CS 353 – Spring 2018

Database Management Systems

Final Report

Social Gaming Marketplace

Group 24

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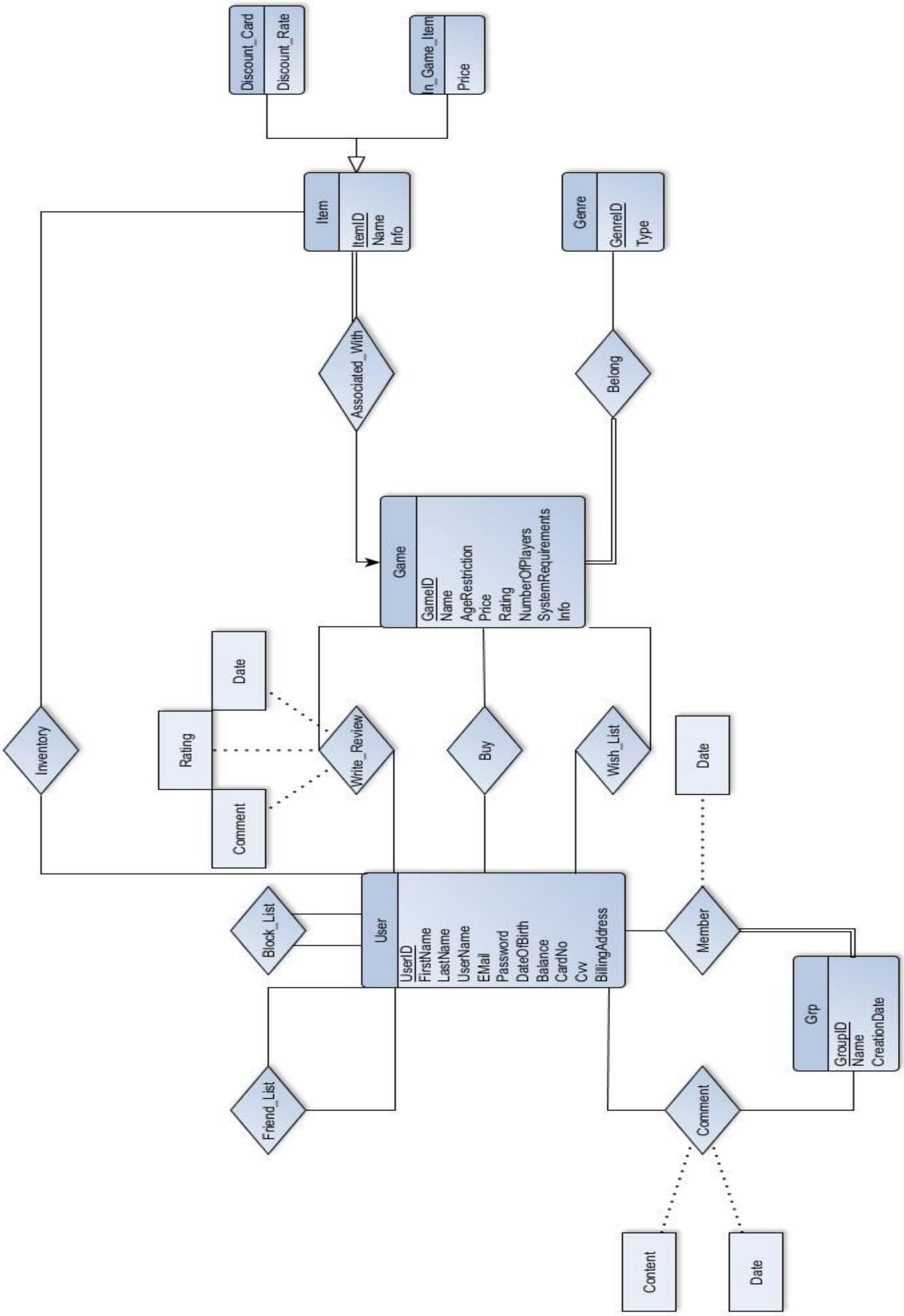
1. Project Description

Social Gaming Marketplace is a web-based application that allows users to buy, download and review games with their unique accounts along with their friends/followers. The system asks the users to have an account associated with a valid email address so that the games are evaluated fairly. The accounts will host the information regarding the username, some personal information and credit card information to enable successful payments. The application provides a platform to find and add peers to communicate and send messages to each other. The system will keep track of the players' recent activities, in-game inventories and list of games along with their genre to let the users to search for games specific to their wishes. Users are also able to search other users who share the same gaming interests. The platform allows users to rate and review the games so that when a different user browses them, they will have an opinion about the game-play. Users are allowed to add the games to their wish lists so that when a discount opportunity occurs they are notified. Users can buy games with the money in their balance or directly with their credit card. The users may block and/or unblock other users if they deem it necessary.

1.1 Project Contribution

Every group member made contribution in reports. In project proposal, Ali wrote introduction, project description part of proposal. Çağatay wrote Functional requirements, non-functional requirements, pseudo requirements and limitations part of the proposal. Mehmet Taha and Ulaş draw E-R diagram part of proposal. In the design stage, Mehmet Taha handle Relational Models, Functional Dependencies and Table Definition part of design report. Çağatay handle use cases/scenarios and algorithm part of design report. Ulaş handle the sql statements of corresponding user interface design. Ali handle the user interface design of the project. In the implementation stage, firstly Ulaş wrote the Java code of the tables. After that each group member take the pages that they desire in order to implement in php using html. Çağatay implement the store page, genre and manage info page. Also he implement the html part of these pages. Ulaş implement the game page, community page, group page and the html part of these pages. Mehmet Taha implement the profile page, inventory page and the html part of these pages. Ali implement the search page and the html part of this page.

2. Final ER Diagram



3. List of Tables

3.1. User

Relational Model:

User(UserID, FirsName, LastName, UserName, Email, Password, DateOfBirth, Balance, CardNo, Cvv, BillingAdress)

3.2. Game

Relational Model:

Game(GameID, Name, AgeRestriction, Price, Rating, NumberOfPlayers, SystemRequirements, Info)

3.3. Buy

Relational Model:

Buy(UserUserID, GameGameID)
FOREIGN KEY : UserUserID REFERENCES User(UserID)
FOREIGN KEY : GameGameID REFERENCES Game(GameID)

3.4. FriendList

Relational Model:

FriendList(UserUserID, UserUserID2)
FOREIGN KEY : UserUserID REFERENCES User(UserID)
FOREIGN KEY : UserUserID2 REFERENCES User(UserID)

3.5. BlockList

Relational Model:

BlockList(UserUserID, UserUserID2)
FOREIGN KEY : UserUserID REFERENCES User(UserID)
FOREIGN KEY : UserUserID2 REFERENCES User(UserID)

3.6 Write_Review

Relational Model:

Write_Review(UserUserID, GameGameID, Comment, Rating, Date)

FOREIGN KEY : UserUserID REFERENCES User(UserID)

FOREIGN KEY : GameGameID REFERENCES Game(GameID)

3.7. WishList

Relational Model:

WishList(UserUserID, GameGameID)

FOREIGN KEY : UserUserID REFERENCES User(UserID)

FOREIGN KEY : GameGameID REFERENCES Game(GameID)

3.8. Item

Relational Model:

Item(ItemID, GameGameID, Name, Info)

FOREIGN KEY : GameGameID REFERENCES Game(GameID)

3.9. Inventory

Relational Model:

Inventory(UserUserID, ItemItemID)

FOREIGN KEY : UserUserID REFERENCES User(UserID)

FOREIGN KEY : ItemItemID REFERENCES Item(ItemID)

3.10. Discount_Card

Relational Model:

Discount_Card(ItemID, DiscountRate)

FOREIGN KEY : ItemID REFERENCES Item(ItemID)

3.11. In_Game_Item

Relational Model:

In_Game_Item(ItemID, Price)

FOREIGN KEY : ItemID REFERENCES Item(ItemID)

3.12. Genre

Relational Model:

Genre(Type)

3.13. Belong

Relational Model:

Belong(GameGameID, GenreType)

FOREIGN KEY : GenreType REFERENCES Genre(Type)

3.14. Grp

Relational Model:

Grp(GroupID, Name, CreationDate)

3.15. Member

Relational Model:

Member(UserUserID, GroupGroupID, Date)

FOREIGN KEY : UserUserID REFERENCES User(UserID)

FOREIGN KEY : GroupGroupID REFERENCES Grp(GroupID)

3.16. Comment

Relational Model:

Comment(UserUserID, GroupGroupID, Content, Date)

FOREIGN KEY : UserUserID REFERENCES User(UserID)

FOREIGN KEY : GroupGroupID REFERENCES Grp(GroupID)

4. Implementation Details

We used MySQL for database. We connected to the databases in our Dijkstra accounts. With a Java program, we connected to that database and created the tables we need by writing table creation queries in MySQL as string and executing them using executeUpdate() method in Java.

For the user interface, we used HTML to design the web pages and CSS to implement the styles. We also used Javascript lanugage. For a better-looking and user-friendly interface, we used Bootstrap framework. The HTML and CSS codes were written in Atom text-editor.

Finally, for the back-end implementation of our system, we used PHP. We have all of our database operations (insertion, deletion, information retrieval) in PHP files. We have some PHP files that has HTML code in them, which shows the interface. We also have PHP files for transition between pages. For instance, for login, logout, buy a game, or join a group, we have PHP files that do required operations and then direct to the related page. We used $_GET, $_POST and $_SESSION to get or send the information to the next or previous pages.

One problem we faced during implementation was that with pagination. For, example, in Store page, we have 3 different paginations for Games, with respect to rating, price and name. In this page, we get a page number as input from the URL. When we used a single page number as a variable. This created a problem as we couldn’t see the information for games in pagination. We solved this problem by using three different page number for each pagination.

The other problem was regarding to search. We needed to get the content of the search field with $_GET in search page to get the content from the page URL. However, we couldn’t do it since the form for the search area gives the input with $_POST. Therefore, we couldn’t get the content at first. We managed to do it by converting the $_POST for search content to $_GET and able to get the search content from URL.

5. Advanced Database Components

5.1 Delete Group Trigger

```
CREATE TRIGGER delete_group
ON Member
AFTER DELETE
AS
DELETE FROM Grp WHERE GroupID NOT IN ( SELECT GroupGroupID FROM Member)
```

5.2 Remove From WishList Trigger

```
CREATE TRIGGER remove_wishlist
ON Buy
AFTER INSERT
AS
DELETE FROM WishList WHERE Buy.UserUserID = WishList.UserUserID AND
Buy.GameGameID = WishList.GameGameID
```

5.3 Age Restriction View

We write this view as PHP code because we used variables in PHP while creating and using this view.

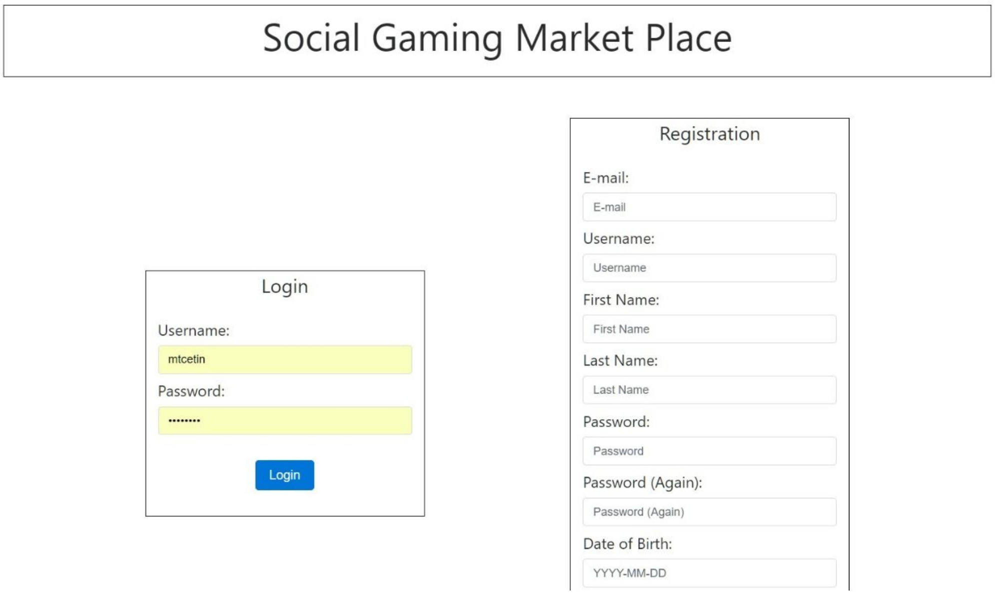
```
$user_id = $row['UserID'];
$date_of_birth = $row['DateOfBirth'];
$age = substr(date("Y-m-d"), 0, 4) - substr($date_of_birth, 0, 4);

$sql_view = "CREATE OR REPLACE VIEW AgeRestrictedGame" . $user_id . " AS SELECT
* FROM Game WHERE AgeRestriction < " . $age . ";";

mysqli_query($conn, $sql_view);
```

6. User's Manual

Register/Login Page



Social Gaming Market Place

Login

Username: mtcetin

Password: ••••••••

Registration

E-mail: E-mail

Username: Username

First Name: First Name

Last Name: Last Name

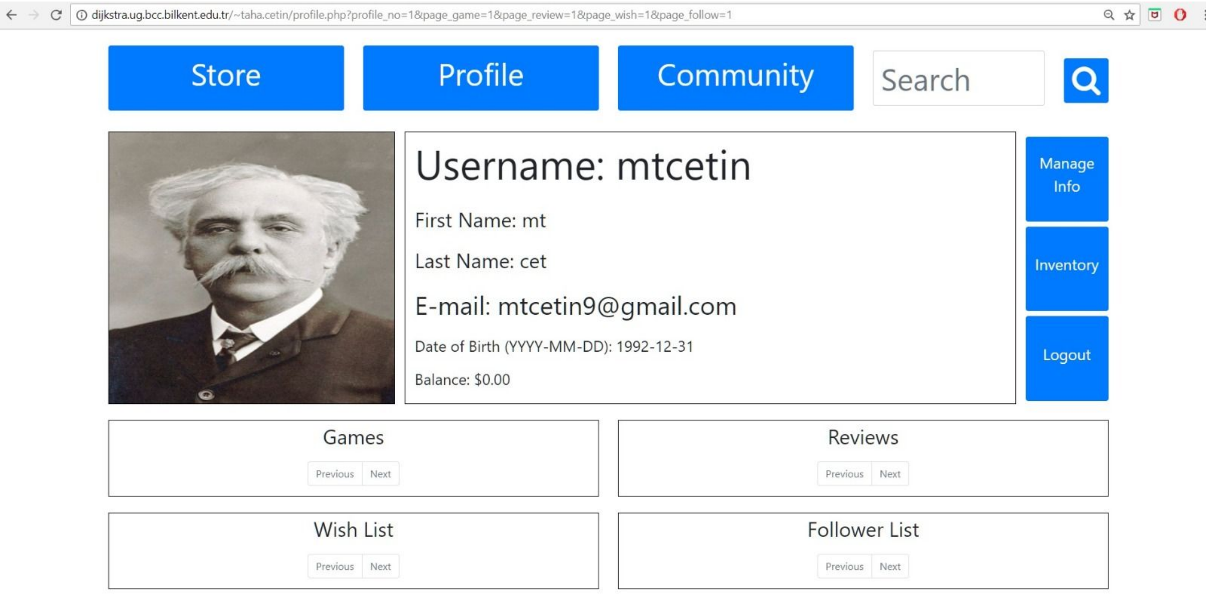
Password: Password

Password (Again): Password (Again)

Date of Birth: YYYY-MM-DD

This is the first page that the user sees when entered the system. In this page, if the user already has an account, they can login just by typing their username and password. Otherwise, they can register the system by entering required information. After registered, the system logs in the user automatically and redirects to the store page, which is the main page of our system.

Profile Page



dijkstra.ug.bcc.bilkent.edu.tr/~taha.cetin/profile.php?profile_no=1&page_game=1&page_review=1&page_wish=1&page_follow=1

Username: mtcetin

First Name: mt

Last Name: cet

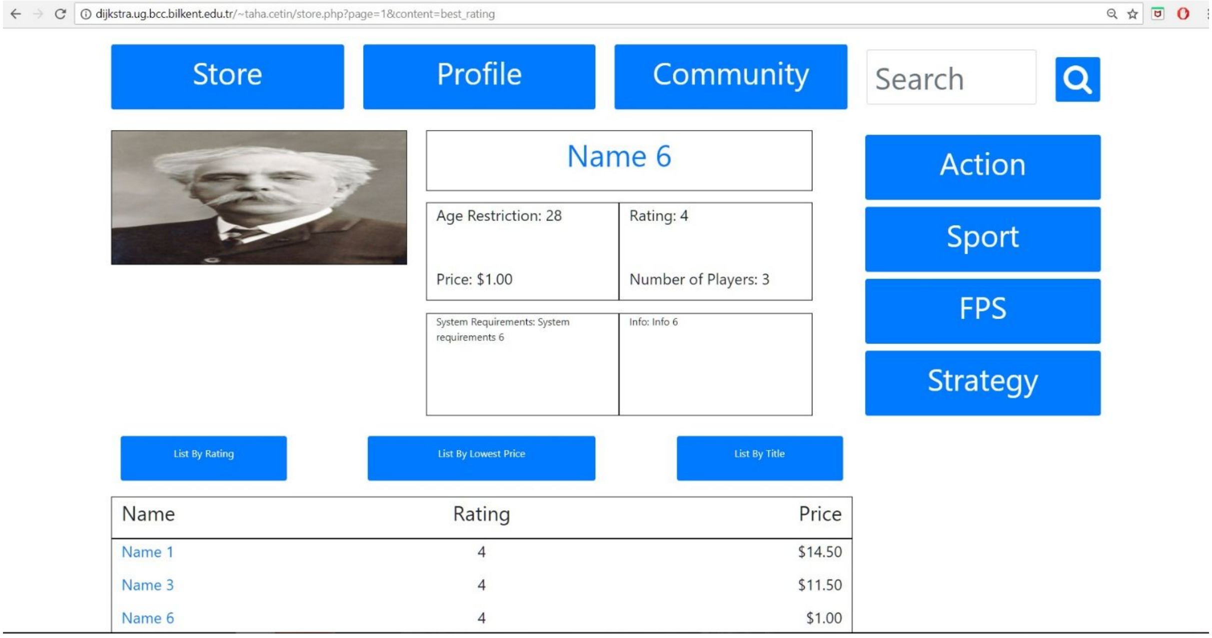
E-mail: mtcetin9@gmail.com

Date of Birth (YYYY-MM-DD): 1992-12-31

Balance: $0.00

This is the profile of the user. From this page, user can see their account information and picture. There is a panel with 3 buttons next to the account information. From these buttons, users can manage and change their information (card information, password etc.), see their inventory and logout from the system. The panel on the bottom of the page shows the games the user bought, their reviews, games in their wishlist and also their followers with appropriate links.

Store Page



Name 6

Age Restriction: 28

Rating: 4

Price: $1.00

Number of Players: 3

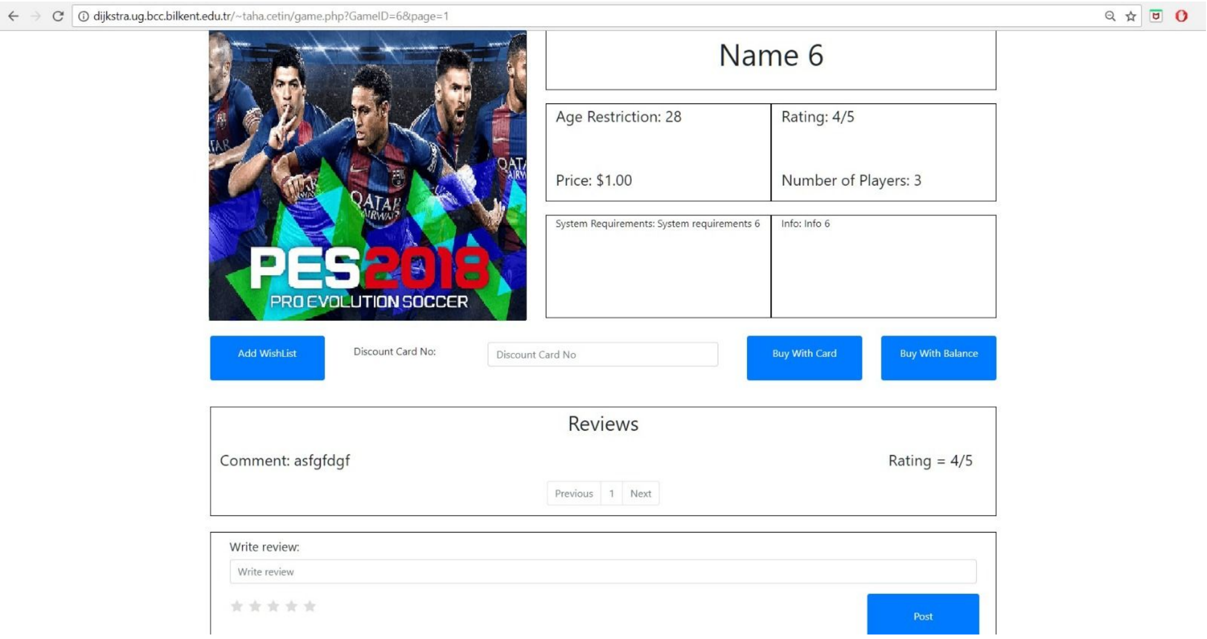
System Requirements: System requirements 6

Info: Info 6

Name	Rating	Price
Name 1	4	$14.50
Name 3	4	$11.50
Name 6	4	$1.00

In the store page, there appears a game that is bought the most at the top. If there is no such game, a random game appears. You can see the information about the game and click to that game to see its page. On the bottom, you can see all the games in the system and you can basically sort them according to their rating, price or title(alphabetically) by using respective buttons. On the right, you can see the genres for the games. You can click on these buttons to see only the games that are the type of the given genre.

Game Page



dijkstra.ug.bcc.bilkent.edu.tr/~taha.cetin/game.php?GameID=6&page=1

Name 6

Age Restriction: 28

Rating: 4/5

Price: $1.00

Number of Players: 3

System Requirements: System requirements 6

Info: Info 6

Discount Card No:

Reviews

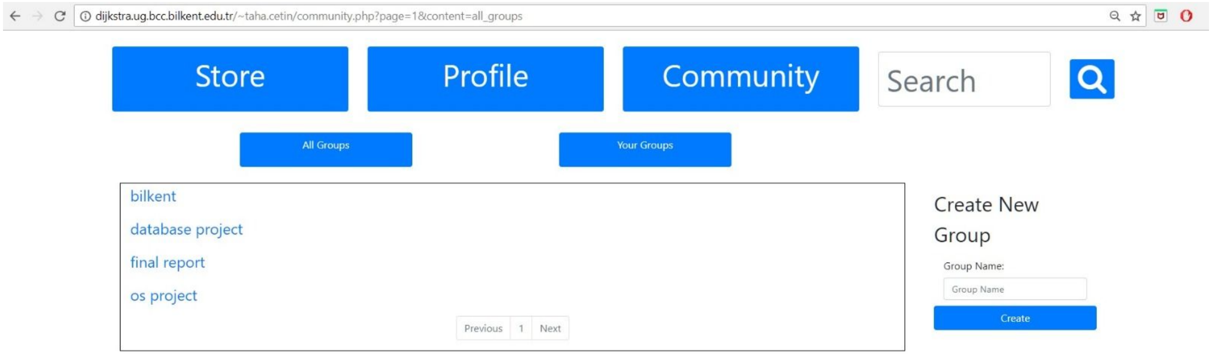
Comment: asfgfdgf

Rating = 4/5

Write review:

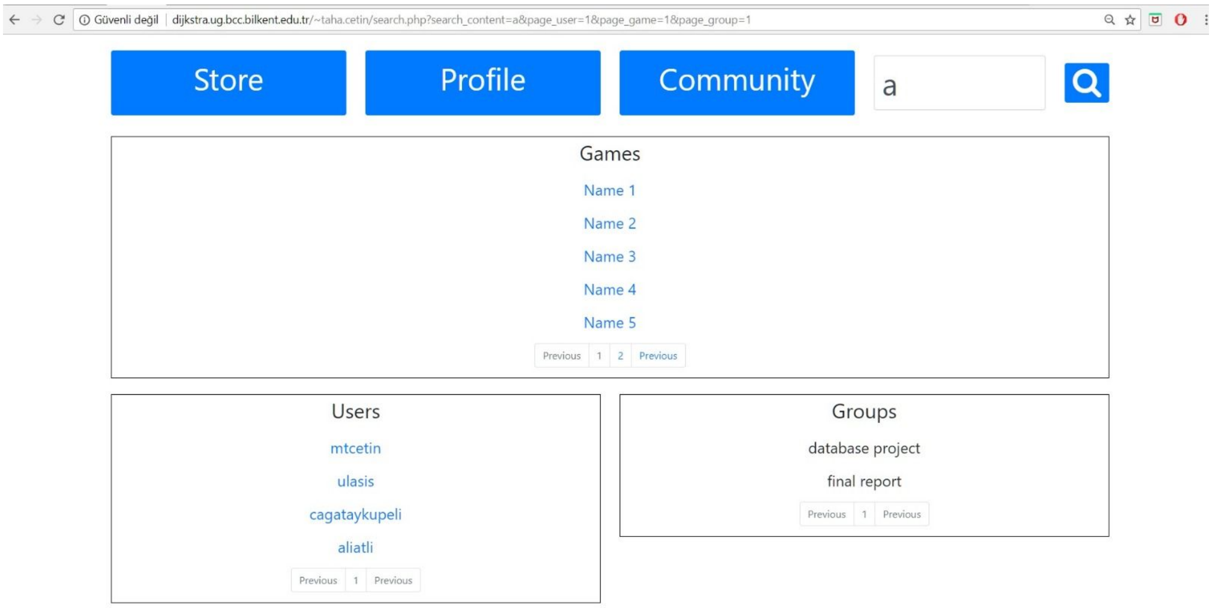
In the game page, you can basically see the information about the game, its name, picture, age restriction, rating, price, system requirements and game description. You can buy the game with your balance or with your credit card with respective buttons, only if you have enough balance of valid credit card information. You can also use discount card by entering its number to get discount. Moreover, you can add the game to your wishlist and remove it from your wishlist. You can see the reviews made for that game with ratings. You can also comment to the game and give a rating by using stars, and click “Post” to send the review. You can only review a game and give rating once.

Community Page



This is the community page. In this page, user can see all groups in the system and their groups(the groups they are members of). User can see these groups by clicking to “All Groups” or “Your Groups” buttons. On the lists of the groups, users can go to the page of respective group by clicking on the name of that group. On the right, there is a panel for creating a group. User can basically enter the name for the group and then click “Create” to create a group.

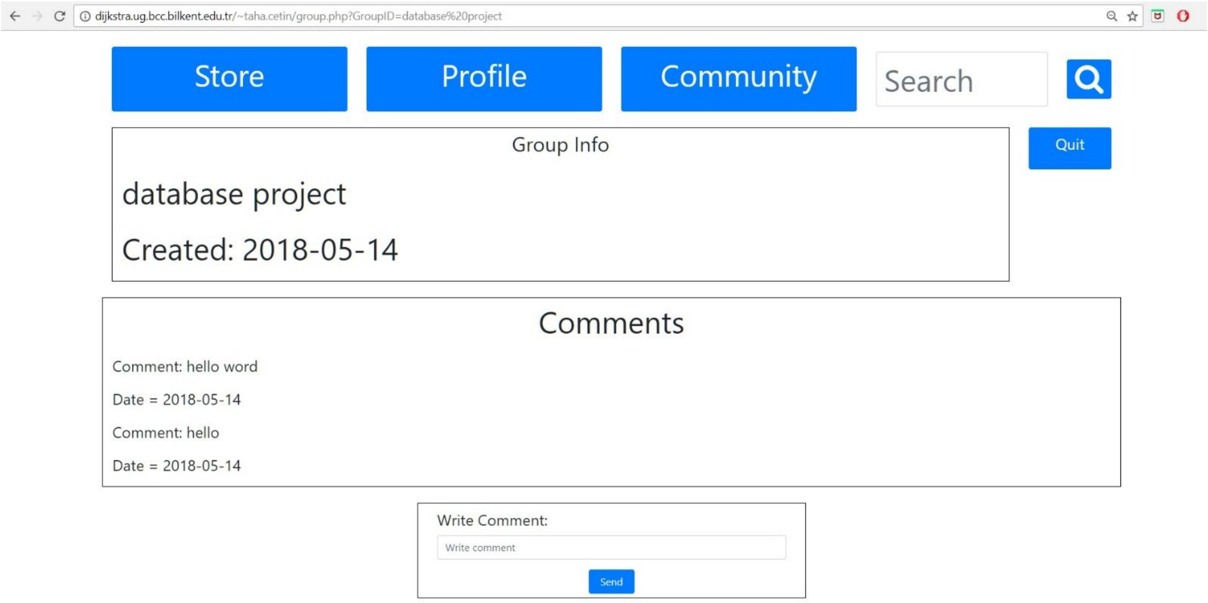
Search Page



You can search for anything by using the text area and search button that appears at the upper right corner of every page. In search page, you can see the Games, Users and

Groups seperately in pagination. You can go to the pages of these games, users or groups by just clicking on them.

Group Page


dijkstra.ug.bcc.bilkent.edu.tr/~taha.cetin/group.php?GroupID=database%20project
Store
Profile
Community
Search
Quit
Write comment
Send

Group Info

database project

Created: 2018-05-14

Comments

Comment: hello word

Date = 2018-05-14

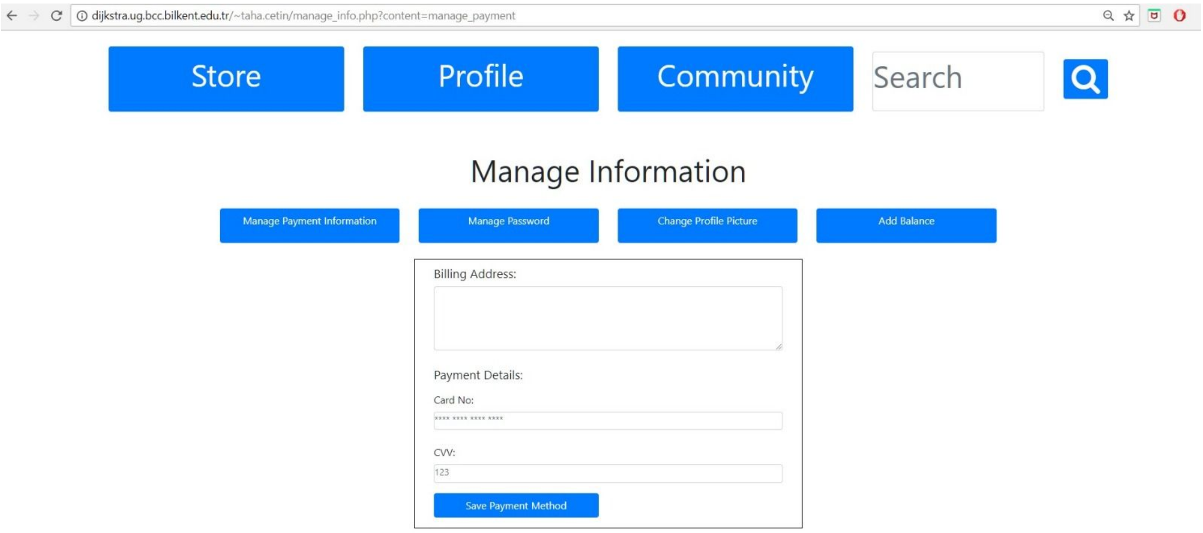
Comment: hello

Date = 2018-05-14

Write Comment:

In group page, you can see the name of that group and creation date. You can basically join and quit a group with the button on the right hand side. You can also comment to a group and see the comments only if you are a member of that group. You can also write a comment and post it by clicking on the button “Send” on the bottom of the group page.

Manage Information Page


dijkstra.ug.bcc.bilkent.edu.tr/~taha.cetin/manage_info.php?content=manage_payment
Store
Profile
Community
Search
Manage Payment Information
Manage Password
Change Profile Picture
Add Balance
Save Payment Method

Manage Information

Billing Address:

Payment Details:

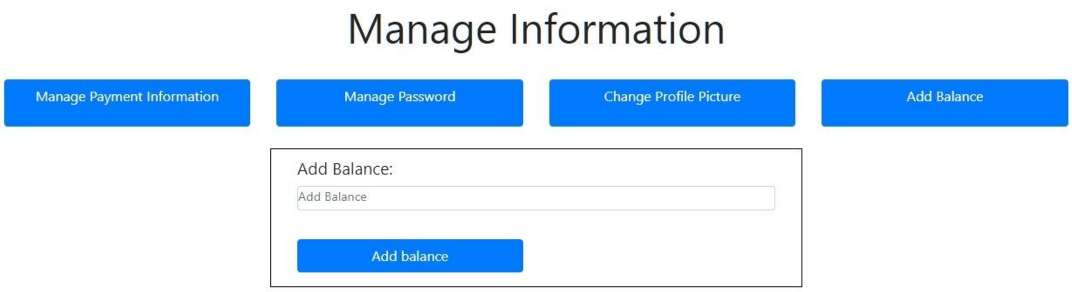
Card No:

**** **** **** ****

CVV:

123

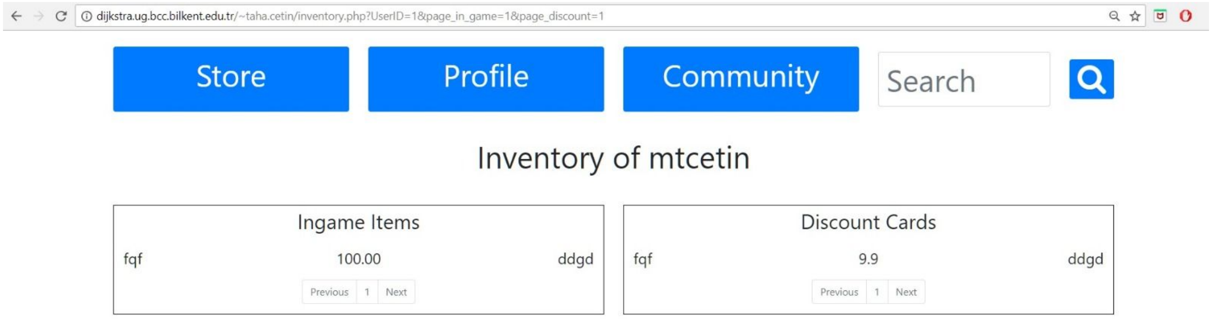
In manage information page, you can change your payment information (billing address, card no, Cvv no), change your password, change your profile picture, and add balance. If you enter valid information for these fields, your account information and details are changed.


Manage Information

Add Balance:

Add Balance

Inventory Page


dijkstra.ug.bcc.bilkent.edu.tr/~taha.cetin/inventory.php?UserID=1&page_in_game=1&page_discount=1

Inventory of mtcetin

Ingame Items		
fqf	100.00	ddgd

Discount Cards		
fqf	9.9	ddgd

You can reach your inventory by clicking to Inventory on your profile. In this page, you can see your items in your inventory, ingame items and discount cards seperately. You can learn the code and price for your items that you'll use.