Spring Fundamentals Exam

My Music DB Application

Exam for the "Spring Fundamentals" course @ SoftUni.

My Music DB Application is here to help us gather information about our favorite music artists and their albums. Of course, this is a lot of work, but for starters we will start with three of the most popular artists. Once we find all their albums, we will add more artists so that our application can have even more data, to help users find information about their favorite artists and tiny albums. At this stage, the functionality of the application is small, but later I believe that you could future develop it by adding many new futures.

1. Database Requirements

The **Database** of the **My Music DB** application needs to support **3 entities**:

User

- Has an **Id – UUID-string or Long**
- Has a **Username (unique)**
    - Username length must be between 3 and 20 characters (inclusive 3 and 20).
- Has a **Full Name**
    - Full Name length must be between 3 and 20 characters (inclusive 3 and 20).
- Has a **Password**
    - Password length must be between 5 and 20 characters (inclusive 5 and 20).
- Has an **Email**
    - Must contains '@'.
    - The email must be unique.

Album

- Has an **Id – UUID-string or Long**
- Has a **Name**
    - Name length must be between 3 and 20 characters (inclusive 3 and 20).
- Has an **Image Url**
    - Image Url length must be minimum 5(inclusive) characters.
- Has a **Description**

  - Description min length must be minimum 5(inclusive) characters
  - The description is a long text field.
- Has a **Copies**
  - All sold copies of the album
  - Must be a more than 10(inclusive).
- Has a **Price**
  - Price must be a positive number
- Has a **Released date**
  - **Date** that cannot be in the future
- Has a **Producer**
  - Name of producer
  - Can be null.
- Has a **Genre**
  - Option between (Pop, Rock, Metal and Other).
    - This is just an enumeration, not entity.
- Has an **Artist**
  - Has **ONLY ONE** artist
  - This is the relation with artists

- Has a **Added From** (user)
  - A User that adds this album to the My Music DB application

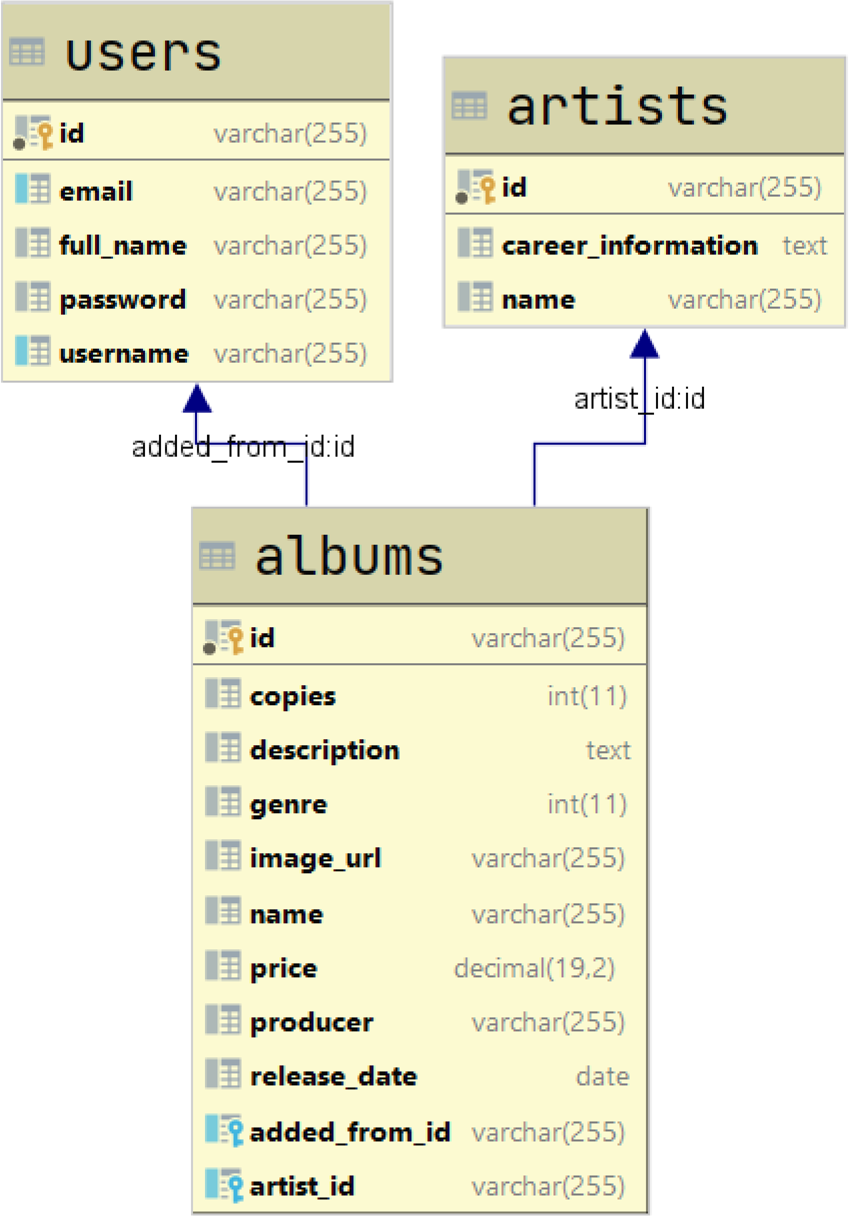
Artist

- Has an **Id – UUID-string or Long**
- Has a Name of the singer or the band.
  - option between (**Queen**, **Metallica**, **Madonna**)
- Has a **Career information**
  - The carrier information is a long text field.
  - This is optional, can be set to null.

Nullable/Empty strings are not allowed unless explicitly mentioned.

Implement the entities with the **correct datatypes** and implement **repositories** for them.

Here is the ER Diagram:



2. Initialize artists

- Implement a method that checks (when app started) if the database does not have any artist and initialize them
  - You are free to do this in some different ways.
  - If you want, you can skip the career information to be null or add this:
    - **Queen Career information:**
      - Queen are a British rock band formed in London in 1970. Their classic line-up was Freddie Mercury (lead vocals, piano), Brian May (guitar, vocals), Roger Taylor (drums, vocals) and John Deacon (bass). Their earliest works were influenced by

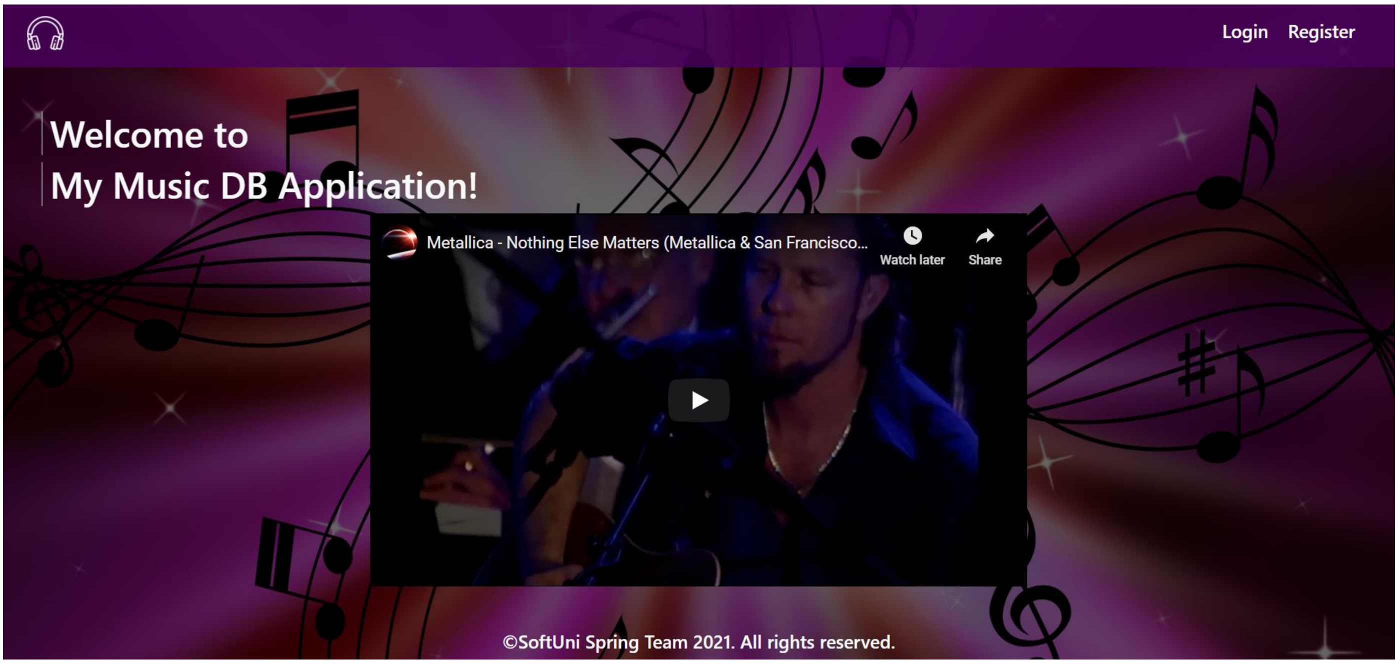
progressive rock, hard rock and heavy metal, but the band gradually ventured into more conventional and radio-friendly works by incorporating further styles, such as arena rock and pop rock.

- **Metallica Career information:**
  - Metallica is an American heavy metal band. The band was formed in 1981 in Los Angeles by vocalist/guitarist James Hetfield and drummer Lars Ulrich, and has been based in San Francisco for most of its career. The band's fast tempos, instrumentals and aggressive musicianship made them one of the founding "big four" bands of thrash metal, alongside Megadeth, Anthrax and Slayer. Metallica's current lineup comprises founding members and primary songwriters Hetfield and Ulrich, longtime lead guitarist Kirk Hammett, and bassist Robert Trujillo. Guitarist Dave Mustaine and bassists Ron McGovney, Cliff Burton and Jason Newsted are former members of the band.

- **Madonna Career information:**
  - Madonna Louise Ciccone - born and raised in Michigan, Madonna moved to New York City in 1978 to pursue a career in modern dance. After performing as a drummer, guitarist, and vocalist in the rock bands Breakfast Club and Emmy, she rose to solo stardom with her debut studio album, Madonna (1983). She followed it with a series of successful albums, including all-time bestsellers Like a Virgin (1984) and True Blue (1986) as well as Grammy Award winners Ray of Light (1998) and Confessions on a Dance Floor (2005).

3. Page Requirements

Index Page (logged out user)


Login
Register
Welcome to
My Music DB Application!
Metallica - Nothing Else Matters (Metallica & San Francisco...
Watch later
Share
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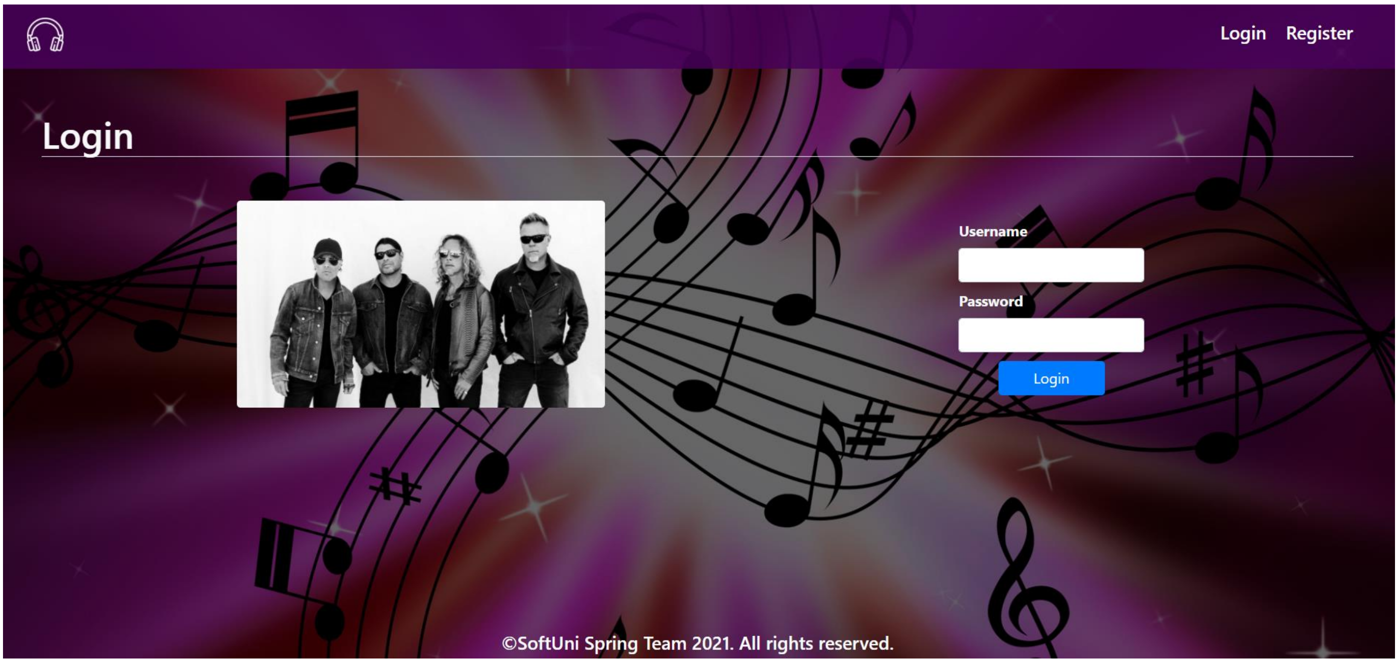
Login Page (logged out user)



Login

Username

Password

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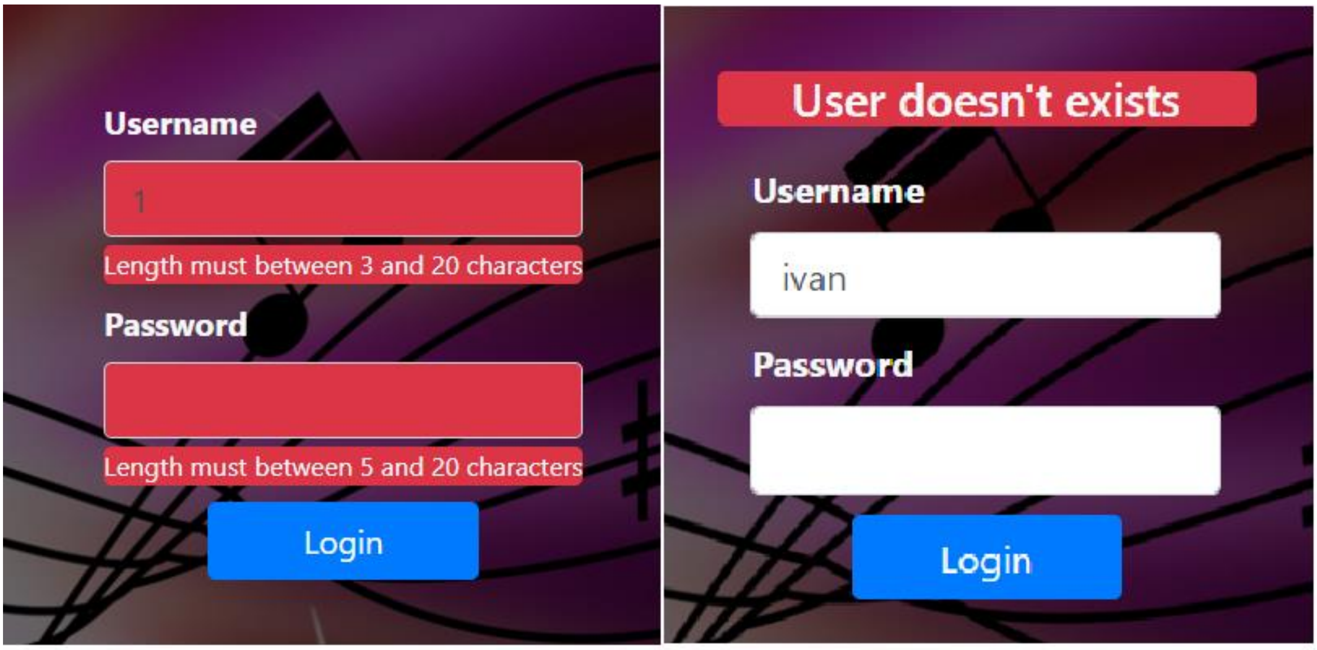
Login Page validations



Username

1

Length must between 3 and 20 characters

Password

Length must between 5 and 20 characters

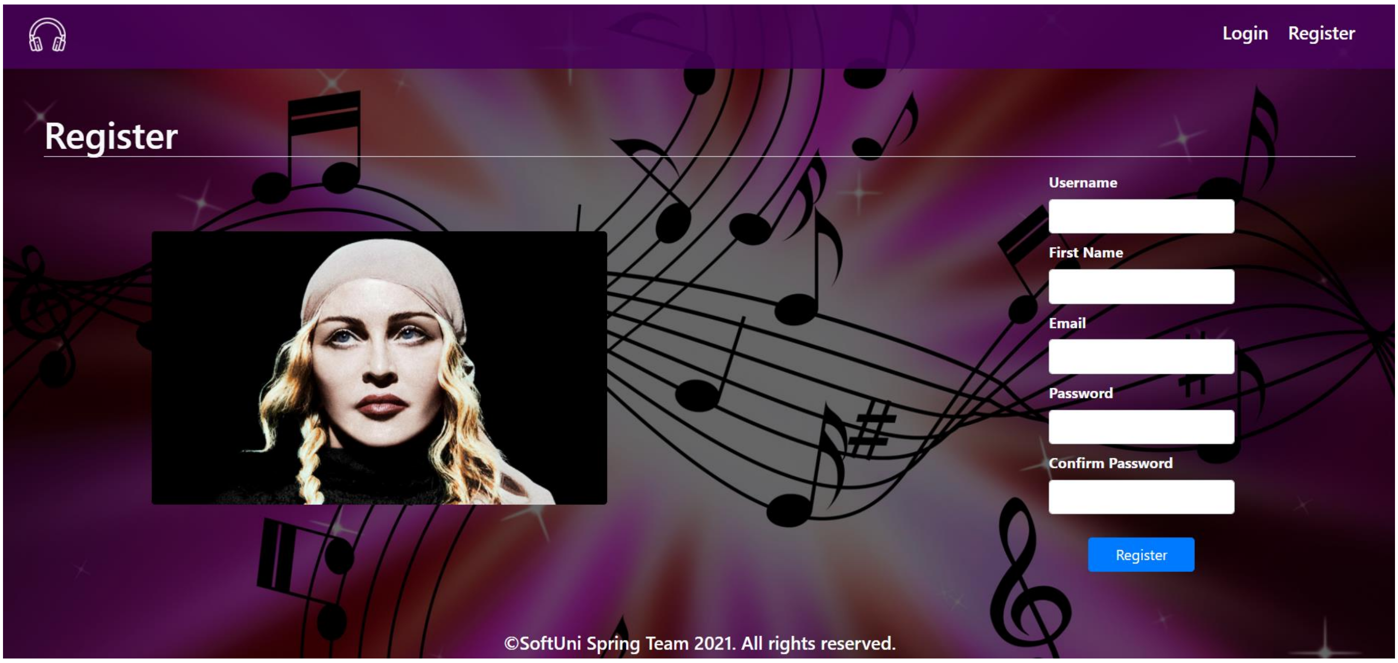
User doesn't exists

Username

ivan

Password

Register Page (logged out user)



Register

Username

First Name

Email

Password

Confirm Password

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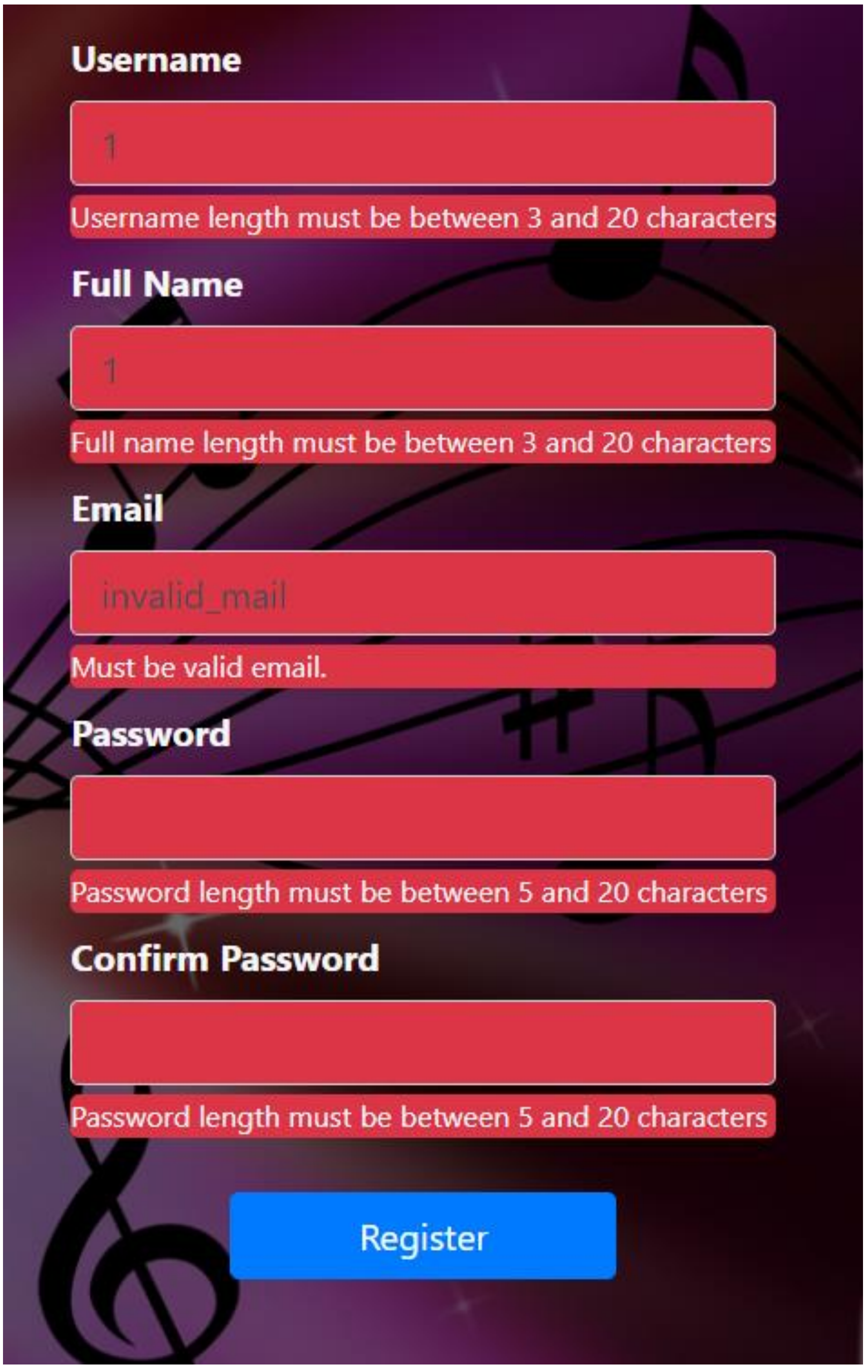
Register Page validations

- Note: it is not necessary to show message for different passwords, just not save the user and redirect again to the register page.



Username

1

Username length must be between 3 and 20 characters

Full Name

1

Full name length must be between 3 and 20 characters

Email

invalid_mail

Must be valid email.

Password

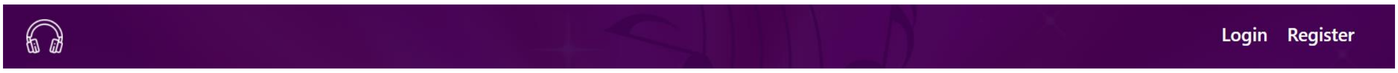
Password length must be between 5 and 20 characters

Confirm Password

Password length must be between 5 and 20 characters

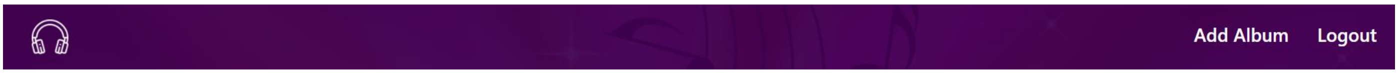
Navigation (Guest user)

- Note: can access only to **Index**, **Login**, **Register** pages.

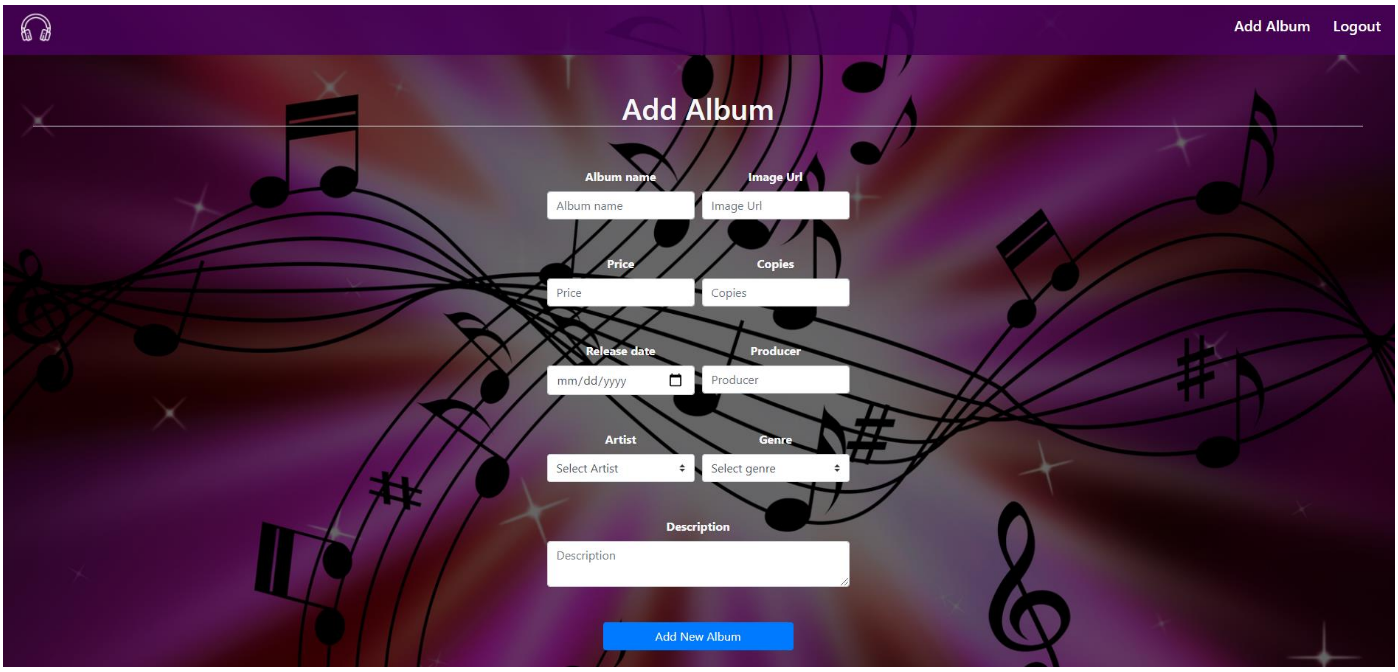


Navigation (Registered user)

- Note: can access only to **Home**, **Add Album**, **Logout**.



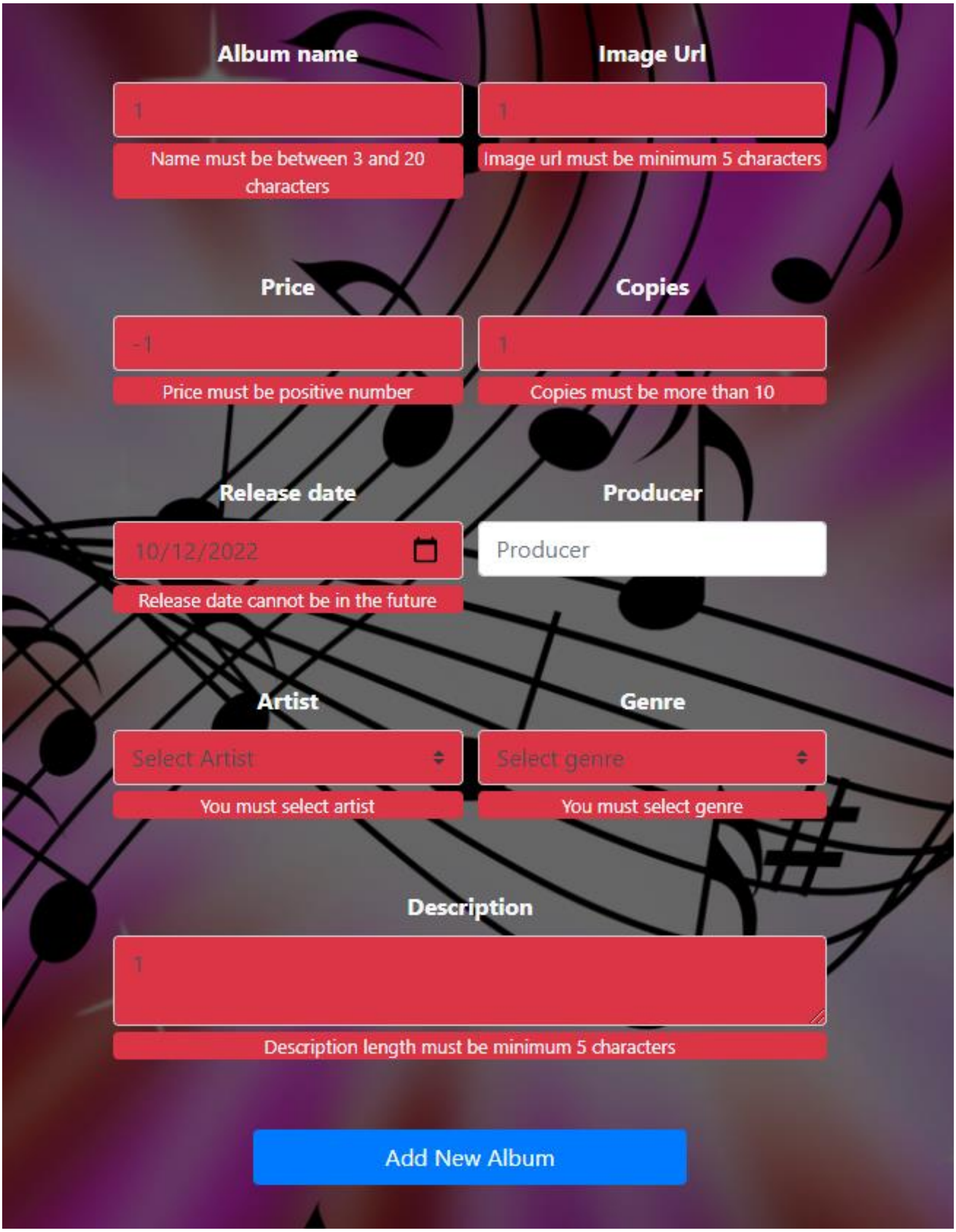
Add Album



Add Album

Album name | Image Url
Album name | Image Url
Price | Copies
Price | Copies
Release date | Producer
mm/dd/yyyy | Producer
Artist | Genre
Select Artist | Select genre
Description
Description

Add Album validation



Album name

1

Name must be between 3 and 20 characters

Image Url

1

Image url must be minimum 5 characters

Price

-1

Price must be positive number

Copies

1

Copies must be more than 10

Release date

10/12/2022

Release date cannot be in the future

Producer

Producer

Artist

Select Artist

You must select artist

Genre

Select genre

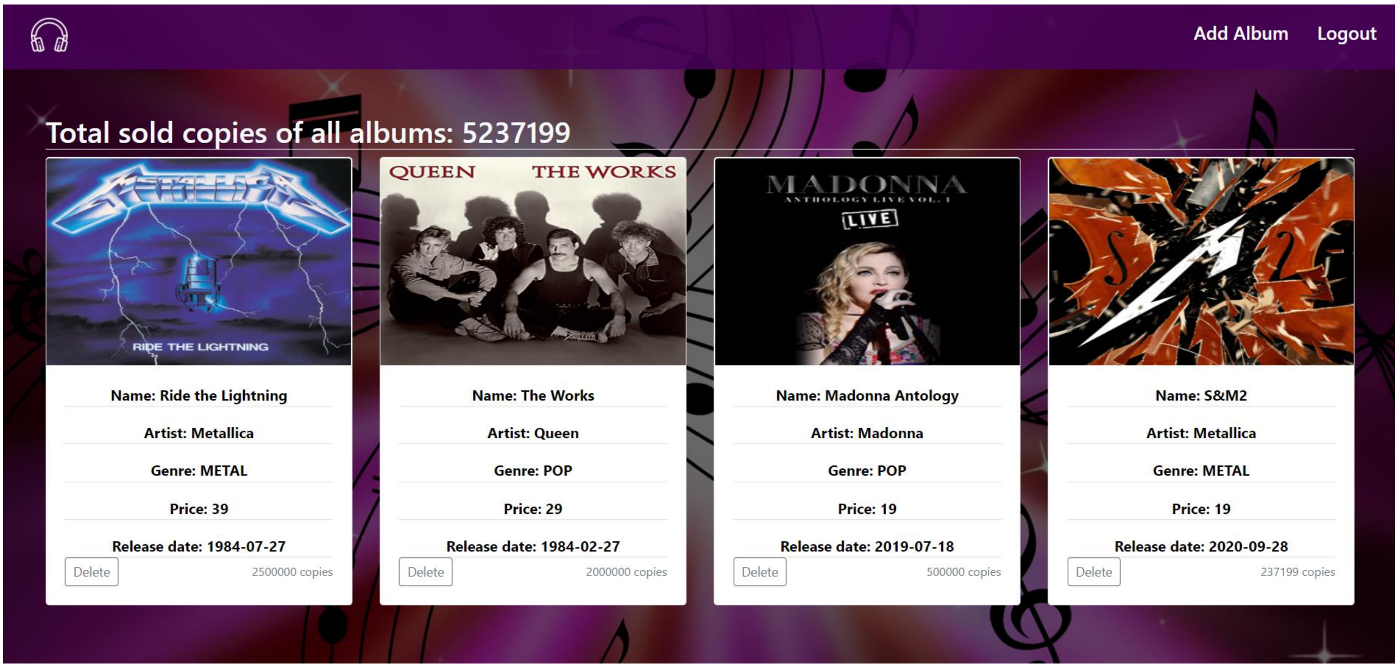
You must select genre

Description

1

Description length must be minimum 5 characters

Home Page (with albums)



Total sold copies of all albums: 5237199

Name: Ride the Lightning
Artist: Metallica
Genre: METAL
Price: 39
Release date: 1984-07-27
Delete 2500000 copies

Name: The Works
Artist: Queen
Genre: POP
Price: 29
Release date: 1984-02-27
Delete 2000000 copies

Name: Madonna Antology
Artist: Madonna
Genre: POP
Price: 19
Release date: 2019-07-18
Delete 500000 copies

Name: S&M2
Artist: Metallica
Genre: METAL
Price: 19
Release date: 2020-09-28
Delete 237199 copies

The templates have been given to you in the application skeleton, so make sure you implement the pages correctly.

NOTE: The templates should look **EXACTLY** as shown above.

NOTE: The templates do **NOT require additional CSS** for you to write. Only **bootstrap** and the **given css** are enough.

NOTE: Albums should be sorted based on the copies sold in **descending order**.

4. Functional Requirements

The **Functionality Requirements** describe the functionality that the **Application** must support.

The **application** should provide **Guest** (not logged in) users with the functionality to **login**, **register** and **view** the **Index** page.

The **application** should provide **Users** (logged in) with the functionality to **logout**, **add an album**, **view all Albums in DB** (**Home page**) and **Delete a single one** from albums.

In **My Music DB Application**, the navbar should redirect to appropriate **URL depending** on that if the user is logged in.

The **application** should provide **functionality** for **adding albums** with **artist** and **category.** Also can delete them from the database.

Delete button remove the selected album from the database and again **redirect** to the **home** page

The first **header** on the **home** page shows the **total sum** of **all copies** of albums in the database at this moment.

The **application** should **store** its **data** into a **MySQL** database.

5. Security Requirements

The **Security Requirements** are mainly access requirements. Configurations about which users can access specific functionalities and pages.

- **`Guest`** (not logged in) users can access **`Index`** page.
- **`Guest`** (not logged in) users can access **`Login`** page.
- **`Guest`** (not logged in) users can access **`Register`** page.
- **`Users`** (logged in) can access **`Home`** page.
- **`Users`** (logged in) can access **`Add Album`** page.
- **`Users`** (logged in) can access **`Logout`** functionality.

6. Scoring

Database – 10 points.

Pages – 25 points.

Functionality – 35 points.

Security – 5 points.

Validations – 15 points.

Code Quality – 10 points.