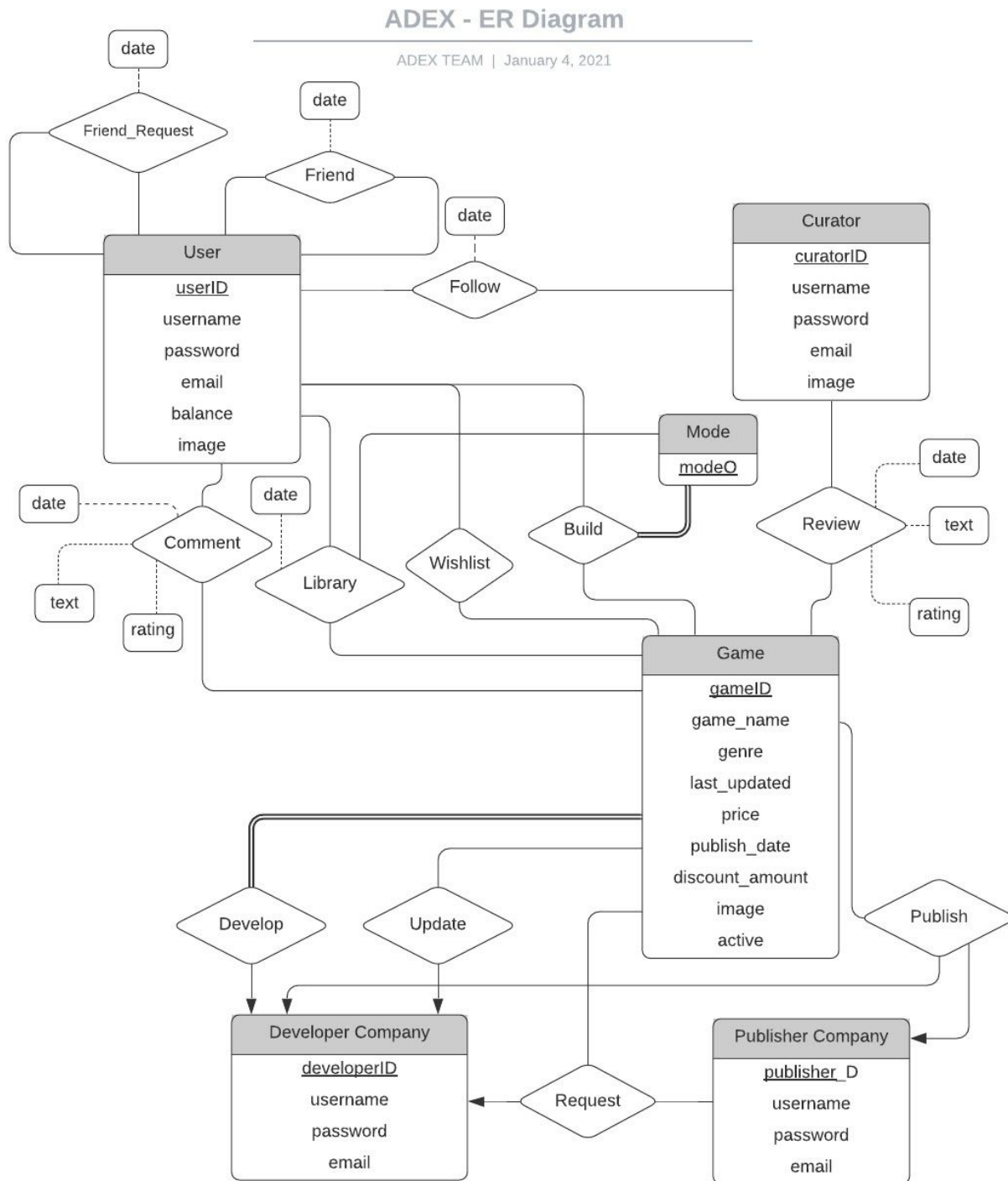
1. Project Description

Adex is a video game digital distribution service. The service provides its users with various video games of different genres. Via Adex, game development companies find the opportunity to share the games they developed with the world. The publisher companies can directly communicate with developer companies and work with them.

The database design of the platform is strong and efficient, such that it can manage a large list of different games. This way, its users find the opportunity to obtain a large game library. The use of such a database also allows for easy tracking of the games developed and published by developer companies.

This platform is suitable for use to any customer that wishes to purchase and play games, and also for both publisher and developer companies which may want to gain profit from exchanges made with the customers.

2.Final E/R Diagram



3. Final List of Tables

3.1 User

Table Definition:

```
user ( userID, username, email, password0, balance, image)  
PK: userID
```

3.2 Friend

Table Definition:

```
friend ( userID1, userID2, date0 )  
FK: userID1 REFERENCES user  
FK: userID2 REFERENCES user
```

3.3 Friend Request

Table Definition:

```
friend_request ( userID1, userID2, date0 )  
FK: userID1 REFERENCES user  
FK: userID2 REFERENCES user
```

3.4 Curator

Table Definition:

```
curator (curatorID, username, image,password0, email)  
PK: curatorID
```

3.5 Follow

Table Definition:

```
follow( userID, curatorID, date0)  
FK: userID REFERENCES user  
FK: curatorID REFERENCES curator
```

3.6 Game

Table Definition:

```
game (gameID, game_name, genre, last_updated,  
price, imageO, active, discount_amount)  
PK: gameID
```

3.7 Comment

Table Definition:

```
comment ( userID, gameID, dateO, textO, ratingO)  
FK: userID REFERENCES user  
FK: gameID REFERENCES game
```

3.8 Library

Table Definition:

```
library (userID, gameID, modO, dateO)  
FK: userID REFERENCES user  
FK: gameID REFERENCES game  
FK: modO REFERENCES mod
```

3.9 Wishlist

Table Definition:

```
wishlist (userID, gameID)  
FK: userID REFERENCES user  
FK: gameID REFERENCES game
```

3.10 Mode

Table Definition:

```
mode (modeO)  
PK: modeO
```

3.11 Build

Table Definition:

```
build( userID,gameID, modO)  
FK: userID REFERENCES user  
FK: gameID REFERENCES game  
FK: modeO REFERENCES mode
```

3.12 Review

Table Definition:

```
review(curatorID,gameID, dateO, textO, ratingO)  
FK: curatorID REFERENCES curator  
FK: gameID REFERENCES game
```

3.13 Publisher Company

Table Definition:

```
publisher_company(publisherID, username, passwordO, email )  
PK: publisherID
```

3.14 Developer Company

Table Definition:

```
developer_company(developerID, username, passwordO, email);  
PK: developerID
```

3.15 Publish

Table Definition:

```
publish(publisherID , developerID, gameID, publish_date)  
FK: publisherID REFERENCES publisher_company  
FK: developerID REFERENCES developer_company  
FK: gameID REFERENCES game
```

3.16 Update

Table Definition:

```
update (developerID,gameID,update_date,description)
FK: developerID REFERENCES developer_company
FK: gameID REFERENCES game
```

3.18 Develop

Table Definition:

```
develop(developerID,gameID) ;
FK: developerID REFERENCES developer_company
FK: gameID REFERENCES game
```

4. Implementation Details

Adex is a web-based service. The Adex service was built using the following technologies:

- React library (JavaScript)
- CSS
- PHP
- MySQL

React was used for building the front-end part of Adex. User-interface related components and application functionalities were created through combined usage of CSS and JavaScript (including React).

For back-end operations, PHP and MySQL were used. For database related queries and operations, we used MySQL, embedded in PHP code, which manages the back-end part of the service. Signup, Login, page transitions, error/validation messages, session information and other related operations were handled via PHP.

Since our team members were using different operating systems, we had problems during the setting up the Apache server and MYSQL. In order to solve this problem, we decided to use a common operating system, which was Windows 10.

In general, every member contributed in both front-end & back-end development of the project. Ege Hakan created the sketch of the project and implemented the functionalities of publisher and user. Rumeysa took part in implementation of social functionalities of users. Olcay helped in sign in & sign up and curator functionalities implementation. Kamil contributed in the development of developer functionalities and also in the debugging processes.

5. Advanced Database Features

5.1 View

We used view in order to obtain different kind of activities that the user can view. Here is sql statement used for creating the activities view:

```
"
    CREATE VIEW allActivities AS
    SELECT
    (SELECT username
    FROM adexdatabase.user
    WHERE userID = F.userID1) as username1, \"became friend
with\" as action,
    (SELECT username
    FROM adexdatabase.user
    WHERE userID = F.userID2) as username2, \"on\", F.date
    FROM adexdatabase.friend as F
    WHERE (userID1 = '$id' OR userID2 = '$id') AND F.date BETWEEN
CURDATE() - INTERVAL 1 WEEK AND CURDATE()

    UNION

    SELECT
    (SELECT username
    FROM adexdatabase.user
    WHERE userID = C.userID) as username, \"commented on\",
    (SELECT game_name
    FROM adexdatabase.game
    WHERE gameID = C.gameID), \"on\", C.date
    FROM adexdatabase.friend as F, adexdatabase.comment as C
    WHERE ((F.userID2 IN (SELECT userID2 FROM friend WHERE
userID1='$id') AND F.userID2 = C.userID)
    OR (F.userID1 IN (SELECT userID1 FROM friend WHERE
userID2='$id') AND F.userID1 = C.userID))
    AND C.date BETWEEN CURDATE() - INTERVAL 1 WEEK AND CURDATE()

    UNION

    SELECT
    (SELECT username
    FROM adexdatabase.user
    WHERE userID = L.userID) as username, \"bought this game: \",
    (SELECT game_name
    FROM adexdatabase.game
```

```

WHERE gameID = L.gameID) as game, \"on\", L.dateO
FROM adexdatabase.friend as F, adexdatabase.library as L
WHERE ((F.userID2 IN (SELECT userID2 FROM friend WHERE
userID1='$id') AND F.userID2 = L.userID)
OR (F.userID1 IN (SELECT userID1 FROM friend WHERE
userID2='$id') AND F.userID1 = L.userID))
AND L.dateO BETWEEN CURDATE() - INTERVAL 1 WEEK AND CURDATE()

UNION

SELECT
(SELECT username
FROM adexdatabase.curator
WHERE curatorID = R.curatorID) as curator, \"reviewed\",
(SELECT game_name
FROM adexdatabase.game
WHERE gameID = R.gameID) as game, \"on\", R.dateO
FROM adexdatabase.follow as F, adexdatabase.review as R
WHERE F.userID = '$id' AND F.curatorID = R.curatorID AND
R.dateO BETWEEN CURDATE() - INTERVAL 1 WEEK AND CURDATE()
ORDER BY date;
"

```

This view contains new friendships, new comments by friends, reviews by followed curators and bought games by friends. This is the screenshot of the usage of these activities obtained from this view:

ADEx	TOP 10	STORE	LIBRARY	WISHLIST	SOCIAL	ACTIVITY	SIGN OUT
uRumeyssa bought this game: madden on 2020-12-29 12:07:35							
cHakan reviewed farketmez on 2020-12-29 12:04:46							
cHakan reviewed nba on 2020-12-29 11:13:14							
cHakan reviewed madden on 2020-12-29 11:12:54							
cHakan reviewed die hard on 2020-12-29 11:12:40							
cHakan reviewed csgo on 2020-12-29 11:12:26							
cHakan reviewed modern warfare on 2020-12-29 11:12:12							
uRumeyssa became friend with uHakan on 2020-12-28 21:57:42							

6. User's Manual

Adex is an online video game digital distribution service. In order to use the services, individuals must first create an account for themselves, and the types of account differ depending on the identity of the individual. Adex provides the following individuals to set up and use accounts on Adex:

- Users (those who purchase and play games)
- Curators (those who review/suggest games)
- Developer Companies (those who develop games)
- Publisher Companies (those who publish the games developed by developer companies)

Once the individual is certain about what type of account they will set up for themselves, they provide their email, username and password information to the website. If the email and username they provided are both unique, their accounts are set up and added to the database of the system. Later, they can use these credentials to sign in to their pages.

Depending on the type of the account, the things they can do within the website differs.

Users can:

- Buy games,
- Comment on games,
- Add games to their wishlist from the store,
- Add friends,
- See their friends' wishlist and buy a game as a gift.
- See friends' activities
- See top 10 games,
- View comments on purchased games
- Add money to their account balance to use for purchasing games

Curators can:

- Review games

Developer Companies can:

- Request to have their developed games published (to publisher companies)

Publisher Companies can:

- Accept or reject publish requests from Developer Companies
- Update published games

The website is a user-friendly website and any individual with an account on Adex is easily navigated through the pages, aided by the labels and links related to the activities listed above for each type of account.