

**CAPSTONE PROJECT REPORT**

**Report 4 – Software Design Document**

– Thủ Đức, November 202 –

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# I. Project Report

## 1. Status Report

| **#** | **Work Item** | **Status** | **Notes (Work Item in Details)** |
| --- | --- | --- | --- |
| 1 |  | Pending |  |
| 2 |  | In Progress |  |
| 3 |  | Completed |  |

## 2. Team Involvements

| **#** | **Task** | **Member** | **Notes (Task Details, etc.)** |
| --- | --- | --- | --- |
| 1 |  | KienNT |  |
| 2 |  | TuanTV |  |
| 3 |  | AnhLM |  |
| 4 |  |  |  |

## 3. Issues/Suggestions

| **#** | **Issue** | **Status** | **Notes (Solution, Suggestion, etc.)** |
| --- | --- | --- | --- |
| 1 |  | Pending |  |
| 2 |  | In Progress |  |
| 3 |  | Completed |  |

# II. Software Design Document

## 1. Overall Description

### 1.1 Assumptions

* Internet connection: Cable, Wifi
* Operation system: Windows 10
* Computer processor: Intel Core I3
* Computer memory: 4GB or more
* Web browser: Chrome, IE
* IDE: Visual Studio, Visual Studio Code
* DBMS: SQL Server 2019
* Modeling: Draw.io
* Source control: Git on IDE

### 1.2 Design Constraints

* Internet connection:
  + Cable
  + Wi-fi (50Mbps or more)
* Opera system:
  + Windows 10
* Computer processor: Intel core i3
* Computer memory: 4GB or more
* Web browser:
  + Chrome
  + IE (version 11 or more)
* IDE: Visual studio 2019, Visual studio code
* DBMS: SQL Server 2019
* Modeling: Draw.io
* Source control: Git on IDE
  + GitHub

### 1.3 Technology Suggestion

## 2. System Architecture Design

### 2.1 Overall Architecture

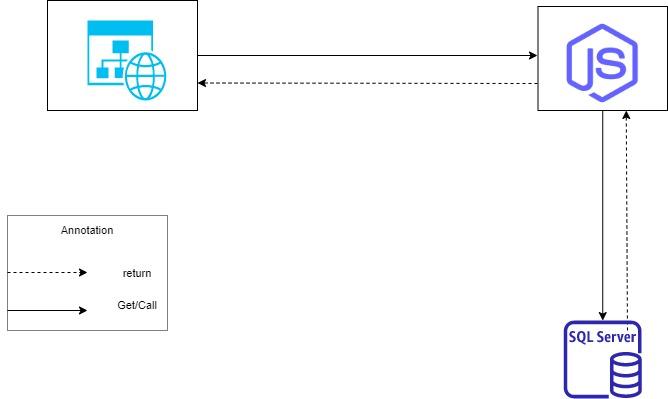
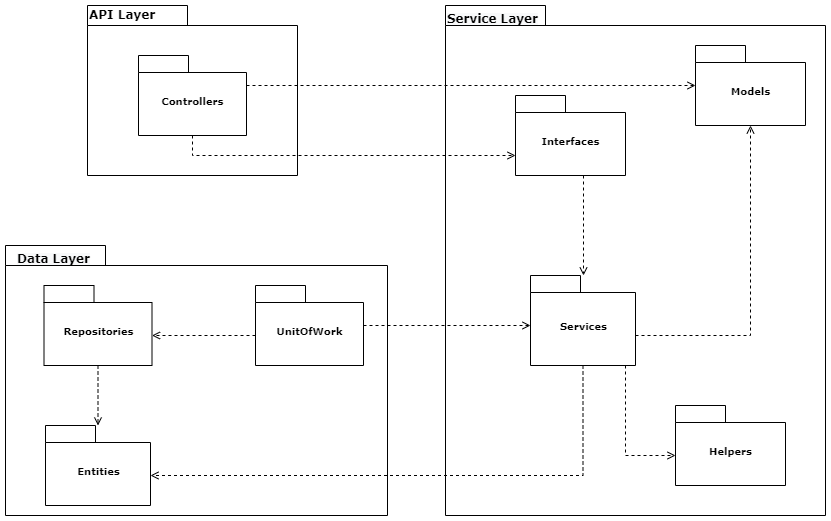


Figure 1:  System Architecture 3-Tier - Overall Architecture

### 2.2 System Architecture

### 2.3 Package Diagram

#### a. Back-end package diagram

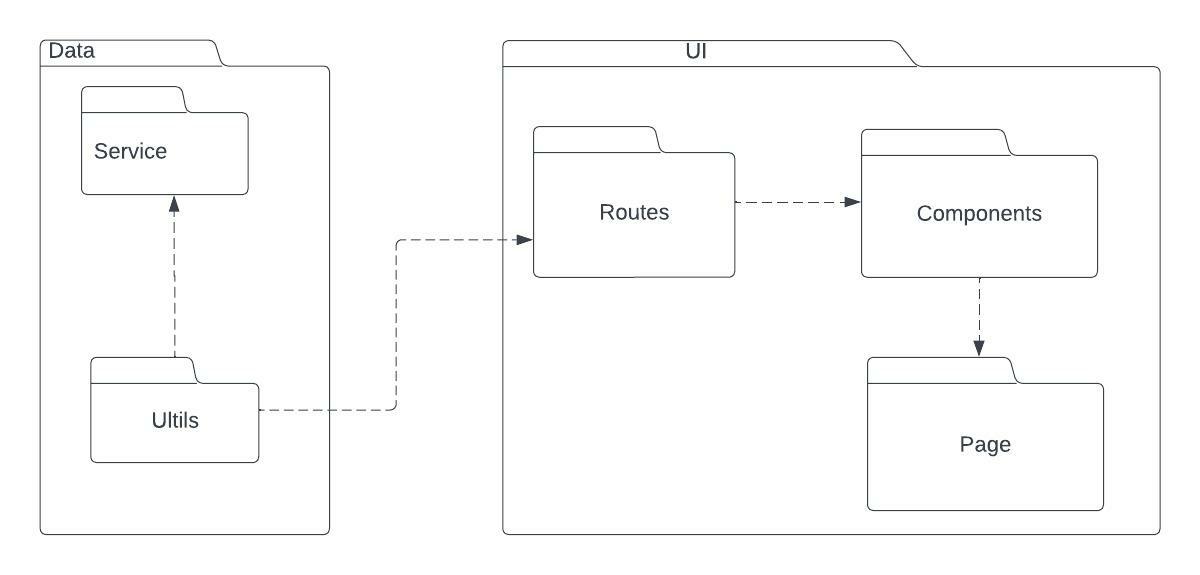


#### Figure :  Package Diagram - Back-end

| **No** | **Package** | **Description** |
| --- | --- | --- |
| *01* | *Controllers* | *The package contains all controller classes* |
| *02* | *Interfaces* | *The package contains all Interface classes* |
| *03* | *Models* | *The package contains all Model classes* |
| *04* | *Services* | *The package contains all Service classes* |
| *05* | *Helpers* | *The package contains all Helper classes* |
| *06* | *Repositories* | *The package contains all Repository classes* |
| *07* | *UnitOfWork* | *The Package contains all controller classes* |
| *08* | *Entities* | *The package contains all Entity classes* |

#### 

#### a. Front-end package diagram



#### Figure :  Package Diagram - Front-end

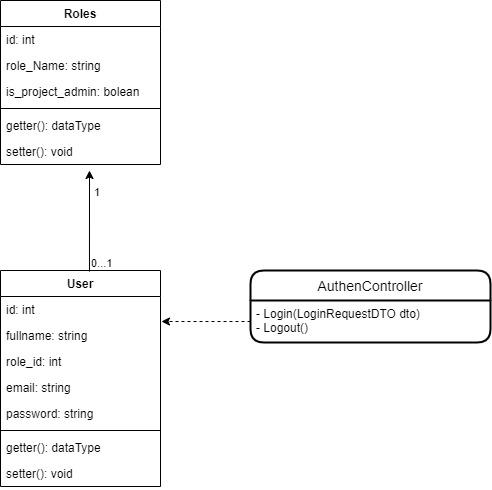
| **No** | **Package** | **Description** |
| --- | --- | --- |
| 01 | Services | The package contains all service classes |
| 02 | Utils | The package contains utility methods for common use |
| 03 | Routers | The package contains router method for common use |
| 04 | Components | The package contains all component classes |
| 05 | Pages | The package contains all page view for common use |

#### 

## 3. System Detailed Design

### 3.1 Authentication

#### a. Class Diagram



#### b. Class Specification

##### b1. AuthenController

*[Provide the detailed description for the class methods]*

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. User

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.2 Manage User

#### a. Class Diagram

#### b. Class Specification

##### b1. UserController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. User

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.3 Manage Test Case

#### a. Class Diagram

#### b. Class Specification

##### b1. CaseController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Test Case

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.4 Manage Test Run

#### a. Class Diagram

#### b. Class Specification

##### b1. RunController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Test Run

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.5 Manage Test Plan

#### a. Class Diagram

#### b. Class Specification

##### b1. PlanController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Test Plan

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.6 Manage Milestones

#### a. Class Diagram

#### b. Class Specification

##### b1. MilestoneController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Milestone

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.7 Manage Report

#### a. Class Diagram

#### b. Class Specification

##### b1. ReportController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Report

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

### 3.8 Manage Project

#### a. Class Diagram

#### b. Class Specification

##### b1. ProjectController

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | Login | * Allow User to login to TMS with following field: + Email: String, required + Password: String, required |
| 02 | Logout | * Allow User logout of TMS |

##### b2. Project

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a role |
| 02 | fullname | private string | Name of a user |
| 03 | email | private string | Email of a user |
| 04 | password | private string | Password of a user |

| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

##### b3. Roles

| **No** | **Attribute** | **Modify and type** | **Description** |
| --- | --- | --- | --- |
| 01 | id | private int | Unique identifier of a user |
| 02 | role\_Name | private string | Name of a role |
| 03 | is\_project\_admin | private bool | Attribute representing whether the admin or not |

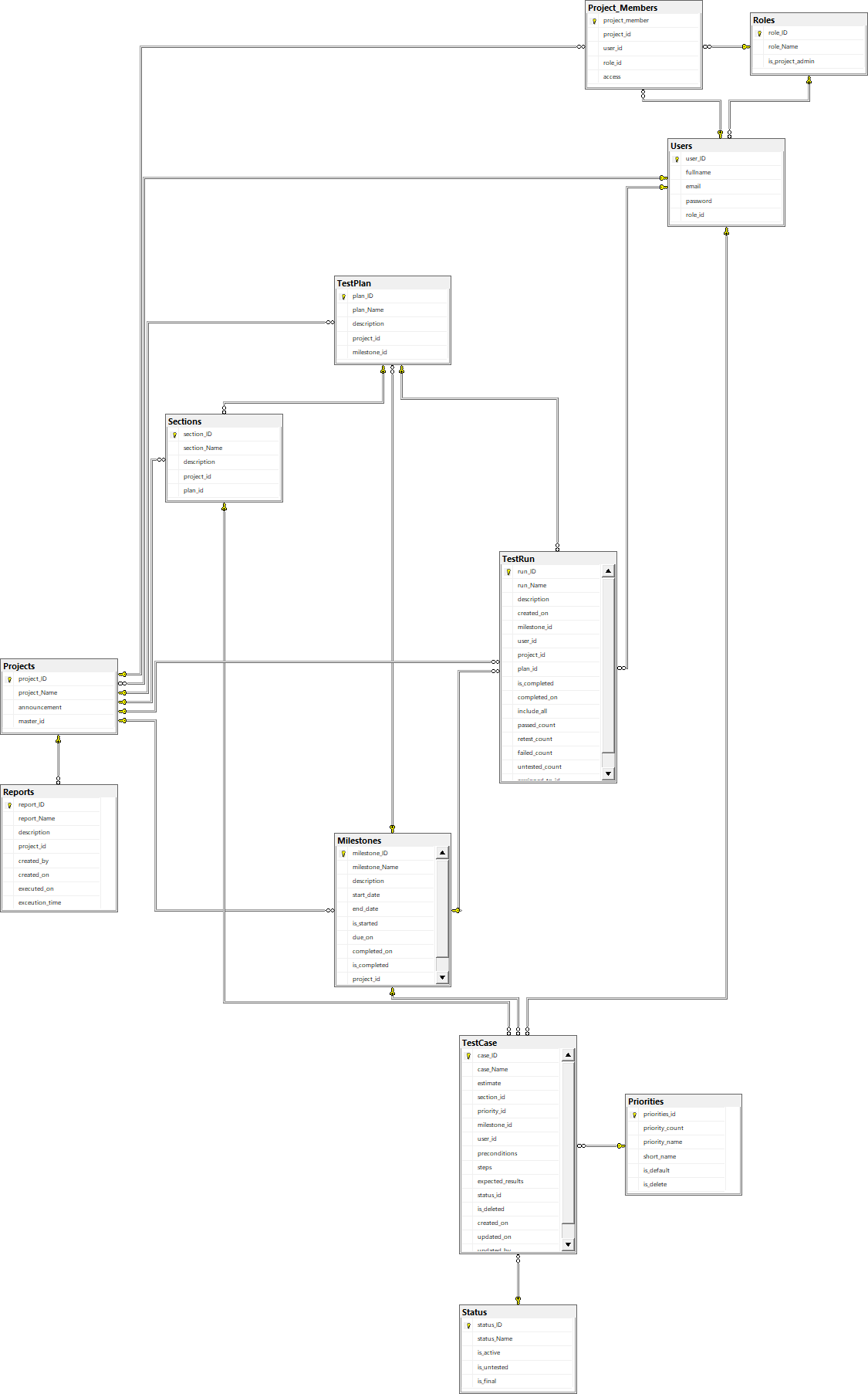
| **No** | **Method** | **Description** |
| --- | --- | --- |
| 01 | getter() | Get attribute value |
| 02 | setter() | Set attribute value |

#### c. Sequence Diagram(s)

## 4. Data & Database Design

### 4.1 Database Design

*[Provide the tables relationship like example below]*



#### a. User

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| user\_id | int |  | X | X | PK |  |
| fullname | nvarchar | 250 |  | X |  |  |
| email | nvarchar | 250 |  | X |  |  |
| password | nvarchar | 250 |  | X |  |  |
| role\_id | nvarchar | 250 |  | X | FK |  |

#### b. Role

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| role\_id | int |  | X | X | PK |  |
| role\_Name | nvarchar | 250 |  | X |  |  |
| is\_project\_admin | nt |  |  | X |  |  |

#### c. Project Member

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| project\_member | int |  | X | X |  |  |
| project\_id | int |  |  |  | PK |  |
| user\_id | int |  |  |  | FK |  |
| role\_id | int |  |  |  | FK |  |
| access | nchar | 10 |  |  |  |  |

#### d. Priorities

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| priorities\_id | int |  | X | X | PK |  |
| priority\_count | int |  |  | X |  |  |
| priority\_name | nvarchar | 250 |  | X |  |  |
| short\_name | nvarchar | 250 |  | X |  |  |
| is\_default | bit |  |  | X |  |  |
| is\_delete | bit |  |  | X |  |  |

#### e. Milestone

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| milestone\_id | int |  | X | X | PK |  |
| milestone\_name | nvarchar | 250 |  | X |  |  |
| description | nvarchar | 250 |  | X |  |  |
| start\_date | date |  |  |  |  |  |
| end\_date | date |  |  |  |  |  |
| is\_started | bit |  |  | X |  |  |
| due\_on | date |  |  |  |  |  |
| completed\_on | date |  |  |  |  |  |
| is\_completed | bit |  |  | X |  |  |
| project\_id | int |  |  | X | FK |  |

#### f. Reports

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| report\_id | int |  | X | X | PK |  |
| report\_Name | nvarchar | 250 |  | X |  |  |
| description | nvarchar | 250 |  |  |  |  |
| project\_id | int |  |  | X | FK |  |
| created\_by | date |  |  | X |  |  |
| created\_on | date |  |  | X |  |  |
| executed\_on | date |  |  | X |  |  |
| executed\_time | date |  |  | X |  |  |

#### g. Section

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| section\_id | int |  | X | X | PK |  |
| section\_name | nvarchar | 250 |  | X |  |  |
| description | nvarchar | 250 |  |  |  |  |
| project\_id | int |  |  |  | FK |  |
| plan\_id | int |  |  |  | FK |  |

#### h. Test Case

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| case\_id | int |  | X | X | PK |  |
| case\_Name | nvarchar |  |  | X |  |  |
| estimate | int |  |  | X |  |  |
| section\_id | int |  |  | X | FK |  |
| priority\_id | int |  |  | X | FK |  |
| milestone\_id | int |  |  |  | FK |  |
| user\_id | int |  |  | X | FK |  |
| preconditions | nvarchar | MAX |  |  |  |  |
| steps | nvarchar | MAX |  |  |  |  |
| expected\_result | nvarchar | MAX |  |  |  |  |
| status\_id | int |  |  |  | FK |  |
| is\_deleted | bit |  |  |  |  |  |
| created\_on | date |  |  | X |  |  |
| updated\_on | date |  |  | X |  |  |
| updated\_by | date |  |  | X |  |  |

#### i. Test Run

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| run\_id | int |  | X | X | PK |  |
| run\_Name | nvarchar | 250 |  | X |  |  |
| description | nvarchar | 250 |  |  |  |  |
| created\_on | date |  |  | X |  |  |
| milestone\_id | int |  |  |  | FK |  |
| user\_id | int |  |  |  | FK |  |
| project\_id | int |  |  |  | FK |  |
| plan\_id | int |  |  |  | FK |  |
| is\_completed | bit |  |  | X |  |  |
| completed\_on | date |  |  | X |  |  |
| include\_all | bit |  |  | X |  |  |
| passed\_count | int |  |  | X |  |  |
| retest\_count | int |  |  | X |  |  |
| failed\_count | int |  |  | X |  |  |
| untested\_count | int |  |  |  |  |  |
| assigned\_to\_id | int |  |  |  |  |  |

#### j. Test Plan

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| plan\_id | int |  | X | X | PK |  |
| plan\_name | nvarchar | 250 |  | X |  |  |
| description | nvarchar | 250 |  |  |  |  |
| project\_id | int |  |  |  | FK |  |
| milestone\_id | int |  |  |  | FK |  |

#### k. Status

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| status\_id | int |  | X | X | PK |  |
| status\_Name | nvarchar | 250 |  | X |  |  |
| is\_active | bit |  |  | X |  |  |
| is\_untested | bit |  |  | X |  |  |
| is\_final | bit |  |  | X |  |  |

#### l. Project

| **Field name** | **Type** | **Size** | **Unique** | **Not Null** | **PK/FK** | **Notes** |
| --- | --- | --- | --- | --- | --- | --- |
| project\_id | int |  | X | X | PK |  |
| project\_name | nvarchar | 250 |  | X |  |  |
| announcement | nvarchar | 250 |  |  |  |  |
| master\_id | int |  |  |  |  |  |