

## Key Relationships and Constraints:

### 1. Users and Roles Table:

Users table has a foreign key referencing Roles (role\_id in Users referencing role\_id in Roles).

### 2. Users and User\_Privileges Table:

User\_Privileges connects Users with Privileges via foreign keys.

user\_id in User\_Privileges refers to Users and privilege\_id in User\_Privileges refers to Privileges.

### 3. Roles and Role\_Privileges Table:

Role\_Privileges connects Roles and Privileges via foreign keys.

role\_id in Role\_Privileges refers to Roles, and privilege\_id refers to Privileges.

### 4. Projects and Users:

Projects has a foreign key project\_manager\_id that references Users (user\_id), making a user (project manager) the creator/owner of the project.

### 5. Modules and Projects:

Modules has a foreign key project\_id that references Projects (project\_id), associating a module with a project.

### 6. Submodules and Modules:

Submodules has a foreign key module\_id that references Modules (module\_id), associating a submodule with a module.

### 7. Employee\_Project\_Assignment and Employees / Projects:

Employee\_Project\_Assignment has foreign keys employee\_id (referencing Employees) and project\_id (referencing Projects), assigning employees to projects.

#### 8. Employee\_Module\_Assignment and Employees / Modules:

Employee\_Module\_Assignment has foreign keys employee\_id (referencing Employees) and module\_id (referencing Modules), assigning employees to modules.

#### 9. Employee\_Submodule\_Assignment and Employees / Submodules:

Employee\_Submodule\_Assignment has foreign keys employee\_id (referencing Employees) and submodule\_id (referencing Submodules), assigning employees to submodules.

#### 10. TestCases and Users:

TestCases has a foreign key assigned\_to referencing Users (user\_id), assigning a user to a test case.

#### 11. Defects and TestCases:

Defects has a foreign key test\_case\_id referencing TestCases (test\_case\_id), linking defects to test cases.

Defects also links to Users via assigned\_to, reported\_by, and fixed\_by foreign keys.

#### 12. Defects and Modules / Submodules:

Defects links to Modules and Submodules via foreign keys module\_id and submodule\_id, associating defects with their respective modules and submodules.

#### 13. Release and TestCases:

ReleaseTestCases connects TestCases with Release, linking test cases to specific releases.

Foreign keys: test\_case\_id (from TestCases) and release\_id (from Release).

#### 14. Notifications and Defects / Users:

Notifications table links Defects and Users via foreign keys defect\_id and user\_id, notifying users about defects.

#### 15. Bench and Employees:

Bench has a foreign key employee\_id that references Employees (employee\_id), storing availability data for employees on the bench.