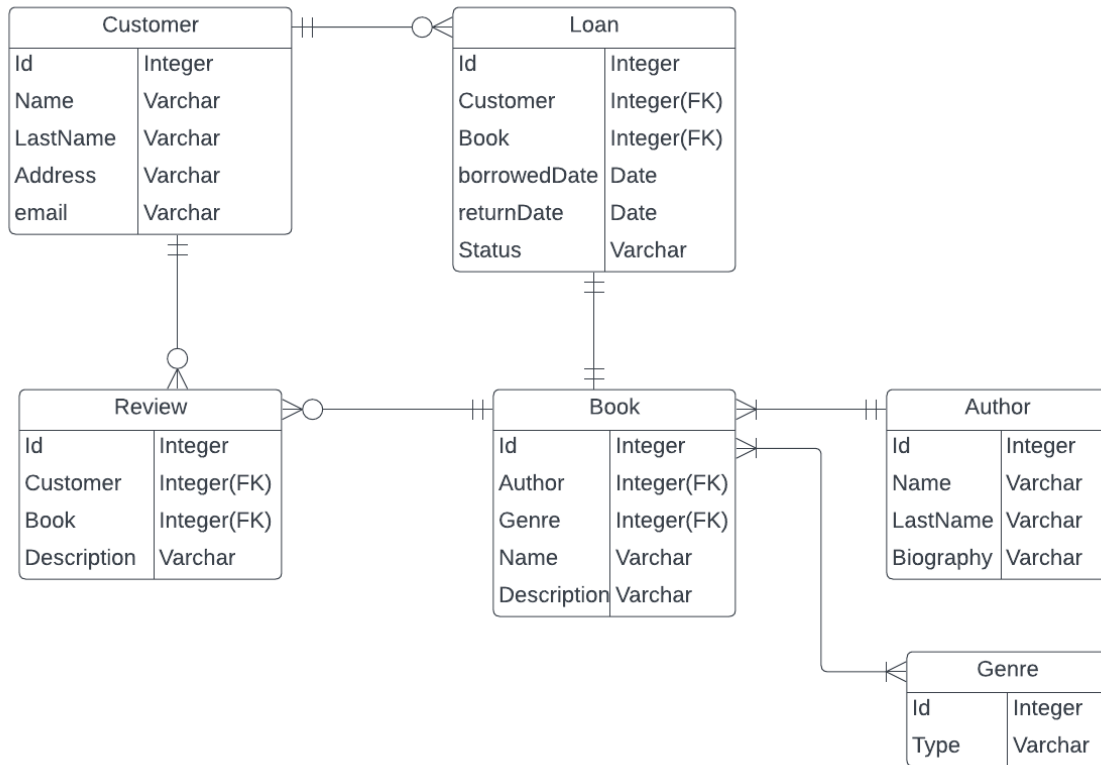# Design REST API(Library Management)

- Functional Requirements
  - **Library Member**
    - Browse books, authors, request, and view Book – Loans.
    - Create, update, and remove reviews.
  - **Library Admin**
    - Create, update, remove books, authors, genres and customers.
    - Accept, reject book- loans request.
    - Update book-loans when book is returned.
    - Remove Reviews.
- Non-Functional Requirements
  - The cached copy must expire in one hour.
  - The API has the capacity for many users.
  - The time of the API response can't be bigger than 2 seconds.

ER DESIGN

Customer

Id	Integer
Name	Varchar
LastName	Varchar
Address	Varchar
email	Varchar

Loan

Id	Integer
Customer	Integer(FK)
Book	Integer(FK)
borrowedDate	Date
returnDate	Date
Status	Varchar

Review

Id	Integer
Customer	Integer(FK)
Book	Integer(FK)
Description	Varchar

Book

Id	Integer
Author	Integer(FK)
Genre	Integer(FK)
Name	Varchar
Description	Varchar

Author

Id	Integer
Name	Varchar
LastName	Varchar
Biography	Varchar

Genre

Id	Integer
Type	Varchar

Resources

- Customer
- Books
- Loans
- Author
- Genres
- Reviews

POST Methods for the resources

```
Creating a Customer
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/customers'
  URI Design - 'http//mylibrary.com/customers'
  ←--JSON--→
  Request Header:
     "POST http//mylibrary.com/customers"
     "Content-type: application/json"
     "Accept:application/json"
     "Authorization:Basic abase64string"
     {
     "id": 1
     "name": "Donovan"
     "lastname": "Rosas"
     "Address": "1234 NW Bobcat Lane, St. Robert"
     "email": "donovanr@email.com"
     }
  ←-XML-→
  Request Header:
     "POST http//mylibrary.com/customers"
     "Content-type: text/xml"
     "Accept:text/xml"
     "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
     <customer>
       <id>1</id>
       <name>"Donovan"</name>
       <lastname>"Rosas"</lastname>
       <address>"1234 NW Bobcat Lane, St. Robert"</address>
       <email>"donovanr@email.com"</email>
     </customer>
    </Request>
  HTTP status code:
       Success
         201 - Created
       Failure
         401 - Unauthorized
         409 - Conflict
         404 - Not Found
```

```
Creating a Book
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/books'
  URI Design - 'http//mylibrary.com/books'
  Request Header:
      "POST http//mylibrary.com/books"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "name": "Love in the time of Cholera"
        "description": "The main characters of the novel... "
        "Author": 3
        "Genre": 6
      }
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/books"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <book>
        <name>"Love in the time of Cholera"</name>
        <description>"The main characters of the novel... "</description>
        <author>3</author>
        <genre>6</genre>
      </book>
    </Request>
HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          409 - Conflict
          404 - Not Found
```

```
Creating a Author
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/authors'
  URI Design - 'http//mylibrary.com/authors'
  Request Header:
      "POST http//mylibrary.com/authors"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "name": "Gabriel"
        "lastname": "García Márquez"
        "biography": "Gabriel was a writter ....."
      }
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/authors"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <authors>
        <name>"Gabriel"</name>
        <lastname>"García Márquez"</lastname>
        <biography>"Gabriel was a writter ....."</biography>
      </authors>
    </Request>
  HTTP status code:
      Success
        201 - Created
      Failure
        401 - Unauthorized
        409 - Conflict
        404 - Not Found
```

```
Creating a Genre
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/genres'
  URI Design - 'http//mylibrary.com/genres'
  Request Header:
      "POST http//mylibrary.com/genres"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "type": "romantic novel"
      }
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/genres"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <genre>
        <type>"romantic novel"</type>
      </genre>
    </Request>
  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          409 - Conflict
          404 - Not Found
```

```
Creating a Loan
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/loans'
  URI Design - 'http//mylibrary.com/loans'
  Request Header:
      "POST http//mylibrary.com/loans"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "customer": 1
        "book": 2
        "borrowedDate": "17-10-23"
        "returnDate": "30-10-23"
        "status": "Borrowed"
      }
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/loans"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <loan>
        <customer>1</customer>
        <book>2</book>
        <borrowedDate>"17-10-23"</borrowedDate>
        <returnDate>"30-10-23"</returnDate>
        <stat>"Borrowed"</stat>
      </loan>
    </Request>
  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          409 - Conflict
          404 - Not Found
```

```
Creating a Review
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/reviews'
  URI Design - 'http//mylibrary.com/reviews'
  Request Header:
      "POST http//mylibrary.com/reviews"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "customer": 1
        "book": 2
        "description": "It was a good book"
      }
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/reviews"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <review>
        <customer>1</customer>
        <book>2</book>
        <description>"It was a good book"</description>
      </review>
    </Request>
  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          409 - Conflict
          404 - Not Found
```

PUT Methods for de Resources.

```
Updating a Customer
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/customers'
  URI Design - 'http//mylibrary.com/customers/{customer_id}'
  Request Header:
      "PUT http//mylibrary.com/customers/{customer_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "name": "Donovan"
        "lastname": "Rosas"
        "Address": "1234 NW Bobcat Lane, St. Robert"
        "email": "donovanr@email.com"
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/customers/{customer_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <customer>
        <name>"Donovan"</name>
        <lastname>"Rosas"</lastname>
        <address>"1234 NW Bobcat Lane, St. Robert"</address>
        <email>"donovanr@email.com"</email>
      </customer>
    </Request>
  HTTP status code:
        Success
          200 - Ok
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Updating a Book
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/books'
  URI Design - 'http//mylibrary.com/books/{book_id}'
  Request Header:
      "PUT http//mylibrary.com/books/{book_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "name": "Love in the time of Cholera"
        "description": "The main characters of the novel... "
        "Author": 3
        "Genre": 6
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/books/{book_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <book>
        <name>"Love in the time of Cholera"</name>
        <description>"The main characters of the novel... "</description>
        <author>3</author>
        <genre>6</genre>
      </book>
    </Request>
HTTP status code:
      Success
        200 - Ok
      Failure
        401 - Unauthorized
        404 - Not Found
        405 - Method Not Allowed
```

```
Updating an Author
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/authors'
  URI Design - 'http//mylibrary.com/authors/{author_id}'
  Request Header:
      "PUT http//mylibrary.com/authors/{author_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "name": "Gabriel"
        "lastname": "García Márquez"
        "biography": "Gabriel was a writter ....."
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/authors/{authors_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <authors>
        <name>"Gabriel"</name>
        <lastname>"García Márquez"</lastname>
        <biography>"Gabriel was a writter ....."</biography>
      </authors>
    </Request>
  HTTP status code:
        Success
          200 - Ok
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Updating a Genre
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/genres'
  URI Design - 'http//mylibrary.com/genres/{genres_id}'
  Request Header:
      "PUT http//mylibrary.com/genres"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "type": "romantic novel"
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/genres/{genres_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <genre>
        <type>"romantic novel"</type>
      </genre>
    </Request>
  HTTP status code:
        Success
          200 - Ok
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Uptading a Loan
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/loans'
  URI Design - 'http//mylibrary.com/loans/{loan_id}'
  Request Header:
      "PUT http//mylibrary.com/loans/{loan_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "customer": 1
        "book": 2
        "borrowedDate": "17-10-23"
        "returnDate": "30-10-23"
        "status": "Borrowed"
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/loans/{loan_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
    <loan>
      <customer>1</customer>
      <book>2</book>
      <borrowedDate>"17-10-23"</borrowedDate>
      <returnDate>"30-10-23"</returnDate>
      <stat>"Borrowed"</stat>
    </loan>
    </Request>
  HTTP status code:
      Success
        201 - Created
      Failure
        401 - Unauthorized
        404 - Not Found
        405 - Method Not Allowed
```

```
Updating a Review
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/reviews'
  URI Design - 'http//mylibrary.com/reviews/{review_id}'
  Request Header:
      "PUT http//mylibrary.com/reviews/{review_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "customer": 1
        "book": 2
        "description": "It was a good book"
      }
  ←—XML—→
  Request Header:
      "PUT http//mylibrary.com/reviews/{review_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <review>
        <customer>1</customer>
        <book>2</book>
        <description>"It was a good book"</description>
      </review>
    </Request>
  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

DELETE Methods for the resources.

```
Delete a Customer
   Protocol - 'HTTP'
   Endpoint - 'http://mylibrary.com/customers'
   URI Design - 'http//mylibrary.com/customers/{customer_id}'
   Request Header:
       "DELETE http//mylibrary.com/customers/{customer_id}"
       "Content-type: application/json"
       "Accept:application/json"
       "Authorization:Basic abase64string"
   ←—XML—→
   Request Header:
       "DELETE http//mylibrary.com/customers/{customer_id}"
       "Content-type: text/xml"
       "Accept:text/xml"
       "Authorization:Basic abase64string"
   HTTP status code:
           Success
             200 - Ok
           Failure
             401 - Unauthorized
             404 - Not Found
             405 - Method Not Allowed
```

snappify.com

```
Delete a Book
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/books'
  URI Design - 'http//mylibrary.com/books/{book_id}'
  Request Header:
      "DELETE http//mylibrary.com/books/{book_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
     "DELETE http//mylibrary.com/books/{book_id}"
     "Content-type: text/xml"
     "Accept:text/xml"
     "Authorization:Basic abase64string"

HTTP status code:
      Success
        200 - Ok
      Failure
        401 - Unauthorized
        404 - Not Found
        405 - Method Not Allowed
```

```
Delete an Author
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/authors'
  URI Design - 'http//mylibrary.com/authors/{author_id}'
  Request Header:
      "DELETE http//mylibrary.com/authors/{author_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
     "DELETE http//mylibrary.com/authors/{authors_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
  HTTP status code:
        Success
          200 - Ok
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Delete a Genre
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/genres'
  URI Design - 'http//mylibrary.com/genres/{genres_id}'
  Request Header:
      "DELETE http//mylibrary.com/genres"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
      "DELETE http//mylibrary.com/genres/{genres_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
  HTTP status code:
        Success
          200 - Ok
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Delete a Loan
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/loans'
  URI Design - 'http//mylibrary.com/loans/{loan_id}'
  Request Header:
      "DELETE http//mylibrary.com/loans/{loan_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
     "DELETE http//mylibrary.com/loans/{loan_id}"
     "Content-type: text/xml"
     "Accept:text/xml"
     "Authorization:Basic abase64string"
  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

```
Delete a Review
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/reviews'
  URI Design - 'http//mylibrary.com/reviews/{review_id}'
  Request Header:
      "DELETE http//mylibrary.com/reviews/{review_id}"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"

  ←—XML—→
  Request Header:
      "DELETE http//mylibrary.com/reviews/{review_id}"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"

  HTTP status code:
        Success
          201 - Created
        Failure
          401 - Unauthorized
          404 - Not Found
          405 - Method Not Allowed
```

GET Methods for the resources

```
Get Genres
    Protocol - 'HTTP'
    Endpoint - 'http://mylibrary.com/genres'
    URI Design -    'http//mylibrary.com/genres'
                    'http//mylibrary.com/genres?page=<page>'
                    'http//mylibrary.com/genres?page=<page>&per_page=<limit>'
                    'http//mylibrary.com/genres?page=<page>&per_page=<limit>&offset=<offset>'

    Request Header:
        "GET http//mylibrary.com/genres"
        "Content-type: application/json"
        "Accept:application/json"
        "Authorization:Basic abase64string"
    ←—XML—→
    Request Header:
        "GET http//mylibrary.com/genres/"
        "Content-type: text/xml"
        "Accept:text/xml"
        "Authorization:Basic abase64string"
    HTTP status code:
        Success
                    200 - Ok
        Failure
                    404 - Not Found
Caching-controll
    cache-control: public, max-age:3600
Response Representation
    JSON
      {
        genres[
          {
            "id" = 1
            "type" = "terror"
          },

          {
            "id" = 2
            "type" = "romantic"
          }
          ...
        ]
      }
    XML—
    <genres>
      <genre>
        <id>1</id>
        <type>"terror"</type>
      </genre>
      <genre>
        <id>2</id>
        <type>"romantic"</type>
      </genre>
      ......
    </genres>
```

snappify.com

```
GET Authors
    Protocol - 'HTTP'
    Endpoint - 'http://mylibrary.com/authors'
    URI Design - 'http//mylibrary.com/authors'
            'http//mylibrary.com/authors?page=<page>'
            'http//mylibrary.com/authors?page=<page>&per_page=<limit>'
            'http//mylibrary.com/authors?page=<page>&per_page=<limit>&offset=<offset>'
    Request Header:
        "GET http//mylibrary.com/authors"
        "Content-type: application/json"
        "Accept:application/json"
        "Authorization:Basic abase64string"

    ←—XML—→
    Request Header:
        "GET http//mylibrary.com/authors"
        "Content-type: text/xml"
        "Accept:text/xml"
        "Authorization:Basic abase64string"
      <?xml version="1.0" encoding="utf-8"?>

    HTTP status code:
            Success
                200 - Ok
            Failure
                404 - Not Found
Caching-controll
    cache-control: public, max-age:3600
Response Representation
    JSON
      {
        authors[
          {
            "id" = 1
            "name": "Gabriel"
            "lastname": "García Márquez"
            "biography": "Gabriel was a writter ....."
          },

          {
            "id" = 2
            "name": "Mario"
            "lastname": "Vargas LLosa"
            "biography": "Mario was a writter ....."
          }
          ...
        ]
      }
    XML—
    <authors>
        <author>
          <id>1</id>
          <name>"Gabriel"</name>
          <lastname>"García Márquez"</lastname>
          <biography>"Gabriel was a writter ....."</biography>
        </author>
        <author>
          <id>2</id>
          <name>"Mario"</name>
          <lastname>"Vargas LLosa"</lastname>
          <biography>"Mario was a writter ....."</biography>
        </author>
        ...
    </authors>
```

```
GET a Customer
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/customers'
  URI Design - 'http//mylibrary.com/customers'
          'http//mylibrary.com/customers?page=<page>'
          'http//mylibrary.com/customers?page=<page>&per_page=<limit>'
          'http//mylibrary.com/customers?page=<page>&per_page=<limit>&offset=<offset>'
  Request Header:
      "GET http//mylibrary.com/customers"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
      "GET http//mylibrary.com/customers"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
  HTTP status code:
        Success
                    200 - Ok
        Failure
                    404 - Not Found
Caching-controll
  cache-control: public, max-age:3600
Response Representation
  JSON
    {
      customers[
        {
          "id": 1
          "name": "Donovan"
          "lastname": "Rosas"
          "Address": "1234 NW Bobcat Lane, St. Robert"
          "email": "donovanr@email.com"
        },

        {
          "id": 2
          "name": "Rodrigo"
          "lastname": "Sanchez"
          "Address": "9874 JKW Sesame Street, St. Rose"
          "email": "rodse@email.com"
        }
        ...
      ]
    }
  XML—
  <customers>
      <customer>
        <id>1</id>
        <name>"Donovan"</name>
        <lastname>"Rosas"</lastname>
        <address>"1234 NW Bobcat Lane, St. Robert"</address>
        <email>"donovanr@email.com"</email>
      </customer>
      <customer>
        <id>2</id>
        <name>"Rodrigo"</name>
        <lastname>"Sanchez"</lastname>
        <address>"9874 JKW Sesame Street, St. Rose"</address>
        <email>"rodse@email.com"</email>
      </customer>
        ...
  </customers>
```

```
GET Books
    Protocol - 'HTTP'
    Endpoint - 'http://mylibrary.com/books'
    URI Design - 'http//mylibrary.com/books'
            'http://mylibrary.com/books?page=<page>'
            'http://mylibrary.com/books?page=<page>&per_page=<limit>&offset=<offset>'
            'http://mylibrary.com/books?page=<page>&per_page=<limit>&offset=<offset>'
            ------ByAuthor-------
            'http//mylibrary.com/books/{author_id}/booksbyAuthor'
            'http//mylibrary.com/books/{author_id}/booksbyAuthor?page=<page>'
            'http//mylibrary.com/books/{author_id}/booksbyAuthor?page=<page>&per_page=<limit>'
            'http//mylibrary.com/books/{author_id}/booksbyAuthor?page=<page>&per_page=<limit>&offset=<offset>'
            ------ByGenre-------
            'http//mylibrary.com/books/{genre_id}/booksbyGenre'
            'http//mylibrary.com/books/{genre_id}/booksbyGenre?page=<page>'
            'http//mylibrary.com/books/{genre_id}/booksbyGenre?page=<page>&per_page=<limit>'
            'http//mylibrary.com/books/{genre_id}/booksbyGenre?page=<page>&per_page=<limit>&offset=<offset>'

    Request Header:
        "GET http//mylibrary.com/books"
        "Content-type: application/json"
        "Accept:application/json"
        "Authorization:Basic abase64string"
    ←—XML—→
    Request Header:
        "GET http//mylibrary.com/books"
        "Content-type: text/xml"
        "Accept:text/xml"
        "Authorization:Basic abase64string"
HTTP status code:
        Success
                    200 - Ok
        Failure
                    404 - Not Found
Caching-controll
    cache-control: public, max-age:3600
Response Representation
    JSON
        {
        books[
            {
            "id" = 1
            "name": "Love in the time of Cholera"
            "description": "The main characters of the novel... "
            "Author": 'http://mylibrary.com/authors/{author_id}'
            "Genre": 'http//mylibrary.com/genres/{genres_id}'
            },

            {
            "id" = 2
            "name": "Twilight"
            "description": "In this novel...."
            "Author": 'http://mylibrary.com/authors/{author_id}'
            "Genre":  'http//mylibrary.com/genres/{genres_id}'
            }
            ...
        ]
        }
    XML—
    <books>
        <book>
        <id>1</id>
        <name>"Love in the time of Cholera"</name>
        <description>"The main characters of the novel... "</description>
        <author>'http://mylibrary.com/authors/{author_id}'</author>
        <genre>'http//mylibrary.com/genres/{genres_id}'</genre>
        </book>
        <book>
        <id>2</id>
        <name>"Twilight"</name>
        <description>"In this novel...."</description>
        <author>'http://mylibrary.com/authors/{author_id}'</author>
        <genre>'http//mylibrary.com/genres/{genres_id}'</genre>
        </book>
        ...
    </books>
```

```
Get Reviews
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/reviews'
  URI Design - 'http//mylibrary.com/reviews'
          'http//mylibrary.com/books?reviews=<page>'
          'http//mylibrary.com/books?reviews=<page>&per_page=<limit>'
          'http//mylibrary.com/books?reviews=<page>&per_page=<limit>&offset=<offset>'
          ---ByCustomer----
          'http//mylibrary.com/reviews/{customer_id}/reviewsbyCustomer'
          'http//mylibrary.com/reviews/{customer_id}/reviewsbyCustomer'
          'http//mylibrary.com/reviews/{customer_id}/reviewsbyCustomer?reviews=<page>&per_page=<limit>'
          'http//mylibrary.com/reviews/{customer_id}/reviewsbyCustomer?reviews=<page>&per_page=<limit>&offset=<offset>'
          -----ByBook-----
          'http//mylibrary.com/reviews/{book_id}/reviewsbyBook'
          'http//mylibrary.com/reviews/{book_id}/reviewsbyBook?reviews=<page>'
          'http//mylibrary.com/reviews/{book_id}/reviewsbyBook?reviews=<page>&per_page=<limit>'
          'http//mylibrary.com/reviews/{book_id}/reviewsbyBook?reviews=<page>&per_page=<limit>&offset=<offset>'

  Request Header:
      "GET http//mylibrary.com/reviews"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
      {
        "customer": 1
        "book": 2
        "description": "It was a good book"
      }
  <---XML--->
  Request Header:
      "GET http//mylibrary.com/reviews"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <review>
        <customer>1</customer>
        <book>2</book>
        <description>"It was a good book"</description>
      </review>
    </Request>
```

```
HTTP status code:
       Success
                  200 - Ok
       Failure
                  404 - Not Found
Caching-controll
  cache-control: public, max-age:3600
Response Representation
  JSON
    {
      reviews[
        {
          "id" = 1
          "customer": 'http//mylibrary.com/customers/{customer_id}'
          "book": 'http//mylibrary.com/books/{book_id}'
          "description": "It was a good book"
        },

        {
          "id" = 2
          "customer": 'http//mylibrary.com/customers/{customer_id}'
          "book":'http//mylibrary.com/books/{book_id}'
          "description": "It was a bad book"
        }

        ...

      ]
    }
  XML--
  <reviews>
     <review>
       <id>1</id>
       <customer>'http//mylibrary.com/customers/{customer_id}'</customer>
       <book>'http//mylibrary.com/books/{book_id}'</book>
       <description>"It was a good book"</description>
     </review>
     <review>
       <id>2</id>
       <customer>'http//mylibrary.com/customers/{customer_id}'</customer>
       <book>'http//mylibrary.com/books/{book_id}'</book>
       <description>"It was a bad book"</description>
     </review>
     ...
  </reviews>
```

```
Get Loans
  Protocol - 'HTTP'
  Endpoint - 'http://mylibrary.com/loans'
  URI Design - 'http//mylibrary.com/loans'
        'http//mylibrary.com/loans?reviews=<page>'
        'http//mylibrary.com/loans?reviews=<page>&per_page=<limit>'
        'http//mylibrary.com/loans?reviews=<page>&per_page=<limit>&offset=<offset>'
        ------ByCustomer---
        'http//mylibrary.com/loans/{customer_id}/loansbyCustomer'
        'http//mylibrary.com/loans/{customer_id}/loansbyCustomer?reviews=<page>'
        'http//mylibrary.com/loans/{customer_id}/loansbyCustomer?reviews=<page>&per_page=<limit>'
        'http//mylibrary.com/loans/{customer_id}/loansbyCustomer?reviews=<page>&per_page=<limit>&offset=<offset>'


  Request Header:
      "POST http//mylibrary.com/loans"
      "Content-type: application/json"
      "Accept:application/json"
      "Authorization:Basic abase64string"
  ←—XML—→
  Request Header:
      "POST http//mylibrary.com/loans"
      "Content-type: text/xml"
      "Accept:text/xml"
      "Authorization:Basic abase64string"
    <?xml version="1.0" encoding="utf-8"?>
    <Request>
      <loan>
        <customer>1</customer>
        <book>2</book>
        <borrowedDate>"17-10-23"</borrowedDate>
        <returnDate>"30-10-23"</returnDate>
        <stat>"Borrowed"</stat>
      </loan>
    </Request>
  HTTP status code:
        Success
                  200 - Ok
        Failure
                  404 - Not Found
Caching-controll
  cache-control: public, max-age:3600
```

Response Representation

```
JSON
  {
    loans[
      {
        "id" = 1
        "customer": 'http//mylibrary.com/customers/{customer_id}'
        "book": 'http//mylibrary.com/books/{book_id}'
        "borrowedDate": "17-10-23"
        "returnDate": "30-10-23"
        "status": "Borrowed"
      },

      {
        "id" = 1
        "customer": 'http//mylibrary.com/customers/{customer_id}'
        "book": 'http//mylibrary.com/books/{book_id}'
        "borrowedDate": "1-03-23"
        "returnDate": "15-03-23"
        "status": "Returned"
      }
      ...
    ]
  }
XML——
<loans>
    <loan>
      <id>1</id>
      <customer>'http//mylibrary.com/customers/{customer_id}'</customer>
      <book>'http//mylibrary.com/books/{book_id}'</book>
      <borrowedDate>"17-10-23"</borrowedDate>
      <returnDate>"30-10-23"</returnDate>
      <stat>"Borrowed"</stat>
    </review>
    <loan>
      <id>2</id>
      <customer>'http//mylibrary.com/customers/{customer_id}'</customer>
      <book>'http//mylibrary.com/books/{book_id}'</book>
      <borrowedDate>"1-03-23"</borrowedDate>
      <returnDate>"15-03-23"</returnDate>
      <stat>"Returned"</stat>
    </loan>
    ...
</loans>
```