Project Report: Simple Project Management Application

Introduction

The "Simple Project Management Application" is a consolebased Java application designed to facilitate basic project management operations. The application allows users to perform tasks such as adding projects, listing projects, selecting a project, updating project details, and deleting projects. This report provides an overview of the code structure, functionality, and key components.

Project Structure

here is a brief description of some of important sections in the code

1. Main Class: `ProjectApp`

- Responsibility: The main class initializes the application, processes user selections, and handles the flow of the program.

- Key Methods:

- `main`: Entry point of the application.

- `processUserSelections`: Manages the user interaction loop and delegates tasks based on user input.

- Other methods handle specific projectrelated operations and user input.

2. ProjectService

Responsibility: Presumed to handle CRUD operations for projects; however, the actual implementation is not provided in this code snippet.

Assumption: The `ProjectService` class is assumed to interact with a database to perform operations on project entities.

3. User Input Handling

- Responsibility: The application uses the `Scanner` class and custom methods to handle user input in different formats (integer, string, decimal).

- Key Methods:

- `getUserSelection`, `getIntInput`, `getStringInput`, `getDecimalInput`: Retrieve user input with appropriate formatting.

4. Project Operations

Responsibility: Methods like `createProject`, `listProject`, `selectProject`, `updateProjectDetails`, and `deleteProject` handle various projectrelated operations using the `ProjectService` class.

5. Exception Handling

Responsibility: Basic exception handling is implemented to catch general exceptions and display error messages to the user.

Code Overview

- The application uses a simple menu system with numbered options for user interaction.

- Each operation is encapsulated within a separate method, promoting code modularity and readability.

- Exception handling ensures that the application gracefully handles errors and provides meaningful feedback to the user.

Output:

1. Launching the Application:

- Upon running the application, the user is presented with a menu displaying various project management options.


```
--------------------------------------------------
                    MAIN MENU
--------------------------------------------------
     1) Add a project
     2) List projects
     3) Select a project
     4) Update project details
     5) Delete a project
```

2. User Selection:

    - The user is prompted to enter a menu selection. The application processes the user input and executes the corresponding operation.

```
Enter a menu selection (press Enter to quit): 1
```

3. Listing Projects:

    - If the user selects the option to list projects, the application displays the existing projects.

```
Enter a menu selection (press Enter to quit): 2

Projects:
    Project ID: 1, Project Name: Project1
-------------------------------------------------
```

4. Creating a Project:

    - When adding a new project, the user is prompted to enter details such as project name, estimated hours, actual hours, difficulty, and notes.

```
Enter a menu selection (press Enter to quit): 1
Enter the project name: Project1
Enter the estimated hours: 34
Enter the actual hours: 31
Enter the project difficulty (1-5): 3
Enter the project notes: Comment down new changes
You have successfully created project: Project ID: 1, Project Name: Project1
```

5. Selecting and Updating a Project:

    - Users can select a project, view its details, and update specific information.

```
Enter a menu selection (press Enter to quit): 3

Projects:
    Project ID: 1, Project Name: Project1

Enter a project ID to select a project: 1
-----------------------------------------------------
```

6. Updating a project:

- the user can also updata a project

```
Enter a menu selection (press Enter to quit): 4

Current Project Details:
Project ID: 1
Project Name: Project1
Enter updated project name (press Enter to keep current):

Project details updated successfully.
-----------------------------------------------------
                    MAIN MENU
-----------------------------------------------------
        1) Add a project
        2) List projects
        3) Select a project
        4) Update project details
        5) Delete a project

You are working with a project: Project ID: 1, Project Name: Project1
```

7. Deleting a Project:

   - Deleting a project involves selecting a project by its ID and confirming deletion.

```
Enter a menu selection (press Enter to quit): 5

Projects:
    Project ID: 1, Project Name: Project3

Enter the project ID to delete: 1

Project deleted successfully.
--------------------------------------------------
                    MAIN MENU
--------------------------------------------------
        1) Add a project
        2) List projects
        3) Select a project
        4) Update project details
        5) Delete a project

You are not working with a project.
```

Conclusion

The "Simple Project Management Application" demonstrates a basic consolebased project management system with essential functionalities. The modular code structure and use of exception handling contribute to the maintainability and robustness of the application. Further development could focus on integrating database functionality and improving the user interface for a more comprehensive project management experience.