CS493 - Portfolio Assignment: Final Project

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The URL where the application is deployed on GCP.

https://cs493-project-351300.wn.r.appspot.com

The URL for account creation/login

https://cs493-project-351300.wn.r.appspot.com

Data Model

- **User**

Property	Data Type	Notes
id	Integer	The id of the user in Datastore. Datastore automatically generates it.
user_id	String	The id of the user in Auth0. Auth0 automatically generates it.
email	String	The email of the user.

- **Boat**

Property	Data Type	Notes
id	Integer	The id of the boat. Datastore automatically generates it.
name	String	Name of the boat(need to be unique in the datastore). **Length of a name:** must be more than 0, and must not be more than 33 characters. **Allowed characters:** Only letters(a - z, A - Z) and space, cannot start or end with space.
type	String	Type of the boat. E.g., Sailboat, Catamaran, etc. **Length of type:** must be more than 0, and must not be more than 45 characters. **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.
length	Integer	The length of the boat in feet. The input must be an integer. The input length of the boat must be large than 0, and less or equal to 1504.
owner	String	The owner of the load. Represented by the "user_id" property.
loads	Array of Embedded Entities	The loads assigned on the boat. If there is no load on the boat, it is an empty array.
self	String	The self link of the boat.

- The Datastore data model of the Embedded Entity in the loads' array.

Property	Data Type	Notes
id	Integer	The id of the load assigned on the boat.

self	String	The self link of the load on the boat.

- **Load**

Property	Data Type	Notes
id	Integer	The id of the load. Datastore automatically generates it.
volume	Integer	The volume of the load in cubic inch. • The input must be an integer • The input volume of the load must be large than 0, and less or equal to 93000.
weight	Integer	The weight of the load in pound. • The input must be an integer • The input weight of the load must be large than 0, and less or equal to 4600.
item	String	The item of the load. E.g., LEGO Blocks. • **Length of type:** must be more than 0, and must not be more than 55 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.
carrier	Embedded Entity	The carrier of the load. If the load has not been assigned, it is null.
self	String	The self link of the load.

- The Datastore data model of the Embedded Entity in the loads' array.

Property	Data Type	Notes
id	Integer	The id of the carrier boat.
name	String	The name of the carrier boat.
self	String	The self link of the carrier boat.

Relationship between the non-user entities

- **For load:**
  A load can be assigned to a boat or removed from a boat by the boat owner. The "carrier" property of an entity load is used to store the carrier information. If the load has not been assigned, it is null. One load only can be assigned to one boat. ***If the load has been assigned to a boat, before deleting/updating it needs to be unloaded by the boat owner*** since the relationship between load and boat is a protected.

- **For boat:**
  The "loads" property of a boat is used to store the current loads on the boat. If there is no load on the boat, it is an empty array. Since the relationship between load and boat a protected entity, ***deleting or updating (except adding or removing loads) a boat will require to unload all the loads by the boat owner first.***

Model of user entity in the application

- **Unique identifier for a user**
  Although the datastore will generate a unique ID for each user, the application will use the ***"user_id"***(the Auth0 ID) as the unique identifier for convenience.
- **If a request needs to supply a user identifier, what needs to be specified by the person making the request.**

The person needs to provide the "user_id" of the specific user. The "user_id" property of each user will be displayed on the webpage once signed up or logged in. Sending a request to the endpoint GET/users will get all registered users' info which includes "user_id".

- **How your application maps a supplied JWT to the identifier of a user.**
  After decoding JWT, the application will use the value in "sub" to query the datastore to see if the user with the "user_id" equal to "sub" exists. And then the app will check if the user has operating authorization.

- **The relationship between the user entity and non-user entity.**
  The boat entity has a property called owner which will contain the sub from the JWT that was used when creating that entity. The owner attribute will be compared against the JWT in the request every time when a user tries to use any of the protected endpoints for the boats.

Endpoints

1. **URL: /users**
   Allow method: GET
   Status code when using a disallowed method: 405 Method Not Allowed

   Example: send request to below endpoint.

DELETE/users

   Failure

   Response:

   Status: 405 Method Not Allowed

   {

      "Error": "This endpoint only allows GET method."

   }

   a. **View all users**
      - Endpoint

GET/users

      - Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Return all the users currently registered in the app. Display id, user_id(the unique ID), and email for each user.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.

      - Simple requests and responses of these status codes
        Request:
        - Path Parameters: None
        - Request Body: None

        Response Body:

Have a response?	Yes
MIME Type	application/json

        Success

        Response(application/json):

        Status: 200 OK

        [

          {

            "user_id": "auth0|629040921ae4ca0069bd413b",

            "email": "admin1@test.com",

            "id": 5073695114526720

          },

          {

            "user_id": "auth0|62904298470ff0006f603a6a",

```
        "email": "admin2@test.com",
        "id": 5147403464212480
    }
]
```

Failure

Request Accept Header: text/html

Status: 406 Not Acceptable

Response:

```
{
    "Error": "The server only returns application/json data."
}
```

2. URL: /loads
Allow method: GET, POST
Status code when using a disallowed method: 405 Method Not Allowed

Example: send request to below endpoint.

DELETE/loads

Failure

> **Response:**
>
> Status: 405 Method Not Allowed
>
> {
>
>   "Error": "This endpoint only allows GET & POST method."
>
> }

a. Create a load
- Endpoint

POST/loads

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	Missing any of the 3 required attributes, more than 3 required attributes, or invalid value of attribute.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.

- Simple requests and responses of these status codes
  Request:
  - Path Parameters: None
  - Request Body:

Required?	Yes
MIME Type	application/json

  - Request JSON Attributes:

Property	Data Type	Notes	Required?
volume	Integer	The volume of the load in cubic inch. • The input must be an integer • The input volume of the load must be large than 0, and less or equal to 93000.	Yes
weight	Integer	The weight of the load in pound. • The input must be an integer • The input weight of the load must be large than 0, and less or equal to 4600.	Yes

item	String	The item of the load. E.g., LEGO Blocks. • **Length of type:** must be more than 0, and must not be more than 55 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.	Yes

Response Body:

Have a response?	Yes
MIME Type	application/json

Success

Request Body Example:
```
{
    "volume": 2000,
    "weight": 100,
    "item": "LEGO Blocks"
}
```

Response:
Status: 201 Created

```
{
    "id": 5695708787113984,
    "volume": 2000,
    "weight": 100,
    "item": "LEGO Blocks",
    "carrier": null,
    "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5695708787113984"
}
```

Failure

Request Body Example(missing attributes):
```
{
    "volume": 2000,
    "item": "Books"
}
```

Response:
Status: 400 Bad Request

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

Request Accept Header: text/plain

Request Body Example:

```
{
    "volume": 2000,
    "weight": 100,
    "item": "Books"
}
```

Response:

Status: 406 Not Acceptable

```
{
    "Error": "The server only returns application/json data."
}
```

Request Content-Type Header: text/plain
Request Body Example:

"volume": 2000,

"weight": 100,
"item": "Books"

Response:

Status: 415 Unsupported Media Type

```
{
    "Error": "The server only accepts application/json data."
}
```

b. View all loads
- Endpoint

GET/loads

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Return a collection of the loads. Implement pagination showing 5 entities at a time. The collection includes a property "total" that indicates how many items are in the collection. And have a "next" link on every page except the last.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.

- Simple requests and responses of these status codes
  Request:
  - Path Parameter: None
  - Request Body: None

  Response Body Format: JSON

Success

Response:

Status: 200 OK

```json
{
    "total": 6,
    "loads": [
        {
            "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5104575795167232",
            "item": "Sticky Notes",
            "volume": 300,
            "carrier": null,
            "weight": 85,
            "id": 5104575795167232
        },
        {
            "volume": 3600,
            "item": "Cell Phone Cases",
            "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5126591025774592",
            "weight": 240,
            "carrier": null,
            "id": 5126591025774592
        },
        {
            "volume": 500,
            "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5160757054406656",
            "carrier": null,
            "item": "Pencils",
            "weight": 80,
            "id": 5160757054406656
        },
        {
            "item": "Books",
            "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5689540979195904",
            "volume": 2100,
            "weight": 500,
            "carrier": null,
            "id": 5689540979195904
        },
        {
            "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5695708787113984",
            "weight": 100,
            "item": "LEGO Blocks",
            "carrier": null,
            "volume": 2000,
            "id": 5695708787113984
        }
    ],
```

```
    "next": "https://cs493-project-
351300.wn.r.appspot.com/loads?cursor=CjMSLWoYendufmNzNDkzLXByb2plY3QtMzUxMzAwchELEgRMb2FkGICAg
Nj4ho8KDBgAIAA="
}
```

Failure

Request Accept Header: text/plain

Response:
Status: 406 Not Acceptable

```
{
    "Error": "The server only returns application/json data."
}
```

3. URL: /loads/:load_id
Allow method: GET, PATCH, PUT, DELETE
Status code when using a disallowed method: 405 Method Not Allowed

Example: send request to below endpoint.

POST/loads/:load_id

Failure

Response:
Status: 405 Method Not Allowed
{
   "Error": "This endpoint does not allow the POST method."
}

a. View a load
- Endpoint

GET/loads/:load_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	
Failure	404 Not Found	No load with this load_id exists.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON or HTML.

- Simple requests and responses of these status codes
Request:
  - Path Parameters: load_id(ID of the load)
  - Request Body: None

Response Body:

Have a response?	Yes
MIME Type	application/json

Success

Response(application/json):
Status: 200 OK

{
   "weight": 100,
   "item": "LEGO Blocks",
   "carrier": null,
   "volume": 2000,
   "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5695708787113984",

```
   "id": 5695708787113984
}
```

Failure

```
Request Accept Header: text/css

Response:
Status: 406 Not Acceptable
{
   "Error": "The server only returns application/json data."
}
```

```
Response(invalid load_id):

Status: 404 Not Found


{
   "Error": "No load with this load_id exists."
}
```

b. Update a load by PATCH
- Endpoint

PATCH/loads/:load_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Successfully edit the valid given attributes under specified load_id.
Failure	400 Bad Request	More than 3 attributes are given, or invalid value of attribute.
Failure	404 Not Found	No load with this load_id exists.
Failure	403 Forbidden	The load with load_id has been loaded on a boat. It needs to be unloaded by the boat owner before updating.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.

- Simple request and responses of these status codes.
  Request:
    - Path Parameters: load_id (ID of the load)

- Request Body:

Required?	Yes
MIME Type	application/json

- Request JSON Attributes:
At least one of the below three attributes.

Property	Data Type	Notes
volume	Integer	The volume of the load in cubic inch. • The input must be an integer • The input volume of the load must be large than 0, and less or equal to 93000.
weight	Integer	The weight of the load in pound. • The input must be an integer • The input weight of the load must be large than 0, and less or equal to 4600.
item	String	The item of the load. E.g., LEGO Blocks. • **Length of type:** must be more than 0, and must not be more than 55 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.

Response Body:

Have a response?	Yes
MIME Type	application/json

Success:

Request Body Example:
```
{
   "volume": 3000,
   "weight": 1000
}
```

Response:
Status: 200 OK

```
{
  "id": 6286656961249280,
  "volume": 3000,
  "weight": 1000,
  "item": "LEGO Blocks",
  "carrier": null,
  "self": "https://cs493-project-351300.wn.r.appspot.com/loads/6286656961249280"
}
```

Failure:

Request Body Example:

```
{
  "volume": 3000,
  "weight": 1000
}
```

Request Accept Header: text/css

Response:

Status: 406 Not Acceptable

```
{
  "Error": "The server only returns application/json data."
}
```

Request Content-Type Header: text/plain
Request Body Example:

```
"volume": 4000,
"item": "Books"
```

Response:

Status: 415 Unsupported Media Type

```
{
  "Error": "The server only accepts application/json data."
}
```

Request Body Example (invalid id):

```
{
  "volume": 3000,
  "weight": 1000
}
```

Response:

Status: 404 Not Acceptable

```
{
  "Error": "No load with this load_id exists."
}
```

Request Body Example (invalid attributes):

```
{
  "volume": 4000,
  "weight": "1000"
}
```

Response:

Status: 400 Bad Request

```
{
    "Error": "At least one of the attributes in request object is invalid."
}
```

Request Body Example (load has been assigned):
```
{
    "volume": 4000,
    "weight": 1000
}
```

Response:
Status: 403 Forbidden


```
{
    "Error": "The load with load_id has been loaded. It needs to be unloaded by the boat owner before updating."
}
```

c. Update a load by PUT

- Endpoint

PUT/loads/:load_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Successfully edit the valid given attributes under specified load_id.
Failure	400 Bad Request	Missing any of the 3 required attributes, more than 3 required attributes, or invalid value of attribute.
Failure	404 Not Found	No load with this load_id exists.
Failure	403 Forbidden	The load with load_id has been loaded on a boat. It needs to be unloaded by the boat owner before updating.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.

- Simple request and responses of these status codes.
  Request:
  - Path Parameters: load_id (ID of the load)
  - Request Body:

Required?	Yes
MIME Type	application/json

  - Request JSON Attributes:

Property	Data Type	Notes	Required?
volume	Integer	The volume of the load in cubic inch. • The input must be an integer • The input volume of the load must be large than 0, and less or equal to 93000.	Yes
weight	Integer	The weight of the load in pound. • The input must be an integer • The input weight of the load must be large than 0, and less or equal to 4600.	Yes
item	String	The item of the load. E.g., LEGO Blocks. • **Length of type:** must be more than 0, and must not be more than 55 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.	Yes

Response Body:

Have a response?	Yes
MIME Type	application/json

Success

Request Body Example:
```
{
    "volume": 1000,
    "weight": 300,
    "item": "Toys"
}
```

Response:
Status: 200 OK

```
{
    "id": 5187754950393856,
    "volume": 1000,
    "weight": 300,
    "item": "Toys",
    "carrier": null,
    "self": "https://cs493-project-351300.wn.r.appspot.com/loads/5187754950393856"
}
```

Failure

Request Body Example:
```
{
    "volume": 800,
    "weight": 100,
    "item": "Ear Plugs"
}
```

Request Accept Header: text/css

Response:

Status: 406 Not Acceptable

{

   "Error": "The server only returns application/json data."

}

Request Content-Type Header: text/plain
Request Body Example:

"volume": 1000,

"weight": 300,
"item": "Toys"

Response:

Status: 415 Unsupported Media Type

{

   "Error": "The server only accepts application/json data."

}

Request Body Example (invalid id):

{

   "volume": 800,

   "weight": 100,

   "item": "Ear Plugs"

}

Response:

Status: 404 Not Acceptable

{

   "Error": "No load with this load_id exists."

}

Request Body Example (invalid attributes):

{

   "volume": "adf",

   "weight": 100,

   "item": "Ear Plugs"

}

Response:

Status: 400 Bad Request

{

   "Error": "At least one of the attributes in request object is invalid."

```
}
```

Request Body Example (load has been assigned):
```
{
   "volume": 800,
   "weight": 100,
   "item": "Ear Plugs"
}
```

Response:
Status: 403 Forbidden

```
{
   "Error": "The load with load_id has been loaded. It needs to be unloaded by the boat owner before updating."
}
```

d. Delete a load

- Endpoint

DELETE/loads/:load_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The load with load_id has been loaded on a boat. It needs to be unloaded by the boat owner before removing.
Failure	404 Not Found	No load with this load_id exists.

- Simple requests and responses of these status codes
  Request:
  - Path Parameters: load_id (ID of the load)
  - Request Body: None

  Response Body Format of Failure: application/json

  Success

Response:
Status: 204 No Content

  Failure

Response(invalid load_id):
Status: 404 Not Found
{
"Error": "No load with this load_id exists."

}

Response (load has been assigned):
Status: 403 Forbidden

```
{
  "Error": "The load with load_id has been loaded. It needs to be unloaded by the boat owner before deleting."
}
```

4. URL: /boats
Allow method: GET, POST
Status code when using a disallowed method: 405 Method Not Allowed

Example: send request to below endpoint.

DELETE/boats

Failure

> **Response:**
>
> Status: 405 Method Not Allowed
>
> {
>
>   "Error": "This endpoint only allows GET & POST method."
>
> }

a. Create a boat
- Endpoint

POST/boats

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	Missing any of the 3 required attributes, more than 3 required attributes, or invalid value of attribute.
Failure	403 Forbidden	The name attribute already existed in the datastore.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple requests and responses of these status codes
  Request:
  - Path Parameters: None
  - Request Body:

Required?	Yes
MIME Type	application/json

  - Request JSON Attributes:

Property	Data Type	Notes	Required?
name	String	Name of the boat(need to be unique in the datastore). - **Length of a name:** must be more than 0, and must not be more than 33 characters.	Yes

		• **Allowed characters:** Only letters(a - z, A - Z) and space, cannot start or end with space.	
type	String	Type of the boat. E.g., Sailboat, Catamaran, etc. • **Length of type:** must be more than 0, and must not be more than 45 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.	Yes
length	Integer	The length of the boat in feet. • The input must be an integer The input length of the boat must be large than 0, and less or equal to 1504.	Yes

Response Body:

Have a response?	Yes
MIME Type	application/json

Success

Request Body Example:

```
{
  "name": "Odyssey",
  "type": "Yatch",
  "length": 99
}
```

Response:

Status: 201 Created

```
{
  "id": 5677459739508736,
  "name": "Odyssey",
  "type": "Yatch",
  "length": 99,
  "owner": "auth0|629040921ae4ca0069bd413b",
  "loads": [],
  "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5677459739508736"
}
```

Failure

Request Body Example(missing attributes):

```
{
  "name": "Sunshine",
  "type": "Yatch"
}
```

Response:

Status: 400 Bad Request

```
{
```

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

Request Content-Type Header: text/plain
Request Body Example:
"name": "Sunshine",
"type": "Yatch",
"length": 99

Response:
Status: 415 Unsupported Media Type

{
   "Error": "The server only accepts application/json data."
}

Request Accept Header: text/plain
Request Body Example:
{
  "name": "Sunshine",
  "type": "Yatch",
  "length": 50
}

Response:
Status: 406 Not Acceptable

{
   "Error": "The server only returns application/json data."
}

Request Body Example (invalid token):
{
  "name": "Sunshine",
  "type": "Yatch",
  "length": 50
}

Response:
Status: 401 Unauthorized

{
   "Error": "Invalid token..."
}

Request Body Example (duplicate name):
{
  "name": "Odyssey",

```
  "type": "Yatch",
  "length": 99
}


Response:
Status: 403 Forbidden


{
   "Error": "The name attribute in the request object has existed in the datastore."
}
```

b. View all boats of current user
- Endpoint

GET/boats

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Return a collection of boats for the current user. Implement pagination showing 5 entities at a time. The collection includes a property "total" that indicates how many items are in the collection. And have a "next" link on every page except the last.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple requests and responses of these status codes
  Request:
  - Path Parameter: None
  - Request Body: None

  Response Body Format: JSON

  Success

```
Response:
Status: 200 OK


{
   "total": 6,
   "boats": [
      {
         "loads": [],
         "length": 1000,
         "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5072058866204672",
         "name": "Blue Moon",
         "type": "Barge",
```

```
      "owner": "auth0|629040921ae4ca0069bd413b",
      "id": 5072058866204672
    },
    {
      "loads": [],
      "name": "Sunshine",
      "type": "Canoe",
      "length": 50,
      "owner": "auth0|629040921ae4ca0069bd413b",
      "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5177006123646976",
      "id": 5177006123646976
    },
    {
      "type": "Barge",
      "loads": [],
      "length": 1000,
      "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5635008819625984",
      "owner": "auth0|629040921ae4ca0069bd413b",
      "name": "Sky Light",
      "id": 5635008819625984
    },
    {
      "name": "Sliver Star",
      "loads": [],
      "length": 850,
      "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5699409840963584",
      "type": "Ferry",
      "owner": "auth0|629040921ae4ca0069bd413b",
      "id": 5699409840963584
    },
    {
      "name": "Odyssey",
      "loads": [],
      "type": "Yatch",
      "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5701666712059904",
      "owner": "auth0|629040921ae4ca0069bd413b",
      "length": 99,
      "id": 5701666712059904
    }
  ],
  "next": "https://cs493-project-
351300.wn.r.appspot.com/boats?cursor=CjMSLWoYendufmNzNDkzLXByb2plY3QtMzUxMzAwchELEgRCb2F0GICAgN
irtJAKDBgAIAA="
}
```

Failure

Request Accept Header: text/plain

Response:
Status: 406 Not Acceptable

```
{
   "Error": "The server only returns application/json data."
}
```

Response (invalid token):
Status: 401 Unauthorized

```
{
   "Error": "Invalid token..."
}
```

5. URL: /boats/:boat_id
Allow method: GET, PATCH, PUT, DELETE
Status code when using a disallowed method: 405 Method Not Allowed

Example: send request to below endpoint.

POST/boats/:boat_id

Failure

Response:
Status: 405 Method Not Allowed
{
   "Error": "This endpoint does not allow the POST method."
}

a. View a boat
- Endpoint

GET/boats/:boat_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	
Failure	404 Not Found	No boat with this boat_id exists.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON or HTML.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.
Failure	403 Forbidden	The token provided by the user is valid, but the user did not have permission to view this boat info.

- Simple requests and responses of these status codes
Request:
  - Path Parameters: boat_id(ID of the boat)
  - Request Body: None

Response Body:

Have a response?	Yes
MIME Type	application/json

Success

Response(application/json): Status: 200 OK {

```json
  "name": "Odyssey",
  "type": "Yatch",
  "length": 99,
  "loads": [
    {
      "self": "https://cs493-project-351300.wn.r.appspot.com/loads/6286656961249280",
      "id": 6286656961249280
    }
  ],
  "owner": "auth0|629040921ae4ca0069bd413b",
  "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5138716758638592",
  "id": 5138716758638592
}
```

Failure

Request Accept Header: text/css

Response:
Status: 406 Not Acceptable
```json
{
  "Error": "The server only returns application/json data."
}
```

Response(invalid load_id):
Status: 404 Not Found

```json
{
  "Error": "No boat with this boat_id exists"
}
```

Response(invalid token):
Status: 401 Unauthorized

```json
{
  "Error": "Invalid token..."
}
```

Response(the current user is not the boat owner):
Status: 403 Forbidden

```json
{
  "Error": "The user does not have permission to view this boat info."
}
```

b. Update a boat by PUT

- Endpoint

PUT/boats/:boat_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Successfully edit the valid given attributes under specified boat_id.
Failure	400 Bad Request	Missing any of the 3 required attributes, more than 3 required attributes, or invalid value of attribute.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user. Or the boat has been loaded. It needs to be unloaded before updating.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple request and responses of these status codes.
  Request:
  - Path Parameters: boat_id (ID of the boat)
  - Request Body:

Required?	Yes
MIME Type	application/json

- Request JSON Attributes:

Property	Data Type	Notes	Required?
name	String	Name of the boat(need to be unique in the datastore). • **Length of a name:** must be more than 0, and must not be more than 33 characters. • **Allowed characters:** Only letters(a - z, A - Z) and space, cannot start or end with space.	Yes
type	String	Type of the boat. E.g., Sailboat, Catamaran, etc. • **Length of type:** must be more than 0, and must not be more than 45 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.	Yes
length	Integer	The length of the boat in feet. • The input must be an integer The input length of the boat must be large than 0, and less or equal to 1504.	Yes

Response Body:

Have a response?	Yes
MIME Type	application/json

Success:

Request Body Example:
```
{
  "name": "Jupiter",
  "type": "Sailboat",
  "length": 45
}
```

Response:
Status: 200 OK

```
{
  "id": 5158257651875840,
  "name": "Jupiter",
  "type": "Sailboat",
  "length": 45,
  "owner": "auth0|629040921ae4ca0069bd413b",
  "loads": [],
  "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5158257651875840"
}
```

Failure:

Request Body Example:
```
{
  "name": "Mars",
  "type": "Sailboat",
  "length": 55
}
```

Request Accept Header: text/css

Response:
Status: 406 Not Acceptable

```
{
  "Error": "The server only returns application/json data."
}
```

Request Content-Type Header: text/plain
Request Body Example:
"name": "Mars",

"type": "Sailboat",
"length": 55

Response:

Status: 415 Unsupported Media Type

```
{
    "Error": "The server only accepts application/json data."
}
```

Request Body Example (invalid id):
```
{
    "name": "Mars",
    "type": "Sailboat",
    "length": 55
}
```

Response:

Status: 404 Not Acceptable

```
{
    "Error": "No boat with this boat_id exists."
}
```

Request Body Example (missing attributes):
```
{
    "name": "Mars",
    "length": 55
}
```

Response:

Status: 400 Bad Request

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

Request Body Example (invalid token):
```
{
    "name": "Mars",
    "type": "Sailboat",
    "length": 55
}
```

Response:

Status: 401 Unauthorized

```
{
```

```
    "Error": "Invalid token..."
}
```

Request Body Example (Current user is not the owner of this boat):
```
{
    "name": "Mars",
    "type": "Sailboat",
    "length": 55
}
```

Response:
Status: 403 Forbidden

```
{
    "Error": "The user does not have permission to update the boat."
}
```

c. **Update a boat by PATCH**
- Endpoint

PATCH/boats/:boat_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	200 OK	Successfully edit the valid given attributes under specified boat_id.
Failure	400 Bad Request	More than 3 attributes are given, or invalid value of attribute.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user. Or the boat has been loaded. It needs to be unloaded before updating.
Failure	415 Unsupported Media Type	The MIME type sent to the endpoint is unsupported. This endpoint only supports JSON.
Failure	406 Not Acceptable	This endpoint can't offer any MIME type listed in a request's Accept header. This endpoint only offers JSON.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple request and responses of these status codes.
  Request:
  - Path Parameters: boat_id (ID of the boat)
  - Request Body:

Required?	Yes

MIME Type	application/json

- Request JSON Attributes:

At least one of the below three attributes.

Property	Data Type	Notes
name	String	Name of the boat(need to be unique in the datastore). • **Length of a name:** must be more than 0, and must not be more than 33 characters. • **Allowed characters:** Only letters(a - z, A - Z) and space, cannot start or end with space.
type	String	Type of the boat. E.g., Sailboat, Catamaran, etc. • **Length of type:** must be more than 0, and must not be more than 45 characters. • **Allowed characters:** Only letters(a-z, A – Z) and space, cannot start or end with space.
length	Integer	The length of the boat in feet. • The input must be an integer The input length of the boat must be large than 0, and less or equal to 1504.

Response Body:

Have a response?	Yes
MIME Type	application/json

Success:

Request Body Example:
```
{
   "name": "Jupiter",
   "length": 80
}
```

Response:
Status: 200 OK

```
{
   "id": 5158257651875840,
   "name": "Jupiter",
   "type": "Canoe",
   "length": 80,
   "owner": "auth0|629040921ae4ca0069bd413b",
   "loads": [],
   "self": "https://cs493-project-351300.wn.r.appspot.com/boats/5158257651875840"
}
```

Failure:

Request Body Example:

```
{
  "name": "Mars",
  "length": 80
}
```

Request Accept Header: text/css

Response:

Status: 406 Not Acceptable

```
{
  "Error": "The server only returns application/json data."
}
```

Request Content-Type Header: text/plain
Request Body Example:

```
"name": "Mars",
"length": 80
```

Response:

Status: 415 Unsupported Media Type

```
{
  "Error": "The server only accepts application/json data."
}
```

Request Body Example (invalid id):

```
{
  "name": "Jupiter",
  "length": 80
}
```

Response:

Status: 404 Not Acceptable

```
{
  "Error": "No boat with this boat_id exists."
}
```

Request Body Example (invalid attributes):

```
{
  "name": "Jupiter",
  "length": "80"
}
```

Response:

Status: 400 Bad Request

```
{
   "Error": "At least one of the attributes in request object is invalid."
}
```

Request Body Example (invalid token):
```
{
   "name": "Jupiter",
   "length": 80
}
```

Response:
Status: 401 Unauthorized

```
{
   "Error": "Invalid token..."
}
```

Request Body Example (Current user is not the owner of this boat):
```
{
   "name": "Jupiter",
   "length": 80
}
```

Response:
Status: 403 Forbidden

```
{
   "Error": "The user does not have permission to update the boat."
}
```

d. Delete a boat
- Endpoint

DELETE/boats/:boat_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user. Or the boat has been loaded. It needs to be unloaded before updating.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple requests and responses of these status codes
  Request:
    - Path Parameters: boat_id (ID of the boat)
    - Request Body: None

  Response Body Format of Failure: application/json

  Success

Response:
Status: 204 No Content

  Failure

Response(invalid boat_id):
Status: 404 Not Found
 	
{
   "Error": "No boat with this boat_id exists."
}

Response(invalid token):
Status: 401 Unauthorized
 	
{
   "Error": "Invalid token..."
}

Response(Current user is not the owner of the boat):
Status: 403 Forbidden
 	
{
   "Error": " The user does not have permission to remove the load from this boat."
}

6. **URL: /boats/:boat_id/loads/load_id**
   Allow method: PUT, DELETE
   Status code when using a disallowed method: 405 Method Not Allowed

   Example: send request to below endpoint.

POST/boats/:boat_id/loads/:load_id

   Failure

Response:
405 Method Not Allowed
{
"Error": "This endpoint only allows PUT & DELETE method."
}

   a. **Assign a load to a boat**
   - Endpoint

PUT/boats/:boat_id/loads/:load_id

   - Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user. Or the load has been loaded on another boat. It needs to be removed from another boat before reloading.
Failure	404 Not Found	No boat with this boat_id exists. Or no load with this load_id exists.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

   - Simple requests and responses of these status codes
     Request:
     - Path Parameters: boat_id (ID of the boat), load_id(ID of the load)
     - Request Body: None

     Response Body Format of Failure: application/json

     Success

Response:
Status: 204 No Content

     Failure

Assign a load to a boat that does not belong to the current user:
Response:
403Forbidden

```
{
    "Error": "The user does not have permission to assign the load on this boat."
}
```

Response (invalid token):
Status: 401 Unauthorized

```
{
    "Error": "Invalid token..."
}
```

Response (invalid load_id):
Status: 404 Not Found

```
{
    "Error": "The specified boat and/or load does not exist."
}
```

b. Remove a load from a boat

- Endpoint

DELETE/boats/:boat_id/loads/:load_id

- Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user.
Failure	404 Not Found	No boat with this boat_id exists. Or no load with this load_id exists. Or the load is not loaded on the boat with this boat_id.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

- Simple requests and responses of these status codes
  Request:
    - Path Parameters: boat_id (ID of the boat), load_id(ID of the load)
    - Request Body: None

  Response Body Format of Failure: application/json

  Success

Response:
```

Status: 204 No Content

Failure

**Remove a load from a boat that does not belong to the current user:**
**Response:**
Status: 403 Forbidden

{
    "Error": "The user does not have permission to remove the load from this boat."
}

**Remove a load from a boat (invalid load_id):**
**Response:**
Status: 404 Not Found

{
    "Error": "The specified boat and/or load does not exist."
}

**Response (invalid token):**
Status: 401 Unauthorized

{
    "Error": "Invalid token..."
}

**7. URL: /boats/:boat_id/loads**
   Allow method: DELETE
   Status code when using a disallowed method: 405 Method Not Allowed

   Example: send request to below endpoint.

   | POST/boats/:boat_id/loads |
   | --- |

   Failure

   **Response:**

   405 Method Not Allowed

   ```
   {
      "Error": "This endpoint only allows DELETE method."
   }
   ```

a. Remove all load from a boat
   - Endpoint

DELETE/boats/:boat_id/loads

   - Status codes that an endpoint can return

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The boat with boat_id is not belonged to the current user.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	401 Unauthorized	The user does not provide token. Or the token provided by the user is invalid.

   - Simple requests and responses of these status codes
     Request:
     - Path Parameters: boat_id (ID of the boat)
     - Request Body: None

     Response Body Format of Failure: application/json

     Success

     Response:

     Status: 204 No Content

     Failure

     Remove a load from a boat that does not belong to the current user:
     Response:

     Status: 403 Forbidden

```
{
    "Error": "The user does not have permission to delete the boat."
}
```

Remove a load from a boat (invalid load_id):
Response:
Status: 404 Not Found

```
{
    "Error": "The specified boat does not exist."
}
```

Response (invalid token):
Status: 401 Unauthorized

```
{
    "Error": "Invalid token..."
}
```