

Bug Tracking System

1. Introduction

1.1 Project Overview

The Bug Tracking System is a web-based application designed to manage and track software bugs throughout the development lifecycle. The system allows users to report, assign, and resolve bugs, ensuring that issues are addressed efficiently and effectively. The platform supports different roles within a development team, such as project managers, developers, and testers, each with specific permissions and responsibilities.

1.2 Goals

The main goals of the Bug Tracking System are:

- To provide a centralized platform for managing bugs in software projects.
- To streamline the process of bug reporting, assignment, and resolution.
- To facilitate collaboration among project managers, developers, and testers.
- To ensure that bugs are addressed in a timely manner, reducing the likelihood of unresolved issues.

2. Functional Requirements

2.1 User Roles

2.1.1 Project Manager

- **Permissions:**
 - Create and manage projects.
 - View all bugs reported within their assigned projects.
 - Assign bugs to developers based on severity and developer workload.
 - Monitor the status of bugs and ensure timely resolution.
- **Responsibilities:**
 - Overseeing the overall progress of the project.
 - Ensuring that bugs are prioritized and resolved according to project timelines.
 - Coordinating with testers and developers to manage the bug lifecycle.

2.1.2 Developer

- **Permissions:**
 - View bugs assigned to them.

- Update the status of bugs (e.g., "In Progress," "Resolved").
- Add comments or additional details to bugs.
- Close bugs once they have been resolved.
- **Responsibilities:**
 - Working on assigned bugs and implementing fixes.
 - Collaborating with testers to reproduce and understand reported bugs.
 - Providing feedback to project managers on the status of bugs.

2.1.3 Tester

- **Permissions:**
 - Report new bugs with detailed descriptions.
 - View bugs they have reported.
 - Inspect bugs.
- **Responsibilities:**
 - Conducting tests to identify bugs in the software.
 - Documenting bugs thoroughly to assist developers in resolving them.
 - Verifying that resolved bugs have been properly fixed.

2.2 Features

2.2.1 User Registration and Login

- **Description:** The system allows users to register with their email and password, specifying their role (Project Manager, Developer, or Tester). Users can then log in using their credentials.
- **Validation:** The system ensures that email addresses are unique and passwords meet security requirements.

2.2.2 Project Management

- **Description:** Project Managers can create new projects by providing a project name and description. They can also assign team members (developers and testers) to specific projects.
- **Operations:**
 - Create new projects.
 - Edit project details.
 - Assign users to projects.
 - View all projects managed by the user.

2.2.3 Bug Reporting

- **Description:** Testers can report bugs by providing a title, description, severity level, and steps to reproduce.
- **Bug Details:**
 - Title: A brief description of the bug.
 - Description: Detailed information about the bug, including how to reproduce it.
 - Severity: Critical, Moderate, Light.

2.2.4 Bug Assignment

- **Description:** Project Managers can assign reported bugs to developers. Bugs can be prioritized based on severity, and developers can be selected based on their current workload.
- **Workflow:**
 - View unassigned bugs.
 - Assign bugs to specific developers.
 - Set priority for bugs.

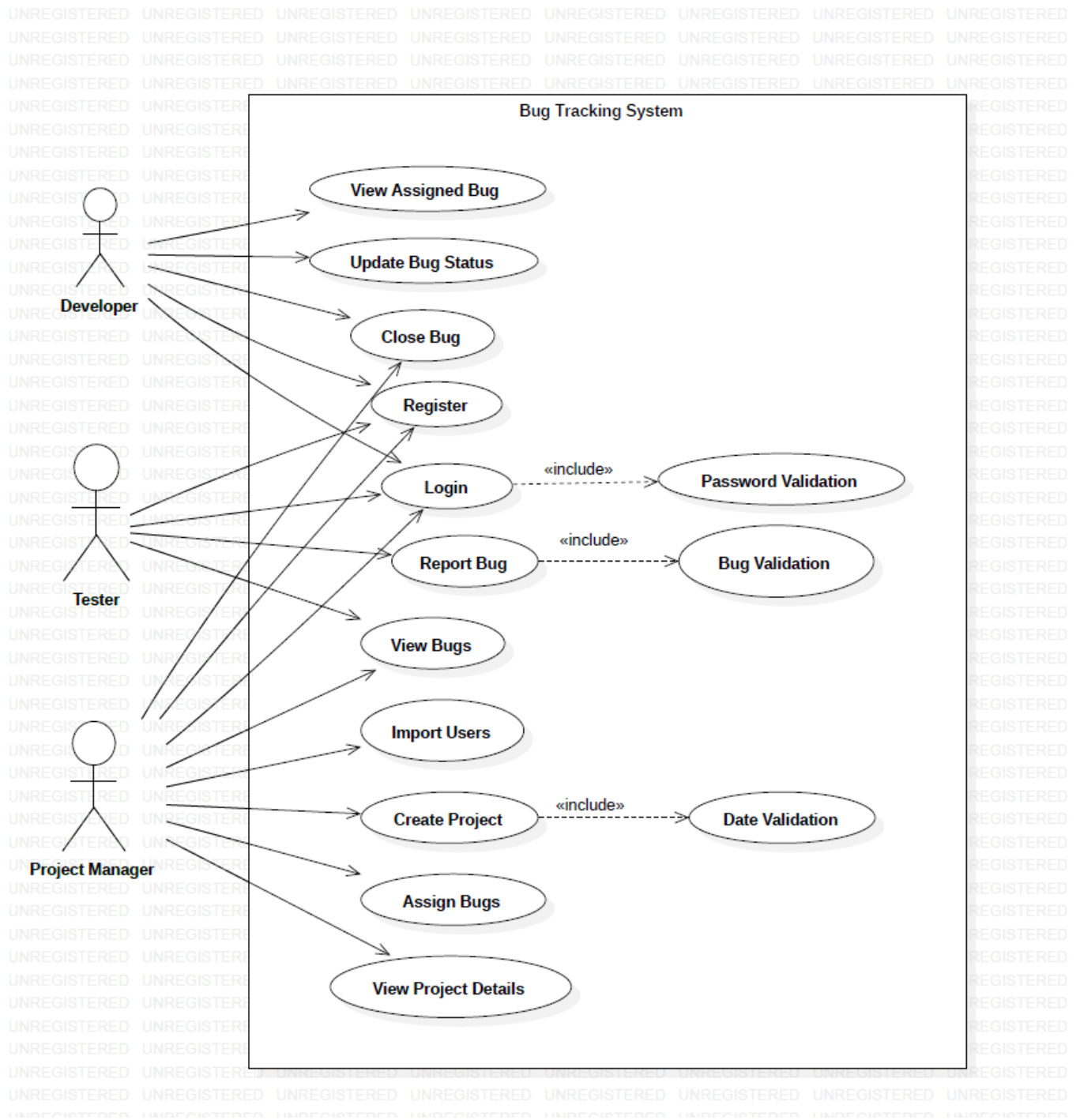
2.2.5 Bug Status Update

- **Description:** Developers can update the status of bugs they are working on. Status options include "Pending," "In Progress," "Resolved," and "Closed."
- **Status Flow:**
 - Bug reported → Pending.
 - Bug assigned → In Progress.
 - Bug fixed → Resolved.
 - Bug verified → Closed.

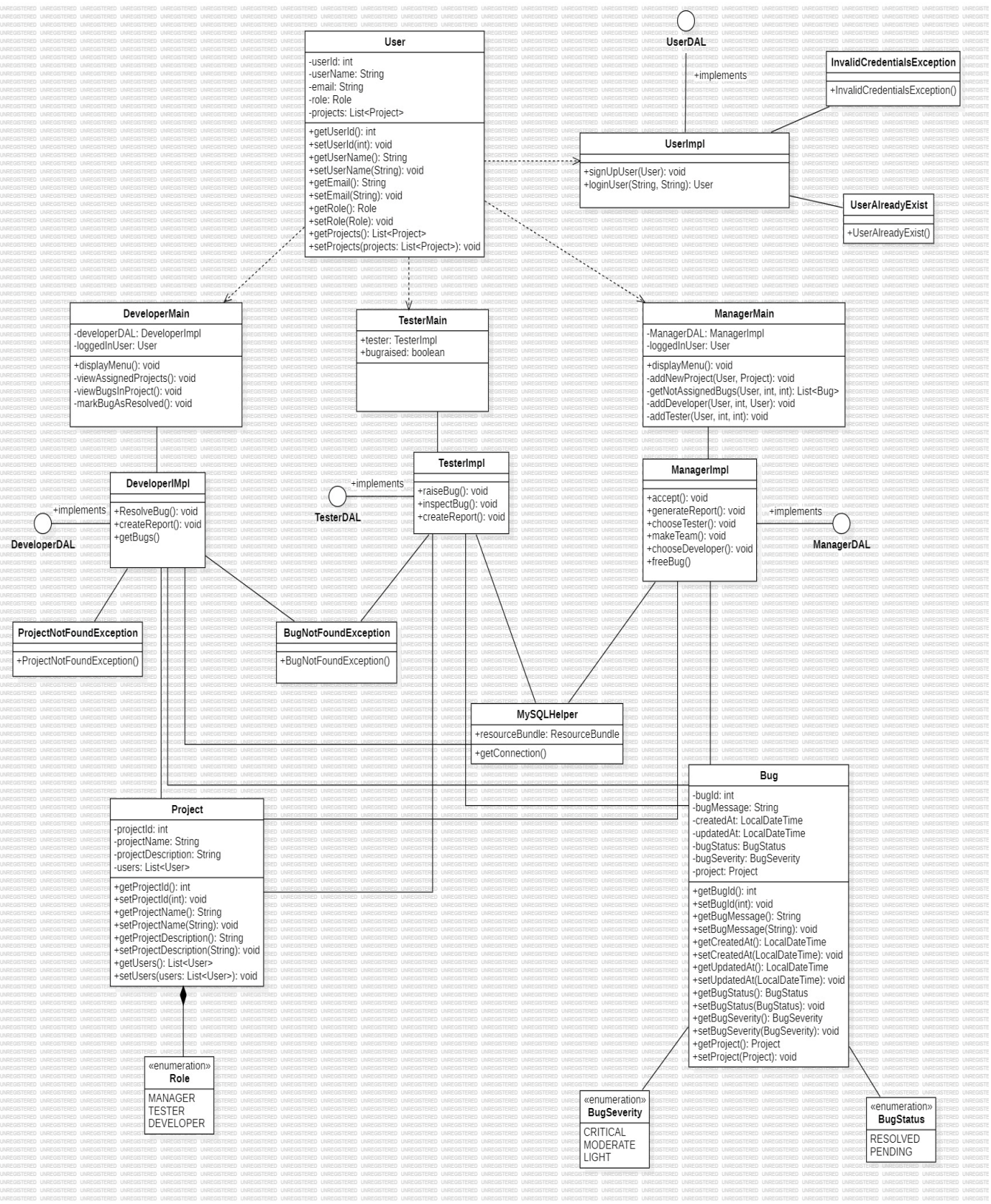
2.2.6 Severity Levels

- **Description:** Bugs are categorized into different severity levels to prioritize their resolution.
 - Critical: Bugs that cause major issues, such as crashes or data loss.
 - Moderate: Bugs that cause inconvenience but have workarounds.
 - Light: Minor bugs that do not significantly impact functionality.

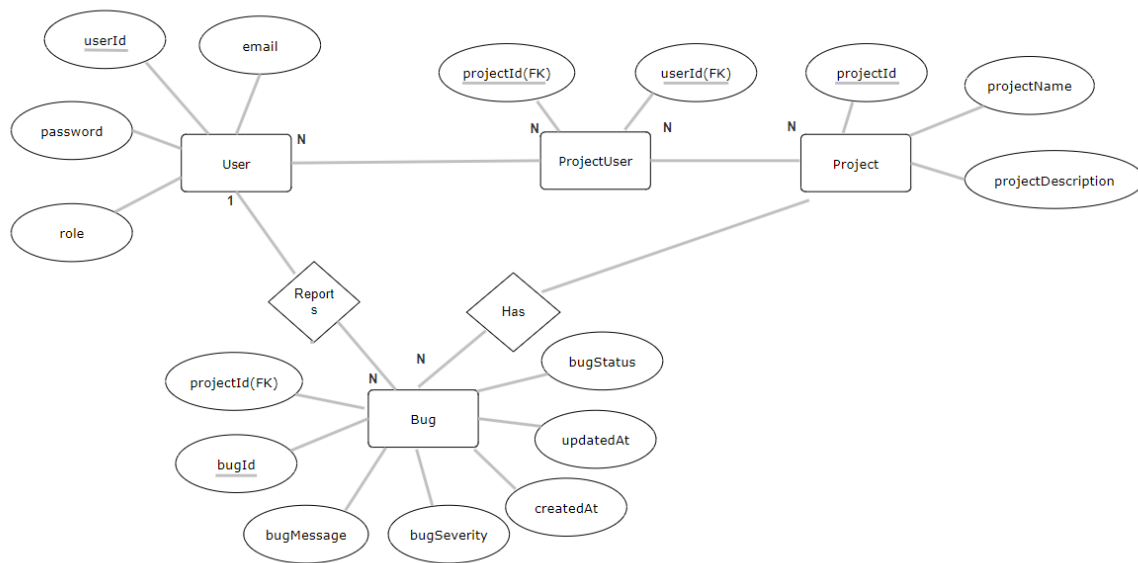
3. Use Case Diagram



4. Class Diagram

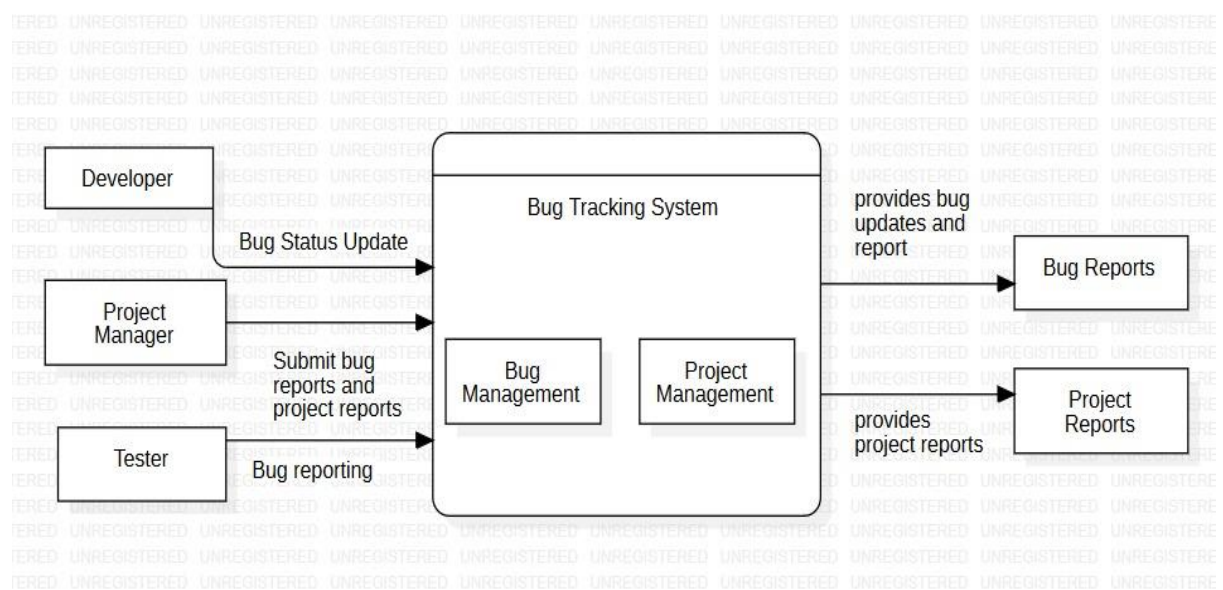


5. ER Diagram



6. DFD

Level 0:



Level 1:

