

Final Project: Game Backlogs

CS 493: Cloud Application Development

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Change log

Version	Change	Date
1.0	Initial version.	Dec, 9 2023

Base URL

<https://pkramer-cloudportfolio.wl.r.appspot.com>

Account Creation URL

<https://pkramer-cloudportfolio.wl.r.appspot.com/home>

Data Model

The app stores 3 kinds of entities in Datastore: Users, Backlogs, and Games.

Users

Property	Data Type	Notes
id	String	The “sub” field of the user’s JWT. Generated automatically upon auth0 sign-up.
username	String	Nickname of the user. Taken from whatever precedes the ‘@’ symbol in the user’s email. Generated automatically upon auth0 sign-up.

Backlogs

Property	Data Type	Notes
id	Integer	The id of the backlog. Datastore automatically generates it.
platform	String	The platform for the game backlog. ex: PC, Playstation, etc. *Required by user
date_created	String	Date the user created the backlog. *Required by user
gamelist	List	List of game_id’s from games that are added to the backlog using the API. Handled automatically.
time	Integer	The estimated amount of time it would take to complete all the games on the backlog. Automatically calculated using data from the games in gamelist.
self	String	A URL of where this object is located. Generated automatically.
owner	String	The id of the user that created the backlog. Generated automatically.

Games

Property	Data Type	Notes
id	Integer	The id of the game. Datastore automatically generates it.
title	String	Name of the game. *Required by user
developer	String	Name of the developer who created the game. *Required by user
time_to_beat	Integer	The estimated amount of time for the average player to complete the game. *Required by user
self	String	A URL of where this object is located. Generated automatically. Do not add upon creation.

Backlogs-Games Relationship

Games can be added and removed to and from specific backlogs. A given game can be on any number of backlogs and does not track what backlogs it is on. When a game is added or removed, the `time_to_beat` value is added or subtracted from the backlog's time attribute. When a game is deleted, it is automatically removed from any backlogs it is on. When a game's `time_to_beat` value is changed, any backlogs that have that game in their gamelist will have their time value adjusted accordingly.

User Information

Users can create or login to their accounts using Auth0 at the `/home` endpoint. When an account is created, the "sub" value of the response is used as the unique identifier for the database's saved user entity. Users can obtain their updated JWT token when logging in at `/home`. This token is used in the authorization header of requests, and the application obtains the "sub" value from that JWT to compare it to the User entities and the "owner" attribute of Backlog entities. Backlog elements are tied to the user that created them and can only be read, updated, or deleted by their owner.

Get Users

Lists all users. Not protected.

GET /users

Request

Path Parameters

None

Request Body

None

Request Body Format

JSON

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 200 OK

```
[
  {
    "id": "auth0|65728ce0a1027c81f5dc5b4d",
    "username": "test"
  },
  {
    "id": "auth0|65729e13a1027c81f5dc6d1e",
    "username": "jerry"
  }
]
```

Failure

Status: 406 Not Acceptable

```
{
  "Error": "Unsupported media type."
}
```

Get Backlogs

Get backlogs for the user. Protected. Paginated 5 at a time.

GET /backlogs

Request

Path Parameters

None

Request Body

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	401 Unauthorized	Authorization header is missing or invalid

Response Examples

Success

Status: 200 OK

```
[
  {
    "date_created": "1/1/2020",
    "gamelist": [
      5072058866204672,
      5187754950393856,
      5635008819625984,
      5643280054222848,
      5658646574792704,
      5700433016258560,
      5704568633556992,
      6313654857236480
    ],
    "id": 5634161670881280,
    "owner": "auth0|65729e13a1027c81f5dc6d1e",
    "platform": "PlayStation",
    "self": "http://localhost:8080/backlogs/None",
    "time": 214
  },
]
```

```
{
  "date_created": "12/9/2023",
  "gamelist": [],
  "id": 5636645067948032,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "Switch",
  "self": "http://localhost:8080/backlogs/5636645067948032",
  "time": 0
},
{
  "date_created": "12/8/23",
  "gamelist": [],
  "id": 5642368648740864,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "PC",
  "self": "http://localhost:8080/backlogs/5642368648740864",
  "time": 0
},
{
  "date_created": "12/8/23",
  "gamelist": [],
  "id": 6221596528214016,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "PC",
  "self": "http://localhost:8080/backlogs/6221596528214016",
  "time": 0
},
{
  "total_count": 4
}
]
```

Failure

```
Status: 401 Unauthorized
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

Create a Backlog

Create a new backlog for the user. Protected.

POST /backlogs

Request

Path Parameters

None

Request Body

Required

Request Body Format

JSON

Request Header

Accept header must be 'application/json'

Request JSON Attributes

Name	Description	Required?
platform	String. Platform for backlog. Ex: Playstation, PC, etc.	Yes
date_created	String. The date.	Yes

Request Body Example

```
{
  "platform": "PC",
  "date_created": "12/8/23"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	The request object is missing at least one required attribute.
Failure	401 Unauthorized	The user's authorization is either missing or invalid.
Failure	406 Unsupported Media Type	The request does not have an Accept header with application/json

Response Examples

Success

Status: 201 Created

```
{
  "date_created": "12/8/23",
  "gamelist": [],
  "id": 5709113312935936,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "PC",
  "self": "https://pkramer-cloudportfolio.wl.r.appspot.com/backlogs/5709113312935936",
  "time": 0
}
```

Failure

Status: 400 Bad Request

```
{
  "Error": "The request object is missing at least one of the required attributes"
}
```

Status: 401 Unauthorized

```
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

Status: 406 Unsupported Media Type

```
{
  "Error": "Unsupported media type."
}
```


Get Backlog by ID

Get a specific backlog for the user. Protected.

GET /backlogs/{backlog_id}

Request

Path Parameters

'backlog_id' (integer)

Request Body

None

Request Body Format

JSON

Request Header

Accept header must be 'application/json'

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	401 Unauthorized	Authorization header is missing or invalid
Failure	403 Forbidden	Backlog does not belong to the user
Failure	404 Not Found	Backlog with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

```
Status: 200 OK
{
  "date_created": "1/1/2020",
  "gamelist": [
    "Uncharted 4",
    "The Last of Us Part Two",
    "Uncharted 3",
    "Ghost of Tsushima",
    "Star Wars Jedi: Survivor",
    "The Last of Us Part One",
    "Hogwarts Legacy",
    "Uncharted 2"
  ],
  "id": 5634161670881280,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "PlayStation",
  "self": "http://localhost:8080/backlogs/None",
  "time": 214
}
```

Failure

```
Status: 401 Unauthorized
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

```
Status: 403 Forbidden
{
  "Error": "Backlog not found"
}
```

```
Status: 404 Not Found
{
  "Error": "Backlog not found"
}
```

Edit Backlog by ID

Edit a specific backlog for the user. Protected.

PUT /backlogs/{backlog_id}, PATCH /backlogs/{backlog_id}

Request

Path Parameters

'backlog_id' (integer)

Request Body

Required

Request Body Format

JSON

Request Header

Accept header must be 'application/json'

Request JSON Attributes

Name	Description	Required?
platform	String. Platform for backlog. Ex: Playstation, PC, etc.	Yes
date_created	String. The date.	Yes

Request Body Example

```
{
  "platform": "PC",
  "date_created": "12/8/23"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	Request object is missing at least one attribute
Failure	401 Unauthorized	Authorization header is missing or invalid
Failure	403 Forbidden	Backlog does not belong to the user
Failure	404 Not Found	Backlog with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

```
Status: 200 OK
{
  "date_created": "12/8/23",
  "gamelist": [],
  "id": 5709113312935936,
  "owner": "auth0|65729e13a1027c81f5dc6d1e",
  "platform": "PC",
  "self": "https://pkramer-cloudportfolio.wl.r.appspot.com/backlogs/5709113312935936",
  "time": 0
}
```

Failure

```
Status: 400 Bad Request
{
  "Error": "The request object is missing at least one required attribute"
}
```

```
Status: 401 Unauthorized
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

```
Status: 403 Forbidden
{
  "Error": "Backlog not found"
}
```

```
Status: 404 Not Found
{
  "Error": "Backlog not found"
}
```

Delete Backlog by ID

Delete a specific backlog for the user. Protected.

DELETE /backlogs/{backlog_id}

Request

Path Parameters

'backlog_id' (integer)

Request Body

None

Request Body Format

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

None

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	401 Unauthorized	Authorization header is missing or invalid
Failure	403 Forbidden	Backlog does not belong to the user
Failure	404 Not Found	Backlog with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 204 No Content

Failure

Status: 401 Unauthorized

```
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

Status: 403 Forbidden

```
{
  "Error": "Backlog does not belong to the user"
}
```

Status: 404 Not Found

```
{
  "Error": "Backlog not found"
}
```

Get Games

Get all games. Not protected. Paginated 5 at a time.

GET /games

Request

Path Parameters

None

Request Body

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	406 Unsupported Media Type	Request does not have Accept header with application/json

Response Examples

Success

Status: 200 OK

```
[
  {
    "developer": "Valve",
    "id": 4790583889494016,
    "self": "http://localhost:8080/games/4790583889494016",
    "time_to_beat": 4,
    "title": "Half-Life 2: Episode One"
  },
  {
    "developer": "The Game Kitchen",
    "id": 4906279973683200,
    "self": "http://localhost:8080/games/4906279973683200",
    "time_to_beat": 19,
    "title": "Blaspemous 2"
  },
  {
    "developer": "Crowbar Collective",
    "id": 5070428590571520,
    "self": "http://localhost:8080/games/5070428590571520",
    "time_to_beat": 18,
    "title": "Black Mesa"
  }
]
```

```
  },
  {
    "developer": "Naughty Dog",
    "id": 5072058866204672,
    "self": "http://localhost:8080/games/5072058866204672",
    "time_to_beat": 18,
    "title": "Uncharted 4"
  },
  {
    "developer": "From Software",
    "id": 5095696621371392,
    "self": "http://localhost:8080/games/5095696621371392",
    "time_to_beat": 43,
    "title": "Sekiro: Shadows Die Twice"
  },
  {
    "next": "https://pkramer-cloudportfolio.wl.r.appspot.com/games?page=2"
  },
  {
    "total_count": 24
  }
]
```

Add Game

Add a new game to the database. Not protected.

POST /games

Request

Path Parameters

None

Request Body

Required

Request Body Format

JSON

Request Header

Accept header must be 'application/json'

Request JSON Attributes

Name	Description	Required?
title	String. Title of the game.	Yes
time_to_beat	Integer. Estimated time to beat the game in hours.	Yes
developer	String. Developer of the game.	Yes

Request Body Example

```
{
  "title": "New Game",
  "time_to_beat": 25,
  "developer": "New Developer"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	The request object is missing at least one required attribute.
Failure	406 Unsupported Media Type	The request does not have an Accept header with application/json

Response Examples

Success

Status: 201 Created

```
{
  "developer": "Placeholder",
  "id": 5679095853613056,
  "self": "https://pkramer-cloudportfolio.wl.r.appspot.com/games/5679095853613056",
  "time_to_beat": 42,
  "title": "Tetris"
}
```

Failure

Status: 400 Bad Request

```
{
  "Error": "The request object is missing at least one of the required attributes"
}
```

Status: 406 Unsupported Media Type

```
{
  "Error": "Unsupported media type."
}
```

Get Game by ID

Get a specific game by ID. Not protected.

GET /games/{game_id}

Request

Path Parameters

'game_id' (integer)

Request Body

None

Request Body Format

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	404 Not Found	Game with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

```
Status: 200 OK
{
  "id": 5072058866204672,
  "self": "https://pkramer-cloudportfolio.wl.r.appspot.com/games/5072058866204672",
  "title": "Game Title 1",
  "time_to_beat": 20,
  "developer": "Developer 1"
}
```

Failure

```
Status: 404 Not Found
{
  "Error": "Game not found"
}
```

Edit Game by ID

Edit a specific game in the database. Not protected.

PUT /games/{game_id}, PATCH /games/{game_id}

Request

Path Parameters

'game_id' (integer)

Request Body

Required

Request Body Format

JSON

Request Header

Accept header must be 'application/json'

Request JSON Attributes

Name	Description	Required?
title	String. Title of the game.	Yes
time_to_beat	Integer. Estimated time to beat the game in hours.	Yes
developer	String. Developer of the game.	Yes

Request Body Example

```
{
  "title": "New Game",
  "time_to_beat": 25,
  "developer": "New Developer"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	Request object is missing at least one attribute
Failure	404 Not Found	Game with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 200 OK

```
{
  "id": 5766502763949056,
  "self": "https://pkramer-cloudportfolio.wl.r.appspot.com/games/5766502763949056",
  "title": "Updated Game",
  "time_to_beat": 30,
  "developer": "Updated Developer"
}
```

Failure

Status: 400 Bad Request

```
{
  "Error": "The request object is missing at least one required attribute"
}
```

Status: 403 Forbidden

```
{
  "Error": "Game not found"
}
```

Status: 404 Not Found

```
{
  "Error": "Backlog not found"
}
```

Delete Game by ID

Delete a specific game from the database. Not protected.

DELETE /games/{game_id}

Request

Path Parameters

'game_id' (integer)

Request Body

None

Request Body Format

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

None

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	404 Not Found	Backlog with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 204 No Content

Failure

Status: 401 Unauthorized

```
{
  "code": "no auth header",
  "description": "Authorization header is missing"
}
```

Status: 404 Not Found

```
{
  "Error": "Game not found"
}
```

Add Game to Backlog

Add a specific game to a specific backlog belonging to the user. Protected.

POST /backlogs/<backlog_id>/games/<game_id>

Request

Path Parameters

'backlog_id' (integer), 'game_id' (integer)

Request Body

None

Request Body Format

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

None

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	Game is already in the backlog
Failure	401 Unauthorized	Authorization header is missing or invalid
Failure	403 Forbidden	Backlog does not belong to the user
Failure	404 Not Found	Backlog or game with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 200 OK

Failure

Status: 400 Bad Request

<pre>{ "error": "Game is already in the backlog" }</pre>
--

Status: 401 Unauthorized

<pre>{ "code": "no auth header", "description": "Authorization header is missing" }</pre>

Status: 403 Forbidden

<pre>{ "error": "Backlog does not belong to the user" }</pre>

Status: 404 Not Found

<pre>{ "Error": "Backlog not found" }</pre>

Remove Game from Backlog

Remove a specific game from a specific backlog belonging to the user. Protected.

DELETE /backlogs/<backlog_id>/games/<game_id>

Request

Path Parameters

'backlog_id' (integer), 'game_id' (integer)

Request Body

None

Request Body Format

None

Request Header

Accept header must be 'application/json'

Response

Response Body Format

None

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	Game is already in the backlog
Failure	401 Unauthorized	Authorization header is missing or invalid
Failure	403 Forbidden	Backlog does not belong to the user
Failure	404 Not Found	Backlog or game with given ID not found
Failure	406 Unsupported media type	The request doesn't have an Accept header containing application/json

Response Examples

Success

Status: 200 OK

Failure

Status: 400 Bad Request

<pre>{ "error": "Game is not in the backlog" }</pre>
--

Status: 401 Unauthorized

<pre>{ "code": "no auth header", "description": "Authorization header is missing" }</pre>

Status: 403 Forbidden

<pre>{ "error": "Backlog does not belong to the user" }</pre>

Status: 404 Not Found

<pre>{ "Error": "Backlog not found" }</pre>
