

Final Project: API Spec

CS 493: Cloud Application Development

URL for app on GCP and account creation/login: <https://shinal-marina.wl.r.appspot.com>

Alex Shin

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Oregon State University

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Data Model

The app stores three entities in Datastore: Users, Boats, and Loads.

Users

Property	Data Type	Notes
id	String	The id of the user. Unique to the user where the value of the id is retrieved from the 'sub' value from user's generated JWT. Automatically generated.

Boats*

Property	Data Type	Notes
id	Integer	The id of the boat. Datastore automatically generates it.
name	String	The name of the boat. Minimum of 2 characters and maximum of 20 characters, and English letters only. Required from the user.
type	String	The type of the boat. Minimum of 2 characters and maximum of 20 characters, and English letters only. Required from the user.
length	Integer	The length of the boat. Minimum length of 1 and maximum length of 1000. Required from the user.
owner	Integer	The id of the owner of the boat. Automatically generated from the user who created the boat.
loads	Array of dictionaries	Each item in the array contains the id of a load the boat is carrying. Initialized to empty array upon boat creation.

*All requests for boats are user-protected and require a valid JWT corresponding to the user.

Loads

Property	Data Type	Notes
id	Integer	The id of the load. Datastore automatically generates it.
volume	Integer	The volume of the load. Minimum volume of 1 and maximum volume of 1000. Required from the user.
carrier	Dictionary	The dictionary contains the id and name of the boat carrying the load. Initialized to empty upon load creation.
content	String	The content of the load. Minimum of 2 characters and maximum of 20 characters, and English letters only. Required from the user.
creation_date	String	The date the load was created (MM/DD/YYYY). Required from the user.

Description of relationship between non-user entities

The two non-user entities are Boats and Loads. These two entities have a relationship where a boat can have zero, one, or more loads on the boat, and a load can only be on one boat.

Description of the user entity

When the user creates account/logs in, the app will set the unique identifier for the user entity in the data model as the 'sub' value of the user's JWT. Whenever making the request, the user needs to supply the generated JWT value as a Bearer Token.

The user entity has a relationship with a non-user entity, boats, where a user can have many boats but a boat can be owned by one user. The relationship between a user and a boat will be mapped when a verified user creates a boat, and such relationship will hold true unless the boat is deleted.

Method Not Allowed

Any requests not explicitly documented herein will return a "method not allowed" (405) error.

Get all Users

View all the users. Unprotected endpoint.

GET /users

Request

Path Parameters

None

Request Body

None

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
[
  {
    "id": "12345123451234512345"
  },
  {
    "id": "56789567895678956789"
  }
]
```

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Create a Boat

Allows you to create a new boat. The user that creates a boat will be the owner of the boat, and the loads of the boat will be initialized to empty. Protected endpoint.

POST /boats

Request

Path Parameters

None

Request Body

Required

Request Body Format

JSON

Request JSON Attributes

Name	Description	Required?
name	The name of the boat.	Yes
type	The type of the boat.	Yes
length	The length of the boat.	Yes

Request Body Example

```
{
  "name": "Sea Witch",
  "type": "Catamaran",
  "length": 100
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	The request is missing any of the three required attributes.
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 201 Created

```
{
  "id": 123,
  "name": "Sea Witch",
  "type": "Catamaran",
  "length": 100,
  "owner": 5072058866204672,
  "loads": [],
  "self": "https://shinal-marina.wl.r.appspot.com/boats/123"
}
```

Failure

Status: 400 Bad Request

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

Failure

Status: 401 Unauthorized

```
{
  "Error": "The request object is missing a JWT or contains invalid JWT"
}
```

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Get a Boat

Allows you to view an existing boat. Protected endpoint.

```
GET /boats/:boat_id
```

Request

Path Parameters

Name	Description
boat_id	ID of the boat

Request Body

None

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	403 Forbidden	The request provided JWT in which the user associated with the JWT does not have access to the boat.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "name": "Sea Witch",
  "type": "Catamaran",
  "length": 100,
  "owner": 5072058866204672,
  "loads": [],
  "self": "https://shinal-marina.wl.r.appspot.com/boats/123"
}
```

Failure

Status: 401 Unauthorized

```
{  
  "Error": "The request object is missing a JWT or contains invalid JWT"  
}
```

Failure

Status: 403 Forbidden

```
{  
  "Error": "The user making the request does not have access to this resource"  
}
```

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{  
  "Error": "MIME type not supported by the endpoint or the Accept header is  
           missing"  
}
```


Edit a Boat

Allows editing a boat. Supports editing a boat either 1) partially or 2) entirely.

1) Edit Partially

Update any subset of attributes while other attributes remain unchanged. Protected endpoint.

```
PATCH /boats/:boat_id
```

Request

Path Parameters

Name	Description
boat_id	ID of the boat

Request Body

Required

Request Body Format

JSON

Request JSON Attributes*

Name	Description
name	The name of the boat.
type	The type of the boat
length	The length of the boat.

*any subset of the above attributes are required (one or two attributes)

Request Body Example

```
{
  "name": "Sea Monster",
  "type": "Fishing"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	The request does not provide the appropriate subset of attributes.
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	403 Forbidden	The request provided JWT in which the user associated with the JWT does not have access to the boat.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "name": "Sea Monster",
  "type": "Fishing",
  "length": 28,
  "owner": 5072058866204672,
  "loads": [],
  "self": "https://shinal-marina.wl.r.appspot.com/boats/123"
}
```

Failure

Status: 400 Bad Request

```
{
  "Error": "The request object did not provide a subset of the required attributes"
}
```

Failure

Status: 401 Unauthorized

```
{
  "Error": "The request object is missing a JWT or contains invalid JWT"
}
```

Failure

Status: 403 Forbidden

```
{
  "Error": "The user making the request does not have access to this resource"
}
```

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

2) Edit Entirely

Update all three attributes of a boat. Protected endpoint.

PUT /boats/:boat_id

Request

Path Parameters

Name	Description
boat_id	ID of the boat

Request Body

Required

Request Body Format

JSON

Request JSON Attributes

Name	Description	Required?
name	The name of the boat.	Yes
type	The type of the boat.	Yes
length	The length of the boat.	Yes

Request Body Example

```
{
  "name": "Sea Monster",
  "type": "Fishing",
  "length": 100
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	The request does not provide all of the required attributes.
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	403 Forbidden	The request provided JWT in which the user associated with the JWT does not have access to the boat.
Failure	404 Not Found	No boat with this boat_id exists.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "name": "Sea Monster",
  "type": "Fishing",
  "length": 100,
  "owner": 5072058866204672,
  "loads": [],
  "self": "https://shinal-marina.wl.r.appspot.com/boats/123"
}
```

Failure

Status: 400 Bad Request

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

Failure

Status: 401 Unauthorized

```
{  
  "Error": "The request object is missing a JWT or contains invalid JWT"  
}
```

Failure

Status: 403 Forbidden

```
{  
  "Error": "The user making the request does not have access to this resource"  
}
```

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{  
  "Error": "MIME type not supported by the endpoint or the Accept header is  
           missing"  
}
```

Delete a Boat

Allows you to delete a boat. Note that if the boat currently holds load(s), deleting the boat will unload any load(s) loaded on it. Protected endpoint.

```
DELETE /boats/:boat_id
```

Request

Path Parameters

Name	Description
boat_id	ID of the boat

Request Body

None

Response

No body

Response Body Format

Success: No body

Failure: JSON

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	403 Forbidden	The request provided JWT in which the user associated with the JWT does not have access to the boat.
Failure	404 Not Found	No boat with this boat_id exists

Response Examples

Success

```
Status: 204 No Content
```

Failure

```
Status: 401 Unauthorized
```

```
{
  "Error": "The request object is missing a JWT or contains invalid JWT"
}
```

Failure

Status: 403 Forbidden

```
{  
  "Error": "The user making the request does not have access to this resource"  
}
```

Failure

Status: 404 Not Found

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

Create a Load

Allows you to create a new load. The carrier of the load will be initialized to null. Unprotected endpoint.

POST /loads

Request

Path Parameters

None

Request Body

Required

Request Body Format

JSON

Request JSON Attributes

Name	Description	Required?
volume	The volume of the load.	Yes
content	The content of the load.	Yes
creation_date	The date the load was created.	Yes

Request Body Example

```
{
  "volume": 7,
  "content": "Breadsticks",
  "creation_date": "10/25/2020"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	201 Created	
Failure	400 Bad Request	The request is missing any of the three required attributes.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 201 Created

```
{
  "id": 123,
  "volume": 7,
  "carrier": null,
  "content": "Breadsticks",
  "creation_date": "10/25/2020",
  "self": "https://shinal-marina.wl.r.appspot.com/loads/123"
}
```

Failure

Status: 400 Bad Request

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

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Get a load

Allows viewing an existing load. Unprotected endpoint.

```
GET /loads/:load_id
```

Request

Path Parameters

Name	Description
load_id	ID of the load

Request Body

None

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	404 Not Found	No load with this load_id exists
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "volume": 7,
  "carrier": {
    "id": 7890,
    "name": "Sea Monster",
    "self": "https://shinal-marina.wl.r.appspot.com/boats/7890"
  },
  "content": "Breadsticks",
  "creation_date": "10/25/2020",
  "self": "https://shinal-marina.wl.r.appspot.com/loads/123"
}
```

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{  
  "Error": "MIME type not supported by the endpoint or the Accept header is  
           missing"  
}
```

Edit a Load

Allows editing a load. Supports editing a load either 1) partially or 2) entirely.

1) Edit Partially

Update any subset of attributes while other attributes remain unchanged. Unprotected endpoint.

```
PATCH /loads/:load_id
```

Request

Path Parameters

Name	Description
load_id	ID of the load

Request Body

Required

Request Body Format

JSON

Request JSON Attributes*

Name	Description
volume	The volume of the load.
content	The content of the load.
creation_date	The date the load was created.

*any subset of the above attributes are required (one or two attributes)

Request Body Example

```
{
  "volume": 77,
  "content": "Fishing Poles"
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	The request does not provide the appropriate subset of attributes.
Failure	404 Not Found	No load with this load_id exists.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "volume": 77,
  "carrier": {
    "id": 7890,
    "name": "Sea Monster",
    "self": "https://shinal-marina.wl.r.appspot.com/boats/7890"
  },
  "content": "Fishing Poles",
  "creation_date": "10/25/2020",
  "self": "https://shinal-marina.wl.r.appspot.com/loads/123"
}
```

Failure

Status: 400 Bad Request

```
{
  "Error": "The request object did not provide a subset of the required
           attributes"
}
```

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is
           missing"
}
```

2) Edit Entirely

Update all three attributes of a load. Unprotected endpoint.

```
PUT /loads/:loads_id
```

Request

Path Parameters

Name	Description
load_id	ID of the load

Request Body

Required

Request Body Format

JSON

Request JSON Attributes

Name	Description	Required?
volume	The volume of the load.	Yes
content	The content of the load.	Yes
creation_date	The date the load was created.	Yes

Request Body Example

```
{
  "volume": 777,
  "content": "Fishing Bait",
  "creation_date": 10/10/2010
}
```

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	400 Bad Request	The request does not provide all of the required attributes.
Failure	404 Not Found	No load with this load_id exists.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

Success

Status: 200 OK

```
{
  "id": 123,
  "volume": 777,
  "carrier": {
    "id": 7890,
    "name": "Sea Monster",
    "self": "https://shinal-marina.wl.r.appspot.com/boats/7890"
  },
  "content": "Fishing Bait",
  "creation_date": "10/10/2010",
  "self": "https://shinal-marina.wl.r.appspot.com/loads/123"
}
```

Failure

Status: 400 Bad Request

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

Failure

Status: 404 Not Found

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

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Delete a Load

Allows you to delete a load. If the load being deleted is being carried by a boat, the boat will be updated to remove the load. Unprotected endpoint.

```
DELETE /loads/:load_id
```

Request

Path Parameters

Name	Description
load_id	ID of the load

Request Body

None

Response

No body

Response Body Format

Success: No body

Failure: JSON

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	404 Not Found	No load with this load_id exists

Response Examples

Success

```
Status: 204 No Content
```

Failure

```
Status: 404 Not Found
```

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


Get all Boats

View all the boats. Boats related to the user corresponding to the valid JWT in the request will be shown.
Protected endpoint.

GET /boats

Request

Path Parameters

None

Request Body

None

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	401 Unauthorized	The request is missing a JWT or contains an invalid JWT.
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

- The response will return 5 boats per page using pagination. There will be a “next” link to get the next page of results, unless there are no more pages of the result.
- The response will also include a property “total” which describe the total number of items in this collection for the specific user making the request.

Success

Status: 200 OK

```
{
  "boats": [
    {
      "id": 123,
      "name": "Sea Witch",
      "type": "Catamaran",
      "length": 100,
      "owner": 5072058866204672,
      "loads": [],
      "self": "https://shinal-marina.wl.r.appspot.com/boats/123"
    },
    {
      "id": 456,
      "name": "Adventure",
      "type": "Sailboat",
      "length": 200,
      "owner": 5072058866204672,
      "loads": [
        {
          "id": 3333,
          "self": "https://shinal-marina.wl.r.appspot.com/loads/3333"
        }
      ],
      "self": "https://shinal-marina.wl.r.appspot.com/boats/456"
    }
  ],
  "total": 2
}
```

Failure

Status: 401 Unauthorized

```
{
  "Error": "The request object is missing a JWT or contains invalid JWT"
}
```

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Get all Loads

View all the loads. Unprotected endpoint.

GET /loads

Request

Path Parameters

None

Request Body

None

Response

Response Body Format

JSON

Response Statuses

Outcome	Status Code	Notes
Success	200 OK	
Failure	406 Not Acceptable	The client requests a MIME type not supported by the endpoint or the Accept header is missing.

Response Examples

- The response will return 5 loads per page using pagination. There will be a “next” link to get the next page of results, unless there are no more pages of the result.
- The response will also include a property “total” which describe the total number of items in this collection.

Success

Status: 200 OK

```
{
  "loads": [
    {
      "id": 123,
      "volume": 7,
      "carrier": null,
      "content": "Breadsticks",
      "creation_date": "10/25/2020",
      "self": "https://shinal-marina.wl.r.appspot.com/loads/123"
    },
    {
      "id": 456,
      "volume": 8,
      "carrier": {
        "id": 1234,
        "name": "Sea World",
        "self": "https://shinal-marina.wl.r.appspot.com/boats/1234"
      },
      "content": "Breadcrumbs",
      "creation_date": "10/23/2020",
      "self": "https://shinal-marina.wl.r.appspot.com/loads/456"
    },
    {
      "id": 789,
      "volume": 100,
      "carrier": {
        "id": 7890,
        "name": "Sea Bass",
        "self": "https://shinal-marina.wl.r.appspot.com/boats/7890"
      },
      "content": "Yo-yos",
      "creation_date": "10/20/2020",
      "self": "https://shinal-marina.wl.r.appspot.com/loads/789"
    }
  ],
  "total": 3
}
```

Failure

Status: 406 Not Acceptable

```
{
  "Error": "MIME type not supported by the endpoint or the Accept header is missing"
}
```

Assign a Load to a Boat

Load a load on to a boat. Load cannot be already assigned to another boat. Unprotected endpoint.

```
PUT /boats/:boat_id/loads/:load_id
```

Request

Path Parameters

Name	Description
boat_id	ID of the boat
load_id	ID of the load

Request Body

None

Response

Response Body Format

Success: No body

Failure: JSON

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	The load is already assigned to another boat
Failure	404 Not Found	The specified boat and/or load does not exist

Response Examples

Success

```
Status: 204 No Content
```

Failure

```
Status: 403 Forbidden
```

```
{
  "Error": "The load is already assigned to another boat"
}
```

Failure

```
Status: 404 Not Found
```

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

Remove a Load from a Boat

Unload a load from a boat. The load is now unassigned to any boat and the boat no longer carries this load. Unprotected endpoint.

```
DELETE /boats/:boat_id/loads/:load_id
```

Request

Path Parameters

Name	Description
boat_id	ID of the boat
load_id	ID of the load

Request Body

None

Response

Response Body Format

Success: No body

Failure: JSON

Response Statuses

Outcome	Status Code	Notes
Success	204 No Content	
Failure	403 Forbidden	No load with this load_id is on the boat with this boat_id
Failure	404 Not Found	The specified boat and/or load does not exist

Response Examples

Success

```
Status: 204 No Content
```

Failure

```
Status: 403 Forbidden
```

```
{
  "Error": "No load with this load_id is on the boat with this boat_id"
}
```

Failure

```
Status: 404 Not Found
```

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