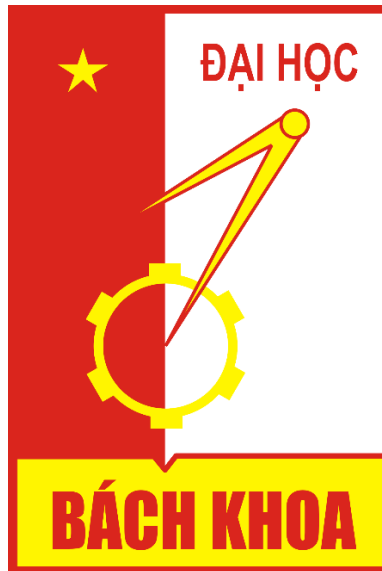


HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATION AND TECHNOLOGY



DATABASE LAB REPORT

Topic:
Internet Game Database (IGDb)

Students names: Nguyen Gia Bach – 20160306
 Hoang Truong Giang – 20161171
 Nguyen Tuan Hai – 20161311

Class: ICT 01 – K61

Under supervision of
Prof. Nguyen Thi Oanh, PhD
Hanoi, 2019

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1. Overview

Nowadays, video game is a popular form of entertainment. With a wide variety of games currently on the market, it is not easy to find an enjoyable and quality game to play. It is also difficult to keep track of new games releasing, and managing all the games one wants to check out. Therefore, we want to use this Database project to create an internet video game database (IGDb) website that focus on simplicity, convenience and user friendliness.

a. Objectives

Our group objective is to create a functional game database website, with basic functions such as finding games based on categories, leaving reviews and ratings for games, adding games to your library and organize them into proper category. This will act as a checklist to keep users' progress on video games.

b. Usage scenario

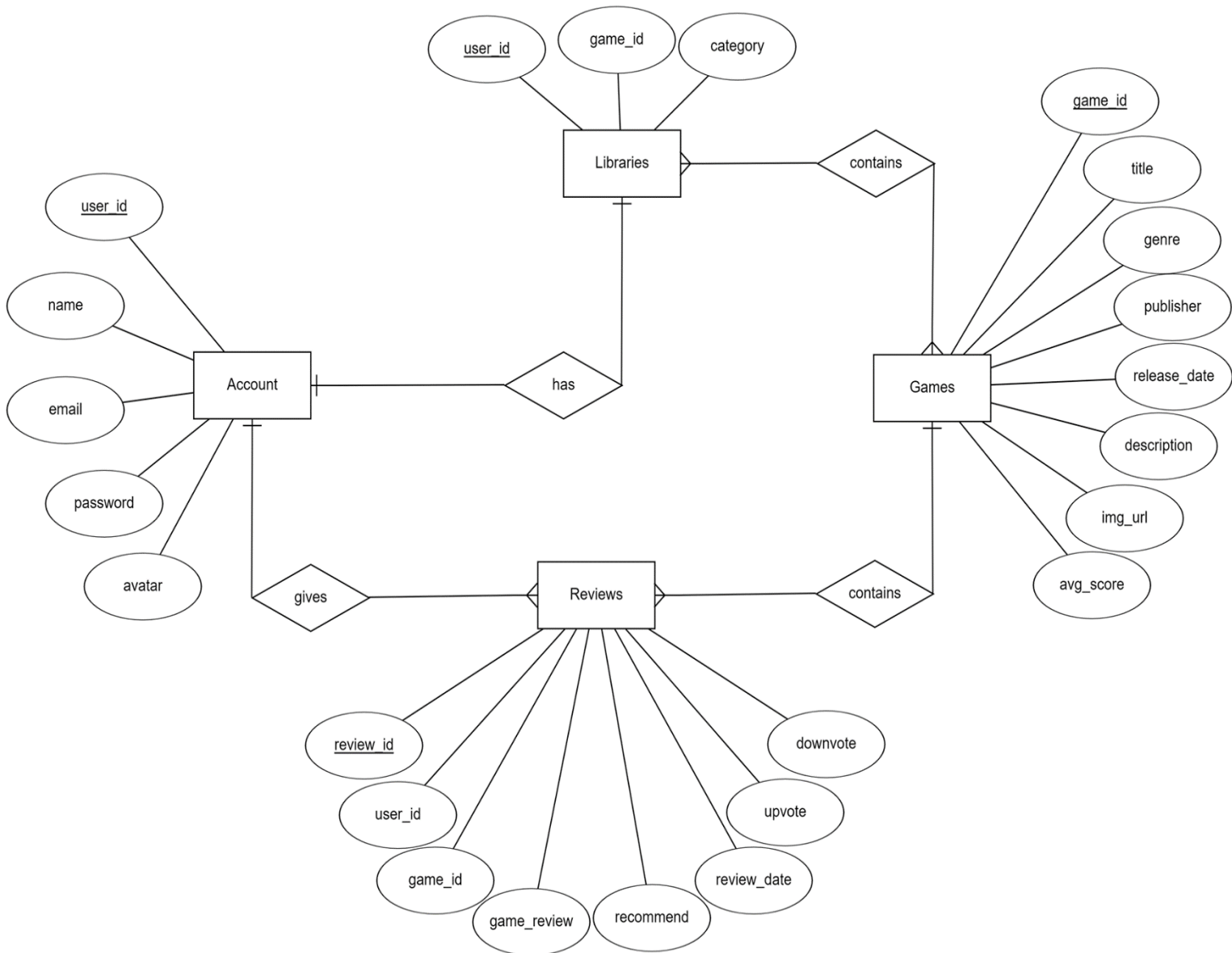
Our game database website is designed to help users on their video games journey. For example, when a user do not know what game to play next, they can easily check their library's "Plan to play" category to try out one of the games that they are interested in but forgot at one point.

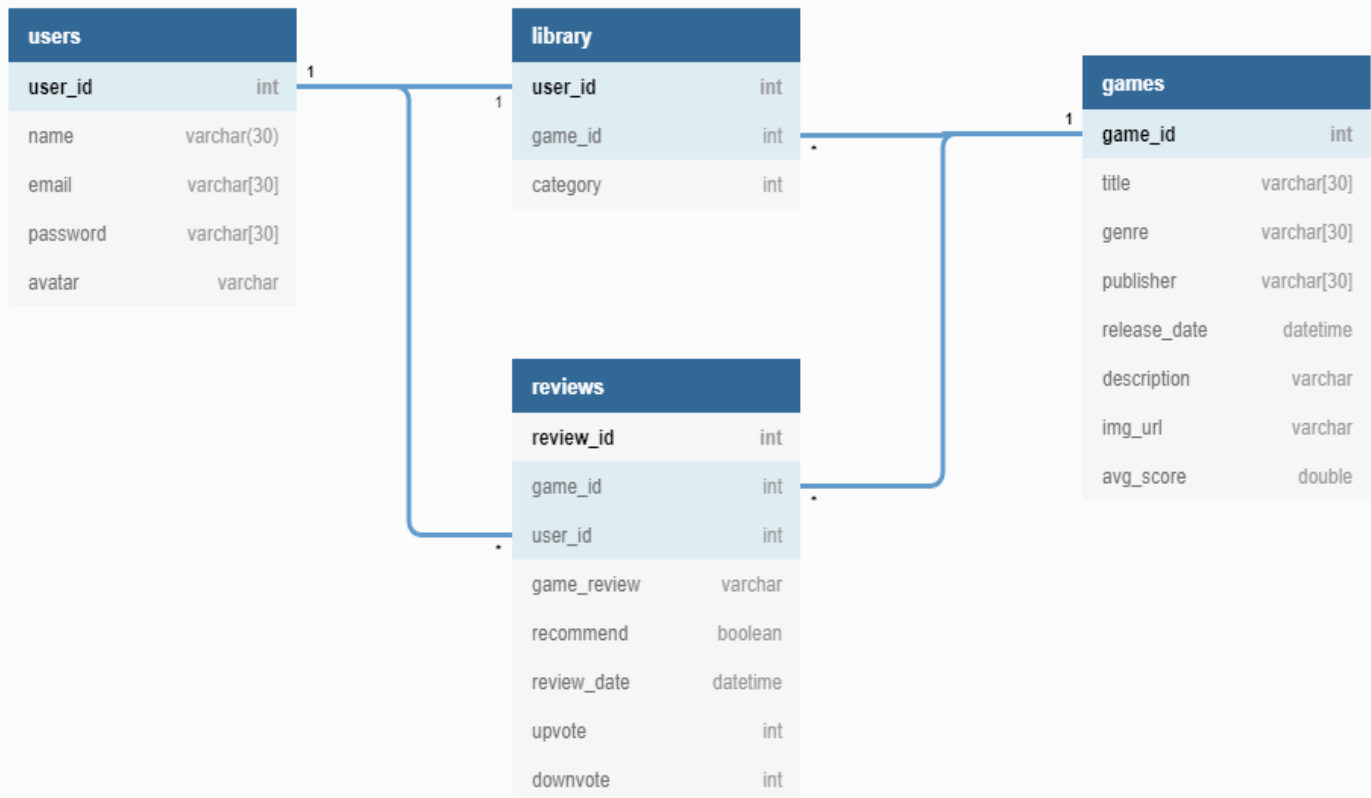
c. Functionalities

- Login/logout/register
- Browse games in categories: release date/most popular/highest rated
- Add game to library
- Organize games in library with four categories: plan to play/completed/playing/dropped
- Give reviews/ratings to rank up, vote on others' reviews
- See games' info: average game score, reviews, descriptions, publishers of latest games release
- Search games by name, genre

2. Database Design

a. Entity Relationship Diagram





b. Detailed tables and their relationships

- **Users:** Used to store all information related to user, has 1-1 relation with library table, 1-n relation with reviews table (1 user has 1 library but can have many reviews)
- **Library:** Acts as a middle table connecting users table and games table using foreign keys, has a 1-1 relationship with users table, n-1 relationship with games table (1 user has 1 library, 1 library can have many games)
- **Reviews:** Used to store all information related to users' reviews, has n-1 relationships with both users and games table (many reviews can belong to 1 user or 1 game)
- **Games:** Used to store all information related to game, has 1-n relationship with both library and reviews table (1 game can belong to many libraries, 1 game can have many reviews)

3. Source Code/User Interface Design

a. Queries:

- Store games display:

```
<div class=gamesContainer>
  <div class="grid-container">
    <?php
      $filter = isset($_SESSION['filter']) ? $_SESSION['filter'] : '';
      $filter_query = isset($_SESSION['filter_query']) ? $_SESSION['filter_query'] : 'game_id';
      $result = pg_query($db_conn, "SELECT * FROM igdb.game_view_store ORDER BY $filter_query DESC;");
      $numrows = pg_num_rows($result);

      if ($numrows == 0){
        echo 'No games added!';
      }
      else {
        $arr = pg_fetch_all($result);
        foreach($arr as $array)
        {
          $img_url = $array['img_url'];
          $cover = strtok($img_url, ";");
          $title = $array['title'];
          $description = $array['description'];
          $game_id = $array['game_id'];

          echo '<div class="grid-item">
            <span class="gameCover">
              <img src=\'.$cover.\' width="200px" height="100px">
            </span>
            <span class="gameInfo">
              <div class="gameName" onclick="game onclick(\'\'.$game_id.\'\' )">\'.$title.\'</div>
              <div class="gameDescription">\'.$description.\'</div>
            </span>
          </div>';
        }
      }
    ?>
  </div>
</div>
```

- Store games slideshow:

```
<div class="carousel-inner">
  <?php
    $result = pg_query($db_conn, "SELECT * from igdb.games;");
    $items = pg_fetch_all($result);
    $item0 = $items[0];
    $game_id0 = $item0['game_id'];
    $img_url0 = $item0['img_url'];
    $cover0 = strtok($img_url0, ";");

    echo '<div class="item active">
      
    </div>';

    for ($i = 1; $i < count($items); $i++){
      $item_i = $items[$i];
      $img_url = $item_i['img_url'];
      $game_id = $item_i['game_id'];
      $cover = strtok($img_url, ";");
      echo '<div class="item" onclick="game onclick(\''. $game_id. '\')">
        
      </div>';
    }
  ?>
</div>
```

- Game filter:

```
<div class=gamesContainer>
  <div class="grid-container">
    <?php
      $gameFilter = isset($_SESSION['gameFilter']) ? $_SESSION['gameFilter'] : '';
      $gameFilter_query = isset($_SESSION['gameFilter_query']) ? $_SESSION['gameFilter_query'] : 'game_id';
      $result = pg_query($db_conn, "SELECT g.game_id, g.title, g.description, g.img_url, g.release_date, g.avg_score,
                                   count(l.game_id) AS total_added FROM igdb.games g
                                   INNER JOIN igdb.library l ON l.game_id = g.game_id
                                   WHERE l.user_id = '". $_SESSION['user_id'] ."'
                                   GROUP BY g.game_id, g.title, g.description, g.img_url, g.release_date, g.avg_score
                                   ORDER BY $gameFilter_query DESC;");

      $numrows = pg_num_rows($result);

      if ($numrows == 0) {
        echo 'No games added!';
      }
      else {
        $arr = pg_fetch_all($result);
        foreach($arr as $array) {
          $img_url = $array['img_url'];
          $cover = strtok($img_url, ";");
          $title = $array['title'];
          $description = $array['description'];
          $game_id = $array['game_id'];

          echo ' <div class="grid-item">
                <span class="gameCover">
                  
                </span>
                <span class="gameInfo">
                  <div class="gameName" onclick="game onclick(\'\'.' . $game_id . '\')">'. $title . '</div>
                  <div class="gameDescription">'. $description . '</div>
                </span>
              </div>';
        }
      }
    <?>
  </div>
</div>
```


- Review filter:

```

<div class=reviewContainer>
  <div class="grid-container">
    <?php
      $reviewFilter = isset($_SESSION['reviewFilter']) ? $_SESSION['reviewFilter'] : '';
      $reviewFilter_query = isset($_SESSION['reviewFilter_query']) ? $_SESSION['reviewFilter_query'] : 'review_id';

      if ($reviewFilter_query == "review_date" || $reviewFilter_query == "review_id") {
        $result = pg_query($db_conn, "SELECT DISTINCT * FROM igdb.reviews r
          INNER JOIN igdb.games g ON g.game_id = r.game_id
          INNER JOIN igdb.library l on l.game_id = g.game_id AND l.user_id = r.user_id
          WHERE l.user_id = '".$_SESSION['user_id']."' ORDER BY $reviewFilter_query DESC;");
      }
      if ($reviewFilter_query == "t" || $reviewFilter_query == "f") {
        $result = pg_query($db_conn, "SELECT DISTINCT * FROM igdb.reviews r
          INNER JOIN igdb.games g ON g.game_id = r.game_id
          INNER JOIN igdb.library l on l.game_id = g.game_id AND l.user_id = r.user_id
          WHERE l.user_id = '".$_SESSION['user_id']."' AND r.recommend = '".$reviewFilter_query."'");
      }

      $numrows = pg_num_rows($result);

      if ($numrows == 0) {
        echo 'User has no reviews!';
      }

      else {
        $arr = pg_fetch_all($result);
        foreach($arr as $array)
        {
          $title = $array['title'];
          $status = $array['category'];
          $img_url = $array['img_url'];
          $cover = strtok($img_url, ";");
          if ($status == 1) $statusText = "Playing";
          else if ($status == 2) $statusText = "Completed";
          else if ($status == 3) $statusText = "Plan to play";
          else if ($status == 4) $statusText = "Dropped";
          $recommend = $array['recommend'];
          if ($recommend == 't') $recommend = "Recommended";
          if ($recommend == 'f') $recommend = "Not Recommended";
          $date = $array['review_date'];
          $content = $array['game_review'];
          $up = $array['upvote'];
          $down = $array['downvote'];
          $game_id = $array['game_id'];
          echo '<div class="grid-item">
            <span class="userAvaReview">
              <img src='.$cover.' width="100%" height="100%">
            </span>
            <div class="reviewInfo">
              <div class=reviewTop>
                <div class="gameNameReview" onclick="game_onclick(\''.$game_id.'\')">'.$title.'</div>

```

- Trigger to update game score automatically:

```
--trigger for calculating avg_score
```

```
CREATE or REPLACE function igdb.tg_af_insert_review() returns trigger as
$$
DECLARE
    pos_review float := 0;
    total_review float := 0;
BEGIN
    SELECT INTO pos_review count(*) FROM igdb.reviews
    WHERE game_id = NEW.game_id and recommend = 'true';
    SELECT INTO total_review count(*) FROM igdb.reviews WHERE game_id = NEW.game_id;
    UPDATE igdb.games
        SET avg_score = ( 10 * pos_review ) / total_review
        WHERE game_id = NEW.game_id;
    RETURN NEW;
END;
$$
language plpgsql;
```

```
create trigger af_insert_review
after insert on igdb.reviews
for each row
when (NEW.review_id is not null)
execute procedure igdb.tg_af_insert_review();
```

- Additional view to filter game:

```
CREATE VIEW igdb.game_view_store AS
SELECT g.*,
       (SELECT COUNT(*)
        FROM igdb.library l
        WHERE l.game_id = g.game_id)
       as total_added FROM igdb.games g;
```

- Check if the game is in the user library/if user already reviewed the game or not before letting user leave a review:

```
<?php
$result = pg_query($db_conn, "SELECT DISTINCT * FROM igdb.reviews r
INNER JOIN igdb.games g ON g.game_id = r.game_id
INNER JOIN igdb.users u on r.user_id = u.user_id
where u.user_id=".$SESSION['user_id']." AND g.game_id = '".$item['game_id']."'");
$numrows = pg_num_rows($result);

if ($numrows == 0) {
    $result = pg_query($db_conn, "SELECT * from igdb.library where user_id=".$SESSION['user_id']." and game_id='".$item['game_id']."'");
    $numrows = pg_num_rows($result);
    if ($numrows == 0) {
        echo '<div class=reviewContainer>
            <div class=yourReview> You must add this game to your library before giving review.</div>
        </div></div>';
    }
    else {
        echo '<div class="formContainer">
            <form method="post" name="review">
                <label>
                    <div class="review">Write your review</div>
                    <textarea name="comment" class="reviewInput"></textarea>
                </label>
                <label>
                    <div class="reviewScore">Do you recommend this game? </div>
                    <label class="checkboxContainer">Recommend
                        <input type="radio" checked="checked" name="radio" value="rec" id="rec">
                        <span class="checkmark"></span>
                    </label>
                    <label class="checkboxContainer">Not recommend
                        <input type="radio" name="radio" value="notrec" id="notrec">
                        <span class="checkmark"></span>
                    </label>
                </label>
                <label>
                    <div>
                        <div class="submitButtonContainer">
                            <button type="submit" name="reviewSubmit" id="submitButton">Submit</button>
                        </div>
                    </div>
                </label>
            </form>
        </div>';
    }
}
else {
    $arr = pg_fetch_all($result);
    foreach($arr as $array)
    {
        $title = $array['title'];
        $recommend = $array['recommend'];
        if ($recommend == 't') $recommend = "Recommended";
        if ($recommend == 'f') $recommend = "Not Recommended";
    }
}
```

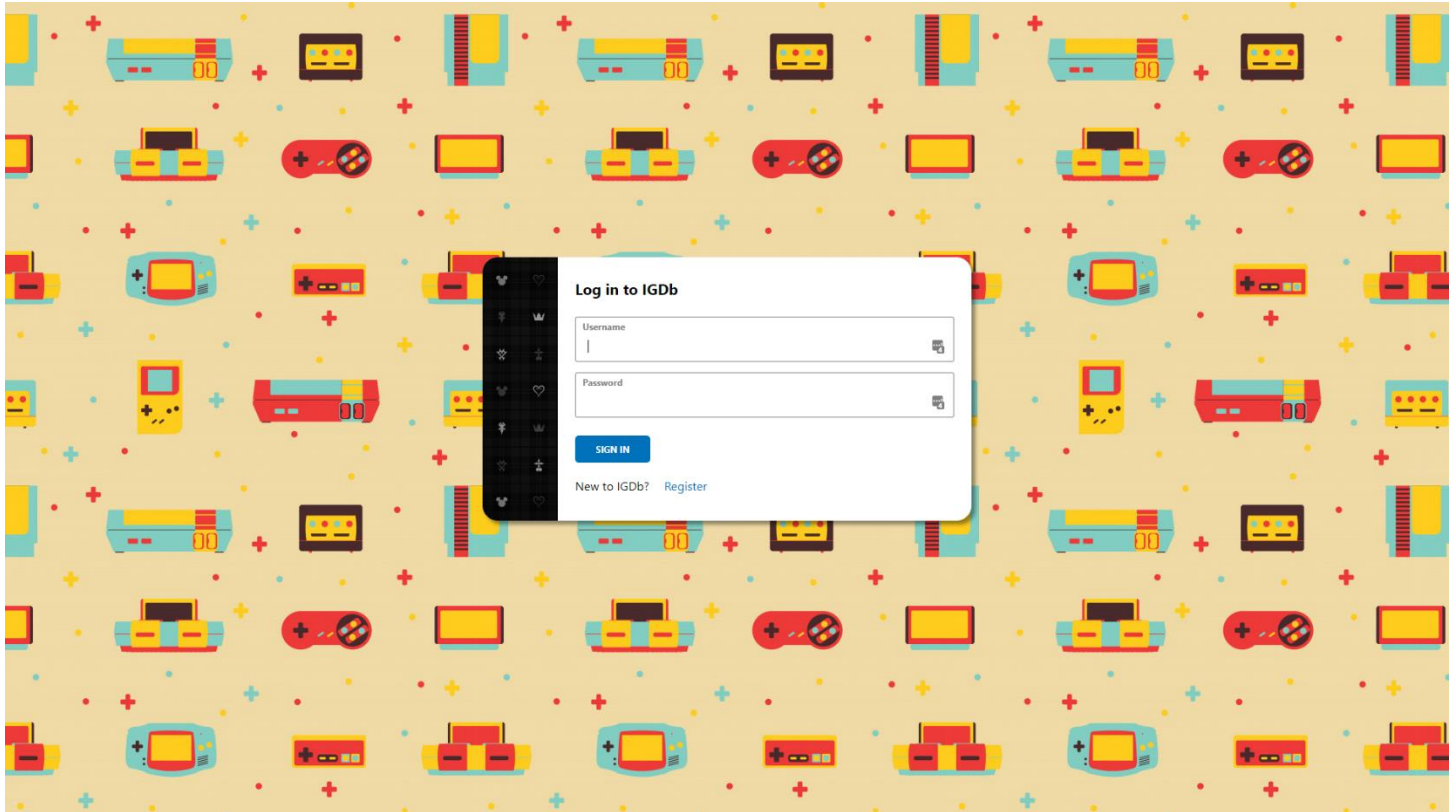
```
<div class="gamesContainer">
  <div class="grid-container">
    <?php
      $filter = isset($_SESSION['filter']) ? $_SESSION['filter'] : '';
      $filter_query = isset($_SESSION['filter_query']) ? $_SESSION['filter_query'] : 'game_id';
      $concat = '%';
      $search_value = $concat.$_GET['search_input'].$concat;
      $result = pg_query($db_conn, "SELECT * FROM igdb.game_view_store WHERE
                                     LOWER($type) LIKE LOWER('".$search_value."')
                                     ORDER BY $filter_query DESC");
      $numrows = pg_num_rows($result);

      if ($numrows == 0){
        echo 'No games found!';
      }
      else {
        $arr = pg_fetch_all($result);
        foreach($arr as $array)
        {
          $img_url = $array['img_url'];
          $cover = strtok($img_url, ";");
          $title = $array['title'];
          $description = $array['description'];
          $game_id = $array['game_id'];

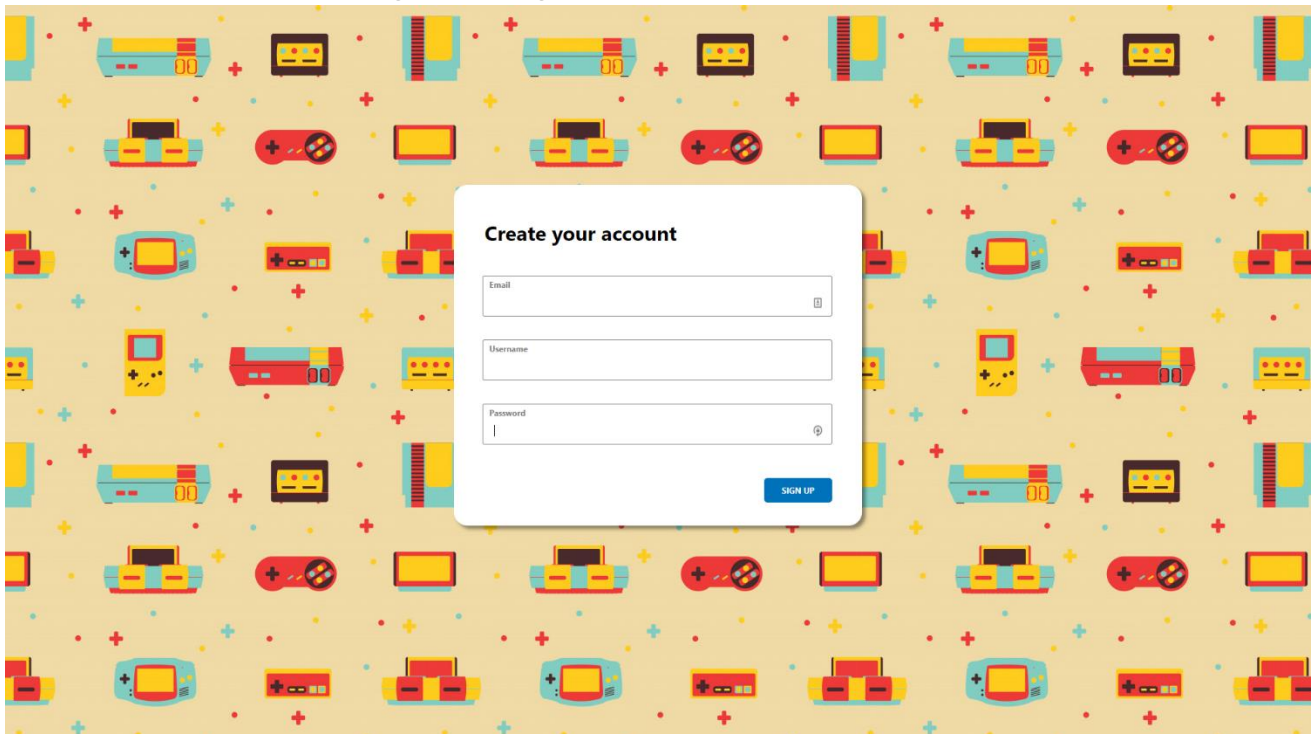
          echo '<div class="grid-item">
              <span class="gameCover">
                
              </span>
              <span class="gameInfo">
                <div class="gameName" onclick="game_onclick(\''.$game_id.\')">'.$title.</div>
                <div class="gameDescription">'.$description.</div>
              </span>
            </div>';
        }
      }
    ?>
  </div>
</div>
```

b. User Interface:

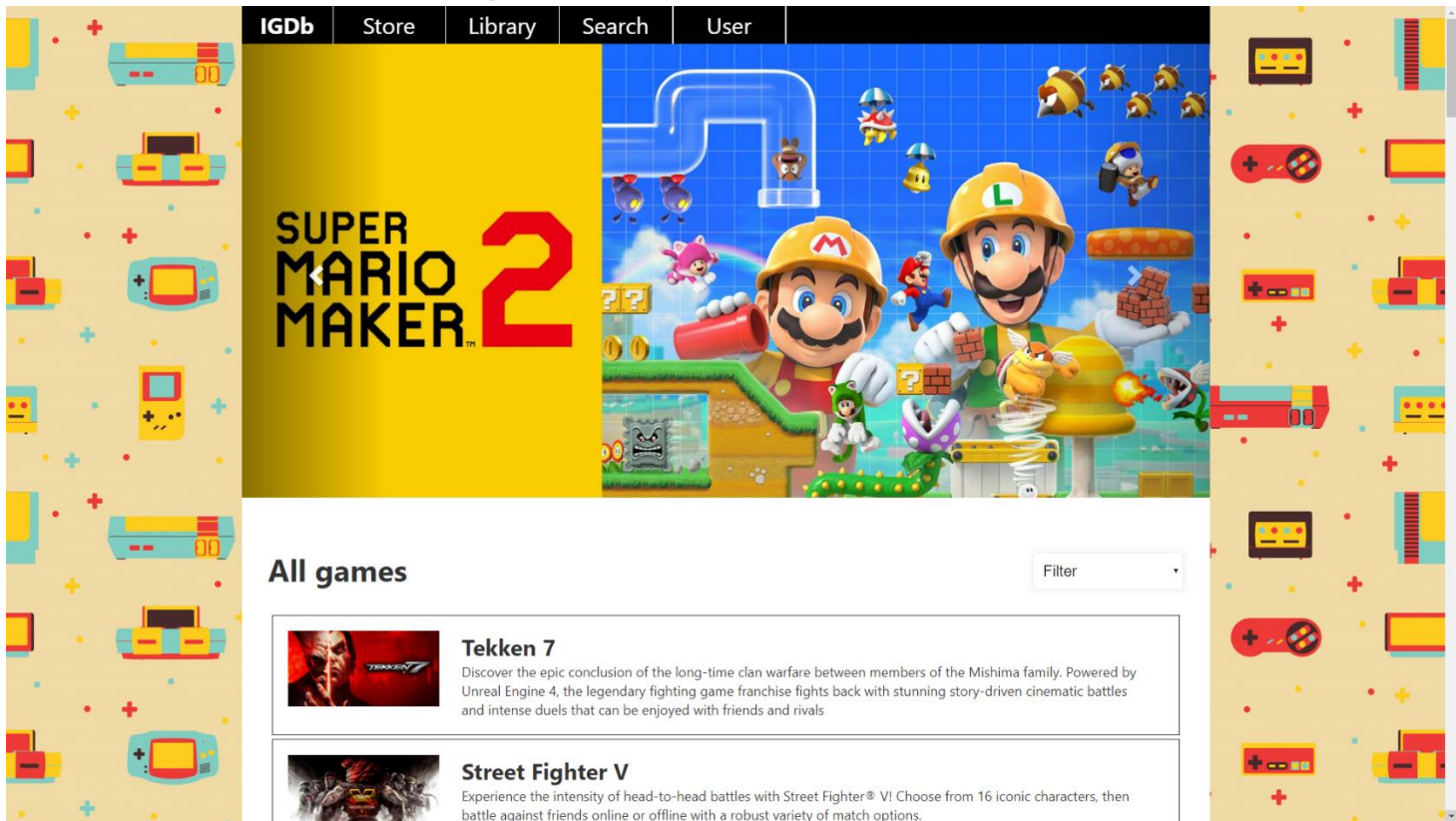
- Login page:



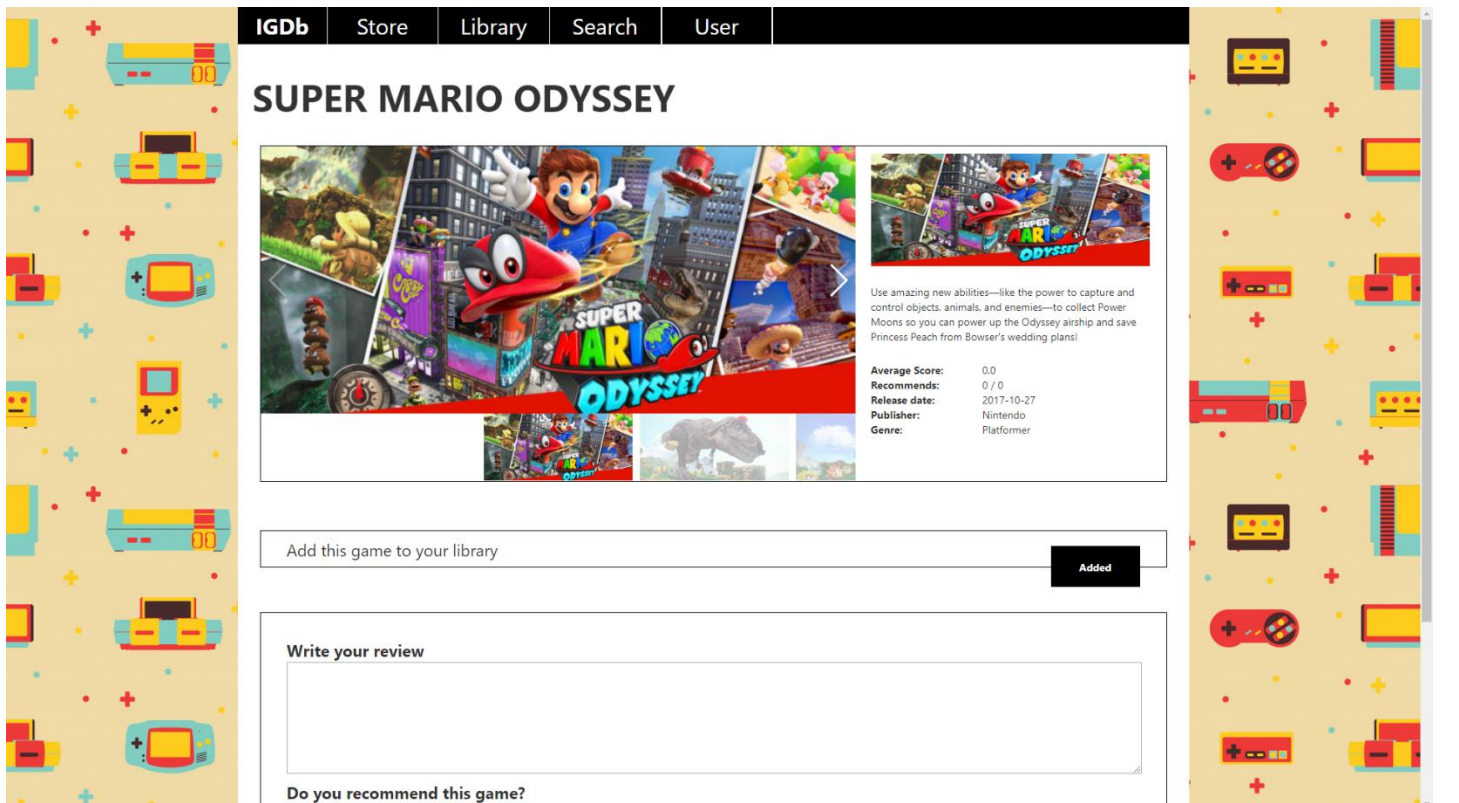
- Register page:



- Store page:



- Game page:



- Search page:

IGDb	Store	Library	Search	User
<div>Search</div> <div><input checked="" type="radio"/> Search by name <input type="radio"/> Search by genre</div>				

IGDb


Store

Library

Search


User

Search result for: rpg




Hyperdimension Neptunia: Re;Birth 1

Packed with fast-paced, turn-based RPG action, fourth-wall-breaking, trope-demolishing dialogue, and more item, weapon, and costume customization than you can shake a Lvl. 1 Stick at, Gamindustri is a world set on turning the concept of the JRPG on its head!




The Elder Scroll V: Skyrim

Winner of more than 200 Game of the Year Awards, Skyrim Special Edition brings the epic fantasy to life in stunning detail. The Special Edition includes the critically acclaimed game and add-ons with all-new features like remastered art and effects, volumetric god rays, dynamic depth of field, screen-space reflections, and more.




Diablo 3

Diablo III is a dungeon crawler hack-and-slash action role-playing game developed and published by Blizzard Entertainment as the third installment in the Diablo franchise.




Divinity: Original Sin 2

The eagerly anticipated sequel to the award-winning RPG. Gather your party. Master deep, tactical combat. Join up to 3 other players - but know that only one of you will have the chance to become a God.



Borderlands 2

The Ultimate Vault Hunter's Upgrade lets you get the most out of the Borderlands 2 experience.



Grim Dawn

Enter an apocalyptic fantasy world where humanity is on the brink of extinction. Free to roam alone

- Library page:

IGDb

Store

Library


Search

User

test1's library

Filter


Edit



Sid Meier's Civilization VI

Plan to play


Civilization VI offers new ways to interact with your world, expand your empire across the map, advance your culture, and compete against history's greatest leaders to build a civilization that will stand the test of time. Play as one of 20 historical leaders including Roosevelt (America) and Victoria (England).



Diablo 3

Playing


Diablo III is a dungeon crawler hack-and-slash action role-playing game developed and published by Blizzard Entertainment as the third installment in the Diablo franchise.



Overwatch

Plan to play

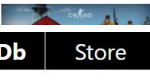
The world needs heroes. Join over 40 million players* as you take your place in the world of Overwatch. Choose your hero from a diverse cast of soldiers, scientists, adventurers, and oddities. Bend time, defy physics, and unleash an array of extraordinary powers and weapons. Engage your enemies in iconic locations from around the globe in the ultimate team-based shooter.



Dota 2

Completed

Every day, millions of players worldwide enter battle as one of over a hundred Dota heroes. And no matter if it's their 10th hour of play or 1,000th, there's always something new to discover. With regular updates that ensure a constant evolution of gameplay, features, and heroes, Dota 2 has taken on a life of its own.



Counter Strike: Global Offensive

Playing

IGDb

Store

Library

Search

User

test1's library

Filter

Submit



Sid Meier's Civilization VI

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped



Diablo 3

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped



Overwatch

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped



Dota 2

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped



Counter Strike: Global Offensive

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped



Divinity: Original Sin 2

☐ Playing
 ☐ Completed
 ☐ Plan to play
 ☐ Dropped

15

- User page:


IGDb

Store


Library

Search

User



test1
test1@gmail.com



Number of games: 15

Number of reviews: 6

Dropped: 2


Plan to play: 6

Completed: 3


Currently playing: 4

Library


Filter



Sid Meier's Civilization VI
Civilization VI offers new ways to interact with your world, expand your empire across the map, advance your culture, and compete against history's greatest leaders to build a civilization that will stand the test of time. Play as one of 20 historical leaders including Roosevelt (America) and Victoria (England).



Diablo 3
Diablo III is a dungeon crawler hack-and-slash action role-playing game developed and published by Blizzard Entertainment as the third installment in the Diablo franchise.



Overwatch
The world needs heroes. Join over 40 million players* as you take your place in the world of Overwatch. Choose

- Reviews:

IGDb

Store

Library

Search

User

Write your review

Do you recommend this game?


☒ Recommend

☐ Not recommend

Submit

All reviews


Filter



bachng | Recommended | 2019-06-17

up: 1 | down: 0


I did not stole your diamonds. **thinking about blowing up the Portal while Soyboy & Hieu in nether and claim the rest**



trgiang1998 | Recommended | 2019-06-17

up: 1 | down: 0


good game



User6 | Not Recommended | 2019-06-17

up: 0 | down: 999

How can I get down from this?? SOYBOY???



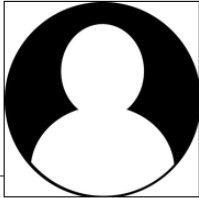
User5 | Recommended | 2019-05-05

up: 100 | down: 0

Bow POWER 5 OP AF!


- User rank increase:

IGDb	Store	Library	Search	User	
------	-------	---------	--------	------	--




test1
test1@gmail.com

Number of games: 12 Number of reviews: 5 Dropped: 3 Plan to play: 3 Completed: 3 Currently playing: 3

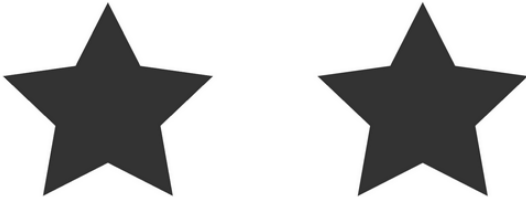


IGDb	Store	Library	Search	User	
------	-------	---------	--------	------	--




bachng
ngb1998@gmail.com

Number of games: 4 Number of reviews: 4 Dropped: 0 Plan to play: 4 Completed: 0 Currently playing: 0




IGDb	Store	Library	Search	User	
------	-------	---------	--------	------	--



User1
user1@gmail.com

Number of games: 0 Number of reviews: 1 Dropped: 0 Plan to play: 0 Completed: 0 Currently playing: 0



4. Evaluation/Future development:

a. Task of each member:

- Nguyen Gia Bach:
 - + Team leader, quality control
 - + Setup project, initialize all base files needed for team members to work on, source version control
 - + Responsible for most of the backend PHP logic on Store page, Library page, Search page, Login/Register, Navigation.
- Hoang Truong Giang:
 - + Responsible for all the frontend pages and UI testing, bug fixing
 - + Create data, trigger for the database
 - + Create powerpoint presentation
- Nguyen Tuan Hai:
 - + Design database tables, views, create data for the database
 - + Backend PHP work on User page, Game page, fix bug backend
 - + Write the report

b. Advantages/Disadvantages:

- Advantages:
 - + Easy to use, simple and convenient
 - + Has potential to be built upon and commercialized
 - + Useful checklist that can be accessed anywhere
- Disadvantages:
 - + Requires a large amount of data to be completed
 - + Lack some quality of life features
 - + Currently hard to maintain

c. Features to be added in the future:

- Users can browse the site without logging in
- Create a dedicated admin page to control the site (add/remove games, reviews, ban/unban users)

5. Conclusion:

IGDb is a small, easy to use and helpful tool, built for a convenient user experience. It is an interesting idea that has great potential to be expanded and built upon, creating an even more enhanced and refined feel for the app. However, with a small resource and limited time, we had to rush and scrapped some of the features. We will continue to further develop this project in the future.