

Istanbul Okan University
SWE312 Design Patterns
Term Project
Mustafa Doruk ÇİL 200218006

Project Aim

Developing a Charity Donation Tracking system with using design patterns in Java programming language.

Used Design Patterns

- 1) Singleton Design Pattern (Used for providing database access)
- 2) Builder Design Pattern (Used for creating User object and Charity Object)
- 3) Proxy Design Pattern (Used for providing donation logic in the project)
- 4) Strategy Design Pattern (Used for database CRUD operations in the project)
- 5) MVC Design Pattern (Used for clear file organization of the project)

Database Architecture

SQLite database used in this project.

This project includes mainly three database table (charity, donations, users).

Charity Table

Charity table includes four attributes (id, name, creatorEmail, creationDate).

id: Primary key of the charity table. Indicates charity id. Datatype is integer.

name: Indicates charity name. Datatype is text.

creatorEmail: Indicates email of the creator of the charity. Datatype is text.

creationDate: Indicates creation date of the charity as DD-MM-YYYY (day-month-year) format
datatype is text.

Donations Table

Donations table includes five attributes. (id, donatorEmail, charity, amount, dateTime).

id: Primary key of the donations table. Indicates id of the donation. Datatype is integer.

donatorEmail: Indicates the donator email. Datatype is text.

charity: Indicates the charity which is donate has been sent. Datatype text.

amount: Indicates the donation amount. Datatype is decimal.

dateTime: Indicates donation date. Datatype is text.

Users Table

Users table includes five attributes. (id, username, email, password).

id: Indicates id of the user. Datatype is integer.

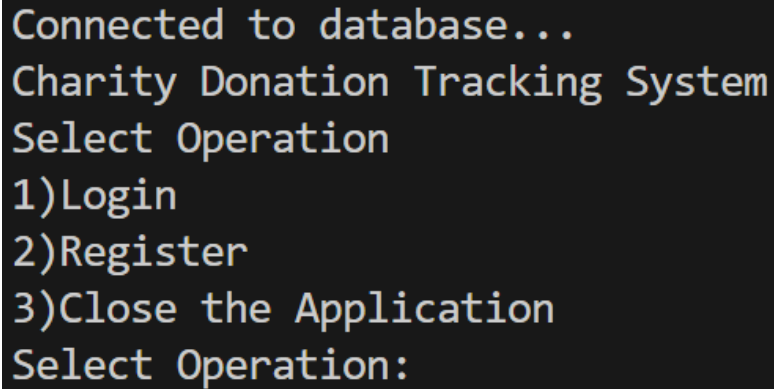
username: Indicates the username of the user. Datatype is text.

email: Indicates the email of the user. Datatype is text.

password: Indicates the password of the user. Datatype is text.

Project Screenshoots

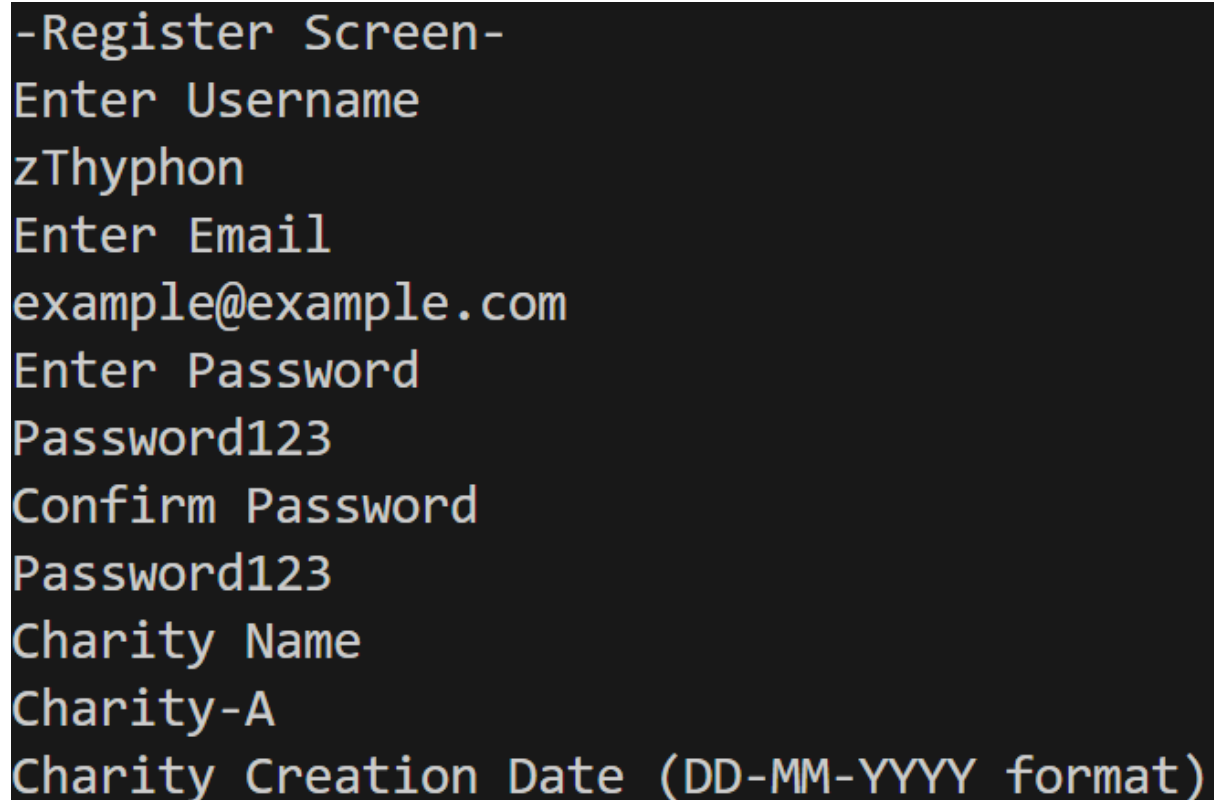
When user started the application, system shall show the selection screen which includes register, login and close the application options.



```
Connected to database...
Charity Donation Tracking System
Select Operation
1)Login
2)Register
3)Close the Application
Select Operation:
```

Photo 1: Starting Screen

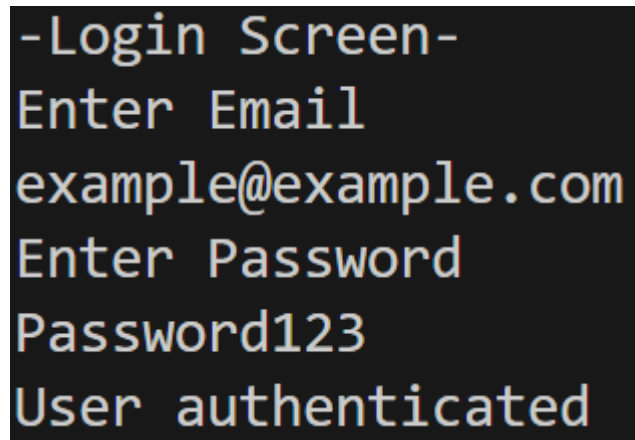
When user registered the application, system shall add user and charity which belongs to the user will added to the database.



```
-Register Screen-
Enter Username
zThyphon
Enter Email
example@example.com
Enter Password
Password123
Confirm Password
Password123
Charity Name
Charity-A
Charity Creation Date (DD-MM-YYYY format)
```

Photo 2: Register Screen

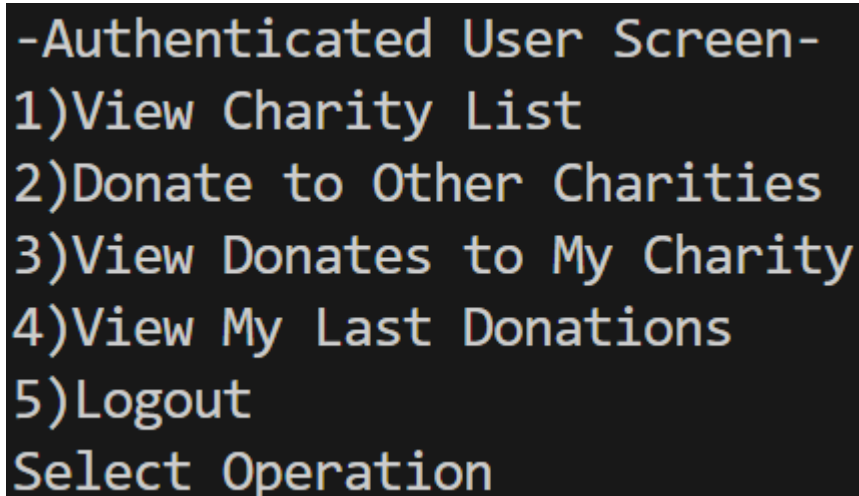
Users can enter the system with using their email and password.



```
-Login Screen-  
Enter Email  
example@example.com  
Enter Password  
Password123  
User authenticated
```

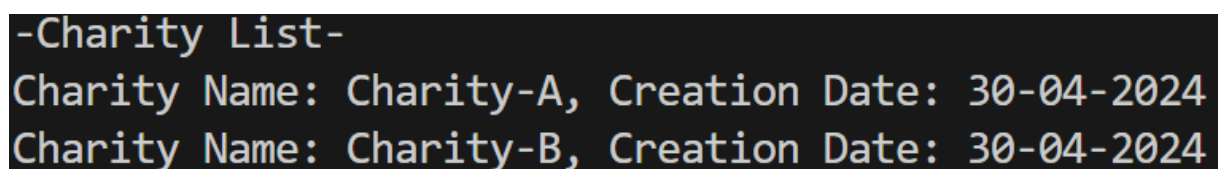
Photo 3: Login Screen

When users authenticated they can select operations below.



```
-Authenticated User Screen-  
1)View Charity List  
2)Donate to Other Charities  
3)View Donates to My Charity  
4)View My Last Donations  
5)Logout  
Select Operation
```

Photo 4: Authenticated User Operation Selection Screen



```
-Charity List-  
Charity Name: Charity-A, Creation Date: 30-04-2024  
Charity Name: Charity-B, Creation Date: 30-04-2024
```

Photo 5: Login Screen

```
-Donation Screen-  
Enter Charity  
Charity-B  
Enter Amount (E.g: 100,3)  
50,70  
50.7$ has been donated to Charity-B successfully
```

Photo 6: Donation Screen

```
-Donates to My Charity-  
Amount: $50.7, Donation Date: 30-04-2024
```

Photo 7: Donations to Charity Screen

```
-My Last Donations-  
Charity: Charity-B, Amount: $50.7, Donation Date: 30-04-2024
```

Photo 8: User Donations to other Charities

File Organization of the Project

.vscode folder: Includes vscode project settings. (Jar file names etc.)

Controllers folder: Includes controller files of the project.

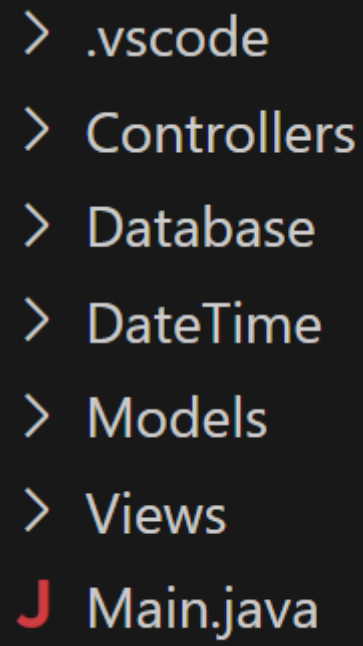
Database folder: Includes database and database related (database connection, database CRUD operations) files.

DateTime folder: Includes date and time related scripts.

Models folder: Includes models used in the project.

Views folder: Includes views which is used in the project.

Main.java: Main application folder. Application is started with main.java file.



A screenshot of a code editor's file explorer showing a project folder structure. The background is dark. The list of files and folders is as follows:

- > .vscode
- > Controllers
- > Database
- > DateTime
- > Models
- > Views
- J Main.java

Photo 9: Project Folder