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Module Code & Module Title

Level 6 – Data and web Development

Milestone 4

Semester

2024/25 Autumn

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Assignment Due Date: Wednesday, March 26, 2025

Assignment Submission Date: Wednesday, March 26, 2025

Submitted To: Lekhnath Katuwal

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1 Introduction

LS Corporation experiences major project management issues due to splintered systems that produce subpar communication and insufficient monitoring of project status and operational inefficiencies. A web-based central project management system will be the focus of this coursework because it will solve the current problems. The solution provides a project data consolidation feature together with task management streamlining and team-wide data visibility. Both Oracle SQL Developer Data Modeler and ASP.NET form the foundation of the designed system which creates defined data connections among users and projects and their respective tasks and subtasks and milestones and resources. The combined approach leads to more effective project management because it enables LS Corporation to obtain real-time data updates and enhance coordination through better communication flow.

1.1 Aims

- The development of a centralized project management solution will provide LS Corporation with a scalable framework to resolve organizational inefficiencies while promoting team-wide cooperation.
- The development of a strong relational database system with workflow models which maintains data consistency and provides user access.
- We will develop a user-friendly web platform that combines advanced features to track projects effectively while allowing smooth user engagement.

1.2 Objectives

- Extract significant entities and attributes along with their essential relationships from the case study to define what systems should handle.
- Normalize the database model using techniques up to 3NF to reduce duplications and create structures with proper primary/foreign keys definitions as well as dependencies and constraints.
- The design process and cardinality information should be included when implementing the normalized schema model using Oracle SQL Developer Data Modeler.
- To develop and create DDL scripts to build database tables and load test data while testing the system's capacity through SQL query execution.
- To handle CRUD features for user management alongside interfaces for controlling projects and tasks alongside subtasks and milestones that also support dynamic display of user-project relations and project milestone overview while showing leaderboards per project.
- Make graphical homepage equipped with navigational menus to reach all system features easily.
- Test of CRUD operations and complex queries and error handling will be confirmed using screenshots in the execution of test cases.
- Create manual for users should include detailed instructions paired with pictures and specific guidance to fix potential issues.

2 Textual Analysis

Textual Analysis represents a qualitative research methodology which allows investigators to analyze written materials and verbal or pictorial texts to dissect their meaning patterns alongside contextual elements. This approach is widely used in disciplines such as literature, media studies, cultural studies, and sociology to explore how texts convey cultural, social, or political messages (Mckee, 2001).

2.1 User and Project

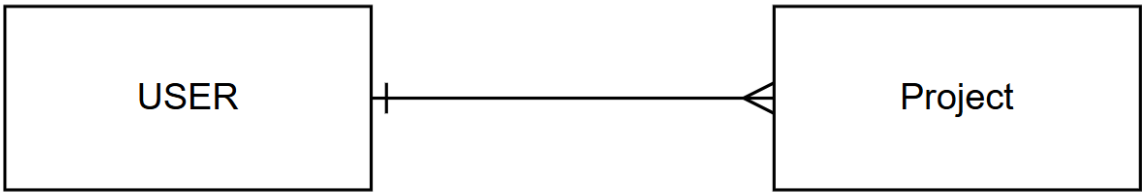


Figure 1: Textual Analysis User and Project

The relationship illustrates the connection between **Users** and **Projects**. The figure indicates that a single user can be associated with multiple projects, establishing a **one-to-many** relationship, which shows one user can participate in several projects simultaneously, each project is managed or worked on by multiple users.

2.2 User and Task

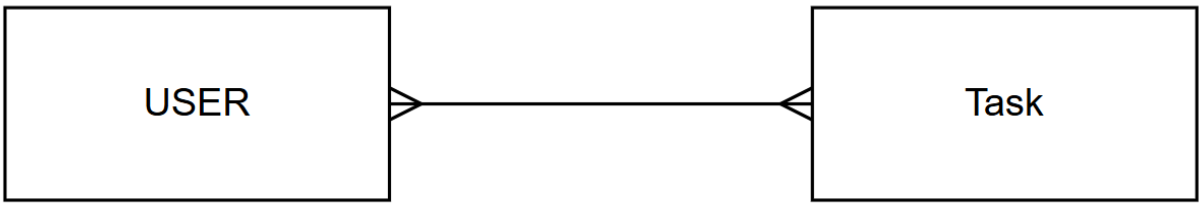


Figure 2: Textual Analysis: User and Task

The relationship illustrates the connection between **Users** and **Task**. The figure indicates that a multiple user can be assigned to multiple tasks, creating a **many-to-many relationship**, which shows while several users can handle several tasks, several tasks are assigned to several users at a time.

2.3 Task and Sub-Task

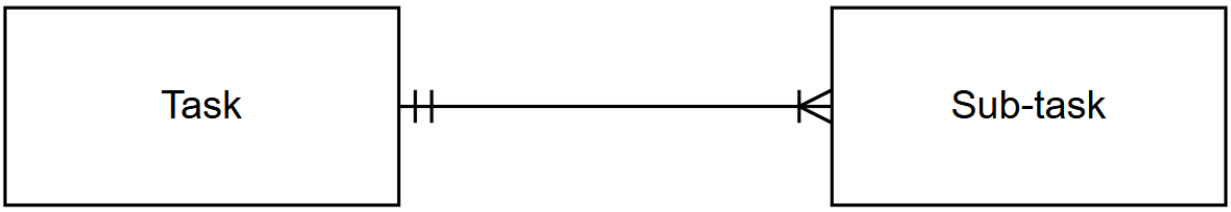


Figure 3: Textual Analysis Task and Sub-Task

The relationship illustrates the connection between **Task** and **Sub-Tasks**. The figure indicates that a single Task has multiple sub-tasks, establishing a **one-to-many** relationship, which shows one Task has several sub-tasks simultaneously, many sub-tasks form a task.

2.4 Task and Resources

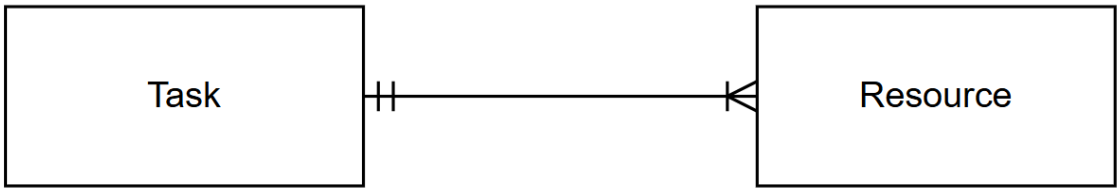


Figure 4: Textual Analysis Task and Resources

The relationship between **Tasks** and **Resources** is represented by a **one-to-many relationship**. This means that a single task can require multiple resources to be completed

2.5 Task and Comments

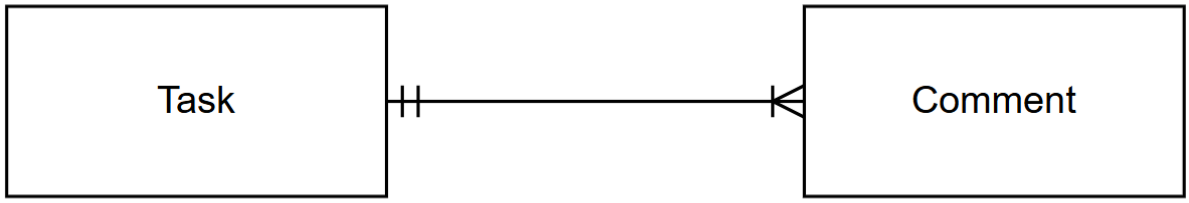


Figure 5: Textual Analysis Task and Comments

The relationship between **Tasks** and **Comments** is a **one-to-many relationship**. This means that a single task can have multiple comments associated with it.

2.6 Project and Milestone

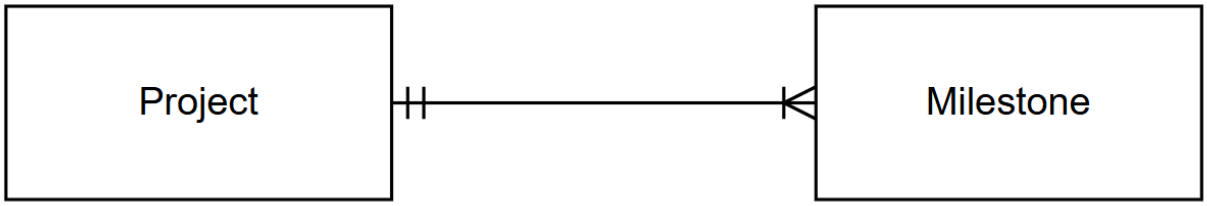


Figure 6: Textual Analysis Project and Milestone

The relationship between **Projects** and **Milestones** is a **one-to-many relationship**. This means that a single project can have multiple milestones associated with it. Each milestone represents a significant stage or achievement within the project.

3 Initial Entity Relationship Diagram

The Entity-Relationship Diagram (ERD) illustrates how the project management system fundamental structure operates. The system puts projects at its core through an implementation of multiple milestones tracking functions. A project management system enables users to work across multiple projects at once and contains Tasks which can be split into Subtasks for extensive control. Task-related comments enable user communication and users can assign project resources to tasks according to their requirements. The outlined model delivers an effective structure for project management efficiency.

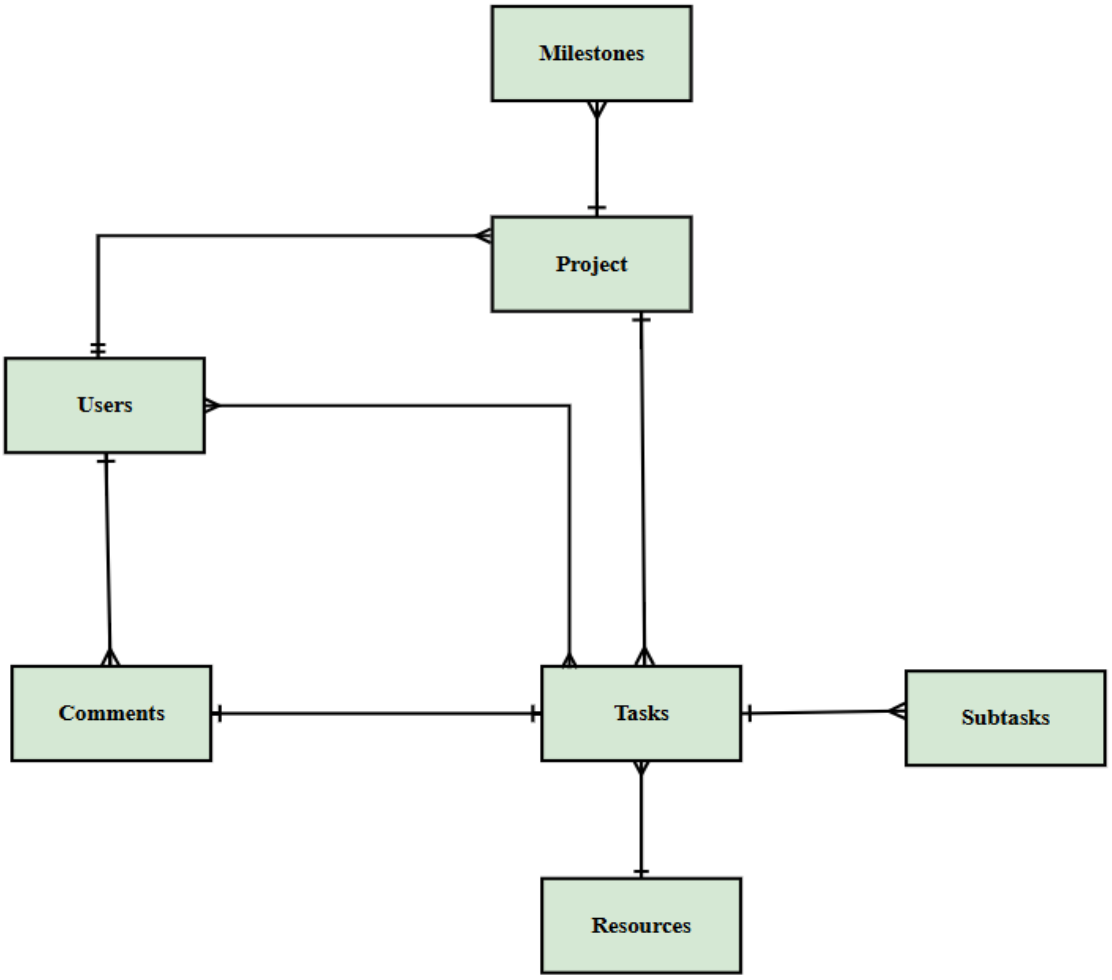


Figure 7: Initial ERD

4 Normalization

Normalization is a crucial process in database design that ensures data is logically stored to reduce redundancy and enhance data integrity (Ramez Elmasri, 2024). Normalization is a process of decomposing large tables into smaller, related tables with a view of removing data redundancy which could be a concern while inserting, deleting or updating records in a database. This practice not only corrects inaccuracies and inconsistencies in the information but also allows optimizing the functioning and increase the efficiency of the database system (Ramez Elmasri, pearson, 2024).

Key objectives of Normalization:

- **Eliminate Data Redundancy**
- **Ensure Data Integrity**
- **Simplify Maintenance**
- **Optimize Storage**

4.1 Normalization of Given Figure

4.1.1 UNF

UNF - (user_id, user_name, user_email, user_contact, {project_id, project_name, project_date, project_status, {task_id, task_name, start_date, due_date, task_status}}

4.1.2 1NF

We can separate repeating data and repeating group. After separating the repeating data, we need to separate it into 3 different tables and select the Primary Key and Foreign key in the table.

Table in 1NF:

User-1 => (**user_id**, user_name, user_email, user_contact)

Project-User-1 => (**project_id,** project_name, project_start_date, project_due_date, project_Status, user_id*)

User-Project-Task-1 => (**task_id,** task_name, start_date, due_date, task_status, user_id*, project_id*)

4.1.3 2NF

For converting 1NF to 2NF we have to we have to eliminate partial dependencies.

For User table, there is only one key, therefore there cannot be any partial dependencies. So, User table is already in 2NF

User-2

User-2 => (**user_id**, user_name, user_email, user_contact)

For User-Project table, there are two keys, so we need to check for partial dependencies in the User-Project table and remove it.

Project-User-2 => {

project_id -> project_name, project_start_date, project_due_date, project_status

user_id -> (non-key attribute of the project depends on this user)

}

Project-2 => (**project_id**, project_name, project_start_date, project_due_date, project_Status)

Project-User-2 => ((**user_id, project_id**) *)

Similarly, For User-Project-Task table, there are two keys, so we need to check for partial dependencies in the User-Project-Task table and remove it.

Project-User-Task-2{

task_id -> task_name, start_date, due_date, task_status

user_id,project_id -> (non-key attributes of the task table depends upon this table)

}

Task-2 => (**task_id,** task_name, start_date, due_date, task_status)

Project-User-Task-2 => ((**user_id, project_id, task_id**) *)

So, tables in 2NF are:

User-3 => (**user_id**, user_name, user_email, user_contact)

Project-3 => (**project_id**, project_name, project_start_date, project_due_date, project_Status)

Project-User-3 => ((**user_id, project_id) *)**

Task-3 => (**task_id**, task_name, start_date, due_date, task_status)

Project-User-Task-3 => **((user_id, project_id, task_id) *)**

4.1.4 3NF

For converting 2NF to 3NF we must remove transitive dependencies, i.e., when a non-key attribute gives another non-key attribute.

Since there are no transitive dependencies in these tables, the final tables are:

User-3 => (**user_id**, user_name, user_email, user_contact)

Project-3 => (**project_id**, project_name, project_start_date, project_due_date, project_Status)

Project-User-3 => ((**user_id, project_id) *)**

Task-3 => (**task_id**, task_name, start_date, due_date, task_status)

Project-User-Task-3 => **((user_id, project_id, task_id) *)**

5 Integration and Assumptions

- Projects contain tasks and milestones.
- Tasks can have subtasks
- Users are assigned to projects and tasks/
- Resources are shared across tasks

6 Final Entity Relationship Diagram

An Entity-Relationship Diagram (ERD) represents a project management system that contains seven fundamental entities including Users, Projects, Tasks, Subtasks, Comments, Resources and Milestones. Users maintain links with multiple Projects and Tasks along with a delineation between Tasks that include Subtasks for specific management needs. Users can add Comments for task communication whereas Resources denote materials and tools necessary for task fulfillment. Project monitoring uses Milestones as organizational units to follow progress. The information system includes various entities that possess individual properties while maintaining distinct connections between them including the relationship between tasks and users along with tasks and projects and tasks and resources and milestones connecting to projects.

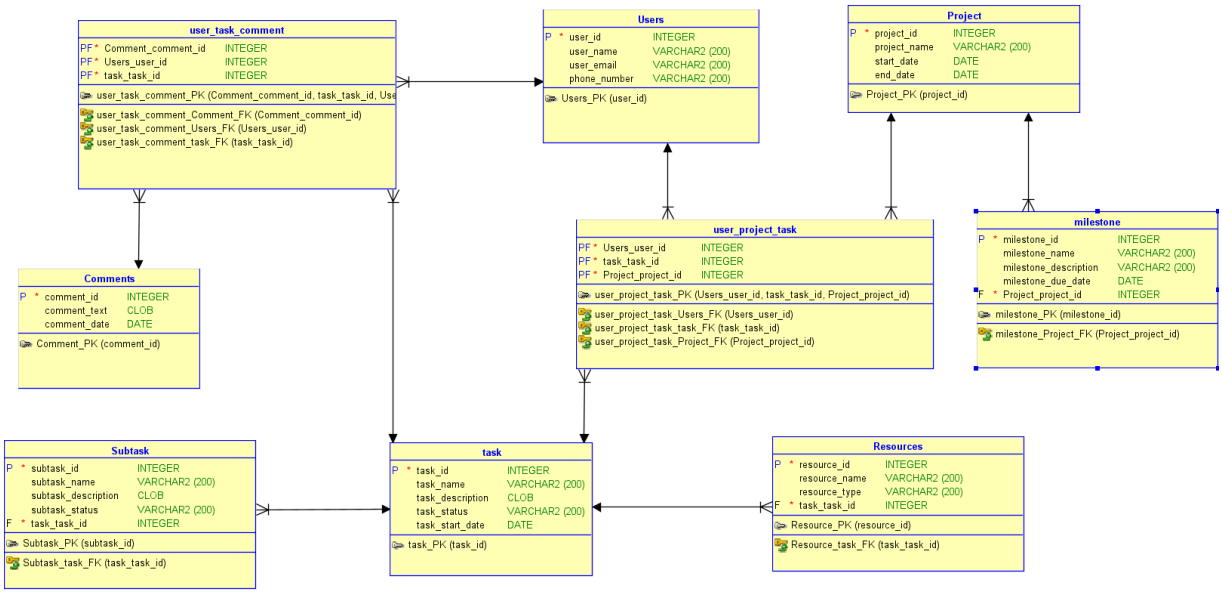


Figure 8: Final ERD

7 Data Dictionary

7.1 User Table

Attribute Name	Data Type	Description
User_ID	INTEGER	Unique identifier for the user (Primary Key)
User_Name	VARCHAR2(30)	Name of the user
User_Email	VARCHAR2(50)	Email of the user
Phone_number	VAECHAR (200)	Contact number of the user

Table 1: User Table 1

7.2 Project Table

Attribute Name	Data Type	Description
Project_ID	INTEGER	Unique identifier for the project (Primary Key)
Project_Name	VARCHAR2(200)	Name of the project
Start_Date	DATE	Project start date
Due_Date	DATE	Project due date

Table 2: Project Table

7.3 Milestone Table

Attribute Name	Data Type	Description
Milestone_ID	INTEGER	Unique identifier for the milestone (Primary Key)
Milestone_Name	VARCHAR2(200)	Name of the milestone
Milestone_Description	CLOB	Description of MileStone
Due_Date	DATE	Milestone completion due date
Project_ID	INTEGER	References Project_ID from Project table (Foreign Key)

Table 3: Milestone Table

7.4 Task Table

Attribute Name	Data Type	Description
Task_ID	INTEGER	Unique identifier for the task (Primary Key)
Task_Name	VARCHAR2(200)	Name of the task
Task_Status	VARCHAR2(200)	Status of the project!
Start_Date	DATE	Task start date
Due_Date	DATE	Task due date
Project_ID	INTEGER	References Project_ID from Project table (Foreign Key)

Table 4: Task Table

7.5 Comment Table

Attribute Name	Data Type	Description
Comment_ID	INTEGER	Unique identifier for the comment (Primary Key)
Comment_text	VARCHAR2(200)	Text content of the comment
Comment_date	DATE	Date when the comment was created

Table 5: Comment Table

7.6 Resource Table

Attribute Name	Data Type	Description
Resource_ID	INTEGER	Unique identifier for the resource (Primary Key)
Resource_Type	VARCHAR2(200)	Type of the resource
Resource_Name	VARCHAR2(100)	Name of the resource

Table 6: Resource Table

7.7 Sub-Task Table

Attribute Name	Data Type	Description
SubTask_ID	INTEGER	Unique identifier for the subtask (Primary Key)
Sub_task_name	VARCHAR2(200)	Name of the SubTask
Sub_Task_description	VARCHAR2(200	Substask Description
Task_ID	INTEGER	References Task_ID from Task table (Foreign Key)
Status	VARCHAR2(30)	Status of the subtask

Table 7: Subtask table

7.8 User Task Comment Table

Attribute Name	Data Type	Description
Task_ID	INTEGER	References Task_ID from Task table (Foreign Key)
Comment_ID	INTEGER	References Comment_ID from Comment table (Foreign Key)
User_ID	INTEGER	References User_ID from User table (Foreign Key)

Table 8: User Task Comment Table

7.9 User Project Task Table

Attribute Name	Data Type	Description
Task_ID	INTEGER	References Task_ID from Task table (Foreign Key)
Project_ID	INTEGER	References Project_ID from Project table (Foreign Key)
User_ID	INTEGER	References User_ID from User table (Foreign Key)

Table 9: User Project Task Table

8 Script

8.1 Create Statements

8.1.1 Users Table

```
CREATE TABLE users (
    user_id      INTEGER NOT NULL,
    user_name    VARCHAR2(200),
    user_email   VARCHAR2(200),
    phone_number VARCHAR2(200)
);

ALTER TABLE users ADD CONSTRAINT users_pk PRIMARY KEY ( user_id );
```

```
Script Output
Task completed in 0.105 seconds

Table USERS created.


Table USERS altered.
```

Figure 9: Users Table

8.1.2 Project Table

```
CREATE TABLE project (
    project_id   INTEGER NOT NULL,
    project_name VARCHAR2(200),
    start_date   DATE,
    end_date     DATE
);

ALTER TABLE project ADD CONSTRAINT project_pk PRIMARY KEY ( project_id );
```

```
Script Output
Task completed in 0.1 seconds

Table PROJECT created.


Table PROJECT altered.
```

Figure 10: Project Table Creation

8.1.3 Comment Table

```
CREATE TABLE comments (
    comment_id   INTEGER NOT NULL,
    comment_text CLOB,
    comment_date DATE
);

ALTER TABLE comments ADD CONSTRAINT comment_pk PRIMARY KEY ( comment_id );
```

```
Script Output
Task completed in 0.17 seconds

Table COMMENTS created.


Table COMMENTS altered.
```

Figure 11: Comment Table Creation

8.1.4 Milestone Table

```
CREATE TABLE milestone (
    milestone_id          INTEGER NOT NULL,
    milestone_name        VARCHAR2(200),
    milestone_description VARCHAR2(200),
    milestone_due_date    DATE,
    project_project_id    INTEGER NOT NULL
);

ALTER TABLE milestone ADD CONSTRAINT milestone_pk PRIMARY KEY ( milestone_id );
```

```
Script Output
Task completed in 0.075 seconds

Table COMMENTS created.

Table COMMENTS altered.

Table MILESTONE created.

Table MILESTONE altered.
```

Figure 12: Milestone Table Creation

8.1.5 Task Table

```
CREATE TABLE task (
    task_id          INTEGER NOT NULL,
    task_name        VARCHAR2(200),
    task_description CLOB,
    task_status      VARCHAR2(200),
    task_start_date  DATE
);

ALTER TABLE task ADD CONSTRAINT task_pk PRIMARY KEY ( task_id );
```

Script Output

Task completed in 0.079 seconds

```
Table TASK created.


Table TASK altered.
```

Figure 13: Task Table

8.1.6 Sub Task Table

```
CREATE TABLE subtask (
    subtask_id          INTEGER NOT NULL,
    subtask_name        VARCHAR2(200),
    subtask_description CLOB,
    subtask_status      VARCHAR2(200),
    task_task_id        INTEGER NOT NULL
);

ALTER TABLE subtask ADD CONSTRAINT subtask_pk PRIMARY KEY ( subtask_id );
```

Script Output

Task completed in 0.09 seconds

```
Table SUBTASK created.


Table SUBTASK altered.
```

Figure 14: Sub task table creation

8.1.7 Resources Table

```
CREATE TABLE resources (
    resource_id   INTEGER NOT NULL,
    resource_name VARCHAR2(200),
    resource_type VARCHAR2(200),
    task_task_id  INTEGER NOT NULL
);
ALTER TABLE resources ADD CONSTRAINT resource_pk PRIMARY KEY ( resource_id );
```

Script Output | Task completed in 0.041 seconds

```
Table RESOURCES created.


Table RESOURCES altered.
```

Figure 15: Resources Table

8.1.8 User Project Task Table

```
CREATE TABLE user_project_task (
    users_user_id      INTEGER NOT NULL,
    task_task_id       INTEGER NOT NULL,
    project_project_id INTEGER NOT NULL
);

ALTER TABLE user_project_task
    ADD CONSTRAINT user_project_task_pk PRIMARY KEY ( users_user_id,
                                                      task_task_id,
                                                      project_project_id );
```

Script Output | Task completed in 0.092 seconds

```
Table USER_PROJECT_TASK created.


Table USER_PROJECT_TASK altered.
```

Figure 16: User Project Task Table

8.1.9 User Task Comment Table

```
CREATE TABLE user_task_comment (
    comment_comment_id INTEGER NOT NULL,
    users_user_id      INTEGER NOT NULL,
    task_task_id       INTEGER NOT NULL
);

ALTER TABLE user_task_comment
    ADD CONSTRAINT user_task_comment_pk PRIMARY KEY ( comment_comment_id,
                                                      task_task_id,
                                                      users_user_id );
```

Script Output

Task completed in 0.091 seconds

```
Table USER_TASK_COMMENT created.


Table USER_TASK_COMMENT altered.
```

Figure 17: User Task Comment Table

8.2 Insert Statements

8.2.1 User Table

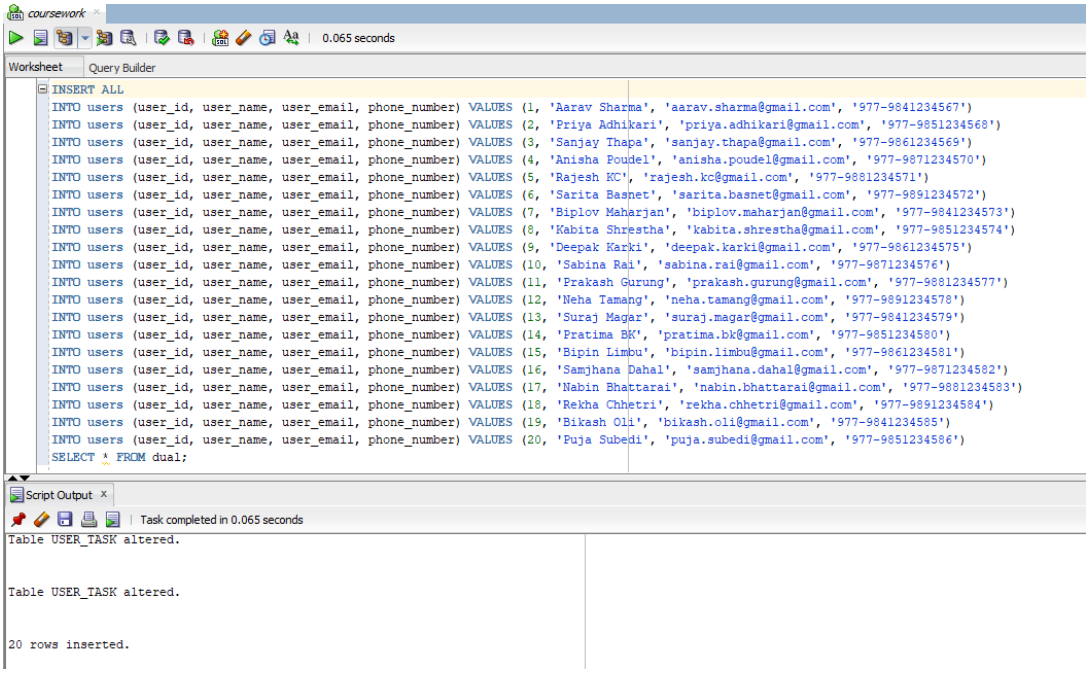


Figure 18: User Table Insertion

8.2.2 Project Table

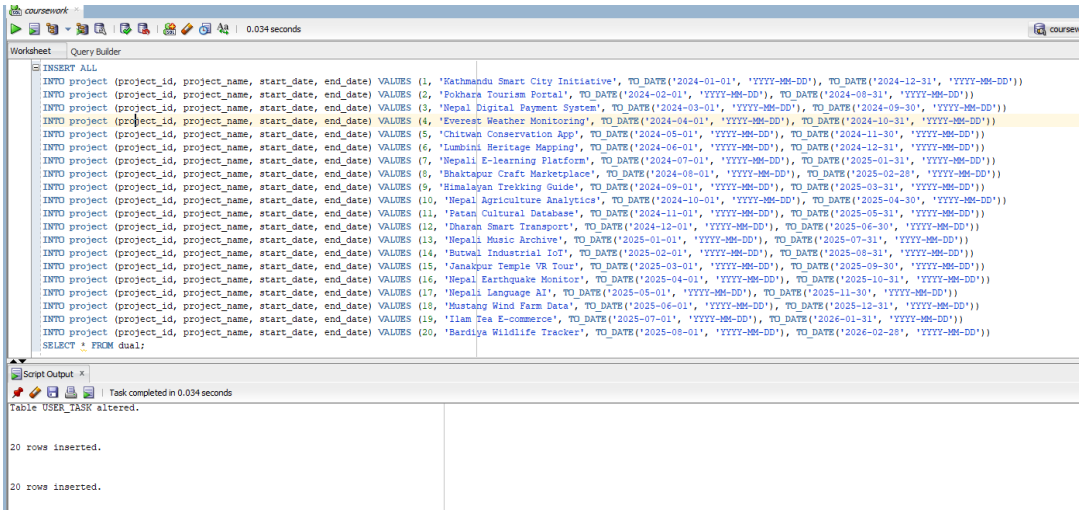


Figure 19: Project Table Insertion

8.2.3 Task Table

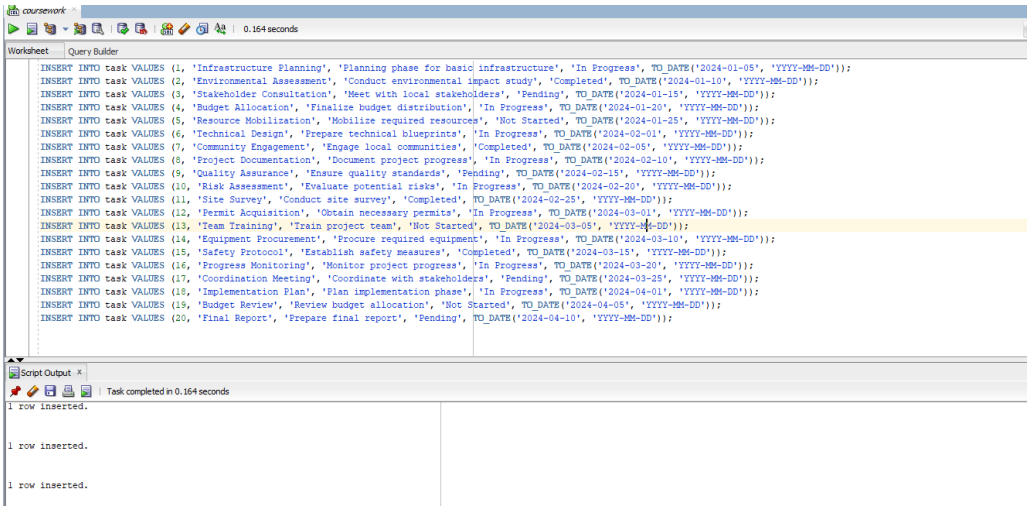


Figure 20: Task Table Insertion

8.2.4 Subtask

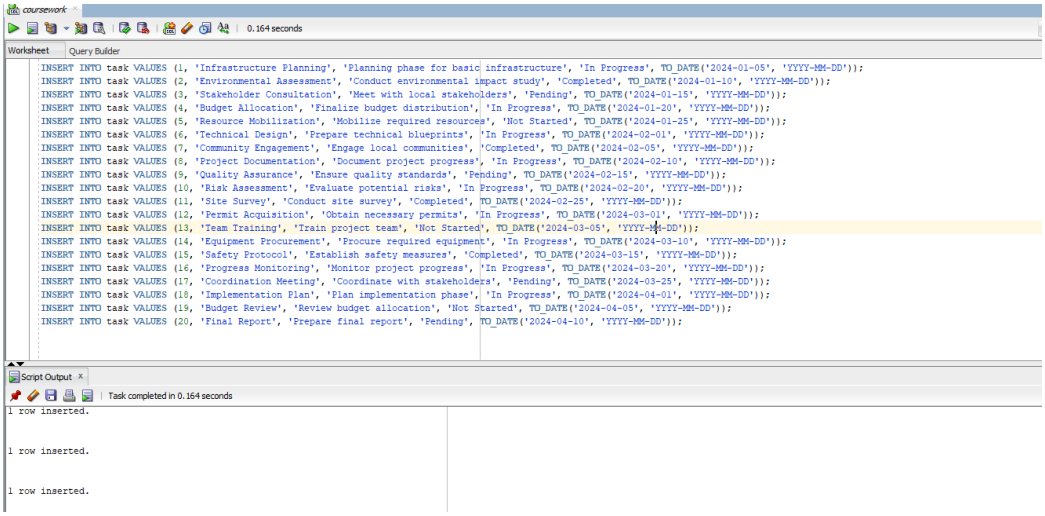


Figure 21: Subtask table insertion

8.2.5 Resource Table

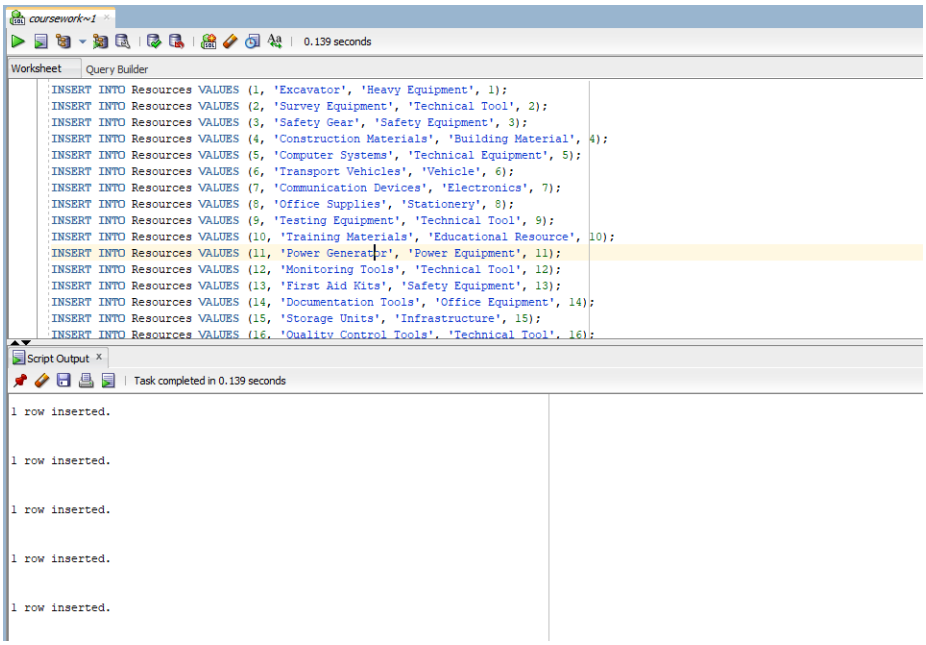


Figure 22: Resource Table insertion

8.2.6 Milestone Table

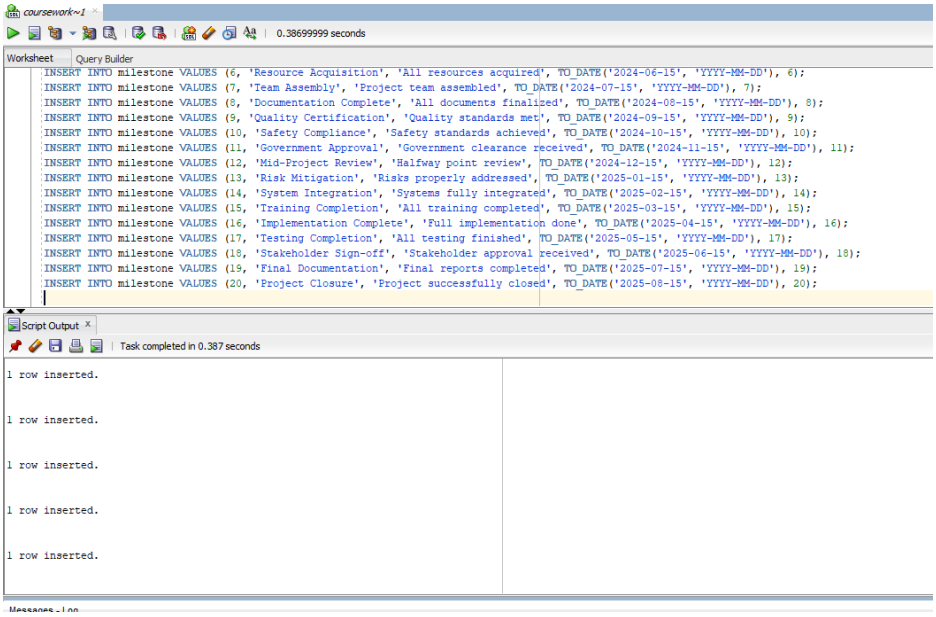


Figure 23: Milestone Table insertion

8.2.7 Comment Table

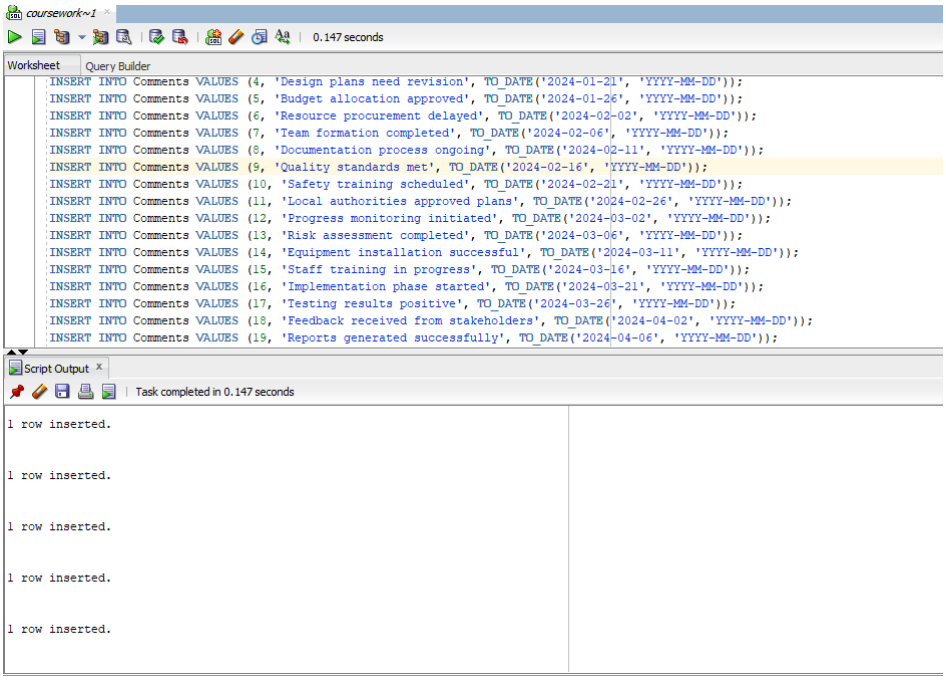


Figure 24: Comment Table insertion

8.2.8 User Project task

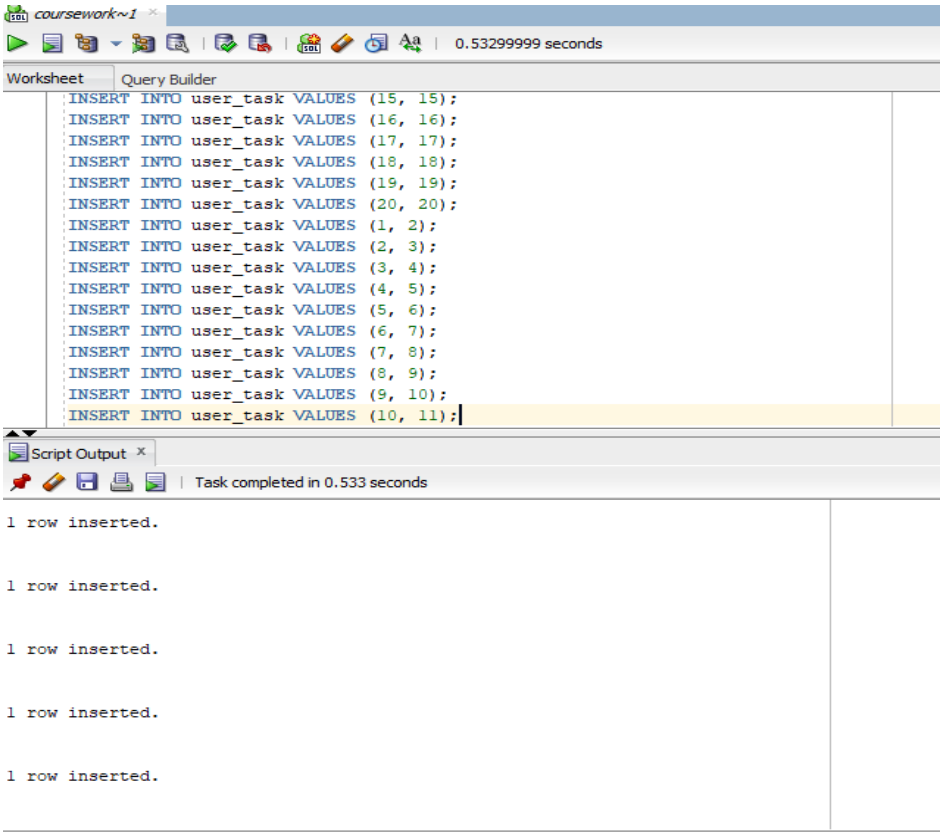


Figure 25: user task table insertion

8.2.9 User Task Comment

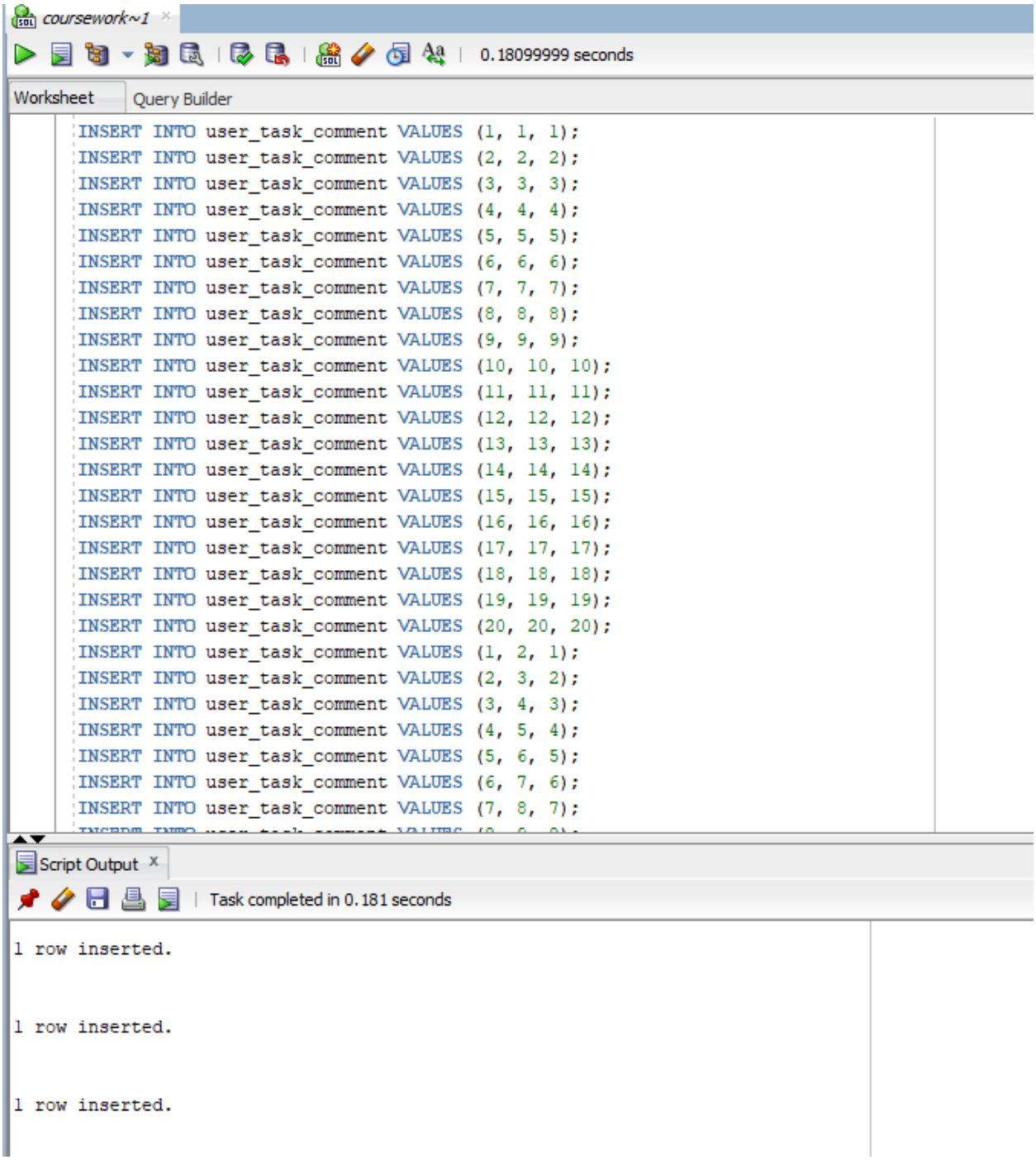


Figure 26: User Task Comment table insertion

8.3 Select Statements

8.3.1 User Table

```
select * from users;
```

Query Result

SQL | All Rows Fetched: 21 in 0.105 seconds

	USER_ID	USER_NAME	USER_EMAIL	PHONE_NUMBER
1	1	Aarav Sharma	aarav.sharma@gmail.com	977-9841234567
2	2	Priya Adhikari	priya.adhikari@gmail.com	977-9851234568
3	3	Rajesh Thapa	rajesh.thapa@gmail.com	977-9861234569
4	4	Sita Bhattarai	sita.bhattarai@gmail.com	977-9871234570
5	5	Bikash Poudel	bikash.poudel@gmail.com	977-9881234571
6	6	Anjali Karki	anjali.karki@gmail.com	977-9891234572
7	7	Dipesh Gurung	dipesh.gurung@gmail.com	977-9841234573
8	8	Sarita Tamang	sarita.tamang@gmail.com	977-9851234574
9	9	Mahesh Shrestha	mahesh.shrestha@gmail.com	977-9861234575
10	10	Nisha Rai	nisha.rai@gmail.com	977-9871234576
11	11	Sunil KC	sunil.kc@gmail.com	977-9881234577
12	12	Sabina Magar	sabina.magar@gmail.com	977-9891234578
13	13	Binod Regmi	binod.regmi@gmail.com	977-9841234579
14	14	Gita Neupane	gita.neupane@gmail.com	977-9851234580
15	15	Prakash Basnet	prakash.basnet@gmail.com	977-9861234581
16	16	Manisha Limbu	manisha.limbu@gmail.com	977-9871234582
17	17	Ramesh Dahal	ramesh.dahal@gmail.com	977-9881234583
18	18	Kabita Oli	kabita.oli@gmail.com	977-9891234584
19	19	Deepak Chhetri	deepak.chhetri@gmail.com	977-9841234585
20	20	Sunita Pun	sunita.pun@gmail.com	977-9851234586
21	21	Nisha Rai	nisha.rai@gmail.com	977-9871234576

Figure 27: User table select statement

8.3.2 Comment Table

Worksheet | Query Builder

```
select * from comments;
```

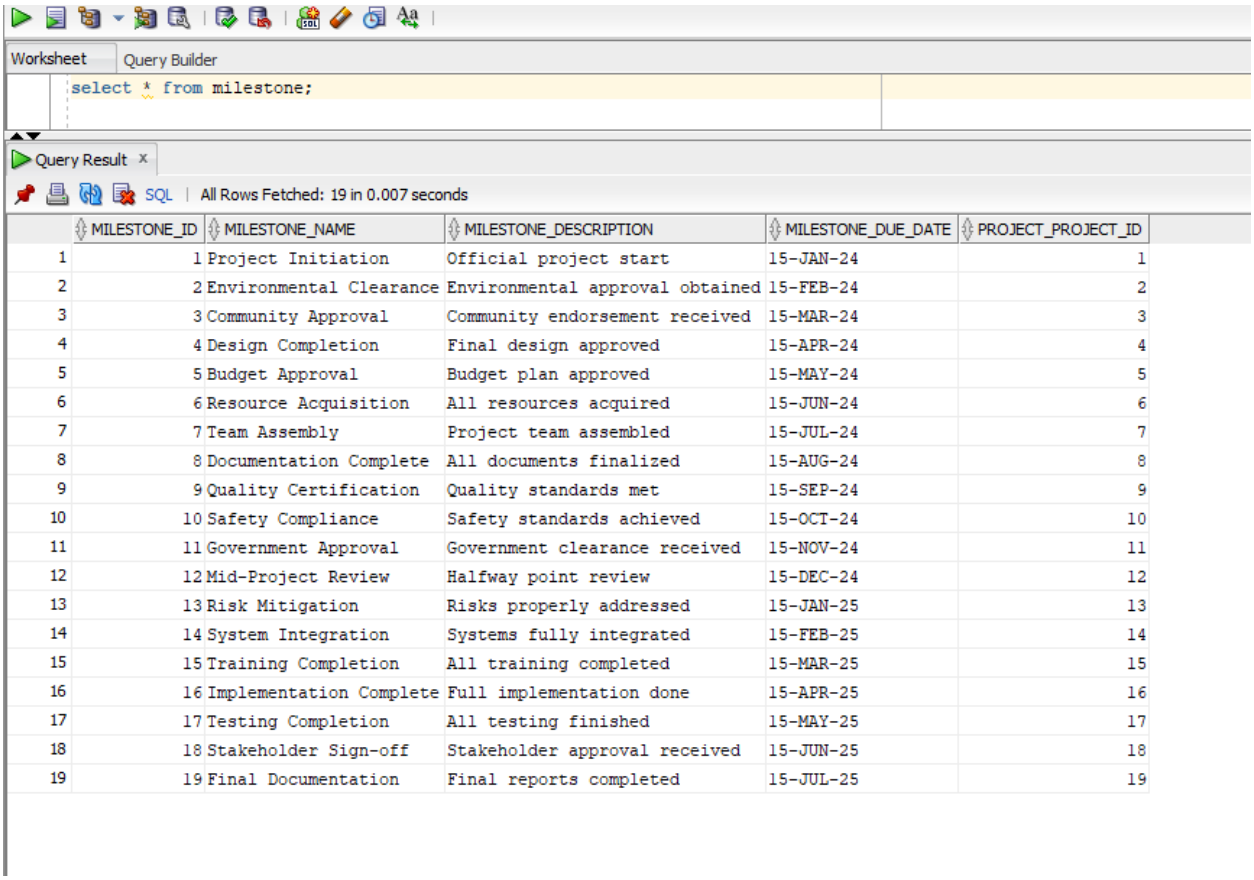
Query Result

SQL | All Rows Fetched: 20 in 0.045 seconds

	COMMENT_ID	COMMENT_TEXT	COMMENT_DATE
1	1	Site conditions are suitable for development	06-JAN-24
2	2	Environmental impact report completed	11-JAN-24
3	3	Local community showing positive response	16-JAN-24
4	4	Design plans need revision	21-JAN-24
5	5	Budget allocation approved	26-JAN-24
6	6	Resource procurement delayed	02-FEB-24
7	7	Team formation completed	06-FEB-24
8	8	Documentation process ongoing	11-FEB-24
9	9	Quality standards met	16-FEB-24
10	10	Safety training scheduled	21-FEB-24
11	11	Local authorities approved plans	26-FEB-24
12	12	Progress monitoring initiated	02-MAR-24
13	13	Risk assessment completed	06-MAR-24
14	14	Equipment installation successful	11-MAR-24
15	15	Staff training in progress	16-MAR-24
16	16	Implementation phase started	21-MAR-24
17	17	Testing results positive	26-MAR-24
18	18	Feedback received from stakeholders	02-APR-24
19	19	Reports generated successfully	06-APR-24
20	20	ui complete	06-APR-24

Figure 28: comment table select statement

8.3.3 Milestone Table



Worksheet | Query Builder

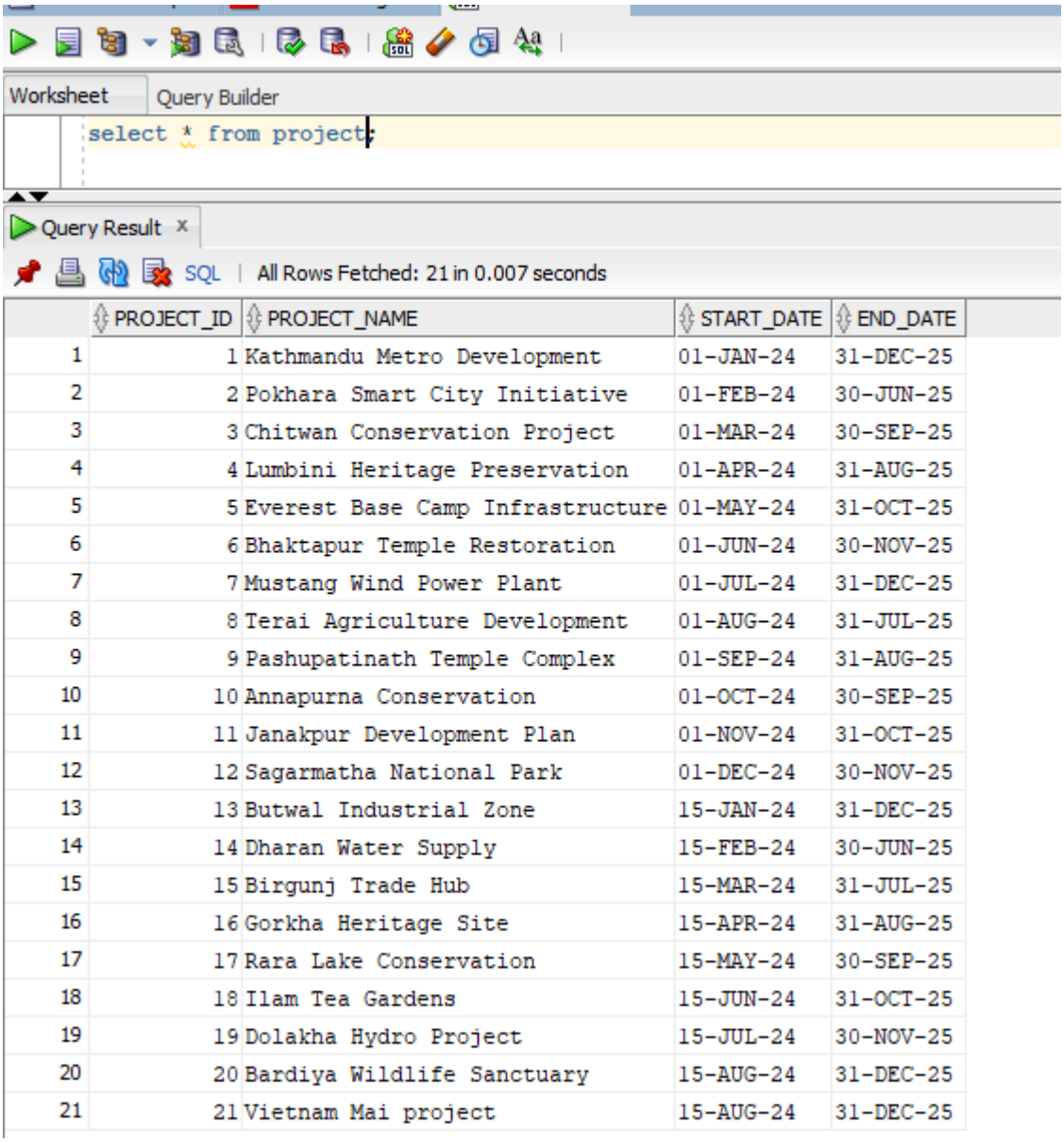
```
select * from milestone;
```

Query Result | SQL | All Rows Fetched: 19 in 0.007 seconds

	MILESTONE_ID	MILESTONE_NAME	MILESTONE_DESCRIPTION	MILESTONE_DUE_DATE	PROJECT_PROJECT_ID
1	1	Project Initiation	Official project start	15-JAN-24	1
2	2	Environmental Clearance	Environmental approval obtained	15-FEB-24	2
3	3	Community Approval	Community endorsement received	15-MAR-24	3
4	4	Design Completion	Final design approved	15-APR-24	4
5	5	Budget Approval	Budget plan approved	15-MAY-24	5
6	6	Resource Acquisition	All resources acquired	15-JUN-24	6
7	7	Team Assembly	Project team assembled	15-JUL-24	7
8	8	Documentation Complete	All documents finalized	15-AUG-24	8
9	9	Quality Certification	Quality standards met	15-SEP-24	9
10	10	Safety Compliance	Safety standards achieved	15-OCT-24	10
11	11	Government Approval	Government clearance received	15-NOV-24	11
12	12	Mid-Project Review	Halfway point review	15-DEC-24	12
13	13	Risk Mitigation	Risks properly addressed	15-JAN-25	13
14	14	System Integration	Systems fully integrated	15-FEB-25	14
15	15	Training Completion	All training completed	15-MAR-25	15
16	16	Implementation Complete	Full implementation done	15-APR-25	16
17	17	Testing Completion	All testing finished	15-MAY-25	17
18	18	Stakeholder Sign-off	Stakeholder approval received	15-JUN-25	18
19	19	Final Documentation	Final reports completed	15-JUL-25	19

Figure 29: Milestone table select statement

8.3.4 Project Table



	PROJECT_ID	PROJECT_NAME	START_DATE	END_DATE
1	1	Kathmandu Metro Development	01-JAN-24	31-DEC-25
2	2	Pokhara Smart City Initiative	01-FEB-24	30-JUN-25
3	3	Chitwan Conservation Project	01-MAR-24	30-SEP-25
4	4	Lumbini Heritage Preservation	01-APR-24	31-AUG-25
5	5	Everest Base Camp Infrastructure	01-MAY-24	31-OCT-25
6	6	Bhaktapur Temple Restoration	01-JUN-24	30-NOV-25
7	7	Mustang Wind Power Plant	01-JUL-24	31-DEC-25
8	8	Terai Agriculture Development	01-AUG-24	31-JUL-25
9	9	Pashupatinath Temple Complex	01-SEP-24	31-AUG-25
10	10	Annapurna Conservation	01-OCT-24	30-SEP-25
11	11	Janakpur Development Plan	01-NOV-24	31-OCT-25
12	12	Sagarmatha National Park	01-DEC-24	30-NOV-25
13	13	Butwal Industrial Zone	15-JAN-24	31-DEC-25
14	14	Dharan Water Supply	15-FEB-24	30-JUN-25
15	15	Birgunj Trade Hub	15-MAR-24	31-JUL-25
16	16	Gorkha Heritage Site	15-APR-24	31-AUG-25
17	17	Rara Lake Conservation	15-MAY-24	30-SEP-25
18	18	Ilam Tea Gardens	15-JUN-24	31-OCT-25
19	19	Dolakha Hydro Project	15-JUL-24	30-NOV-25
20	20	Bardiya Wildlife Sanctuary	15-AUG-24	31-DEC-25
21	21	Vietnam Mai project	15-AUG-24	31-DEC-25

Figure 30: Project Table select statements

8.3.5 Resources Table

Worksheet Query Builder

```
select * from resources;
```

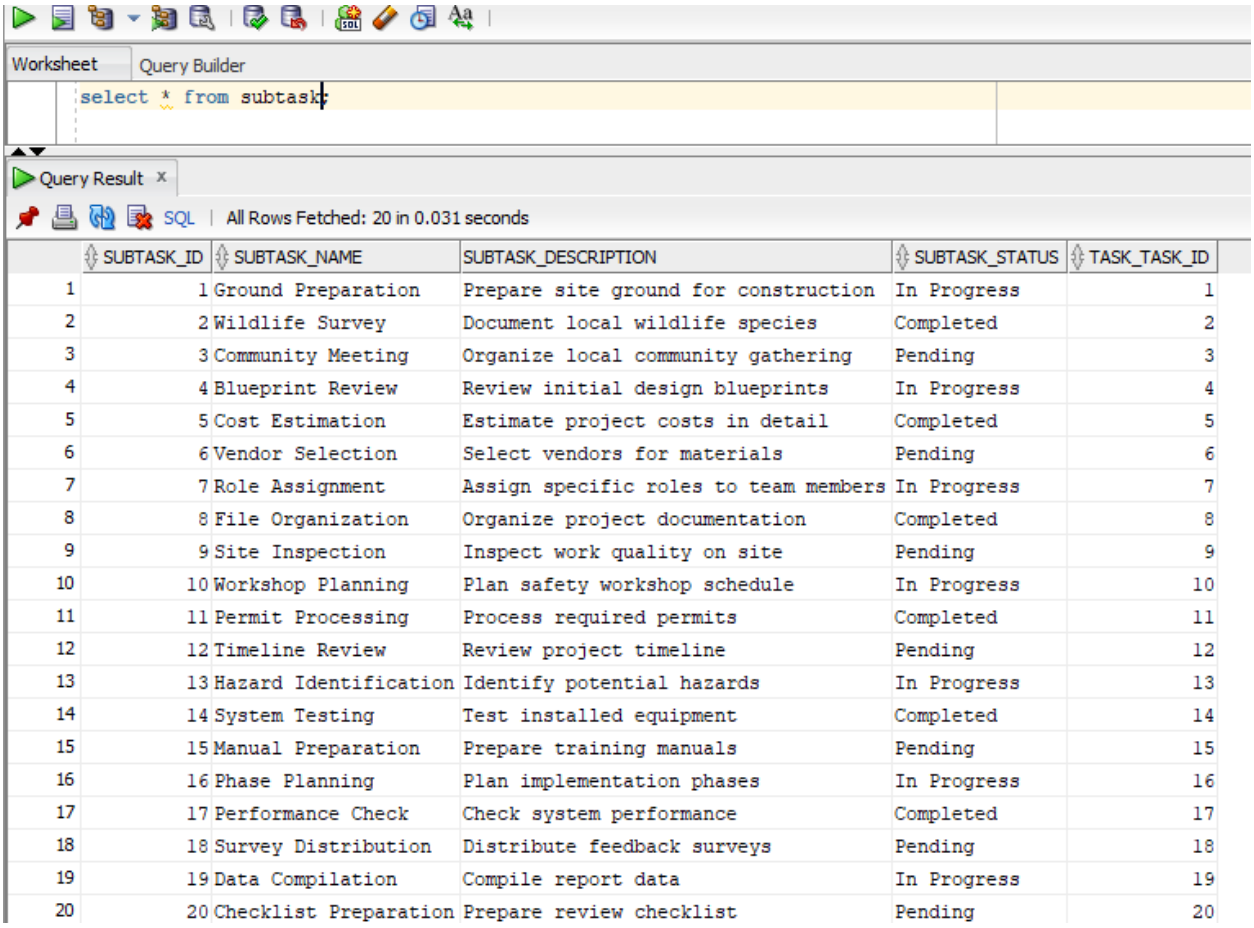
Query Result

SQL | All Rows Fetched: 20 in 0.031 seconds

	RESOURCE_ID	RESOURCE_NAME	RESOURCE_TYPE	TASK_TASK_ID
1	1	Excavator	Heavy Equipment	1
2	2	Survey Equipment	Technical Tool	2
3	3	Safety Gear	Safety Equipment	3
4	4	Construction Materials	Building Material	4
5	5	Computer Systems	Technical Equipment	5
6	6	Transport Vehicles	Vehicle	6
7	7	Communication Devices	Electronics	7
8	8	Office Supplies	Stationery	8
9	9	Testing Equipment	Technical Tool	9
10	10	Training Materials	Educational Resource	10
11	11	Power Generator	Power Equipment	11
12	12	Monitoring Tools	Technical Tool	12
13	13	First Aid Kits	Safety Equipment	13
14	14	Documentation Tools	Office Equipment	14
15	15	Storage Units	Infrastructure	15
16	16	Quality Control Tools	Technical Tool	16
17	17	Networking Equipment	Technical Equipment	17
18	18	Measurement Tools	Technical Tool	18
19	19	Presentation Equipment	Office Equipment	19
20	20	Maintenance Tools	Technical Tool	20

Figure 31: Resource table select statement

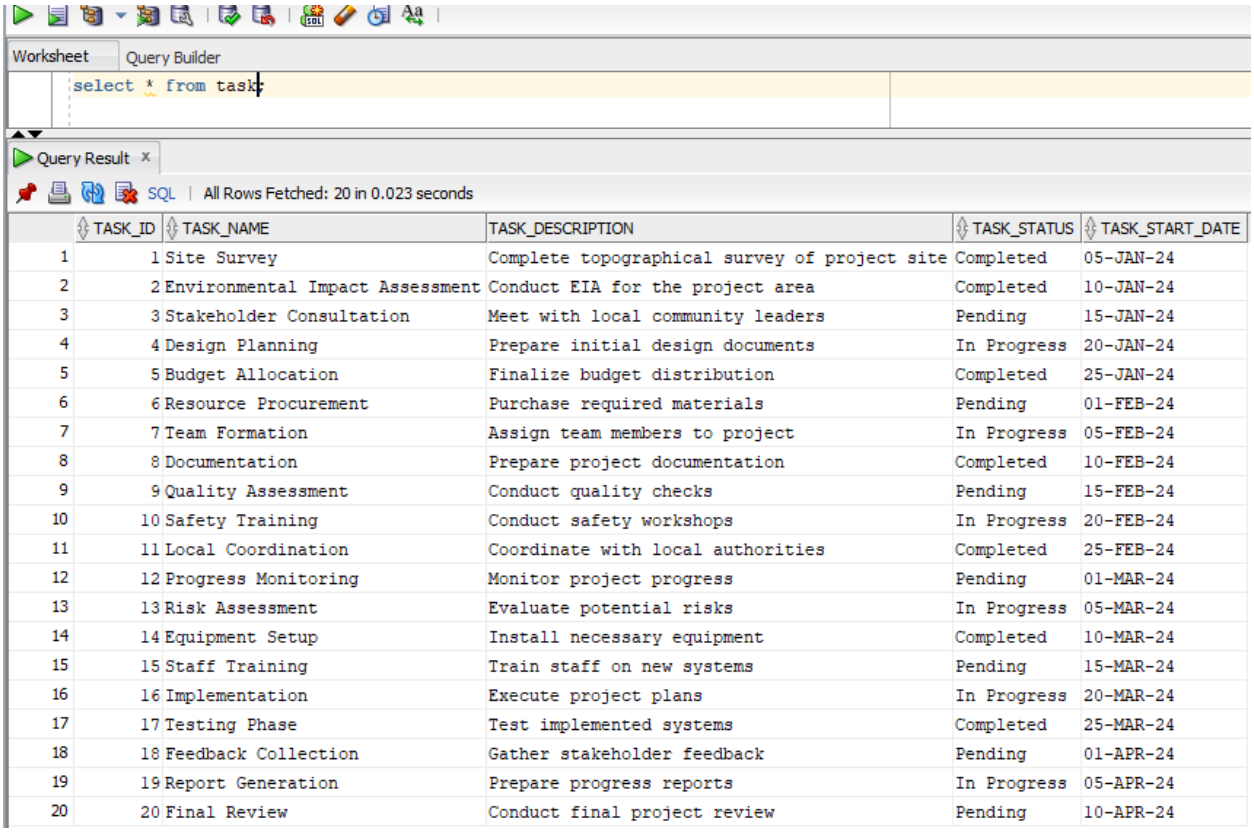
8.3.6 Subtask



	SUBTASK_ID	SUBTASK_NAME	SUBTASK_DESCRIPTION	SUBTASK_STATUS	TASK_TASK_ID
1	1	Ground Preparation	Prepare site ground for construction	In Progress	1
2	2	Wildlife Survey	Document local wildlife species	Completed	2
3	3	Community Meeting	Organize local community gathering	Pending	3
4	4	Blueprint Review	Review initial design blueprints	In Progress	4
5	5	Cost Estimation	Estimate project costs in detail	Completed	5
6	6	Vendor Selection	Select vendors for materials	Pending	6
7	7	Role Assignment	Assign specific roles to team members	In Progress	7
8	8	File Organization	Organize project documentation	Completed	8
9	9	Site Inspection	Inspect work quality on site	Pending	9
10	10	Workshop Planning	Plan safety workshop schedule	In Progress	10
11	11	Permit Processing	Process required permits	Completed	11
12	12	Timeline Review	Review project timeline	Pending	12
13	13	Hazard Identification	Identify potential hazards	In Progress	13
14	14	System Testing	Test installed equipment	Completed	14
15	15	Manual Preparation	Prepare training manuals	Pending	15
16	16	Phase Planning	Plan implementation phases	In Progress	16
17	17	Performance Check	Check system performance	Completed	17
18	18	Survey Distribution	Distribute feedback surveys	Pending	18
19	19	Data Compilation	Compile report data	In Progress	19
20	20	Checklist Preparation	Prepare review checklist	Pending	20

Figure 32: Subtask table select statements

8.3.7 Task Table



Worksheet | Query Builder

```
select * from task;
```

Query Result

SQL | All Rows Fetched: 20 in 0.023 seconds

	TASK_ID	TASK_NAME	TASK_DESCRIPTION	TASK_STATUS	TASK_START_DATE
1	1	Site Survey	Complete topographical survey of project site	Completed	05-JAN-24
2	2	Environmental Impact Assessment	Conduct EIA for the project area	Completed	10-JAN-24
3	3	Stakeholder Consultation	Meet with local community leaders	Pending	15-JAN-24
4	4	Design Planning	Prepare initial design documents	In Progress	20-JAN-24
5	5	Budget Allocation	Finalize budget distribution	Completed	25-JAN-24
6	6	Resource Procurement	Purchase required materials	Pending	01-FEB-24
7	7	Team Formation	Assign team members to project	In Progress	05-FEB-24
8	8	Documentation	Prepare project documentation	Completed	10-FEB-24
9	9	Quality Assessment	Conduct quality checks	Pending	15-FEB-24
10	10	Safety Training	Conduct safety workshops	In Progress	20-FEB-24
11	11	Local Coordination	Coordinate with local authorities	Completed	25-FEB-24
12	12	Progress Monitoring	Monitor project progress	Pending	01-MAR-24
13	13	Risk Assessment	Evaluate potential risks	In Progress	05-MAR-24
14	14	Equipment Setup	Install necessary equipment	Completed	10-MAR-24
15	15	Staff Training	Train staff on new systems	Pending	15-MAR-24
16	16	Implementation	Execute project plans	In Progress	20-MAR-24
17	17	Testing Phase	Test implemented systems	Completed	25-MAR-24
18	18	Feedback Collection	Gather stakeholder feedback	Pending	01-APR-24
19	19	Report Generation	Prepare progress reports	In Progress	05-APR-24
20	20	Final Review	Conduct final project review	Pending	10-APR-24

Figure 33: Task Table select statement

8.3.8 User Project Task Table

Worksheet | Query Builder

```
select * from user_project_task;
```

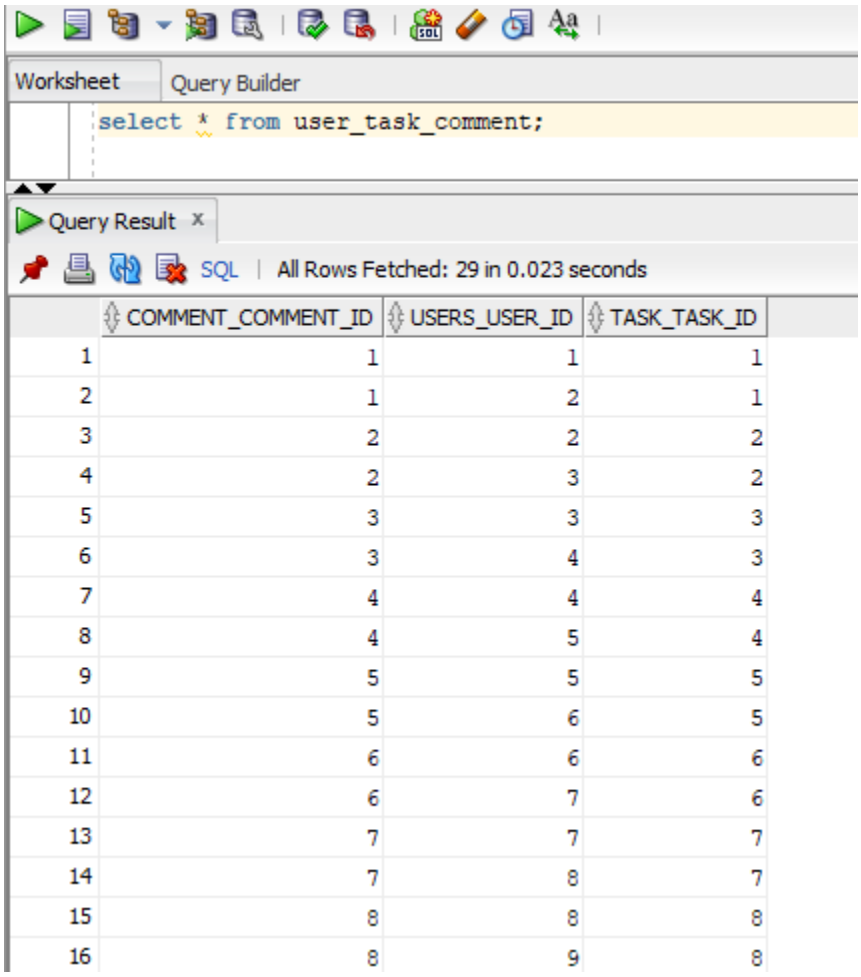
Query Result

SQL | All Rows Fetched: 30 in 0.028 seconds

	USERS_USER_ID	TASK_TASK_ID	PROJECT_PROJECT_ID
1	1	1	1
2	1	2	11
3	2	2	1
4	2	3	12
5	3	3	2
6	3	4	13
7	4	4	2
8	4	5	14
9	5	5	3
10	5	6	15
11	6	6	3
12	6	7	16
13	7	7	4
14	7	8	17
15	8	8	4

Figure 34: User Project Task Table

8.3.9 User Task Comment Table



	COMMENT_COMMENT_ID	USERS_USER_ID	TASK_TASK_ID
1	1	1	1
2	1	2	1
3	2	2	2
4	2	3	2
5	3	3	3
6	3	4	3
7	4	4	4
8	4	5	4
9	5	5	5
10	5	6	5
11	6	6	6
12	6	7	6
13	7	7	7
14	7	8	7
15	8	8	8
16	8	9	8

Figure 35: User Task Comment Table

9 Form

9.1 Home Page

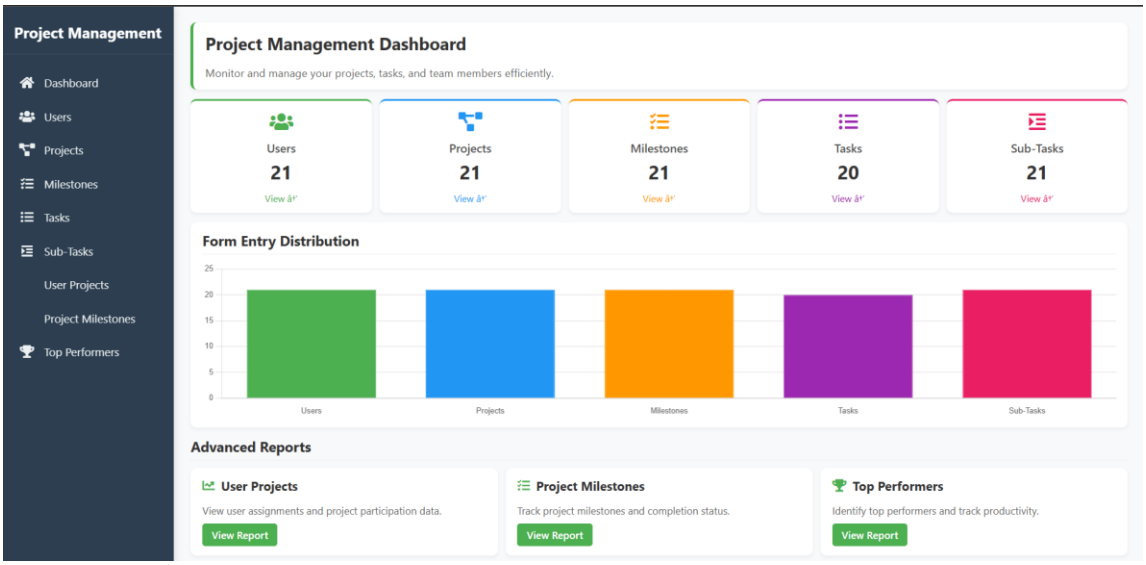
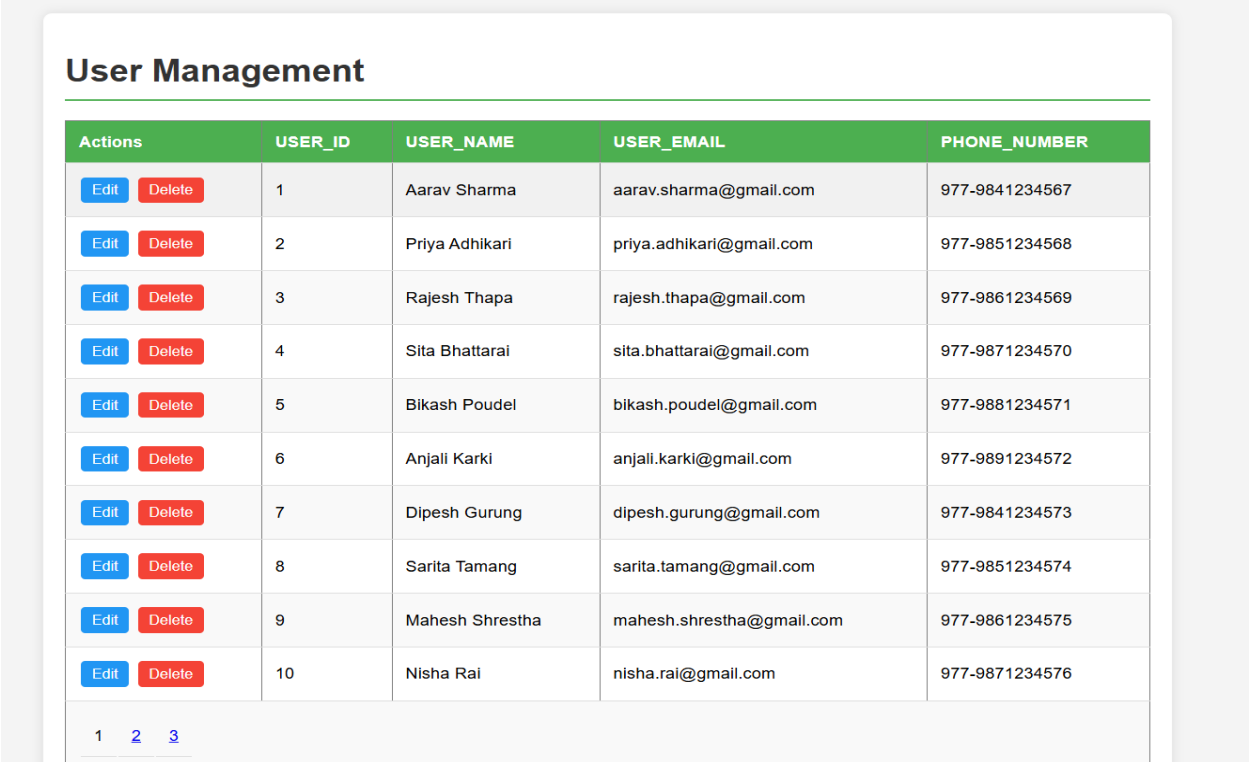


Figure 36: Home Page

9.2 Basic Web Forms

9.2.1 Users Page



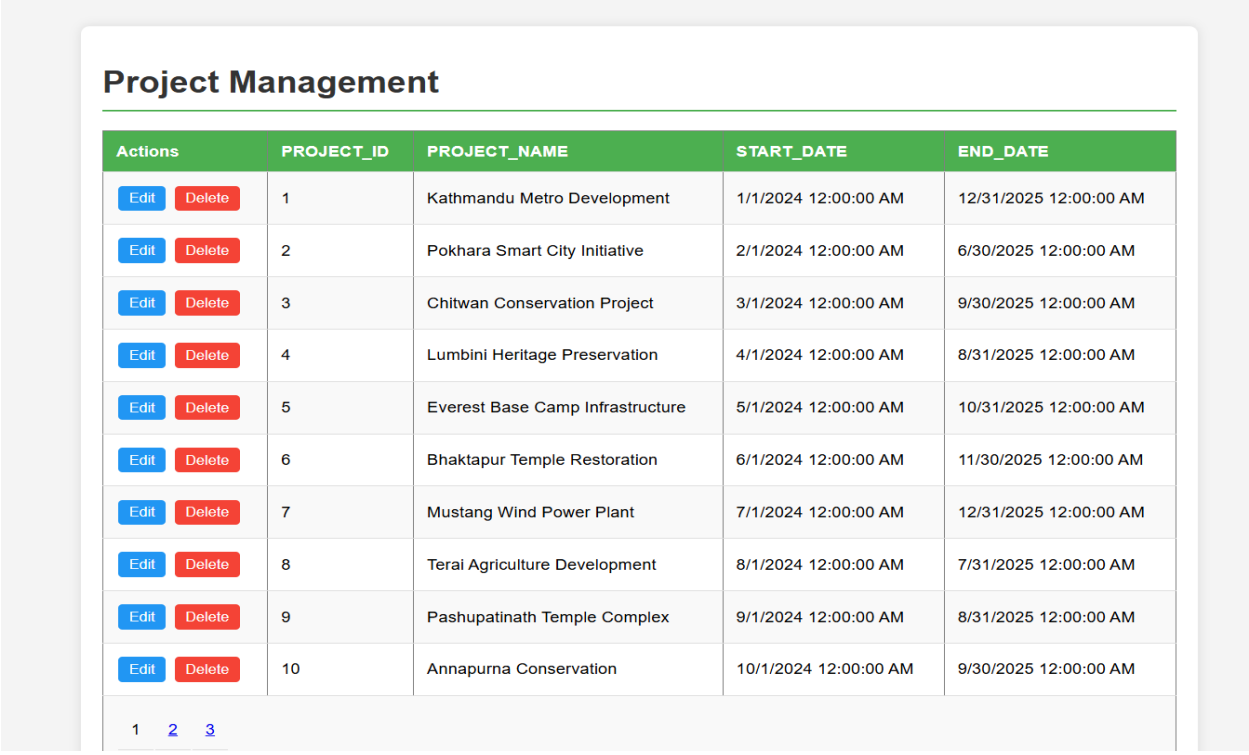
User Management

Actions	USER_ID	USER_NAME	USER_EMAIL	PHONE_NUMBER
Edit Delete	1	Aarav Sharma	aarav.sharma@gmail.com	977-9841234567
Edit Delete	2	Priya Adhikari	priya.adhikari@gmail.com	977-9851234568
Edit Delete	3	Rajesh Thapa	rajesh.thapa@gmail.com	977-9861234569
Edit Delete	4	Sita Bhattarai	sita.bhattarai@gmail.com	977-9871234570
Edit Delete	5	Bikash Poudel	bikash.poudel@gmail.com	977-9881234571
Edit Delete	6	Anjali Karki	anjali.karki@gmail.com	977-9891234572
Edit Delete	7	Dipesh Gurung	dipesh.gurung@gmail.com	977-9841234573
Edit Delete	8	Sarita Tamang	sarita.tamang@gmail.com	977-9851234574
Edit Delete	9	Mahesh Shrestha	mahesh.shrestha@gmail.com	977-9861234575
Edit Delete	10	Nisha Rai	nisha.rai@gmail.com	977-9871234576

1 2 3

Figure 37: User web form

9.2.2 Project Page



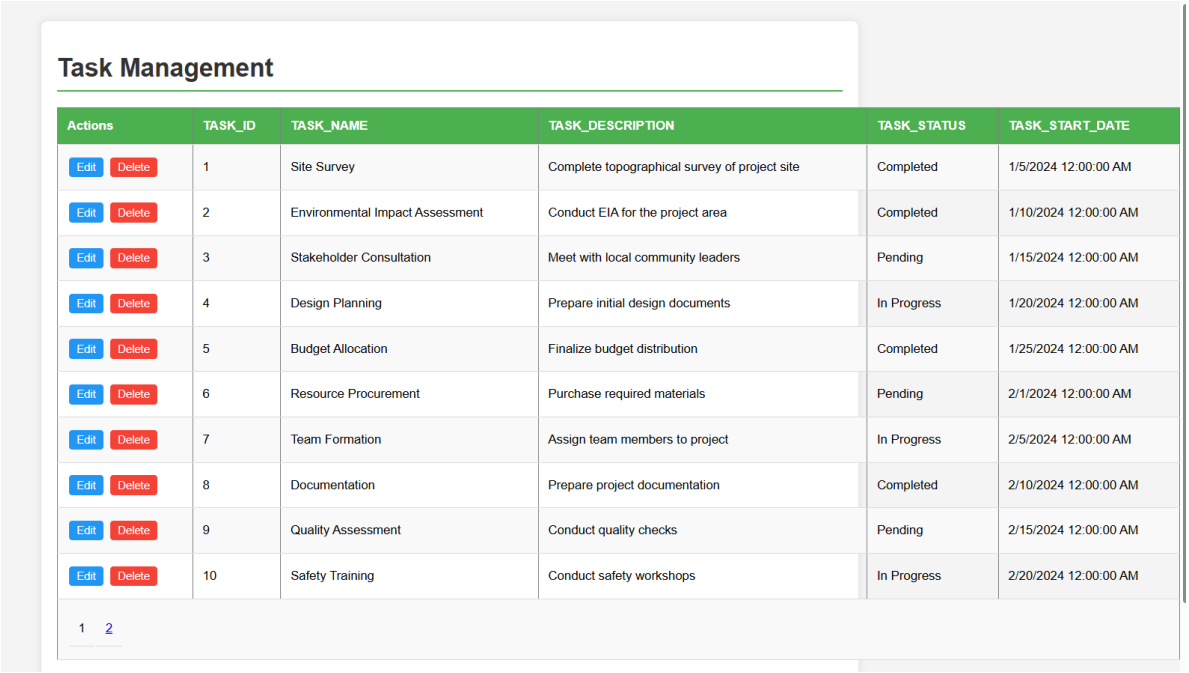
Project Management

Actions	PROJECT_ID	PROJECT_NAME	START_DATE	END_DATE
Edit Delete	1	Kathmandu Metro Development	1/1/2024 12:00:00 AM	12/31/2025 12:00:00 AM
Edit Delete	2	Pokhara Smart City Initiative	2/1/2024 12:00:00 AM	6/30/2025 12:00:00 AM
Edit Delete	3	Chitwan Conservation Project	3/1/2024 12:00:00 AM	9/30/2025 12:00:00 AM
Edit Delete	4	Lumbini Heritage Preservation	4/1/2024 12:00:00 AM	8/31/2025 12:00:00 AM
Edit Delete	5	Everest Base Camp Infrastructure	5/1/2024 12:00:00 AM	10/31/2025 12:00:00 AM
Edit Delete	6	Bhaktapur Temple Restoration	6/1/2024 12:00:00 AM	11/30/2025 12:00:00 AM
Edit Delete	7	Mustang Wind Power Plant	7/1/2024 12:00:00 AM	12/31/2025 12:00:00 AM
Edit Delete	8	Terai Agriculture Development	8/1/2024 12:00:00 AM	7/31/2025 12:00:00 AM
Edit Delete	9	Pashupatinath Temple Complex	9/1/2024 12:00:00 AM	8/31/2025 12:00:00 AM
Edit Delete	10	Annapurna Conservation	10/1/2024 12:00:00 AM	9/30/2025 12:00:00 AM

1 2 3

Figure 38: Project web from

9.2.3 Task Page



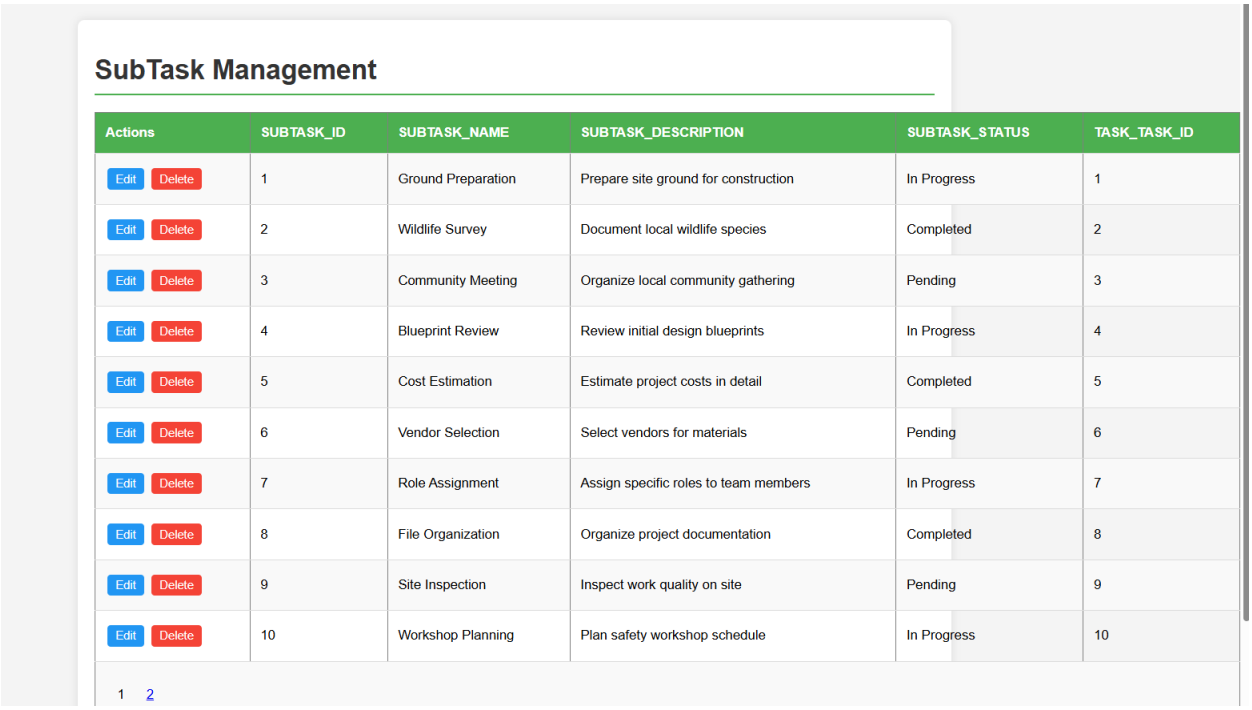
Task Management

Actions	TASK_ID	TASK_NAME	TASK_DESCRIPTION	TASK_STATUS	TASK_START_DATE
Edit Delete	1	Site Survey	Complete topographical survey of project site	Completed	1/5/2024 12:00:00 AM
Edit Delete	2	Environmental Impact Assessment	Conduct EIA for the project area	Completed	1/10/2024 12:00:00 AM
Edit Delete	3	Stakeholder Consultation	Meet with local community leaders	Pending	1/15/2024 12:00:00 AM
Edit Delete	4	Design Planning	Prepare initial design documents	In Progress	1/20/2024 12:00:00 AM
Edit Delete	5	Budget Allocation	Finalize budget distribution	Completed	1/25/2024 12:00:00 AM
Edit Delete	6	Resource Procurement	Purchase required materials	Pending	2/1/2024 12:00:00 AM
Edit Delete	7	Team Formation	Assign team members to project	In Progress	2/5/2024 12:00:00 AM
Edit Delete	8	Documentation	Prepare project documentation	Completed	2/10/2024 12:00:00 AM
Edit Delete	9	Quality Assessment	Conduct quality checks	Pending	2/15/2024 12:00:00 AM
Edit Delete	10	Safety Training	Conduct safety workshops	In Progress	2/20/2024 12:00:00 AM

1 2

Figure 39: Task web form

9.2.4 Sub task Page



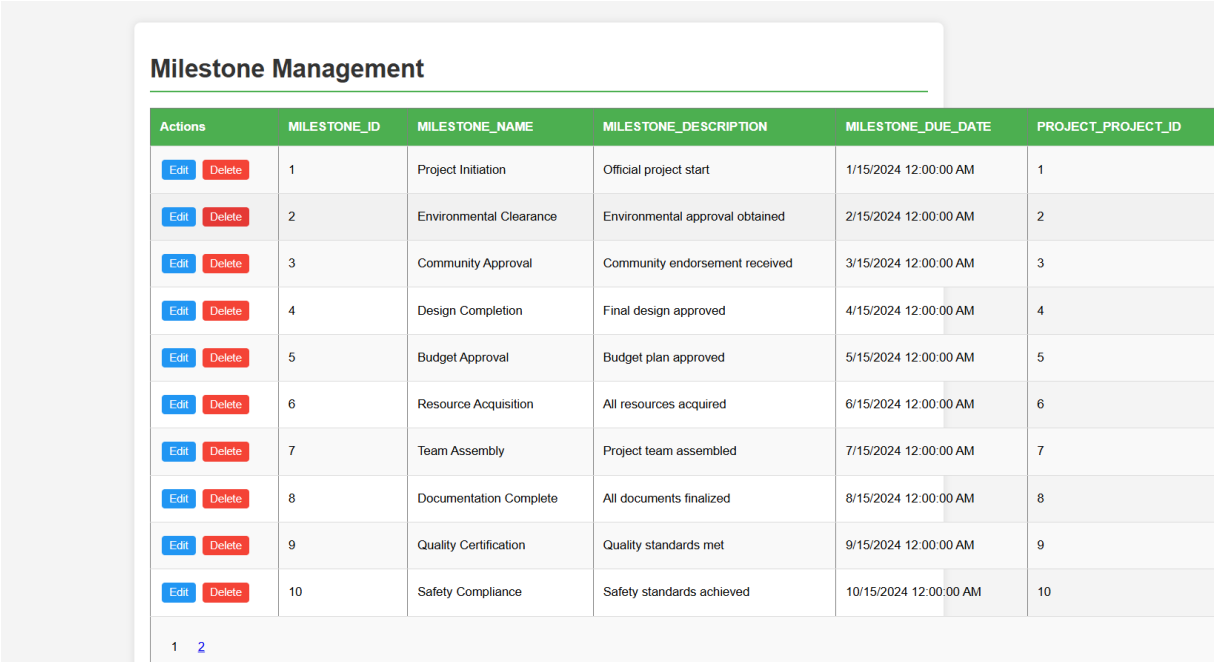
SubTask Management

Actions	SUBTASK_ID	SUBTASK_NAME	SUBTASK_DESCRIPTION	SUBTASK_STATUS	TASK_TASK_ID
Edit Delete	1	Ground Preparation	Prepare site ground for construction	In Progress	1
Edit Delete	2	Wildlife Survey	Document local wildlife species	Completed	2
Edit Delete	3	Community Meeting	Organize local community gathering	Pending	3
Edit Delete	4	Blueprint Review	Review initial design blueprints	In Progress	4
Edit Delete	5	Cost Estimation	Estimate project costs in detail	Completed	5
Edit Delete	6	Vendor Selection	Select vendors for materials	Pending	6
Edit Delete	7	Role Assignment	Assign specific roles to team members	In Progress	7
Edit Delete	8	File Organization	Organize project documentation	Completed	8
Edit Delete	9	Site Inspection	Inspect work quality on site	Pending	9
Edit Delete	10	Workshop Planning	Plan safety workshop schedule	In Progress	10

1 2

Figure 40: Subtask webform

9.2.5 Milestone Page



Milestone Management

Actions	MILESTONE_ID	MILESTONE_NAME	MILESTONE_DESCRIPTION	MILESTONE_DUE_DATE	PROJECT_PROJECT_ID
Edit Delete	1	Project Initiation	Official project start	1/15/2024 12:00:00 AM	1
Edit Delete	2	Environmental Clearance	Environmental approval obtained	2/15/2024 12:00:00 AM	2
Edit Delete	3	Community Approval	Community endorsement received	3/15/2024 12:00:00 AM	3
Edit Delete	4	Design Completion	Final design approved	4/15/2024 12:00:00 AM	4
Edit Delete	5	Budget Approval	Budget plan approved	5/15/2024 12:00:00 AM	5
Edit Delete	6	Resource Acquisition	All resources acquired	6/15/2024 12:00:00 AM	6
Edit Delete	7	Team Assembly	Project team assembled	7/15/2024 12:00:00 AM	7
Edit Delete	8	Documentation Complete	All documents finalized	8/15/2024 12:00:00 AM	8
Edit Delete	9	Quality Certification	Quality standards met	9/15/2024 12:00:00 AM	9
Edit Delete	10	Safety Compliance	Safety standards achieved	10/15/2024 12:00:00 AM	10

1 2

Figure 41: Milestone page

9.3 Complex web Form and Queries

9.3.1 User Project

- **Query**

  SELECT p.project_id, p.project_name, p.start_date, p.end_date

  FROM project p

  JOIN user_project_task upt ON p.project_id = upt.project_project_id

  JOIN users u ON upt.users_user_id = u.user_id

  WHERE u.user_id =: user_id

- **Complex Form**

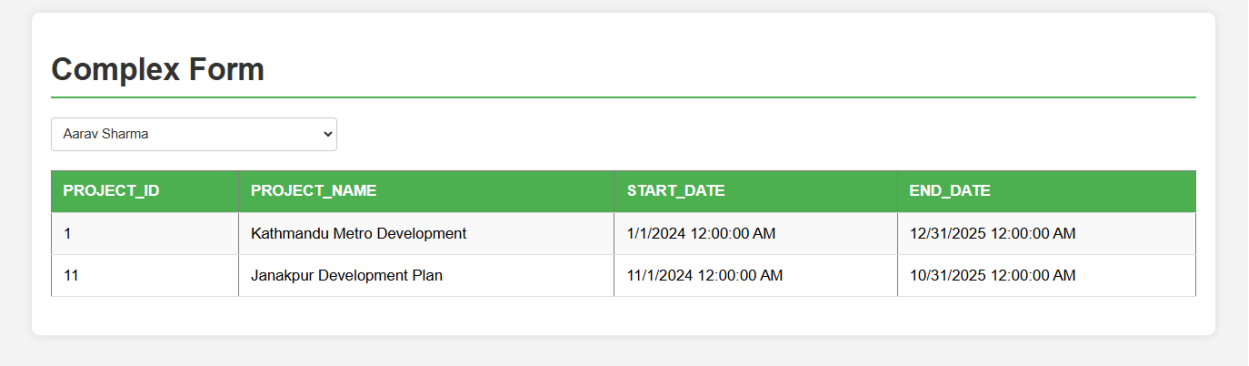


Figure 42: Complex form User Project

9.3.2 Project Milestone

- **Query**

  SELECT p.PROJECT_ID, p.PROJECT_NAME, m.MILESTONE_ID, m.MILESTONE_NAME, m.MILESTONE_DESCRIPTION, m.MILESTONE_DUE_DATE FROM PROJECT p, MILESTONE m WHERE p.PROJECT_ID = m.PROJECT_PROJECT_ID AND (p.PROJECT_ID = :product)

- **Complex Form**

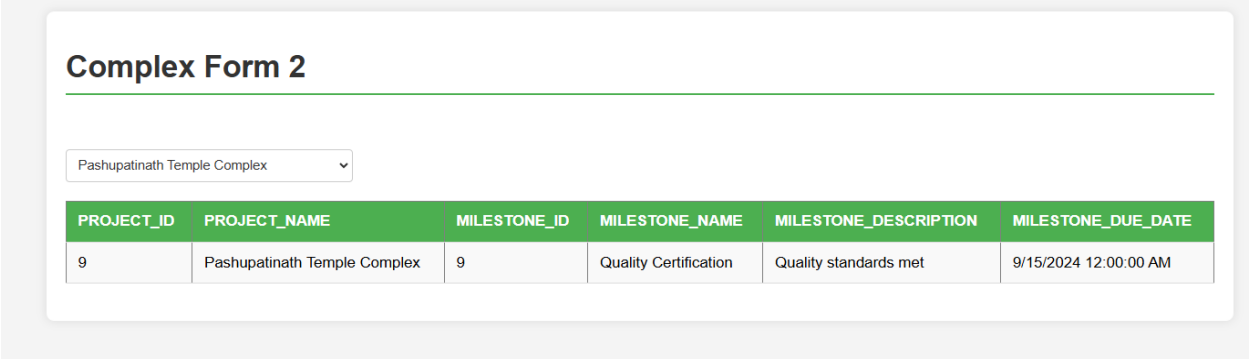


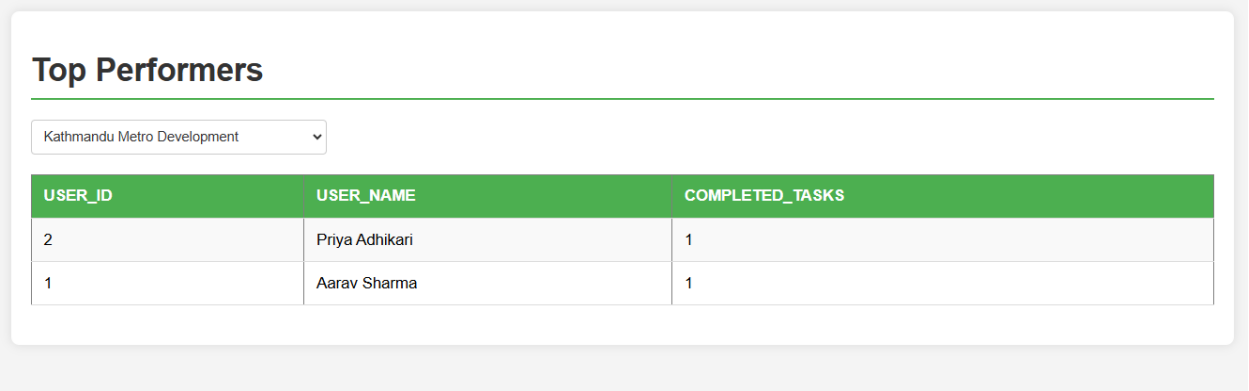
Figure 43: Complex form User Milestone

9.3.3 Top Performer

- **Query**

  SELECT * FROM (SELECT u.user_id, u.user_name, COUNT(*) AS completed_tasks FROM user_project_task upt JOIN task t ON upt.task_task_id = t .task_id JOIN users u ON upt.users_user_id = u.user_id WHERE t .task_status = 'Completed' AND upt.project_project_id =:project_id GROUP BY u.user_id, u.user_name ORDER BY completed_tasks DESC) top_users WHERE ROWNUM<= 3

- **Complex Form**



10 User Manual

The Dashboard page from where we can navigate to different pages to perform the operations

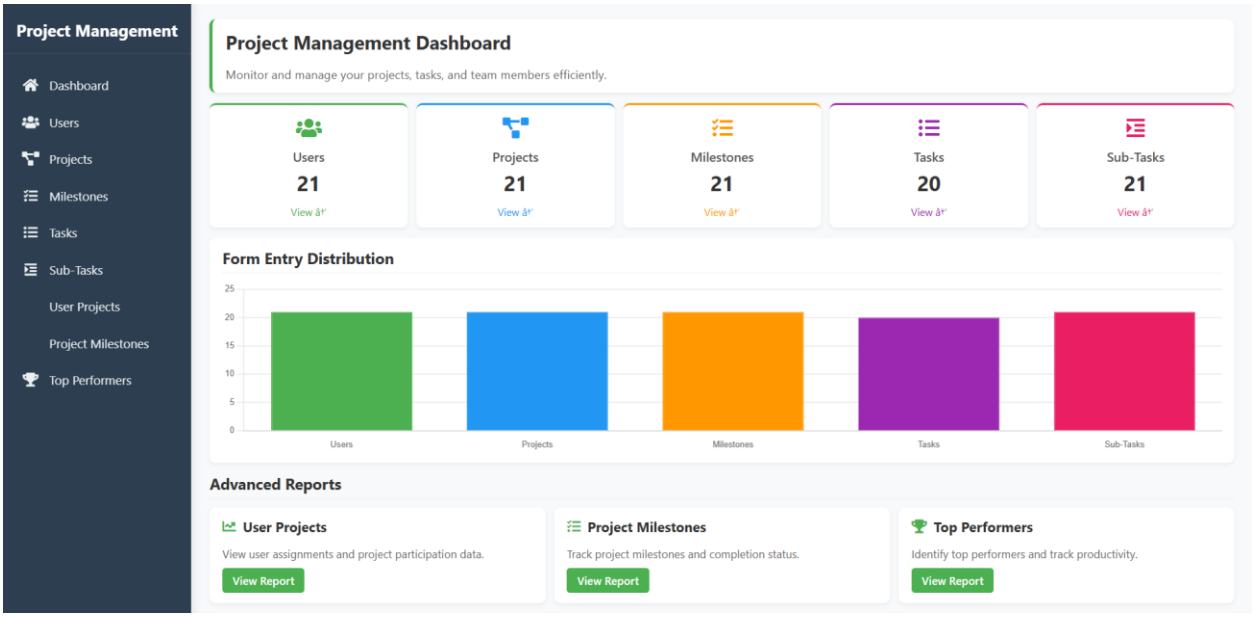


Figure 44: Dashboard

Now when we click on the view all in the Users, we go to the Users Page where we can perform all kinds of Curd Operations

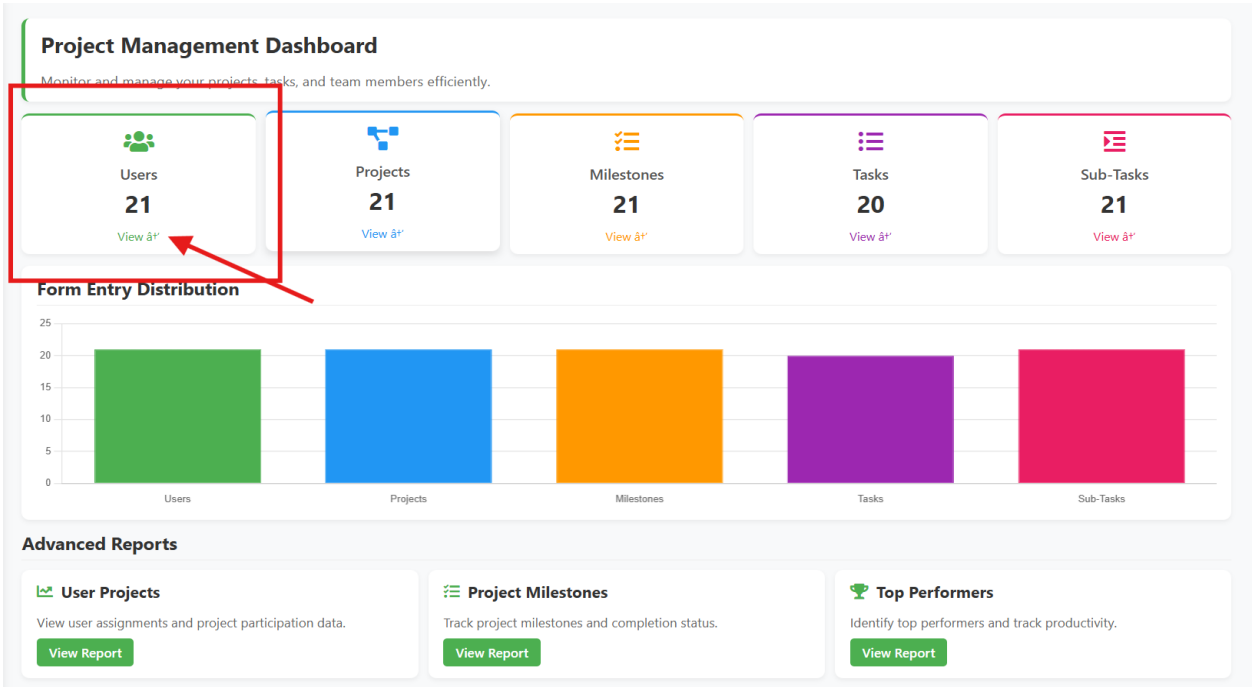
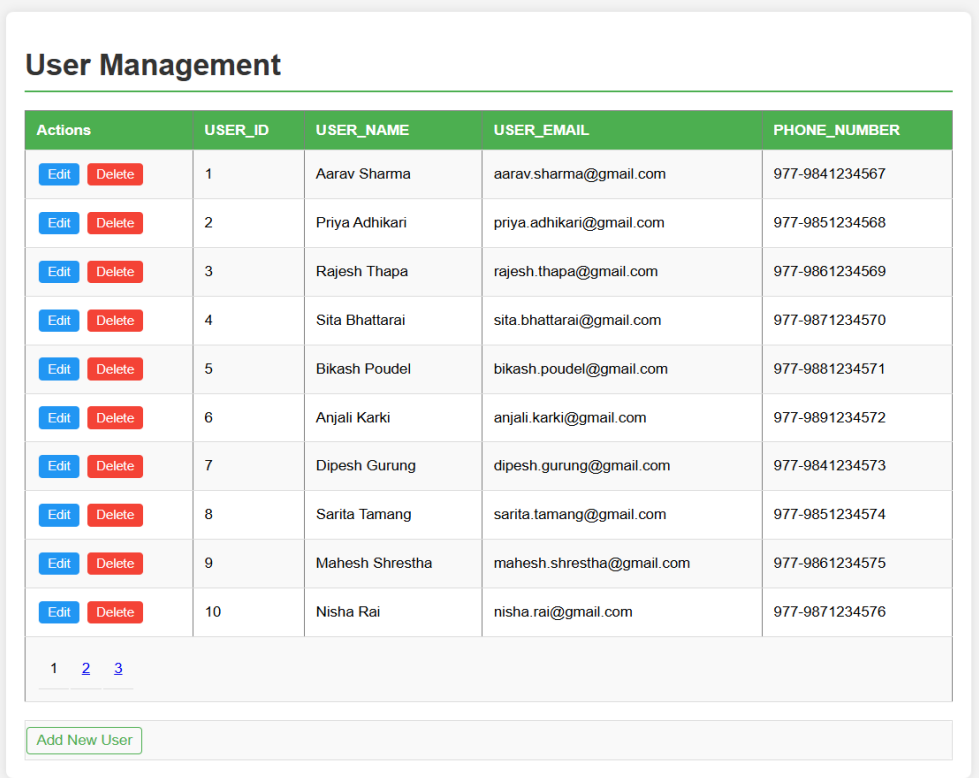


Figure 45: Dashboard to User page

We land on the User page



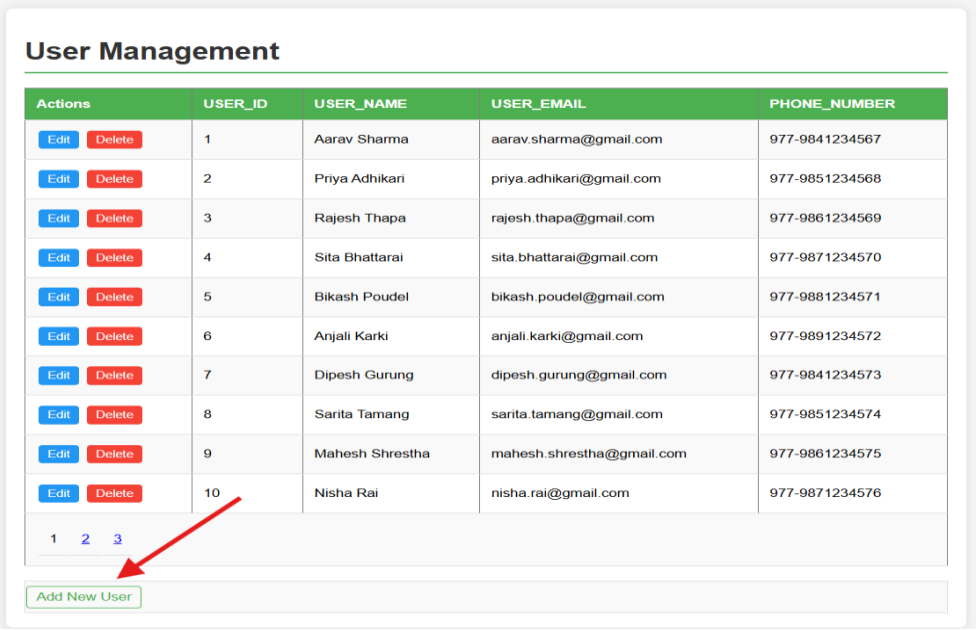
User Management

Actions	USER_ID	USER_NAME	USER_EMAIL	PHONE_NUMBER
Edit Delete	1	Aarav Sharma	aarav.sharma@gmail.com	977-9841234567
Edit Delete	2	Priya Adhikari	priya.adhikari@gmail.com	977-9851234568
Edit Delete	3	Rajesh Thapa	rajesh.thapa@gmail.com	977-9861234569
Edit Delete	4	Sita Bhattarai	sita.bhattarai@gmail.com	977-9871234570
Edit Delete	5	Bikash Poudel	bikash.poudel@gmail.com	977-9881234571
Edit Delete	6	Anjali Karki	anjali.karki@gmail.com	977-9891234572
Edit Delete	7	Dipesh Gurung	dipesh.gurung@gmail.com	977-9841234573
Edit Delete	8	Sarita Tamang	sarita.tamang@gmail.com	977-9851234574
Edit Delete	9	Mahesh Shrestha	mahesh.shrestha@gmail.com	977-9861234575
Edit Delete	10	Nisha Rai	nisha.rai@gmail.com	977-9871234576

1 2 3

Add New User

Figure 46: User Page



User Management

Actions	USER_ID	USER_NAME	USER_EMAIL	PHONE_NUMBER
Edit Delete	1	Aarav Sharma	aarav.sharma@gmail.com	977-9841234567
Edit Delete	2	Priya Adhikari	priya.adhikari@gmail.com	977-9851234568
Edit Delete	3	Rajesh Thapa	rajesh.thapa@gmail.com	977-9861234569
Edit Delete	4	Sita Bhattarai	sita.bhattarai@gmail.com	977-9871234570
Edit Delete	5	Bikash Poudel	bikash.poudel@gmail.com	977-9881234571
Edit Delete	6	Anjali Karki	anjali.karki@gmail.com	977-9891234572
Edit Delete	7	Dipesh Gurung	dipesh.gurung@gmail.com	977-9841234573
Edit Delete	8	Sarita Tamang	sarita.tamang@gmail.com	977-9851234574
Edit Delete	9	Mahesh Shrestha	mahesh.shrestha@gmail.com	977-9861234575
Edit Delete	10	Nisha Rai	nisha.rai@gmail.com	977-9871234576

1 2 3

Add New User

Figure 47: Add Users

Now add in a user just like this

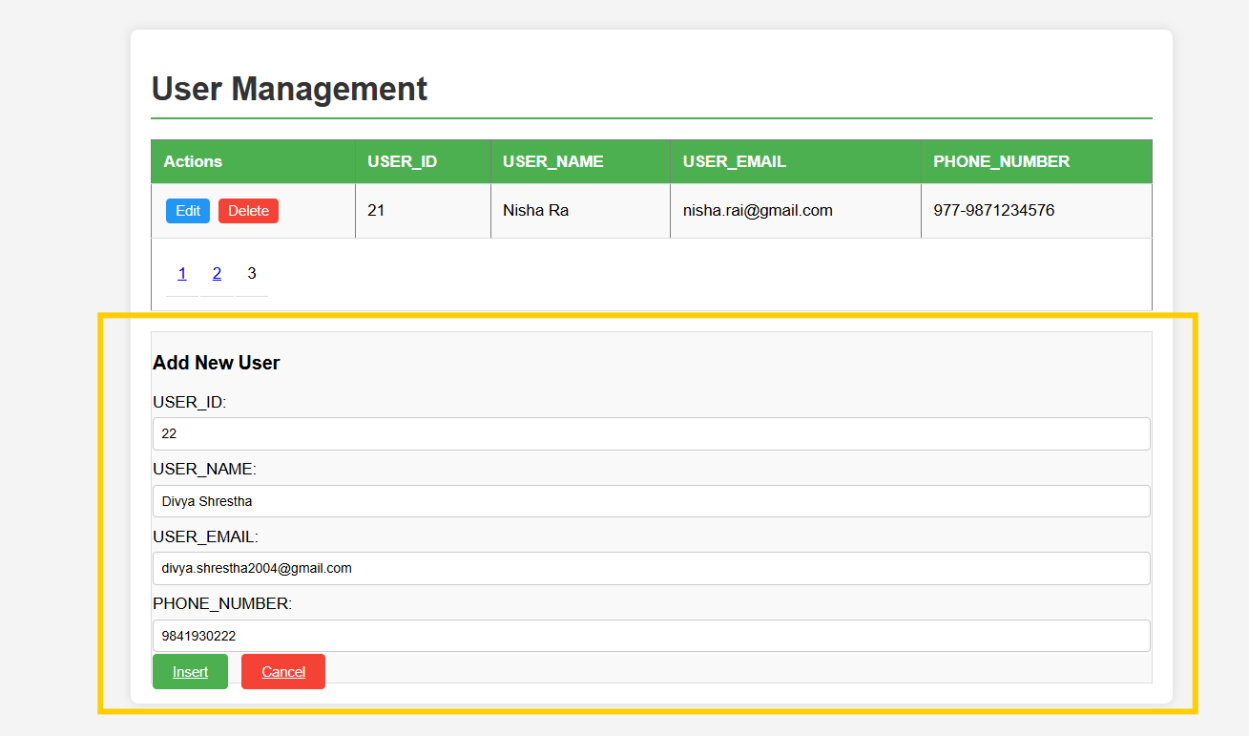


Figure 48: Add User

The User is now added

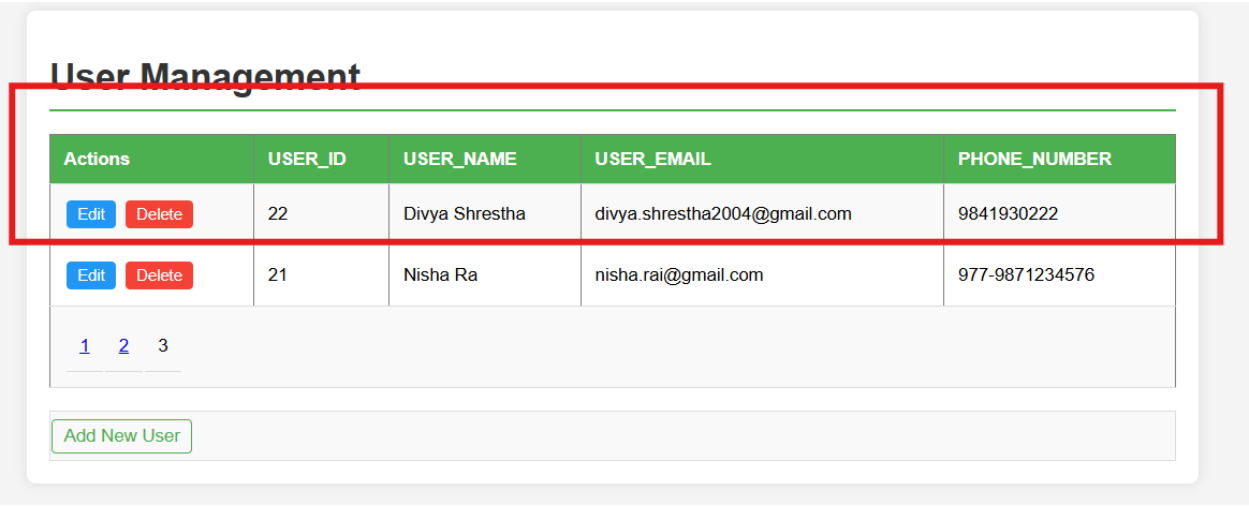


Figure 49: New User added

Update User by Clicking the Edit button

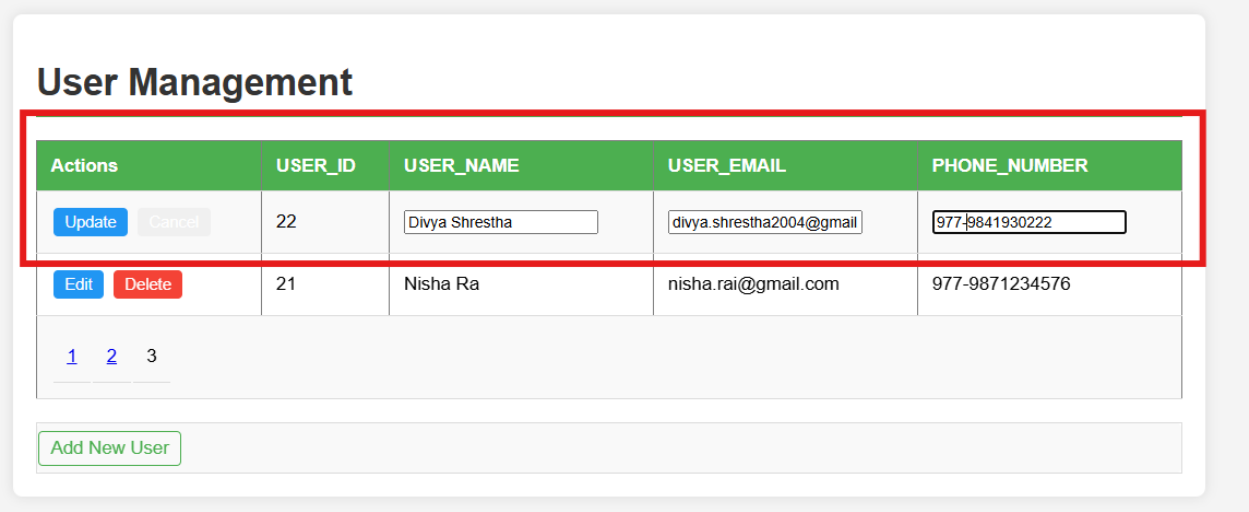


Figure 50: User update

We add 977- in front of the Phone number

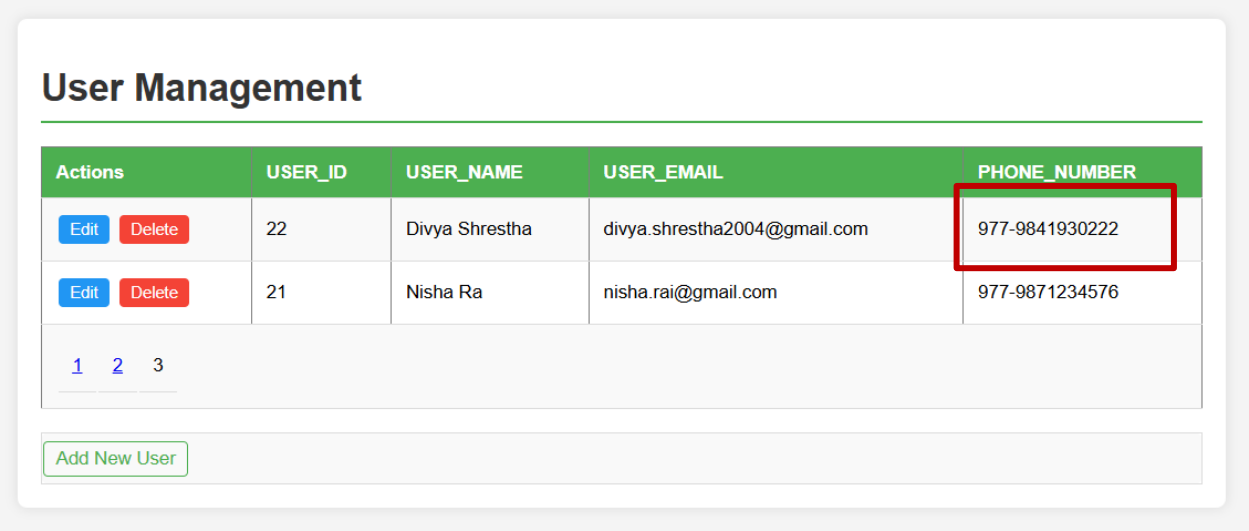


Figure 51: Phone Number edited

Now to delete the User

Click on the Delete button and a pop up must appear! click on Ok button

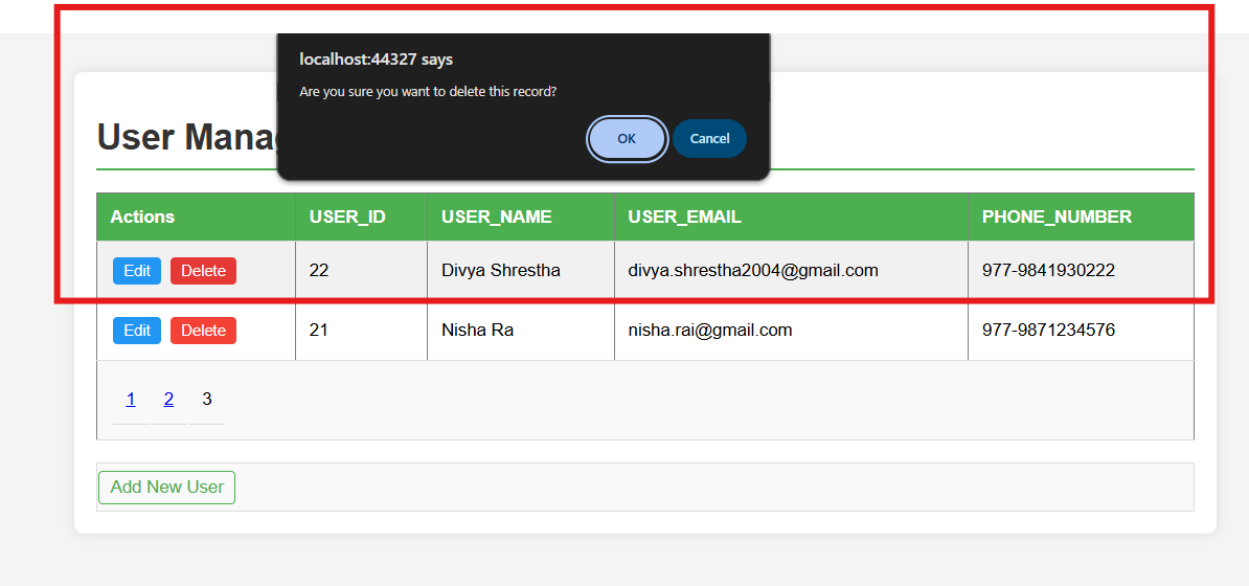


Figure 52: Deleting User

User is deleted Successfully!

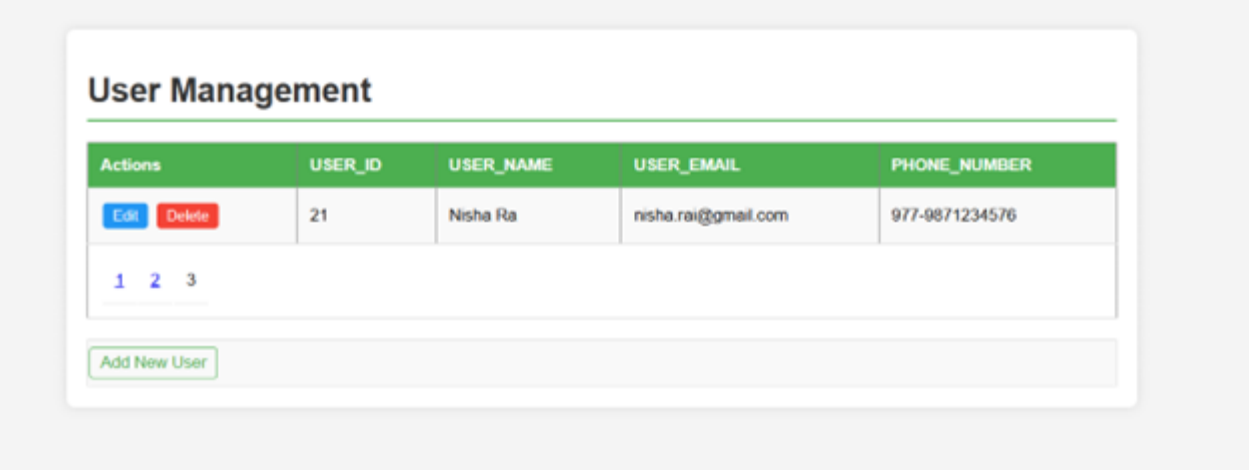


Figure 53: User removed Successfully!

Go back to Dashboard page and now we repeat the same for Projects

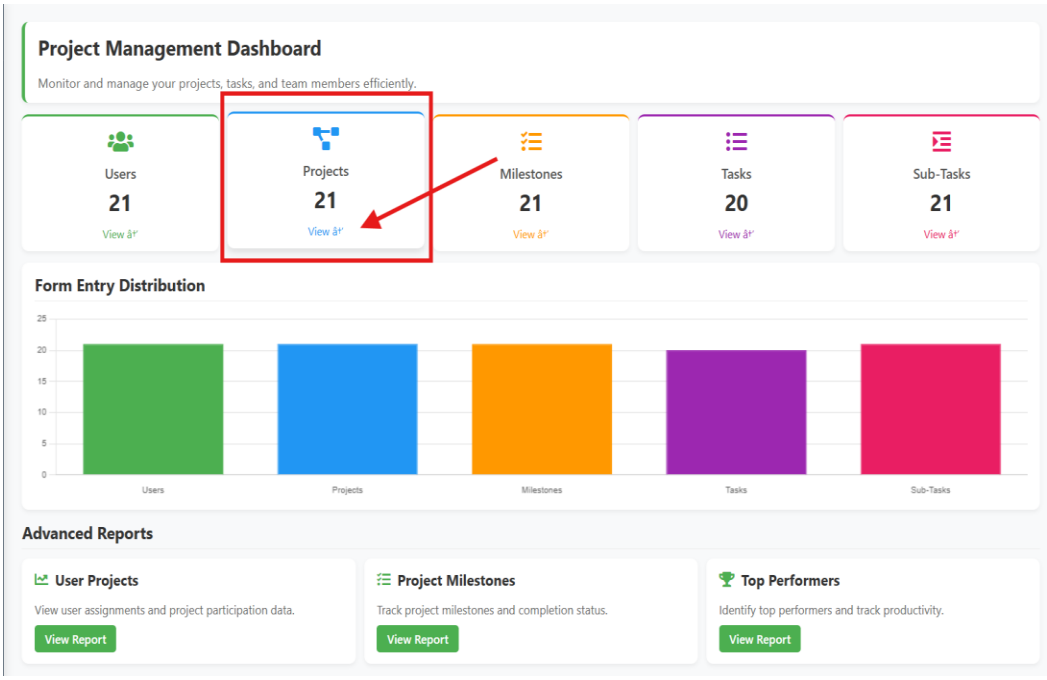


Figure 54: Dashboard to Project

Now add in a user just like this

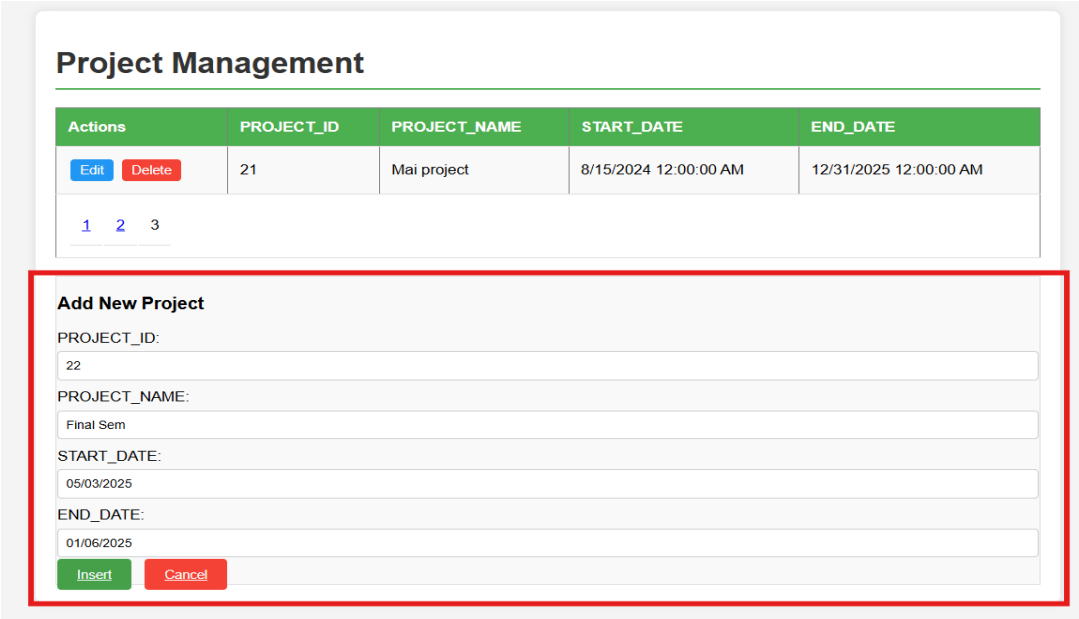


Figure 55: Add Project

The Project is Added Successfully!

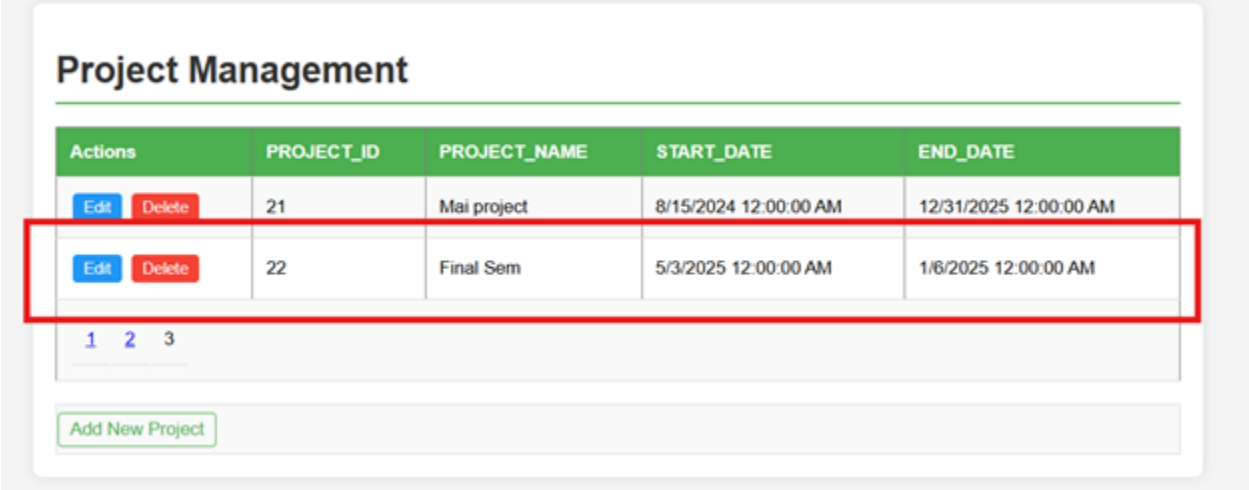


Figure 56: Project Added

Click on the Edit button to update the project

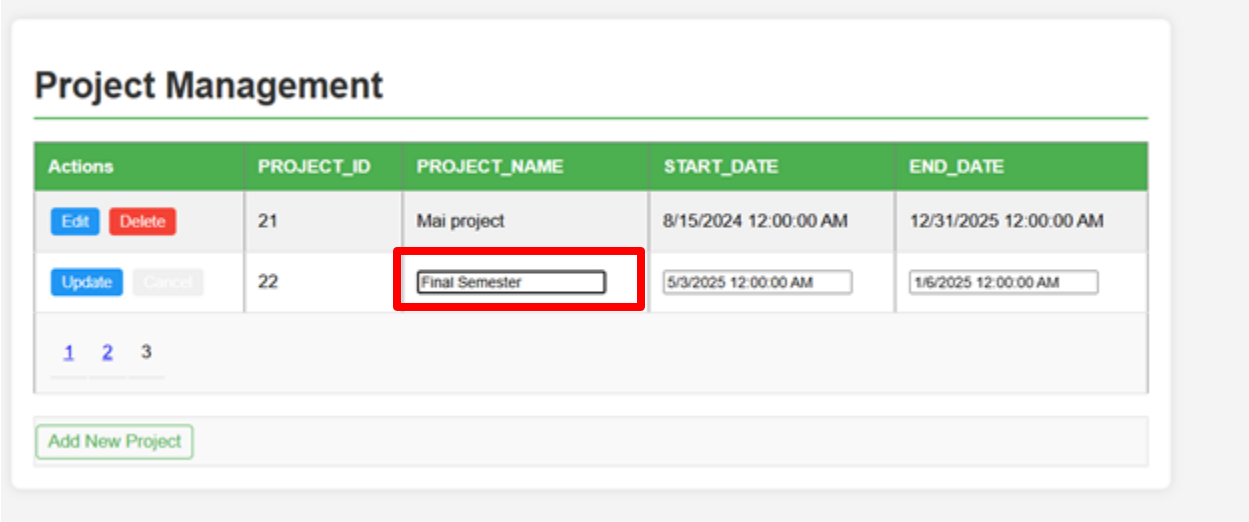


Figure 57: Edit Project

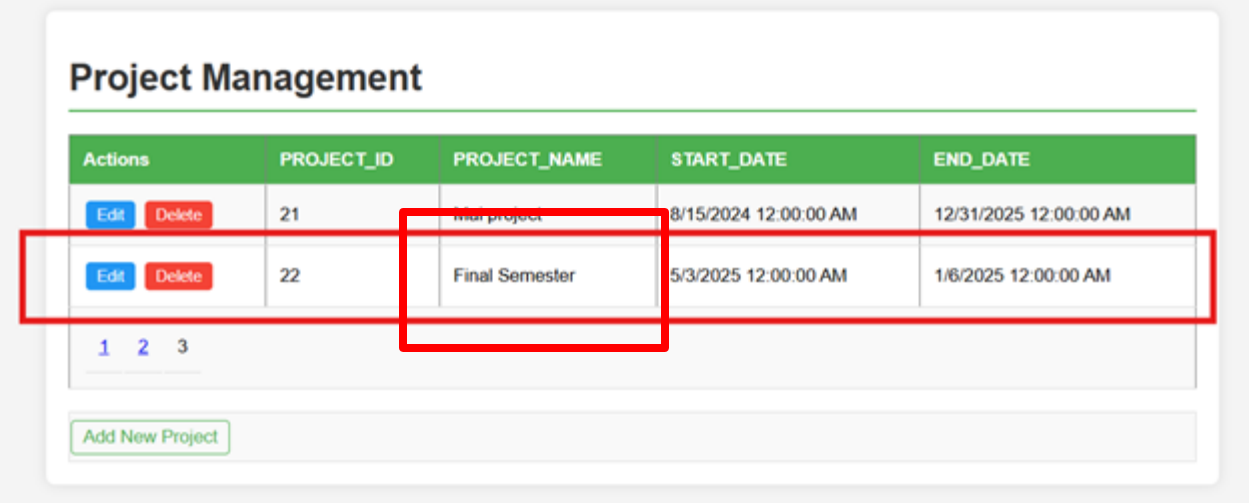


Figure 58: Project Edited Successfully!

Now we delete the project, click on the delete button to delete the project

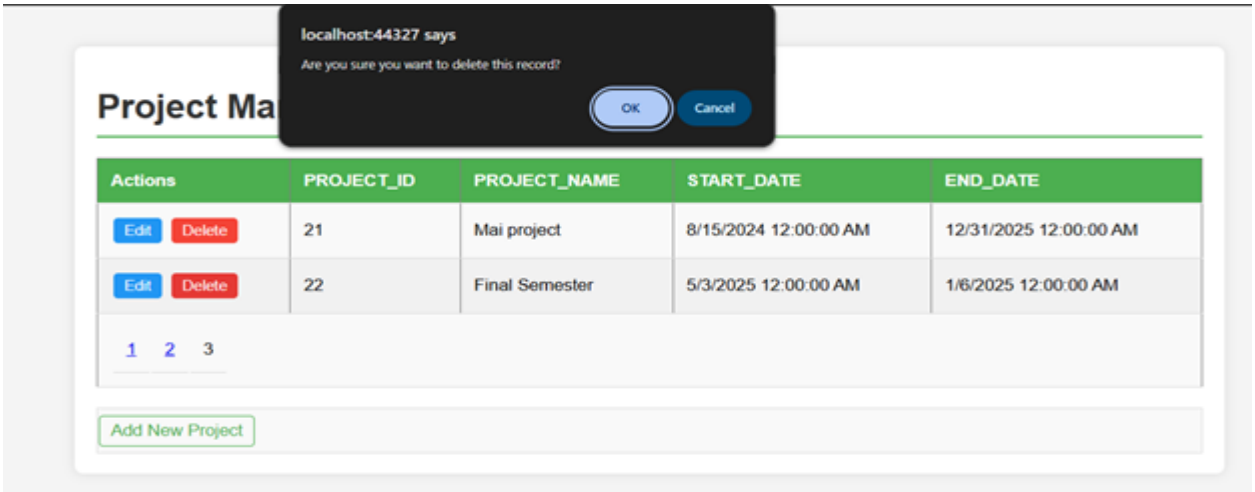


Figure 59: Delete Project

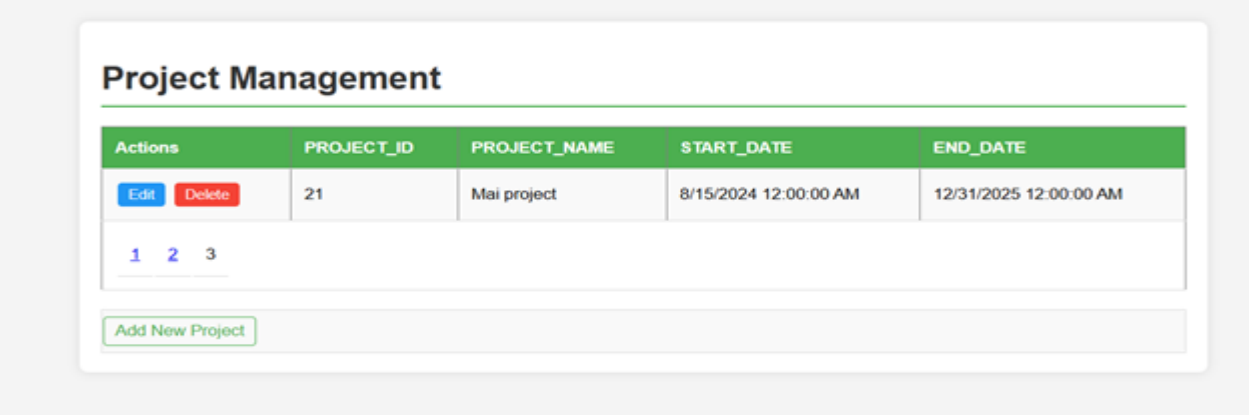


Figure 60: Project Deleted Successfully!

Now we do it for the milestone

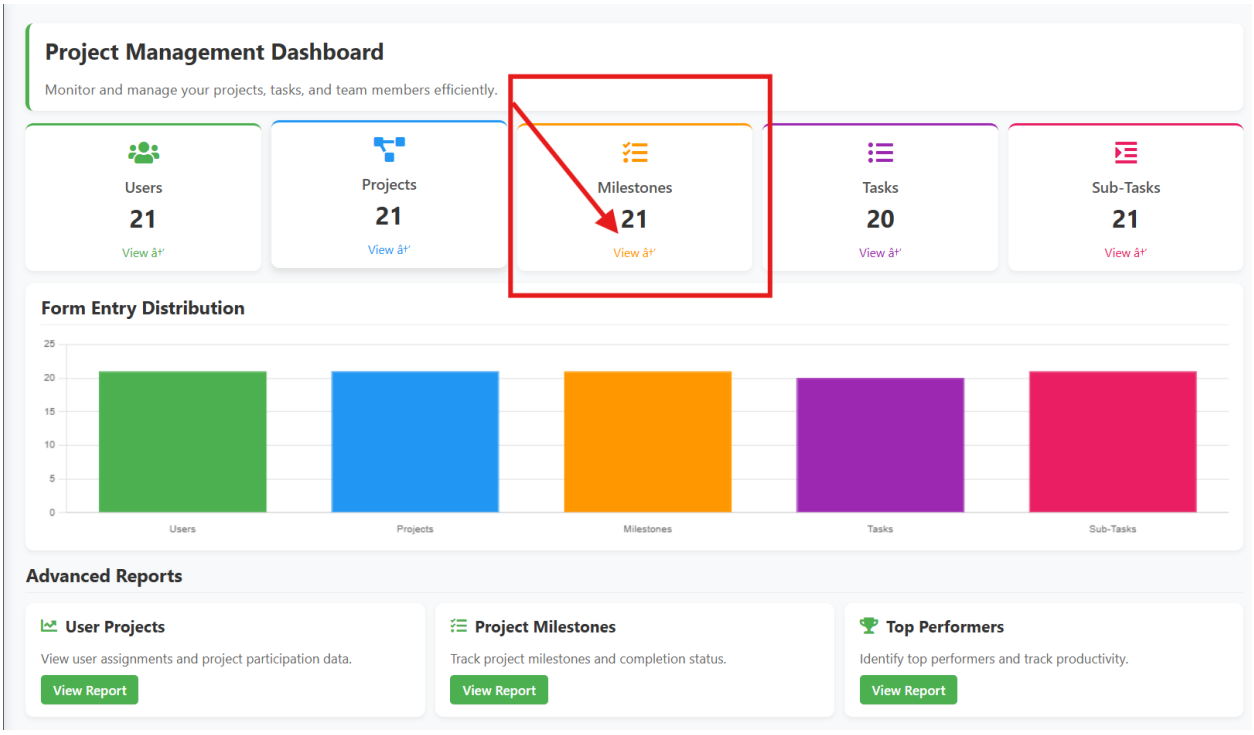


Figure 61: Dashboard-Milestone

Click on the Add Milestone Button to add new Milestone

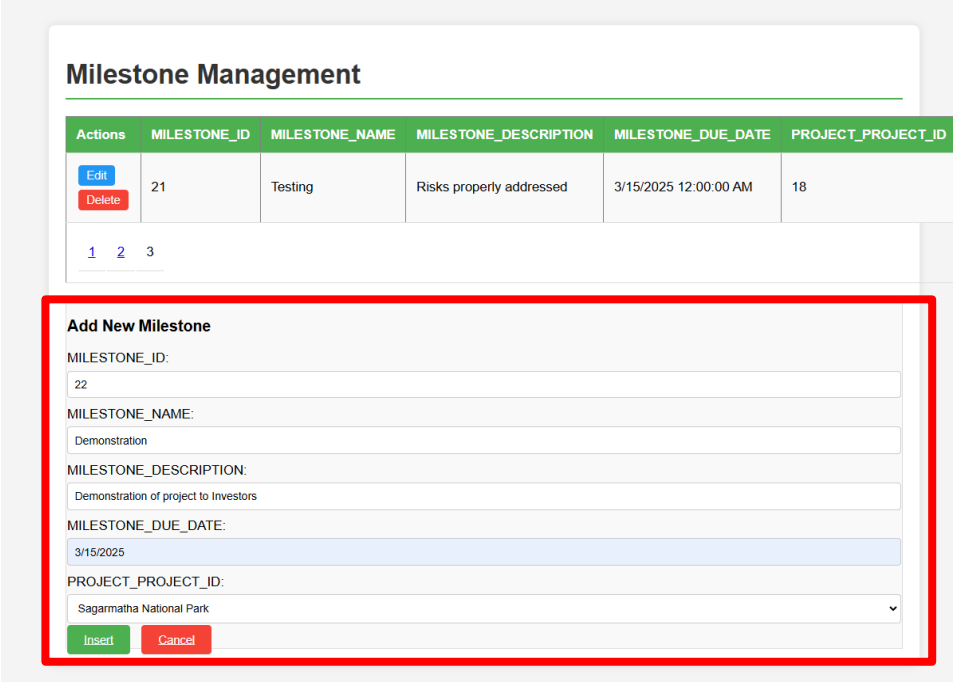


Figure 62: Add new milestone

New Milestone is added

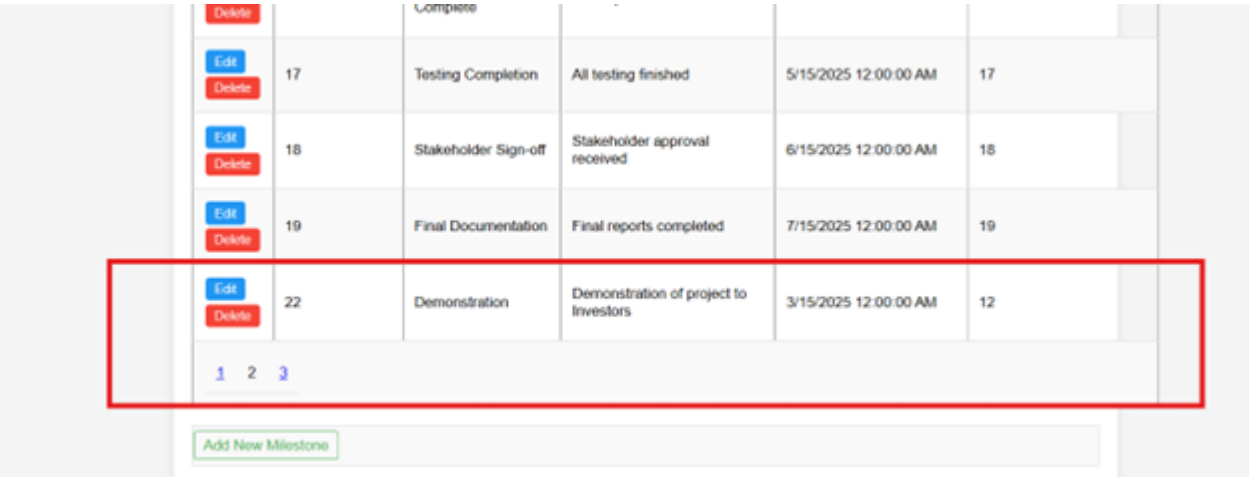


Figure 63: New Milestone Added

Click on the edit button to edit the milestone

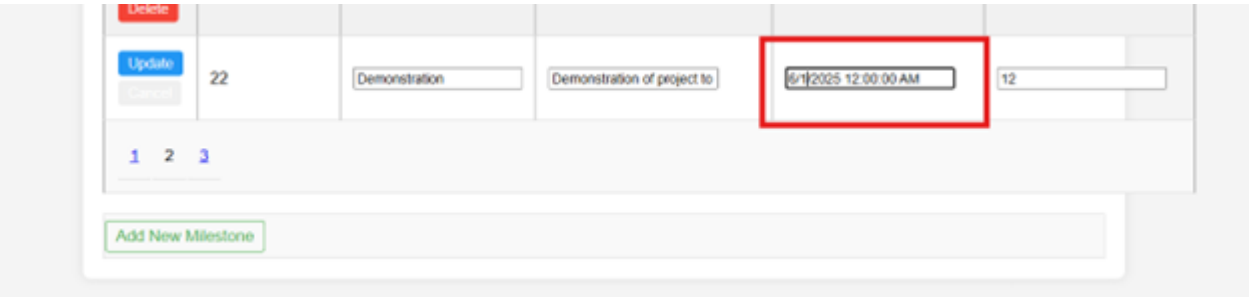


Figure 64: Edit milestone

Milestone Edited

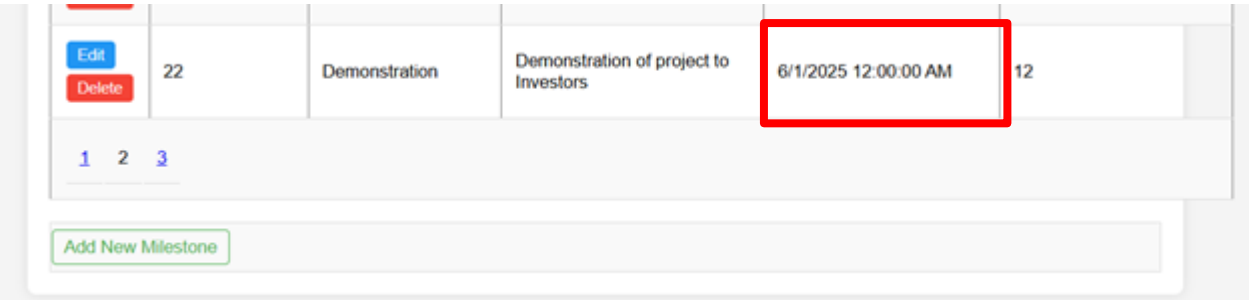


Figure 65: milestone edited

Click on the Delete button to delete the milestone

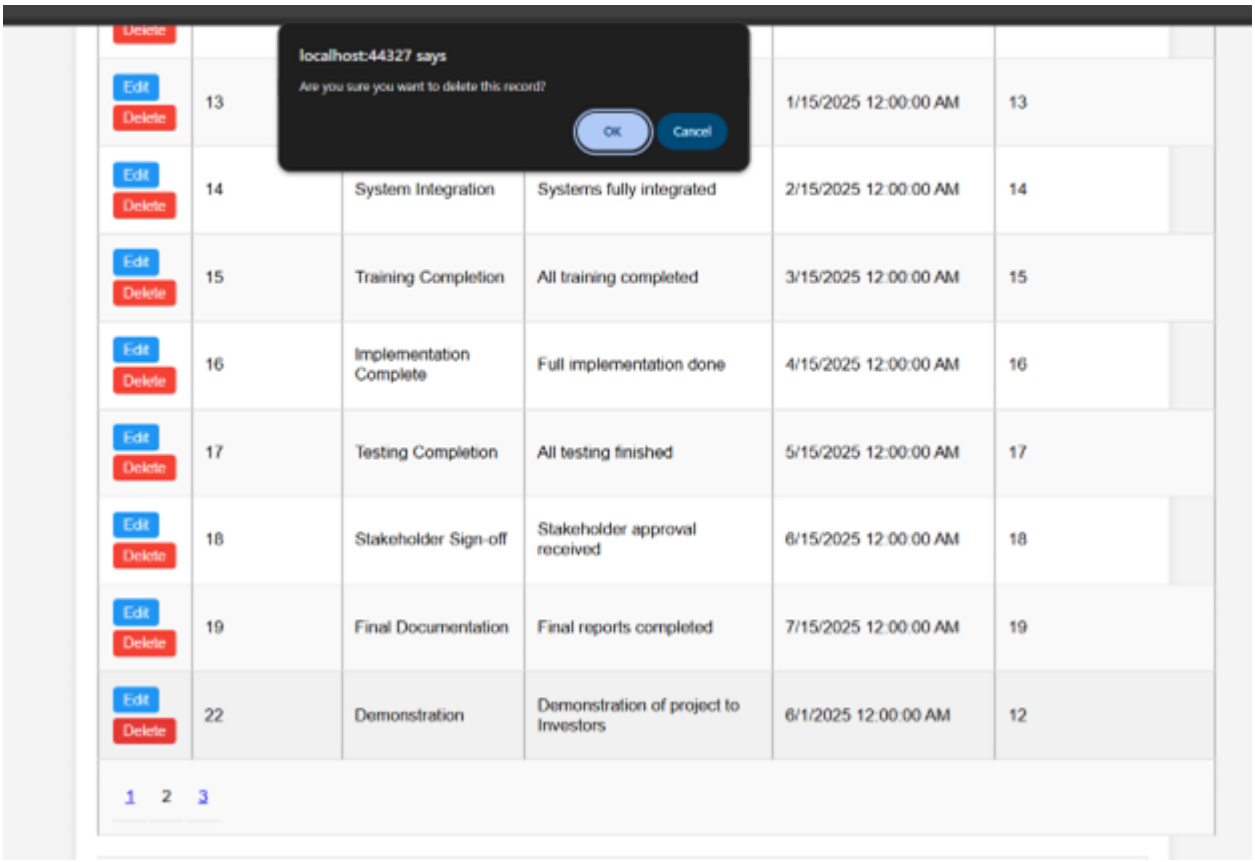


Figure 66: Milestone Deleted

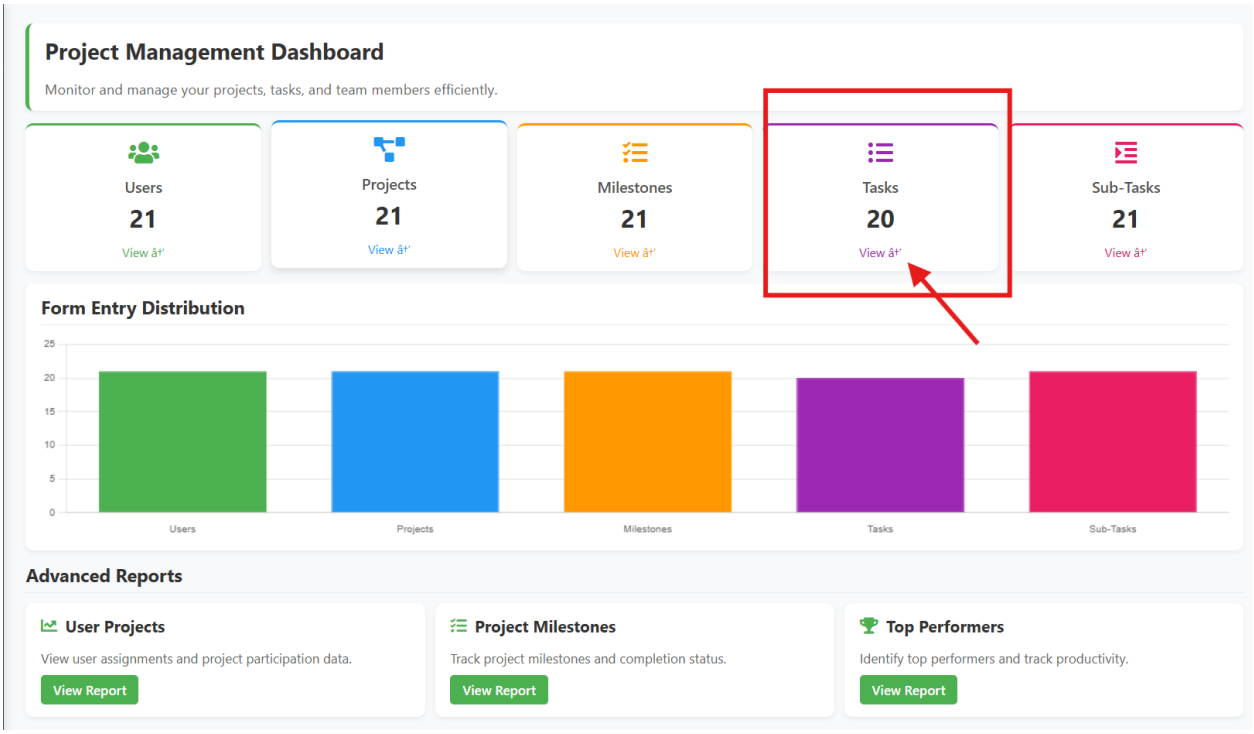


Figure 67: Dashboard Task

Click on add new Task to add task and fill in the details

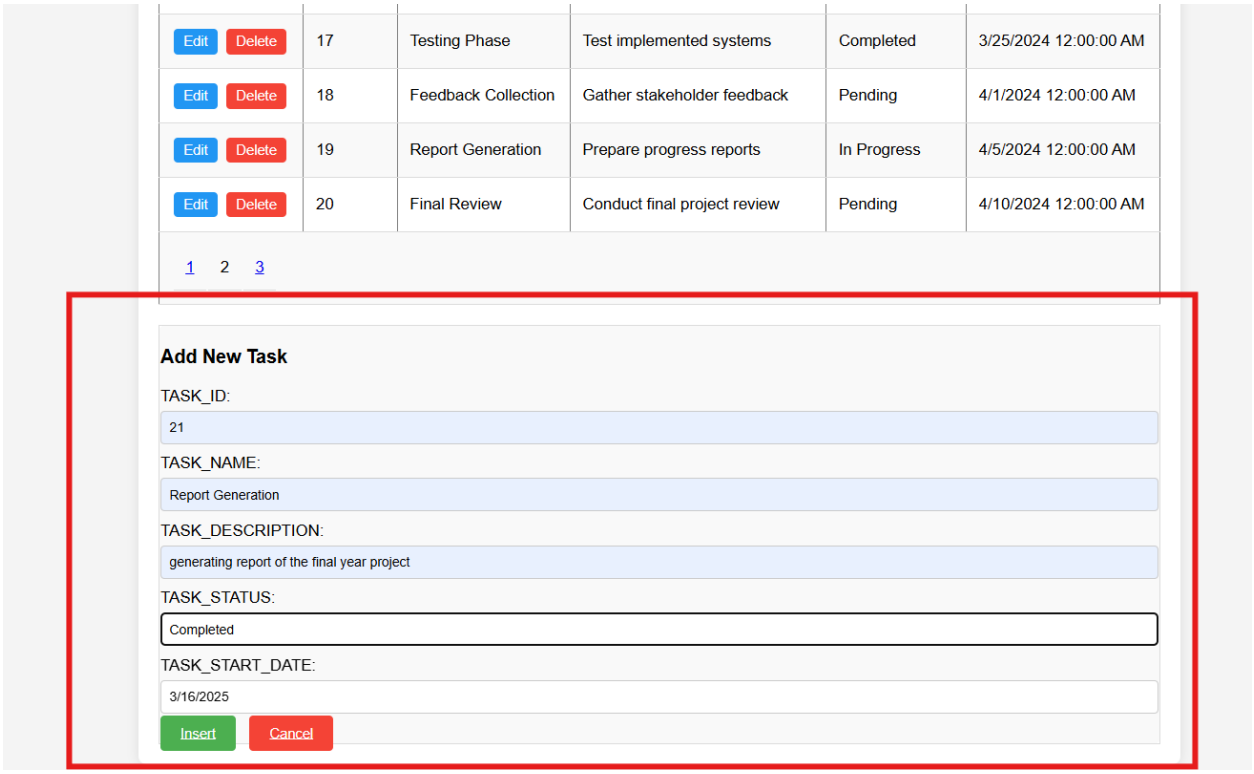


Figure 68: Add new Task

Task added Successfully!

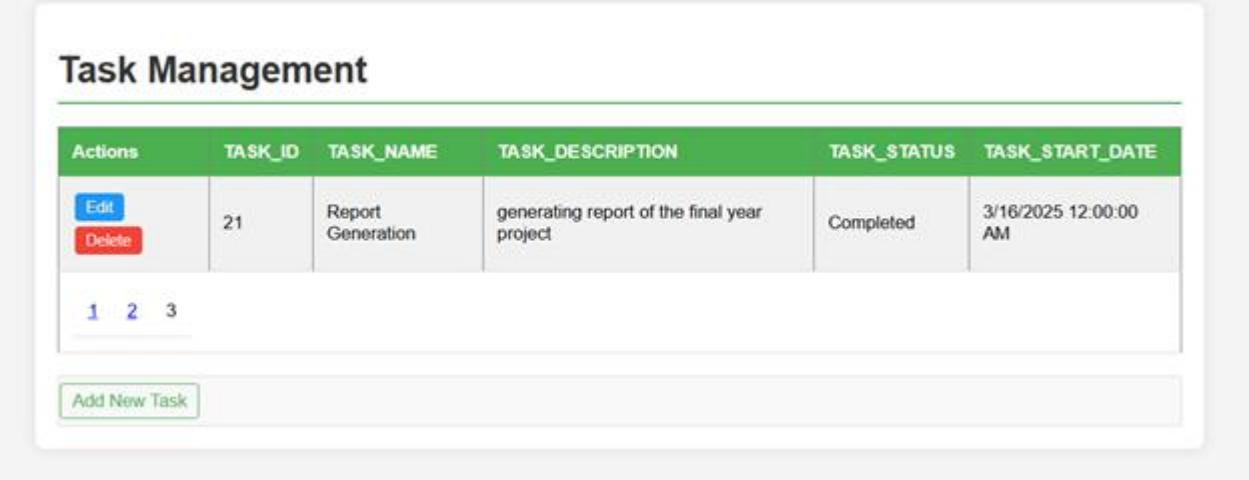


Figure 69: Task added successfully

Click on the edit button to edit the task and click on update

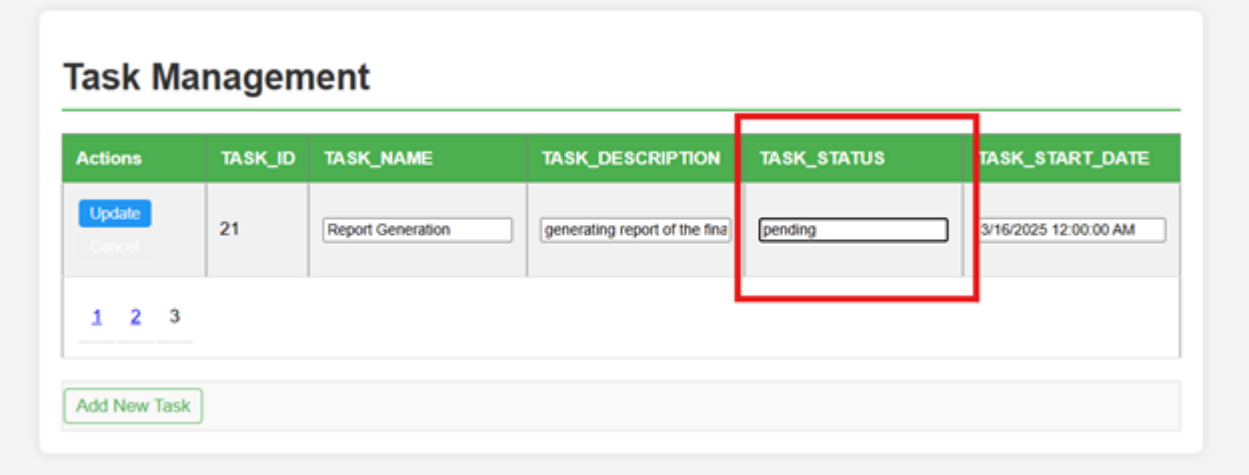


Figure 70: Updating Task

Task Updated Successfully!

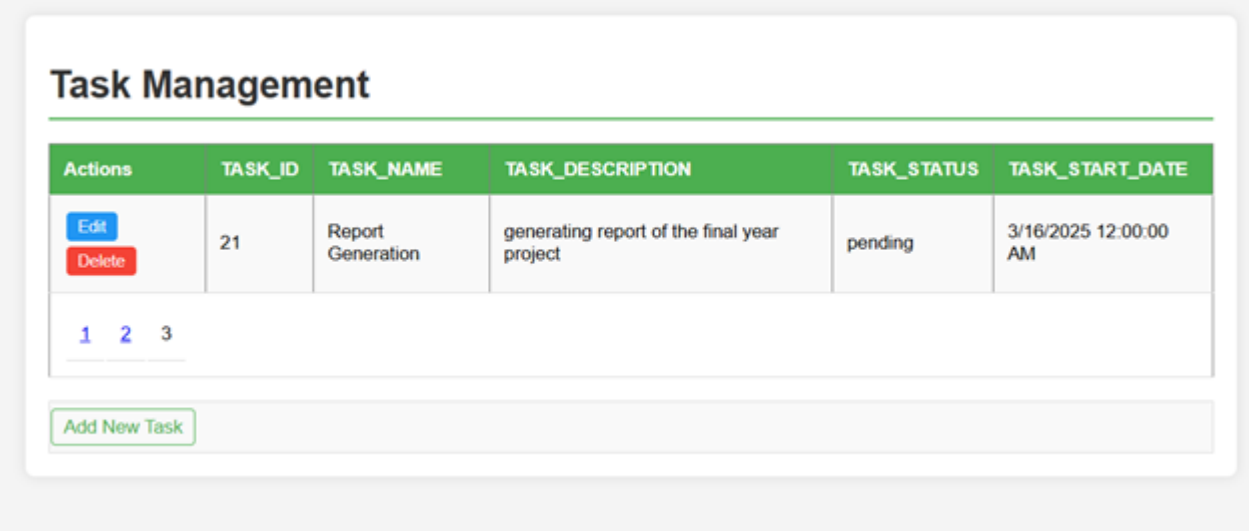


Figure 71: Task Updated Successfully!

Now click on the delete button to delete the task! And click on OK

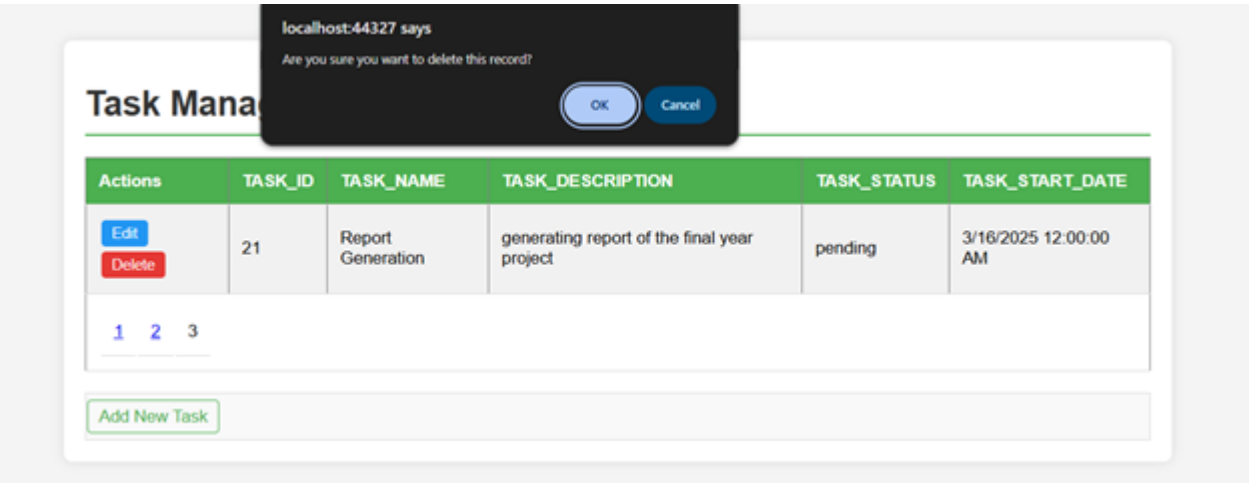


Figure 72: Task Deleted Successfully

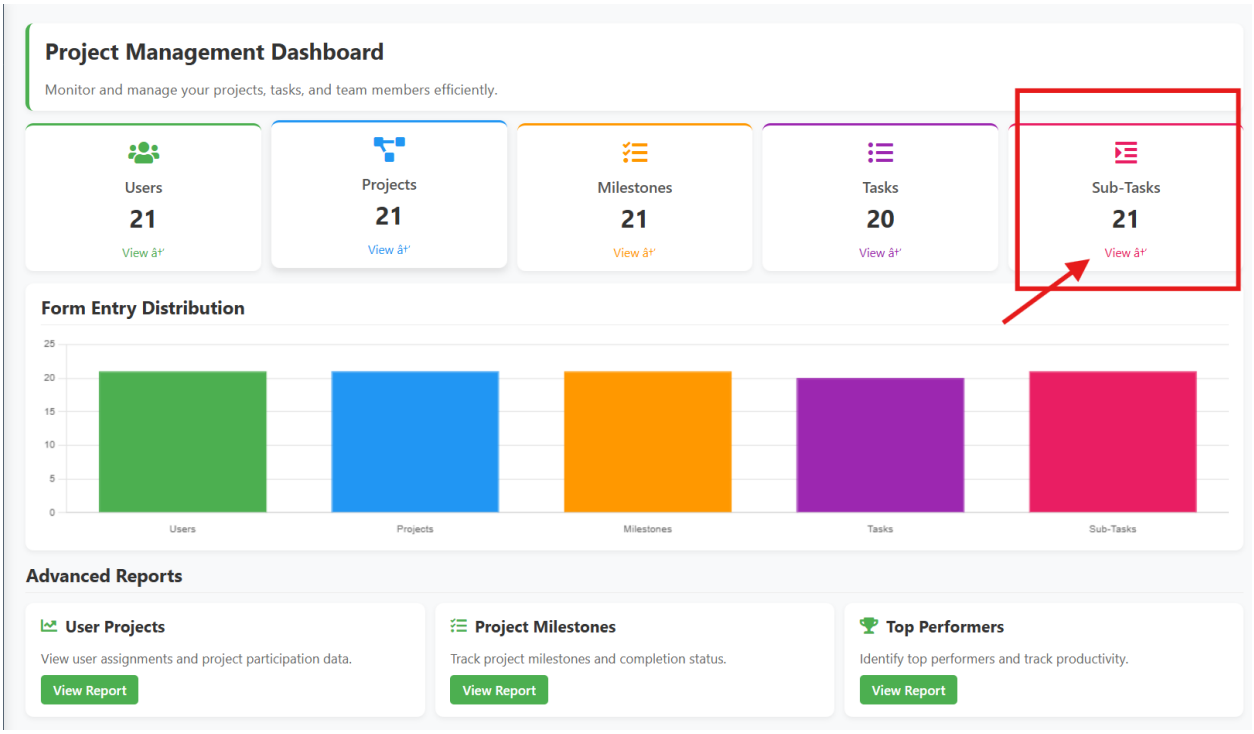


Figure 73: Dashboard to Subtask

Click on add Sub Task to add new Subtask

Figure 74: Add new Subtask

Click on the Edit button to edit Subtask

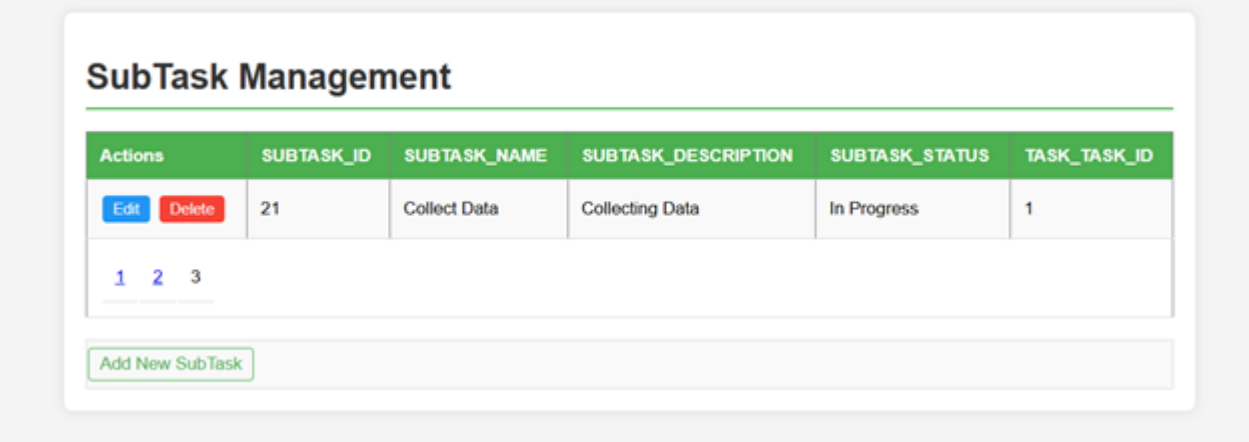


Figure 75: Edit Subtask

Click on update to update it!

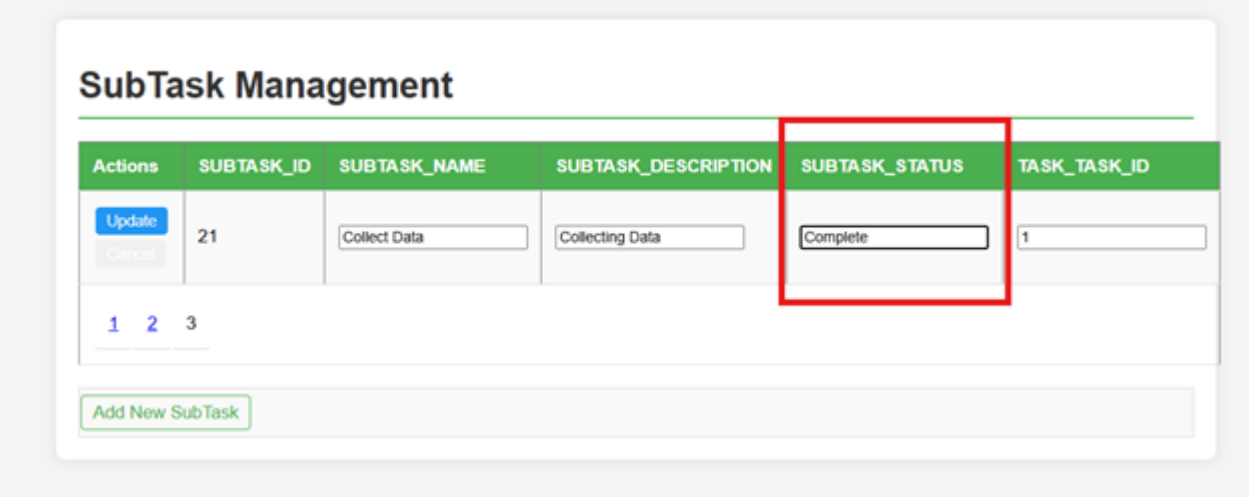


Figure 76: Edit Subtask

Task Edited Successfully!

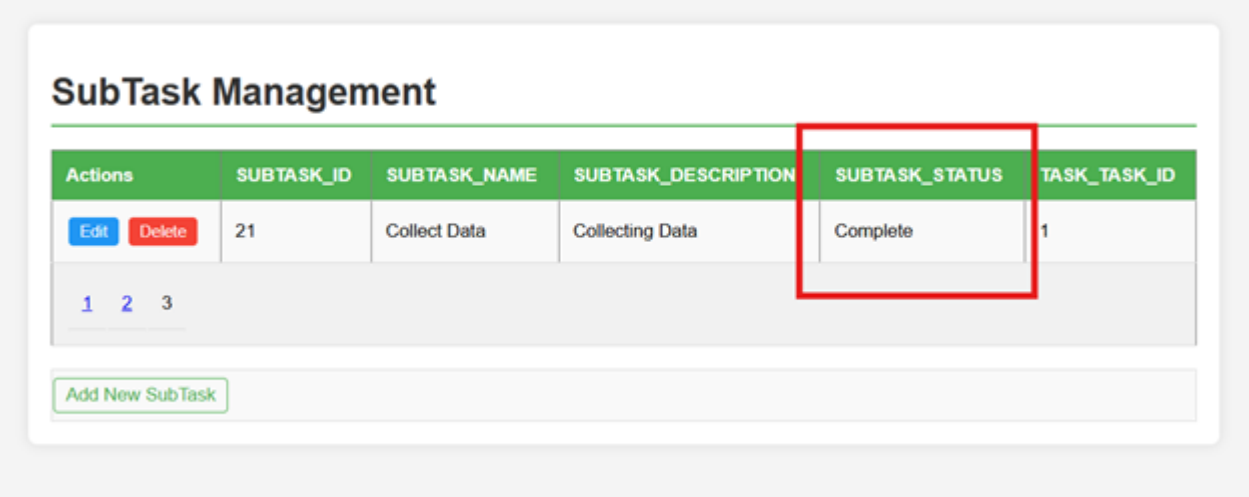


Figure 77: Subtask edited Successfully!

Now click on the Delete Button then press ok to delete the Subtask

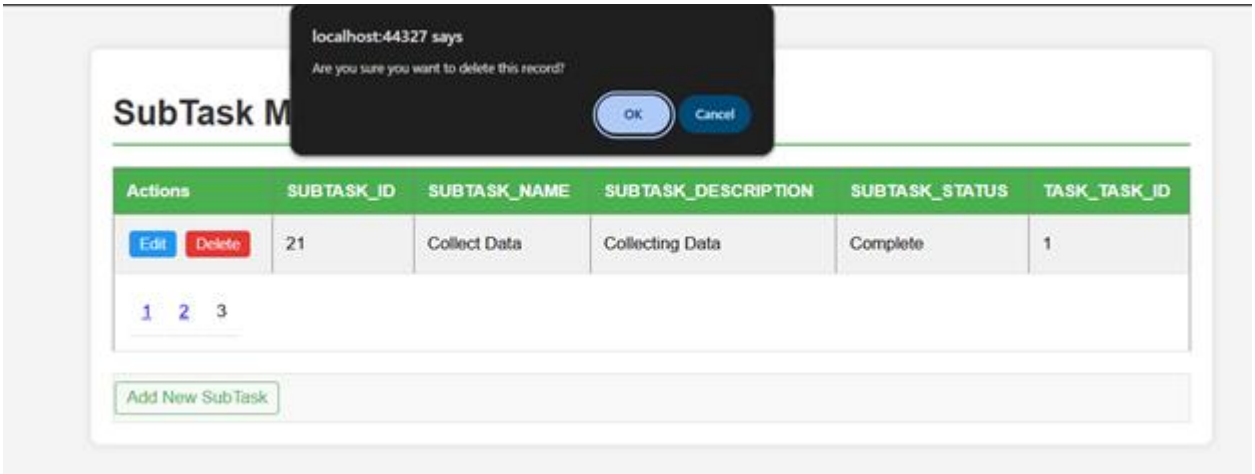


Figure 78: Subtask Deleted Successfully!

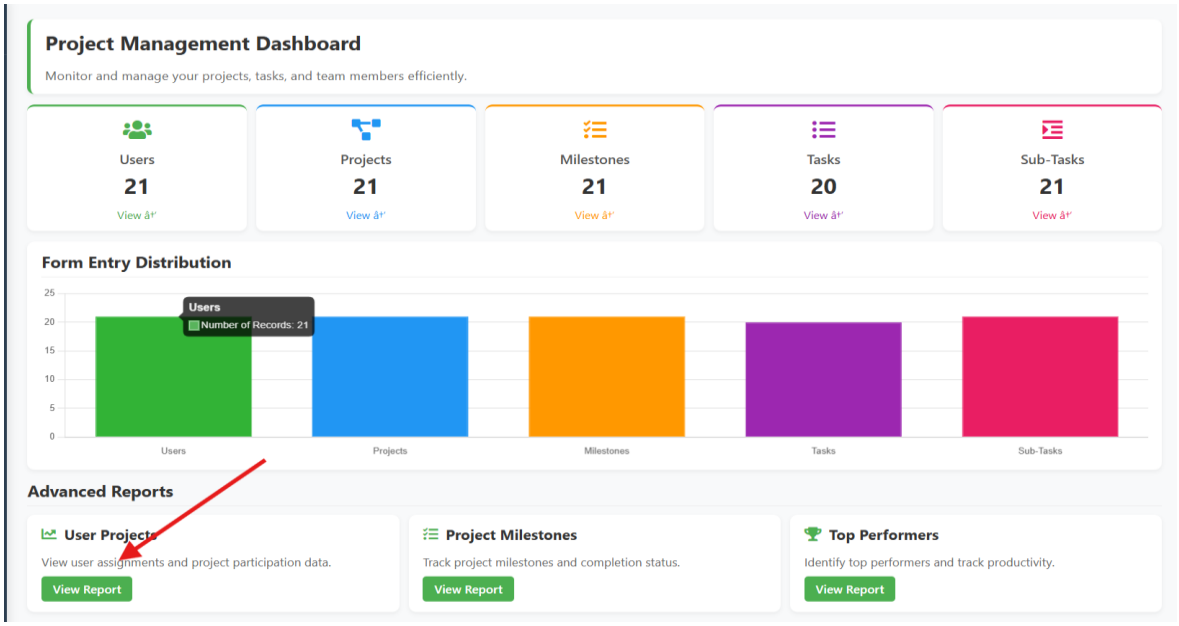


Figure 79: Dashboard User Project

Now Click on any of the User from the Project to show their Projects

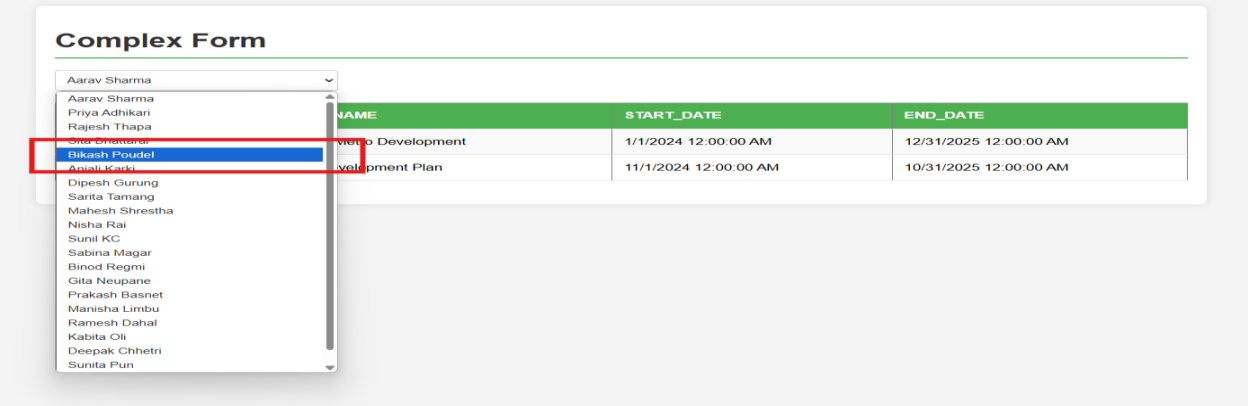


Figure 80: Select User from the dropdown

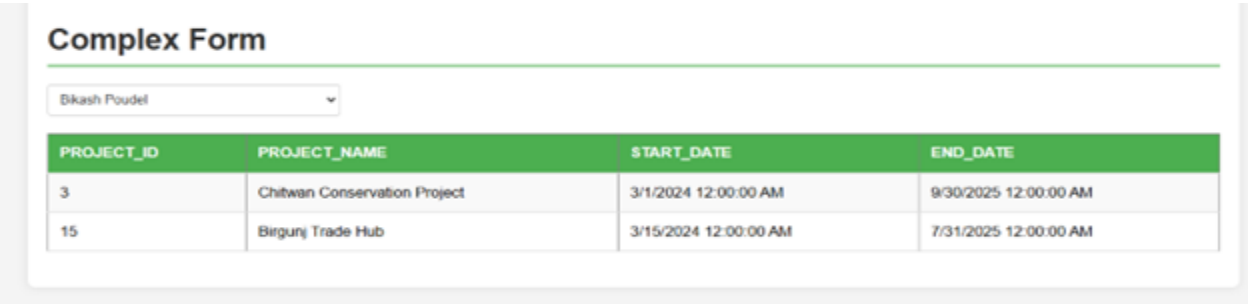


Figure 81: Project of the specific User

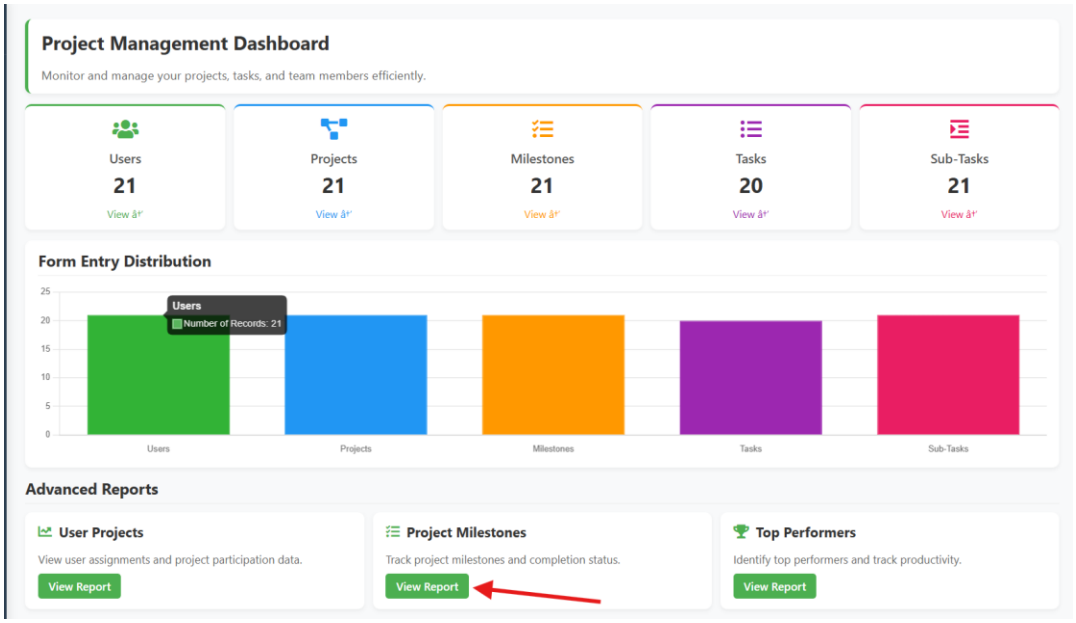


Figure 82: Dashboard to Project Milestone

Select the project form the dropdown and list of projects will be displayed

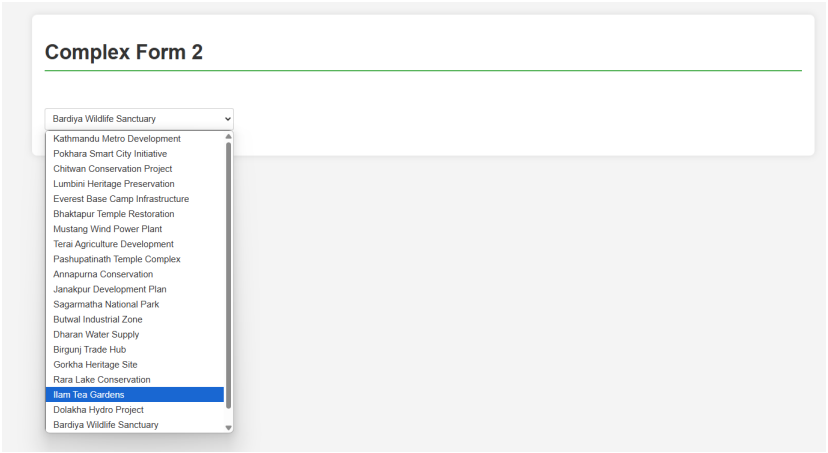


Figure 83: Project Milestone Dropdown

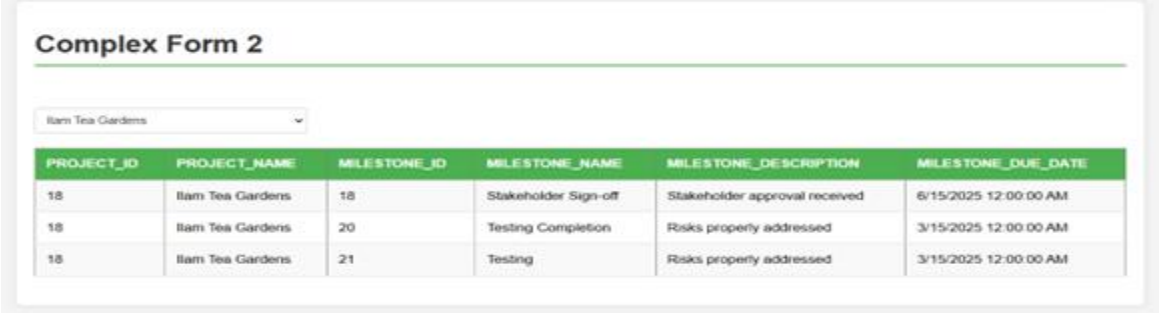


Figure 84: Project milestones

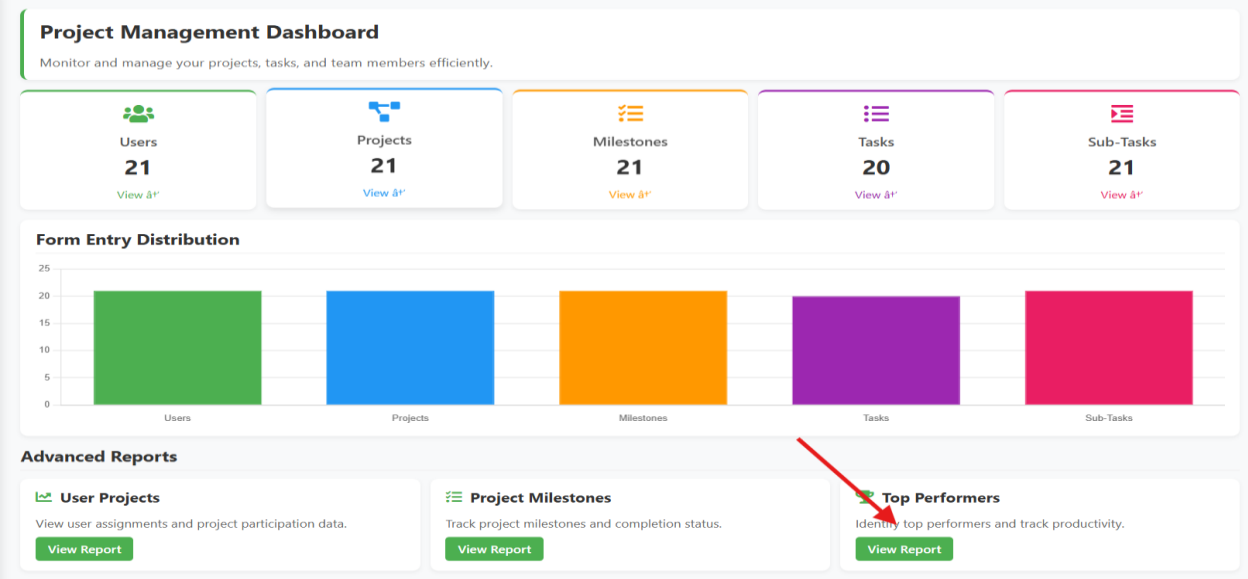


Figure 85: Dashboard Top performer

Select the Project from the dropdown to see the top performer of the project

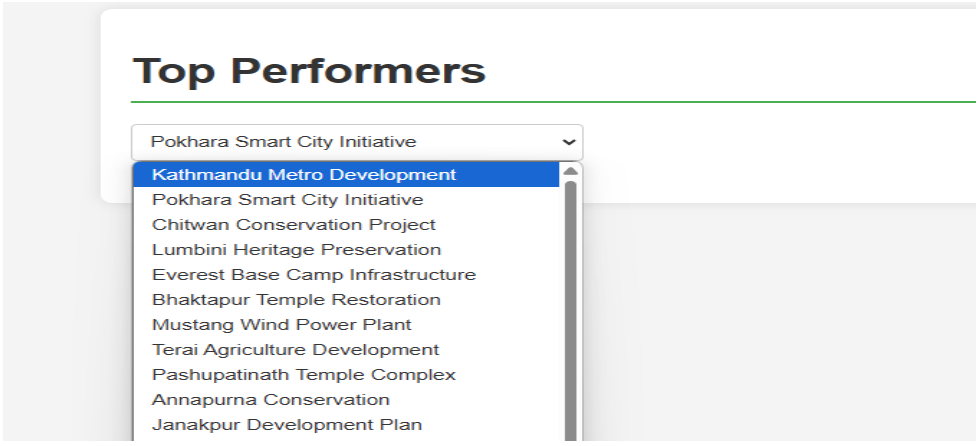


Figure 86: Project Dropdown

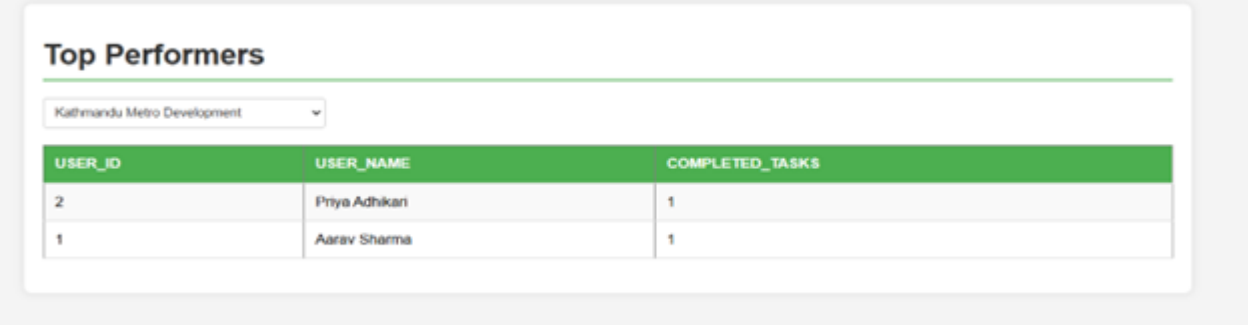


Figure 87: Projects Top performers

11 Testing

11.1 Basic Web Forms

11.1.1 User Web Form

Test no.	1
Objective	CURD Operation on User Form
Action	i) Creating a new User ➢ Click on “Add New User” ➢ Fill in the values ○ USER_ID = 22 ○ USER_NAME = Divya Shrestha ○ USER_EMAIL = divya.shrestha2004@gmail.com ○ PHONE_NUMBER = 9841930222 ➢ Click on insert ii) Reading new User ➢ Refresh the page iii) Updating User ➢ Click on the “edit” button ➢ Change PHONE_NUMBER = 977-9841930222 ➢ Click on Enter button of the keyboard iv) Deleting the user ➢ Click on Delete “button” of the specific User ➢ A pop up will appear, click on “Ok”
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 10: Test Case 1: User Webform

Add new User

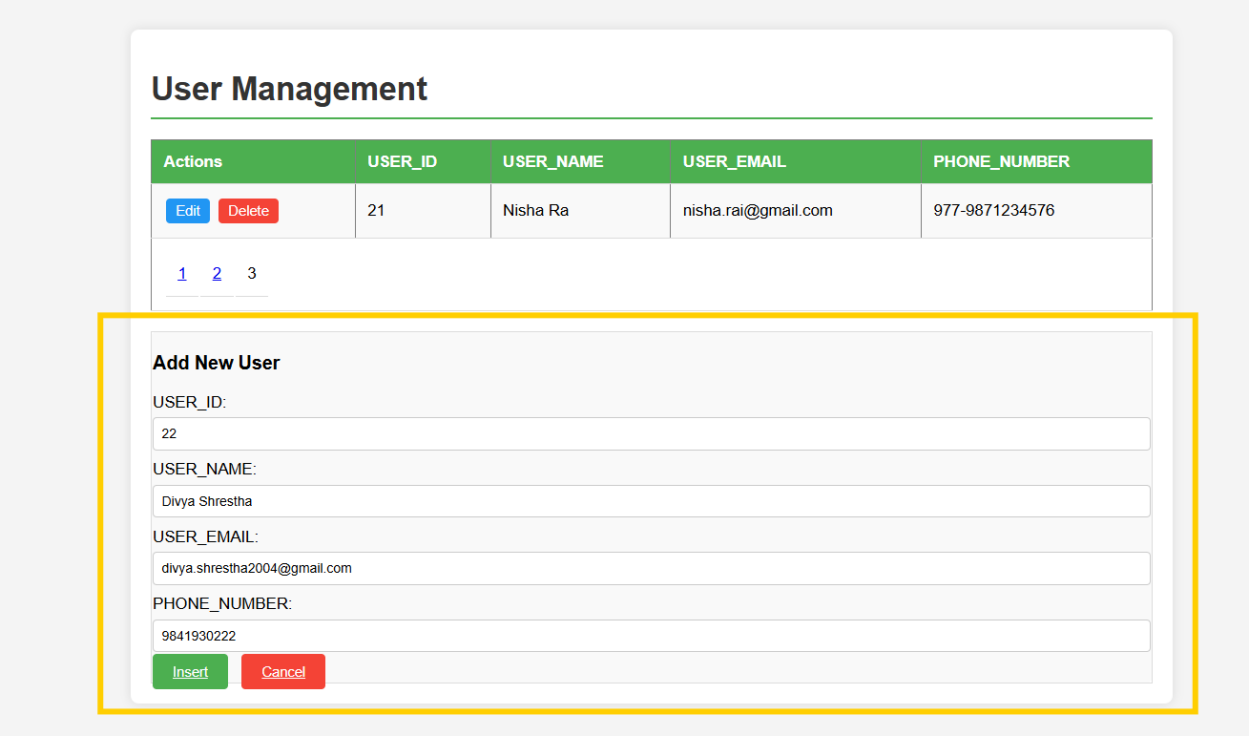


Figure 88: Add User Test

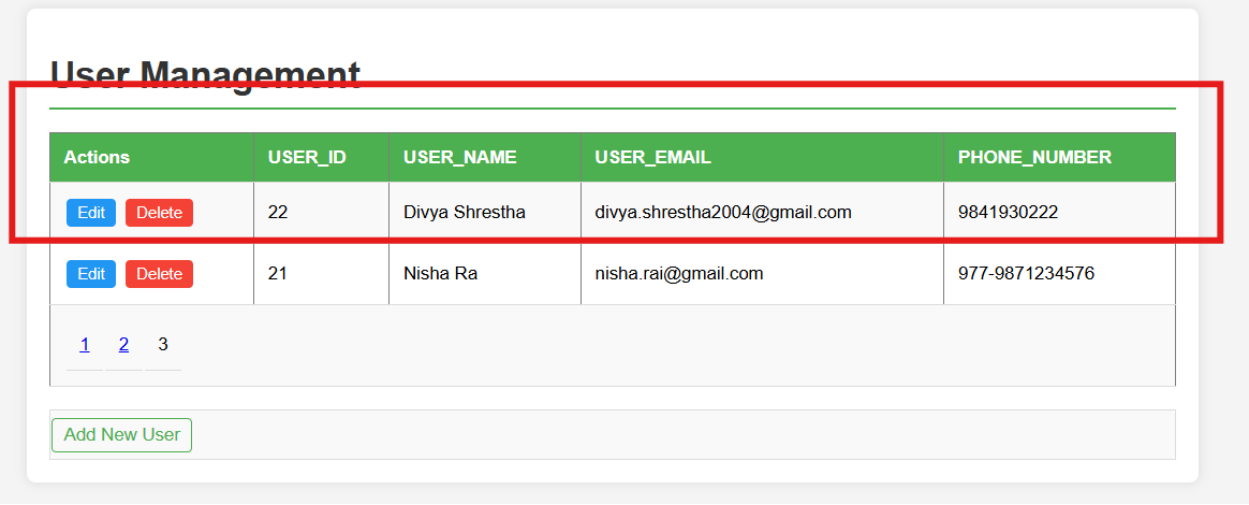


Figure 89: User added

Edit User

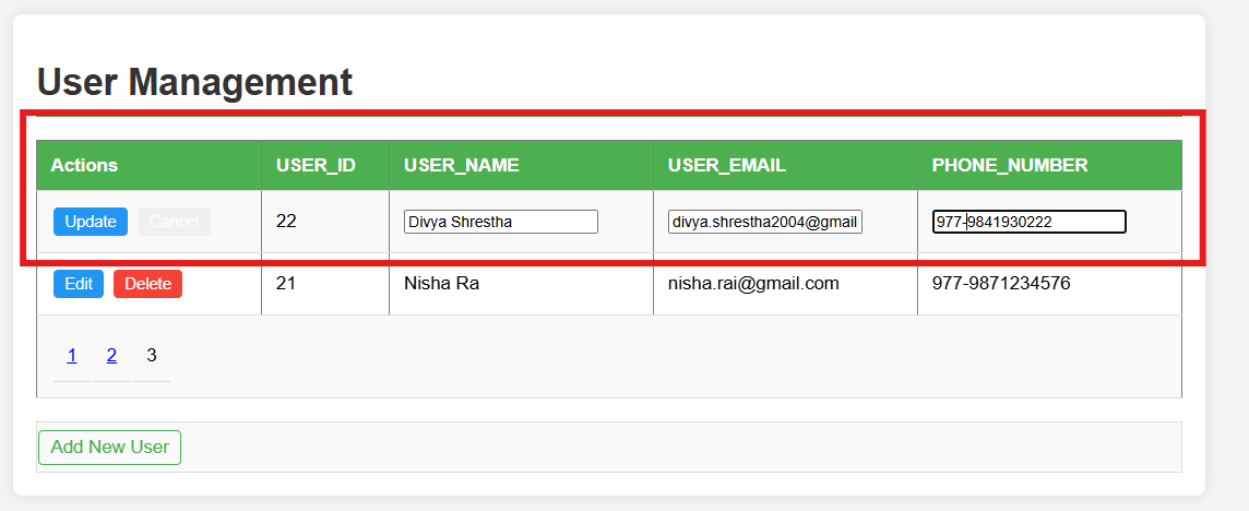


Figure 90: Edit User

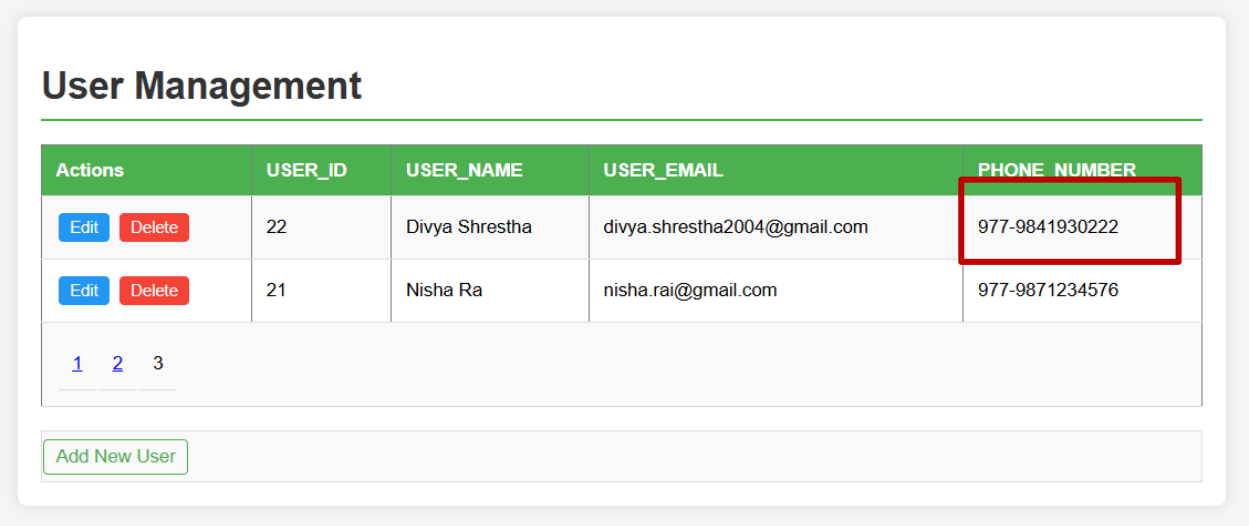


Figure 91: User Edited

Delete User

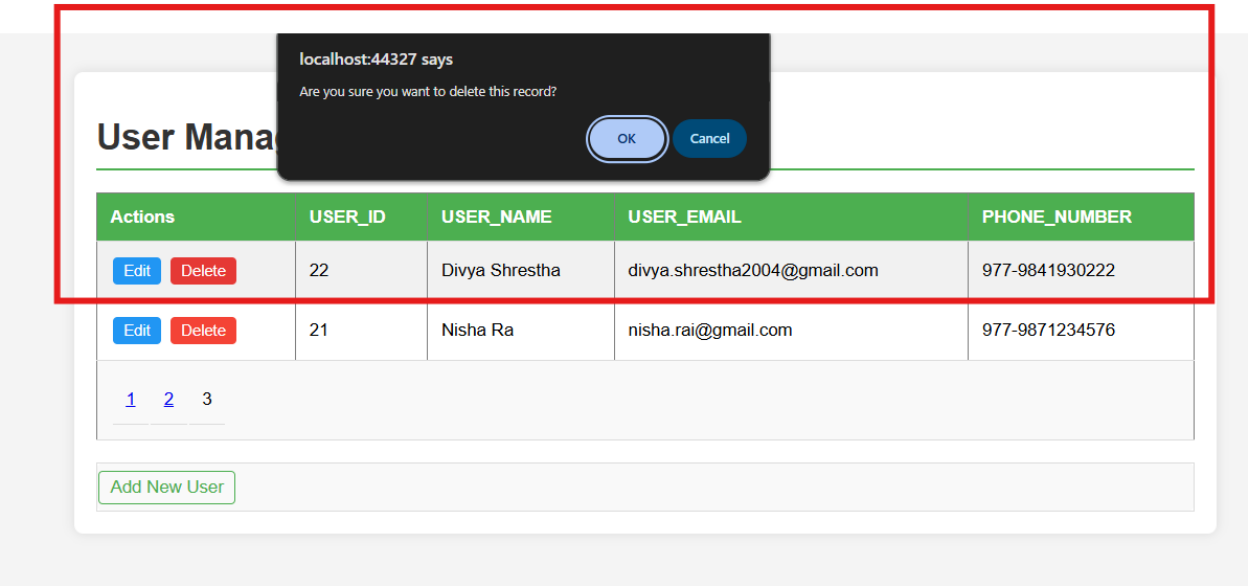


Figure 92: Delete User

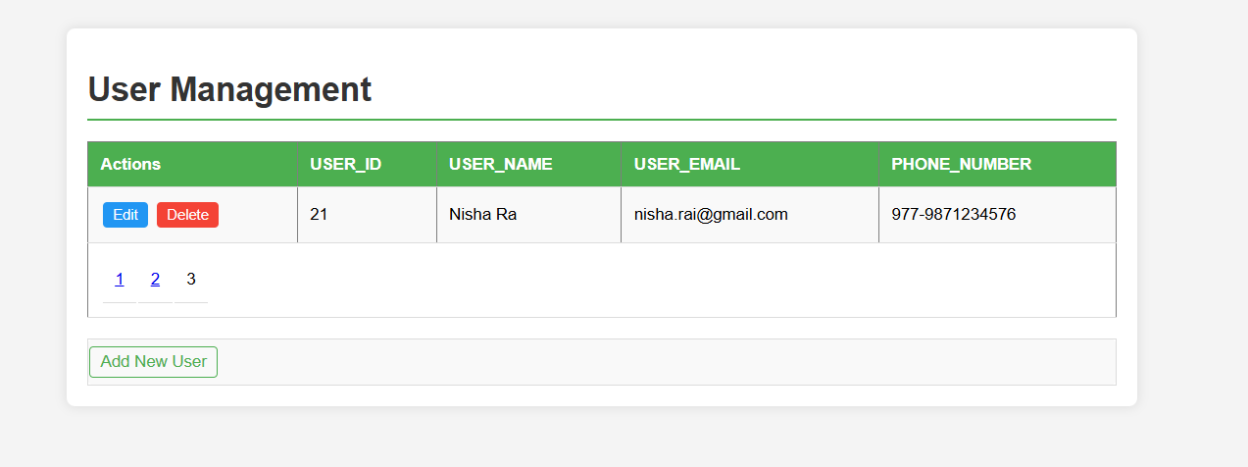


Figure 93: User Deleted

11.1.2 Project Web Form

Test no.	2
Objective	CURD Operation on Project Form
Action	v) Creating a new User ➢ Click on “Add New Project” ➢ Fill in the values o PROJECT_ID = 22 o PROJECT_NAME = Final Sem o START_DATE = 2025/03/05 o START_DATE = 2025/06/01 ➢ Click on insert vi) Reading new Project Page ➢ Refresh the page vii) Updating Project ➢ Click on the “edit” button ➢ Change PROJECT_NAME = Final Semester ➢ Click on Enter button of the keyboard viii) Deleting the Project ➢ Click on Delete “button” of the specific Project ➢ A pop up will appear, click on “Ok”
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 11: Test Case 2: Project Webform

Add new Project

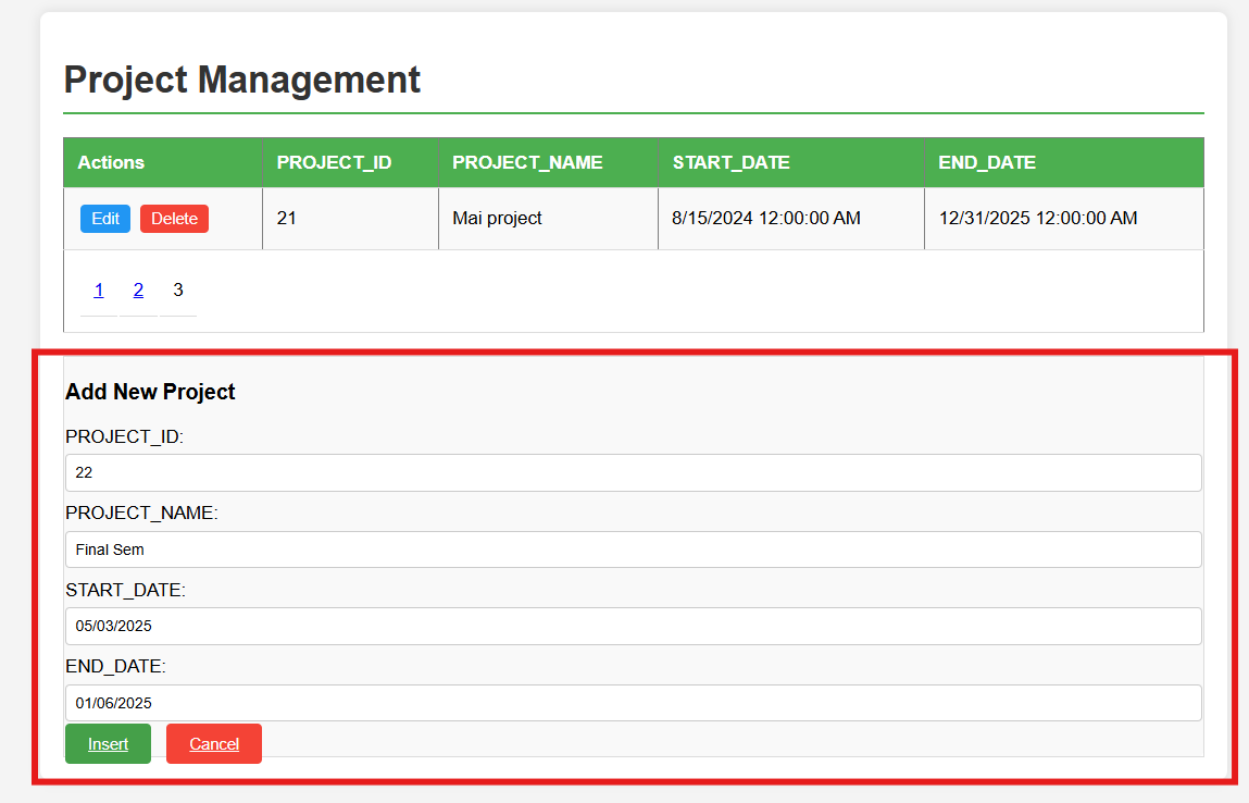


Figure 94: Add new Project

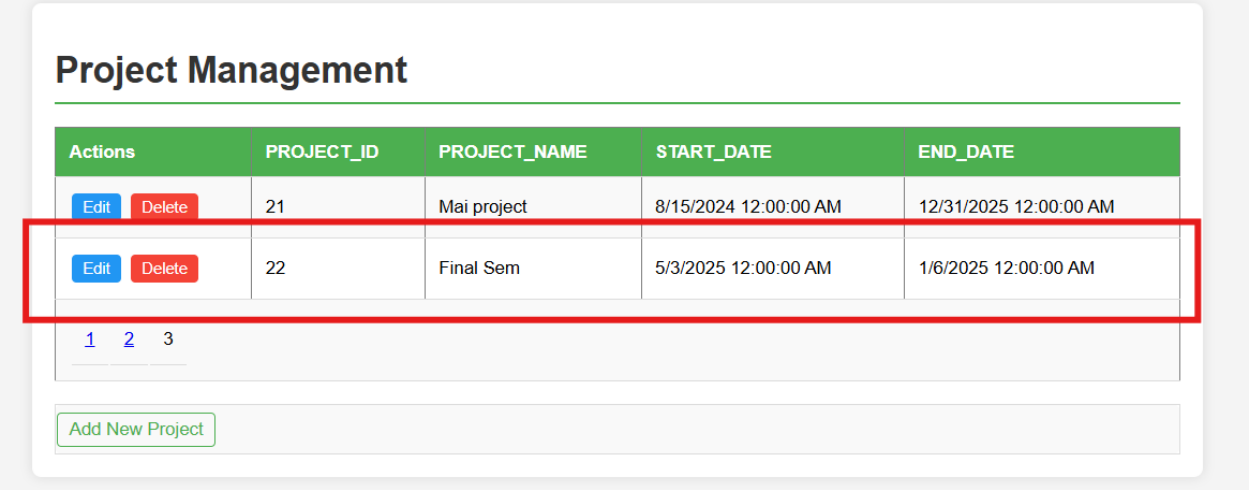


Figure 95: Project added Successfully

Edit Project

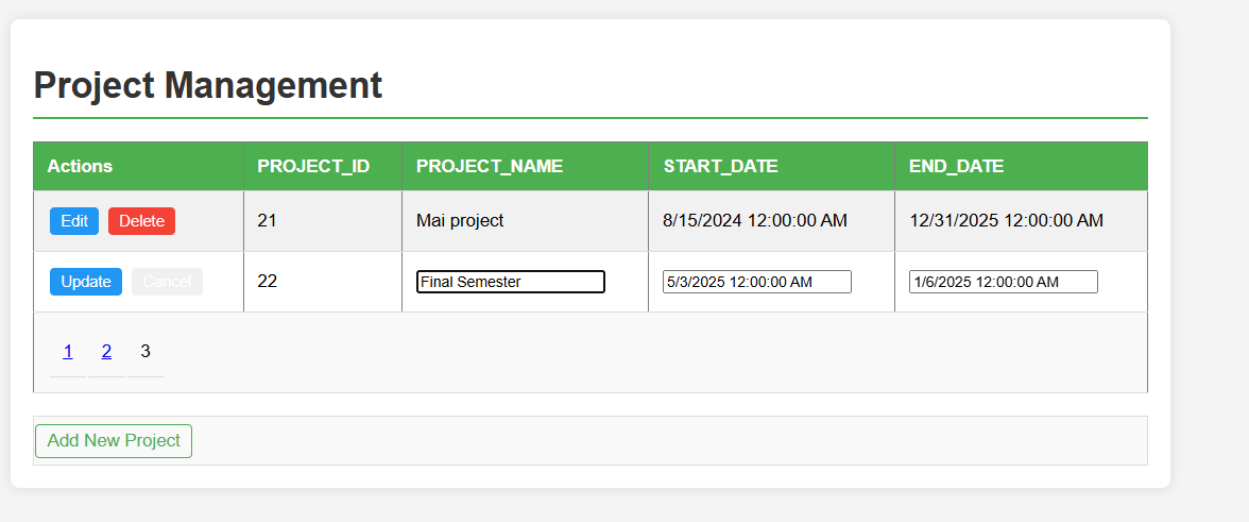


Figure 96: Edit Project

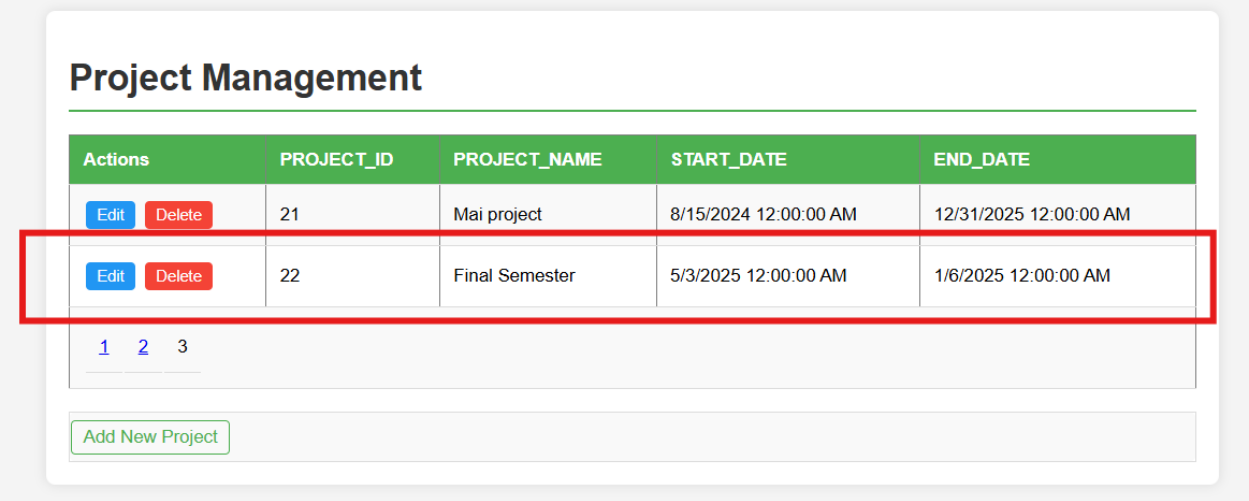


Figure 97: Project Edited Successfully!

Delete Project

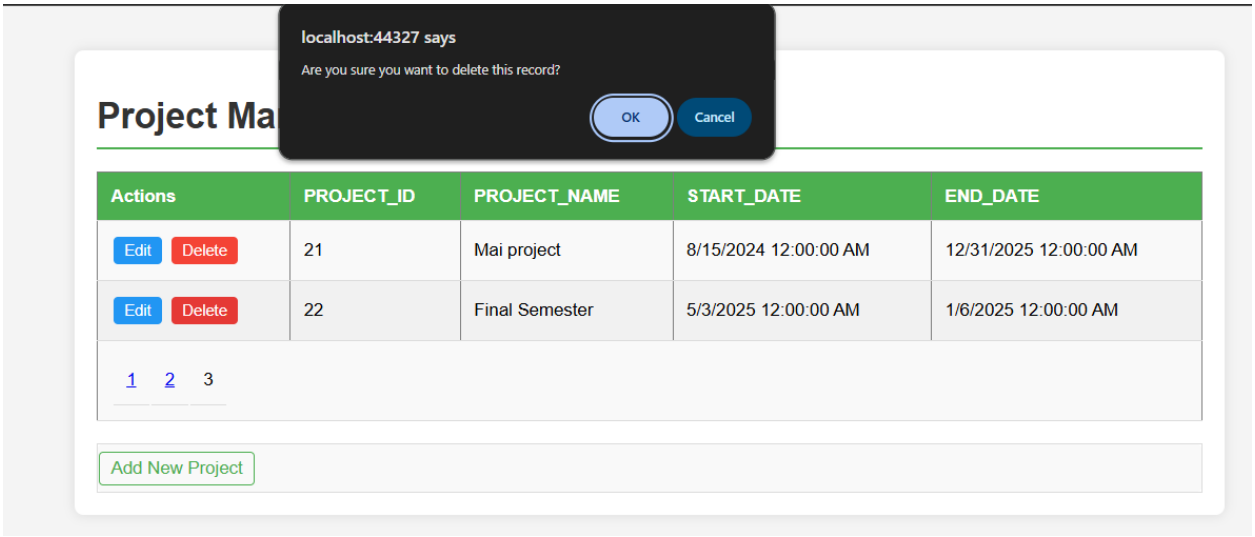


Figure 98: Delete Project

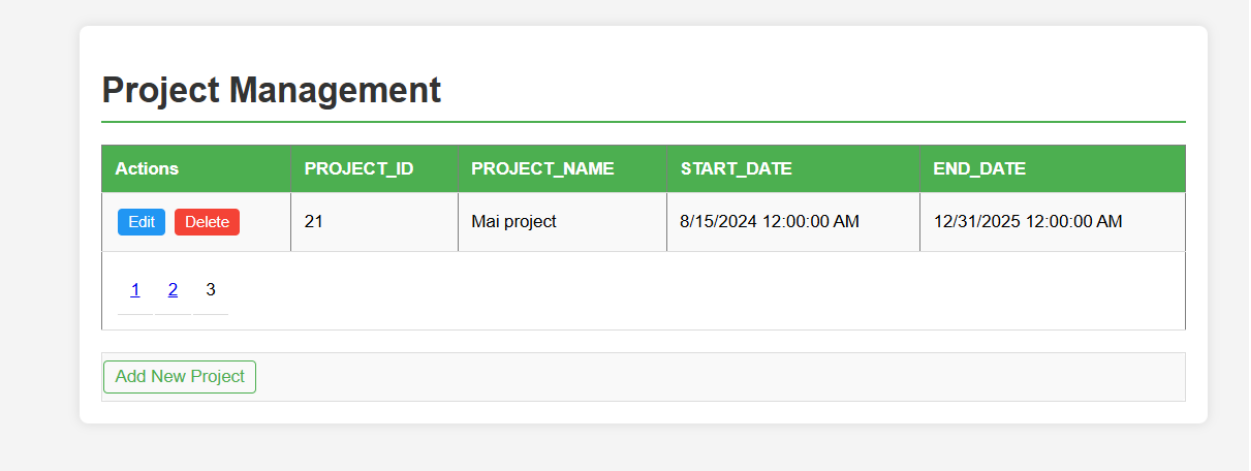


Figure 99: Project Deleted Successfully!

11.1.3 Milestone Webform

Test no.	3
Objective	CURD Operation on Milestone Form
Action	ix) Creating a new Milestone ➢ Click on “Add New Milestone” ➢ Fill in the values o MILESTONE_ID = 22 o MILESTONE_NAME = Demonstration o MILESTONE_DESCRIPTION = Demonstration of project to Investors o MILESTONE_DUE_DATE = 2025/03/15 o PROJECT_PROJECT_ID = Sagarmatha National Park ➢ Click on insert x) Reading new Project Page ➢ Refresh the page xi) Updating Milestone ➢ Click on the “edit” button ➢ Change MILESTONE_DUE_DATE = 2025/06/01 ➢ Click on Enter button of the keyboard xii) Deleting the Milestone ➢ Click on Delete “button” of the specific Milestone ➢ A pop up will appear, click on “Ok”
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 12: Milestone table

Add Milestone

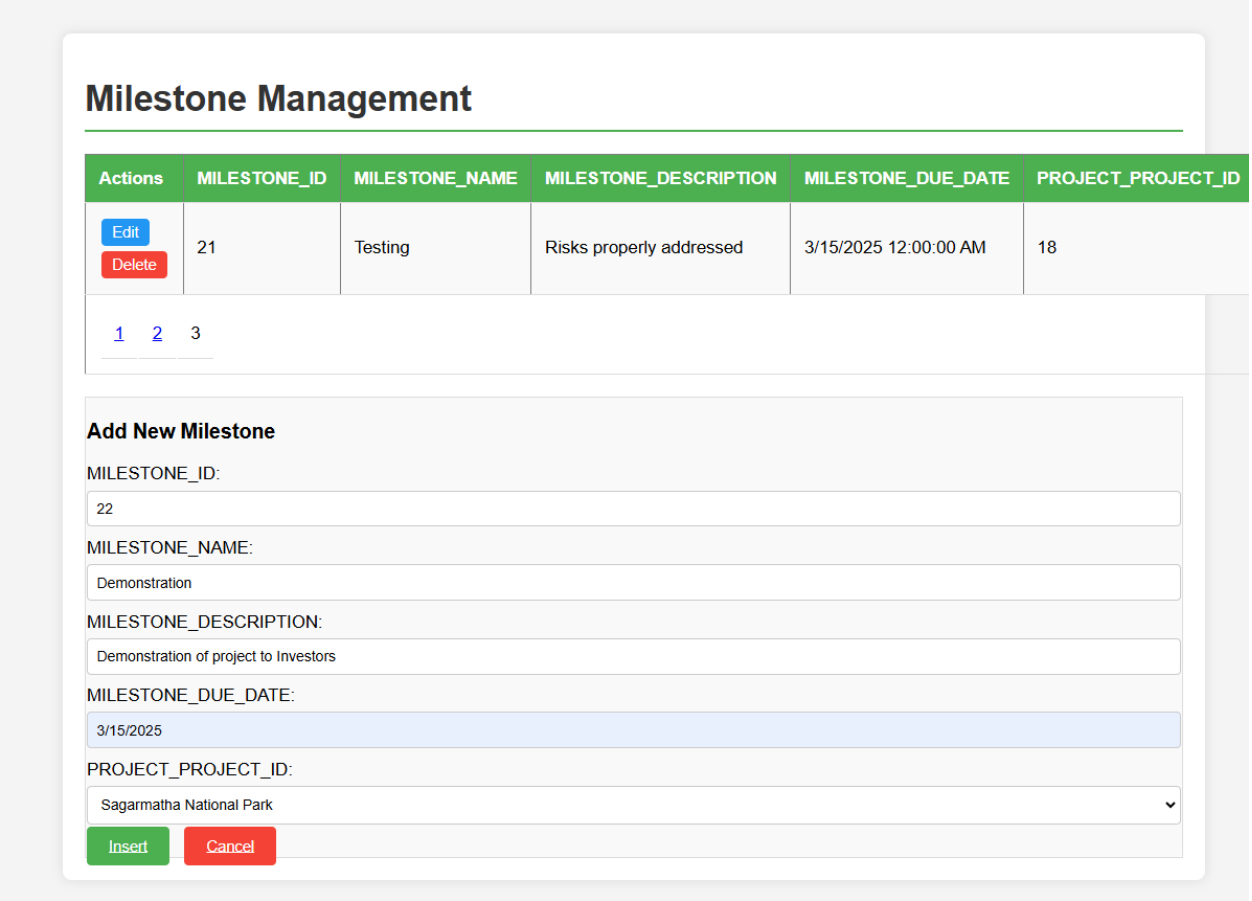


Figure 100: Add new milestone

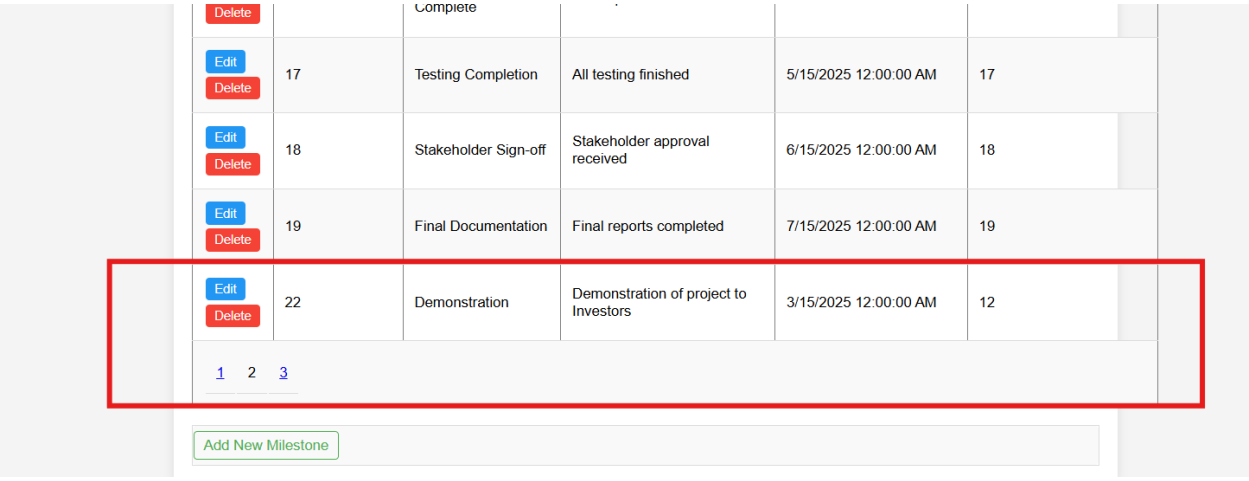


Figure 101: Milestone added successfully

Edit Milestone

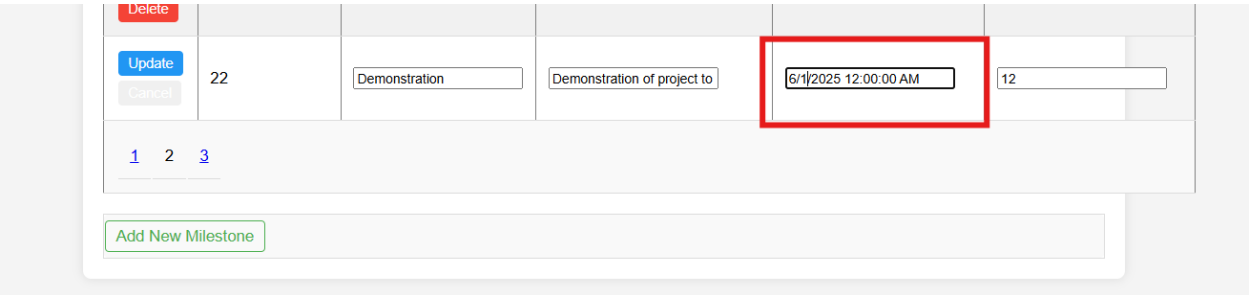


Figure 102: Editing Milestone

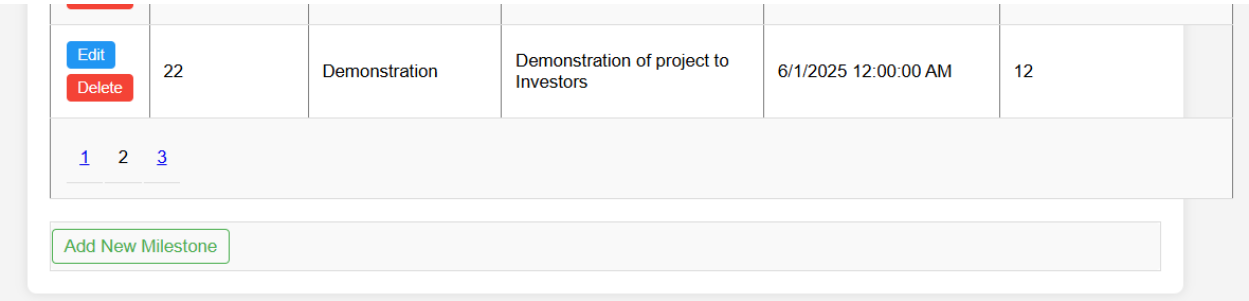


Figure 103: Edited successfully!

Delete Milestone

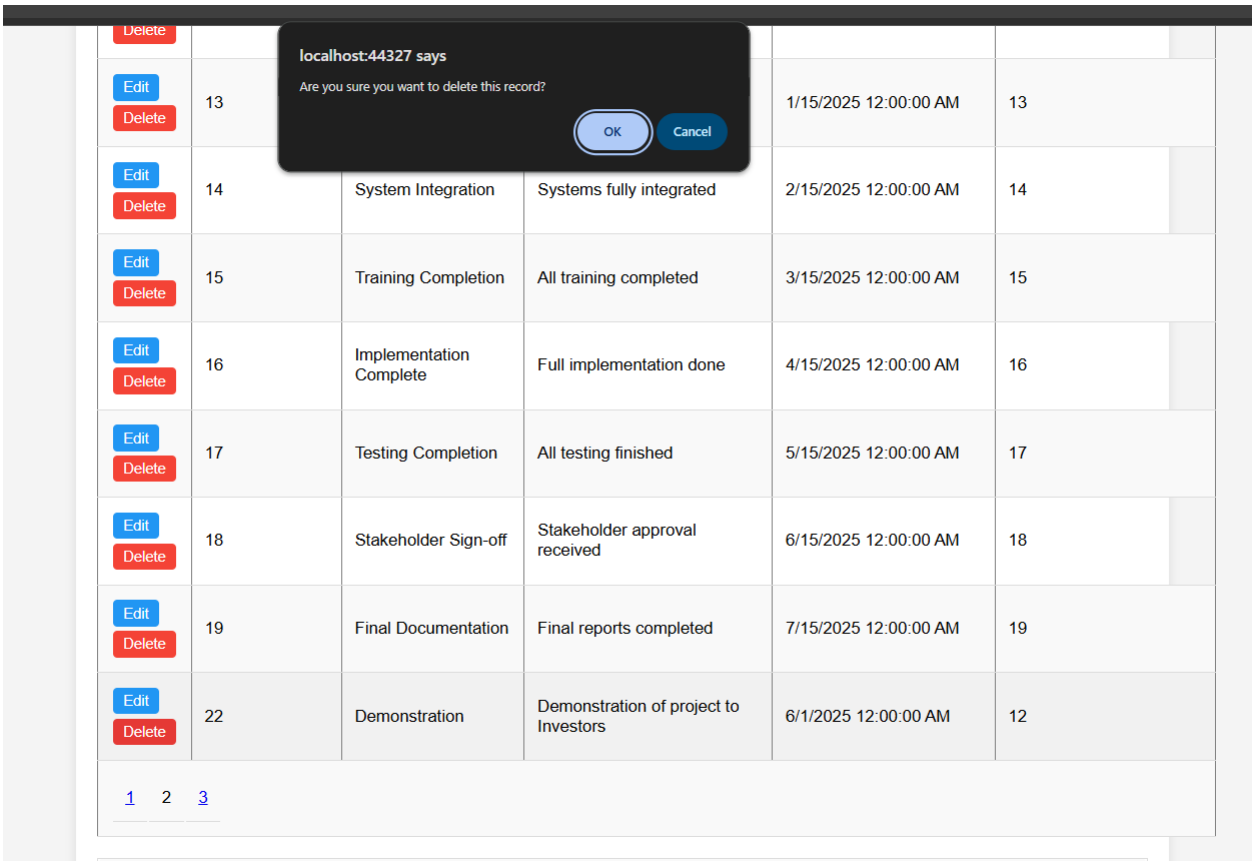


Figure 104: Delete User

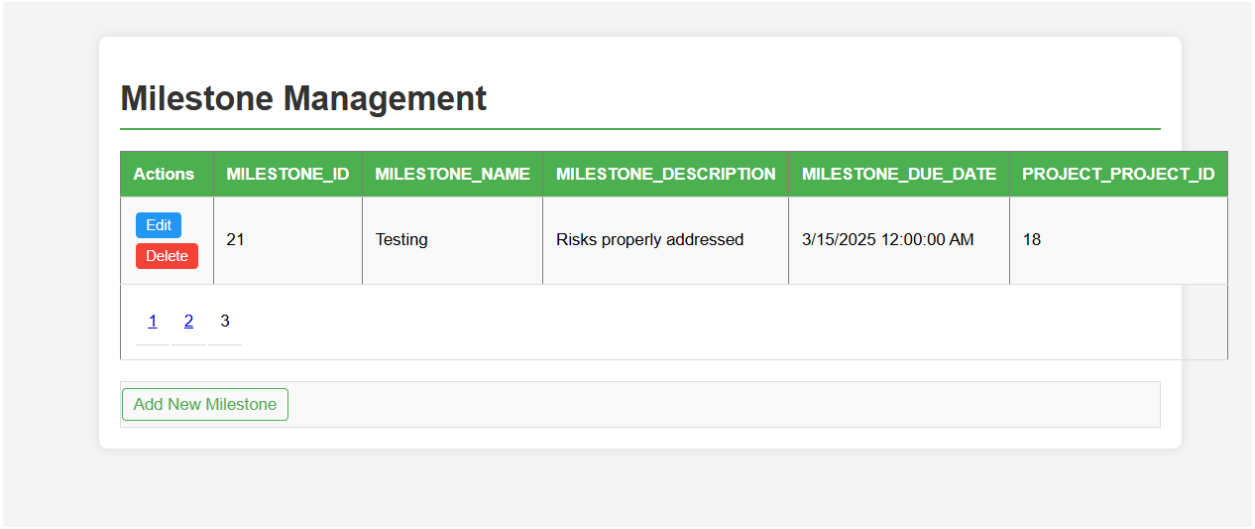


Figure 105: User Deleted Successfully!

11.1.4 Task Webform

Test no.	4
Objective	CURD Operation on Task Form
Action	xiii) Creating a new Task ➢ Click on “Add New Milestone” ➢ Fill in the values o TASK_ID = 22 o TASK_NAME = Demonstration o TASK_DESCRIPTION = Generating report for final year project! o TASK_STATUS = Completed o TASK_START_DATE = 2025/03/16 ➢ Click on insert xiv) Reading new Task Page ➢ Refresh the page xv) Updating Task ➢ Click on the “edit” button ➢ Change TASK_STATUS = pending ➢ Click on Enter button of the keyboard xvi) Deleting the Task ➢ Click on Delete “button” of the specific Task ➢ A pop up will appear, click on “Ok”
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 13: Test 4: Task Webform

ADD task

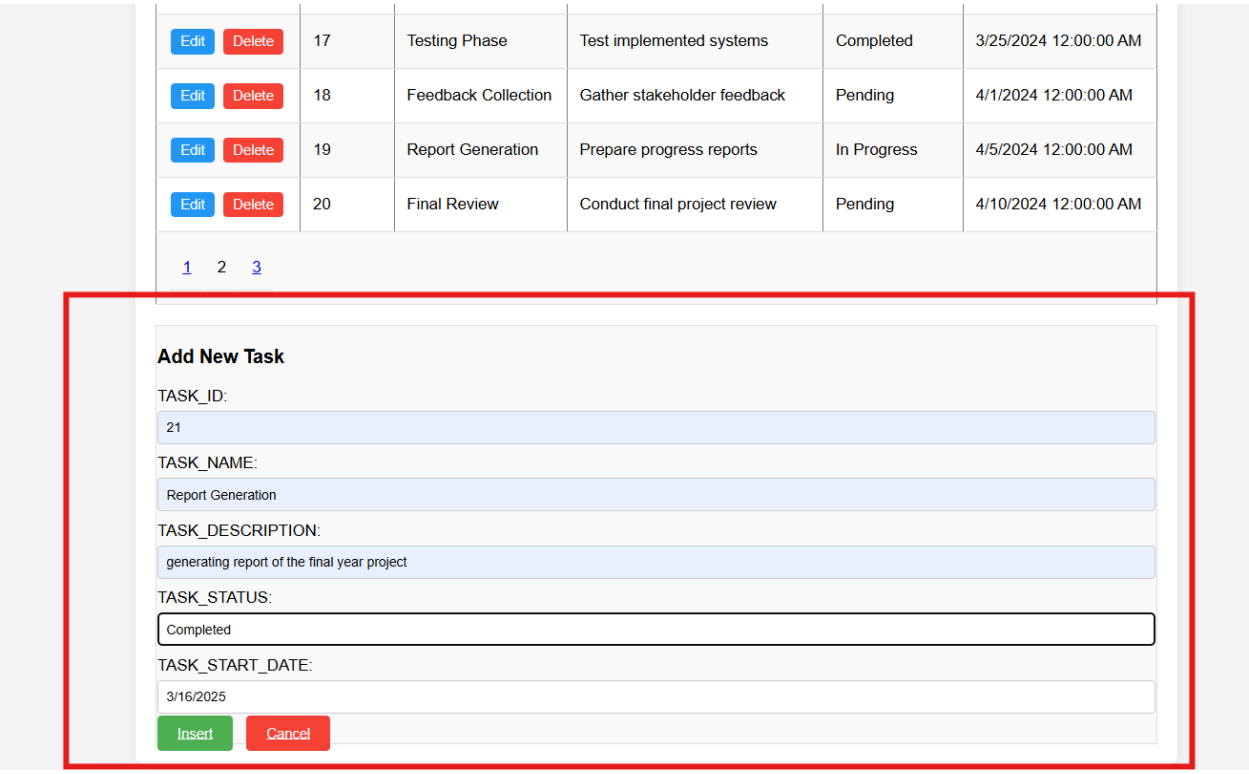


Figure 106: Add Task

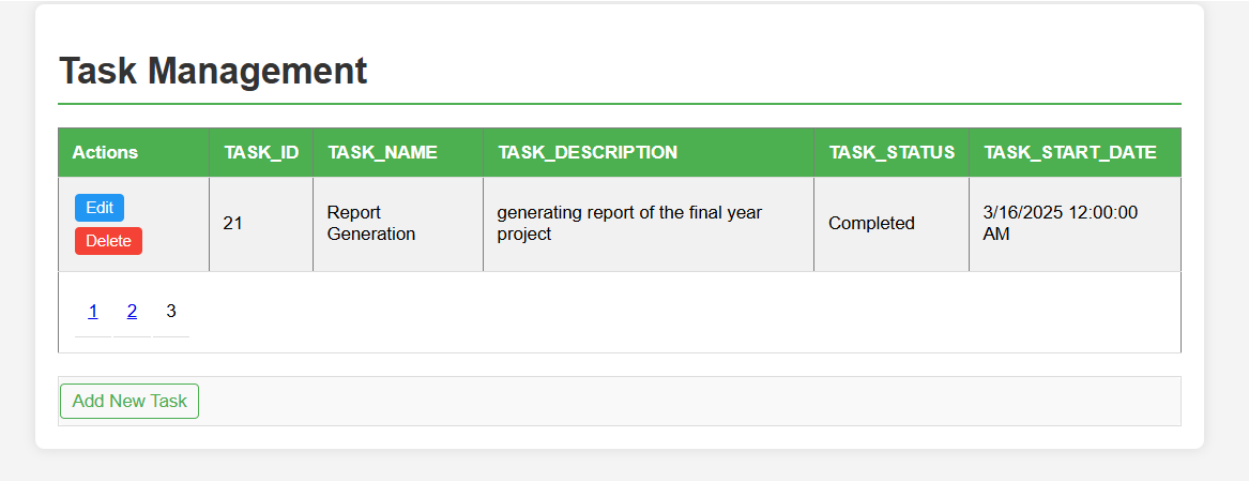


Figure 107: Task added successfully!

Edit Task

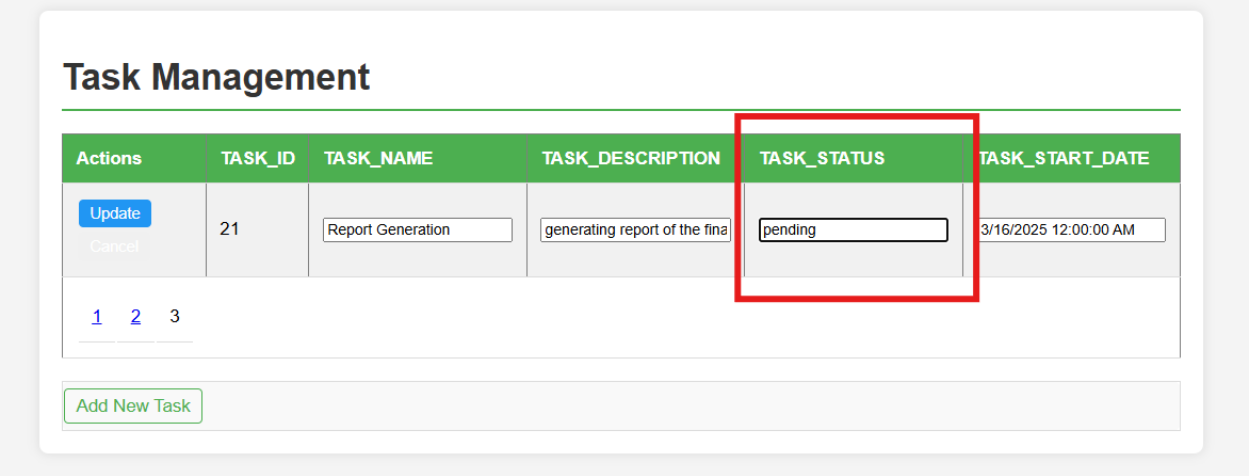


Figure 108: Edit Task

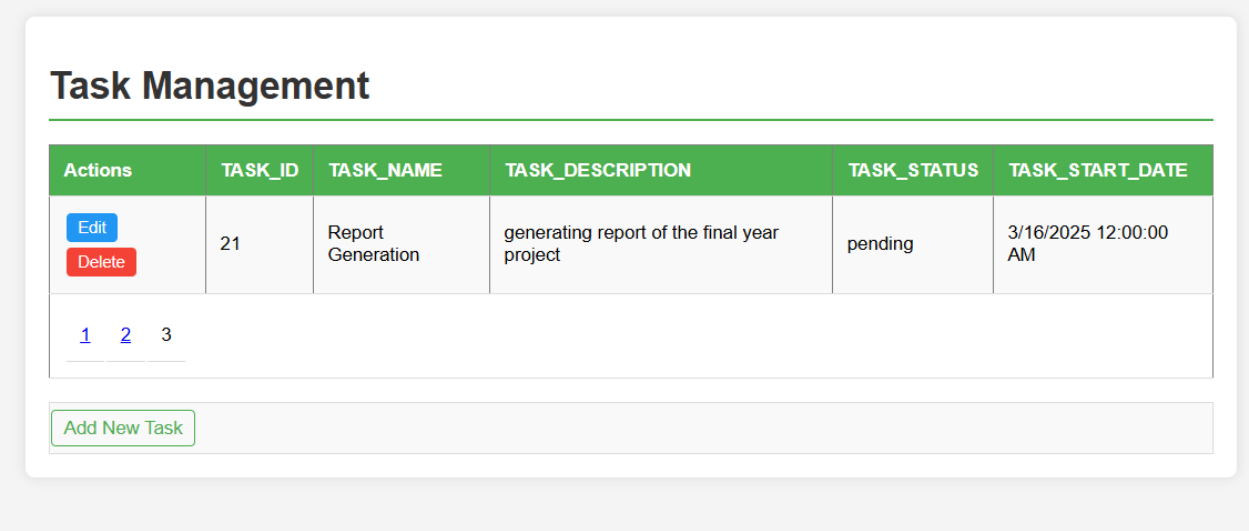


Figure 109: Task edited successfully!

Delete Task

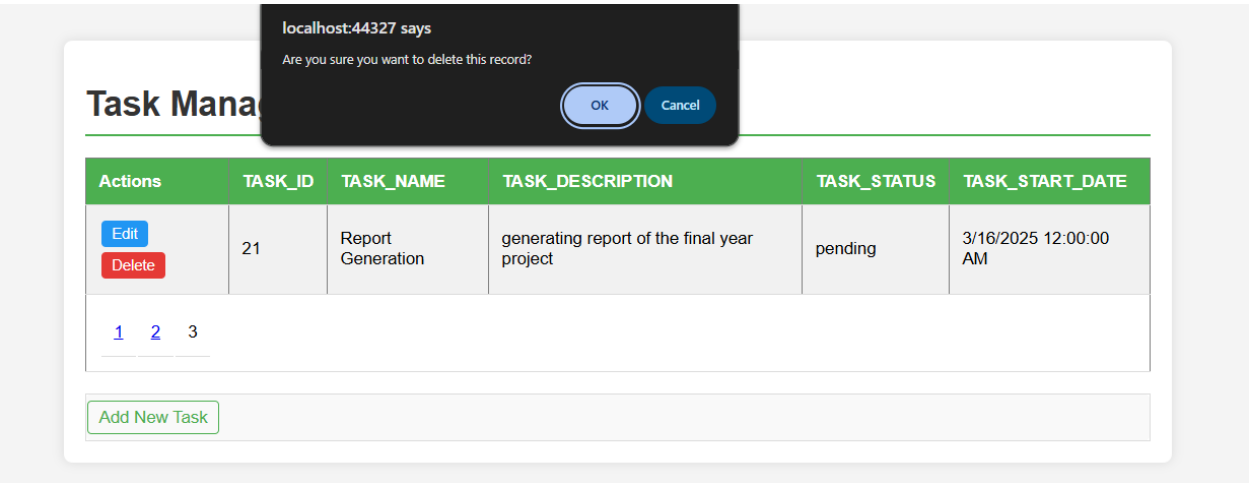


Figure 110: Delete Task

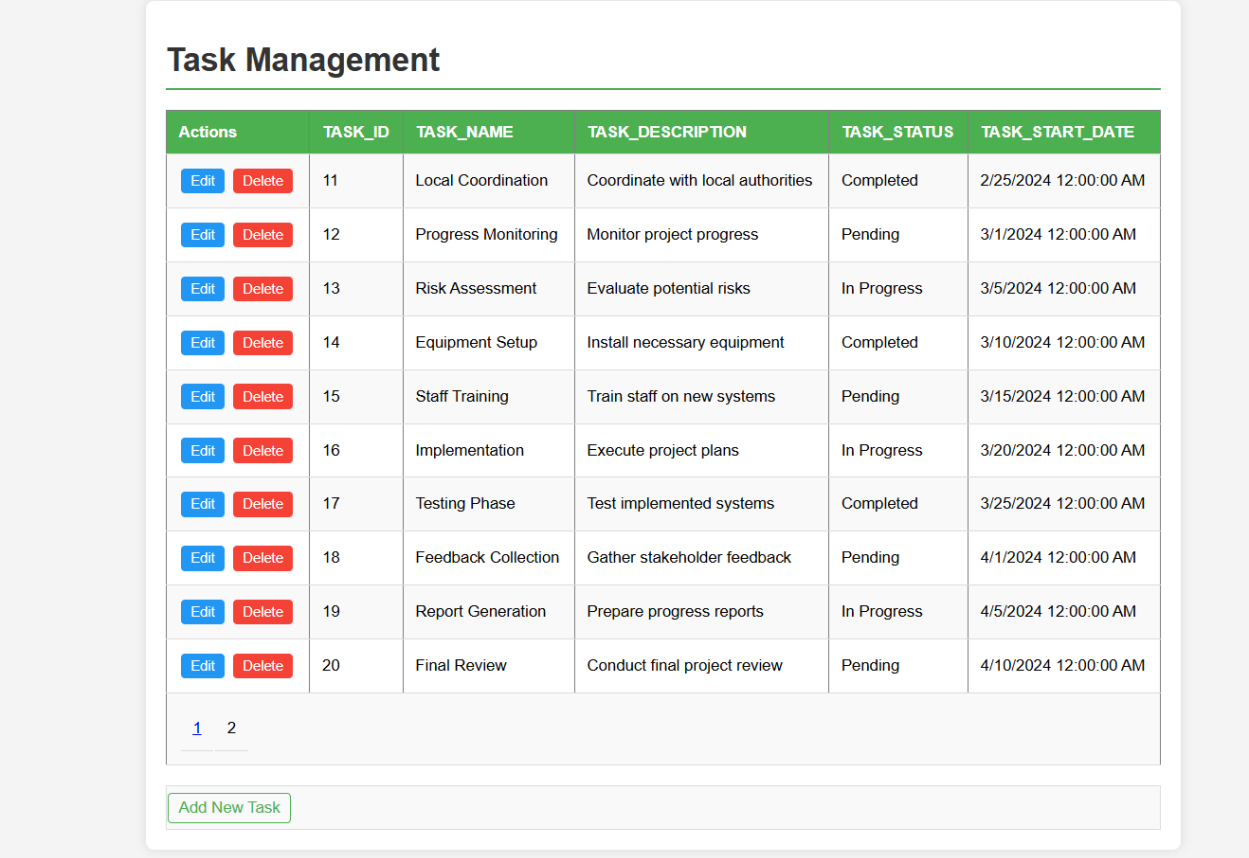


Figure 111: Task deleted Successfully!

11.1.5 Sub Task Webform

Test no.	4
Objective	CURD Operation on Sub Task Form
Action	xvii) Creating a new Sub Task ➢ Click on “Add New Sub Task” ➢ Fill in the values o SUBTASK_ID = 21 o SUBTASK_NAME = Collect Data o TASK_DESCRIPTION = Collecting data o TASK_STATUS = In progress o TASK_TASK_ID = Site Survey ➢ Click on insert xviii) Reading new Sub Task Page ➢ Refresh the page xix) Updating Subtask ➢ Click on the “edit” button ➢ Change SUBTASK_STATUS = Completed ➢ Click on Enter button of the keyboard xx) Deleting the Subtask ➢ Click on Delete “button” of the specific Subtask ➢ A pop up will appear, click on “Ok”
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 14: Test Case 4: Subtask Webform

Add Subtask

Table 15: Adding Subtask

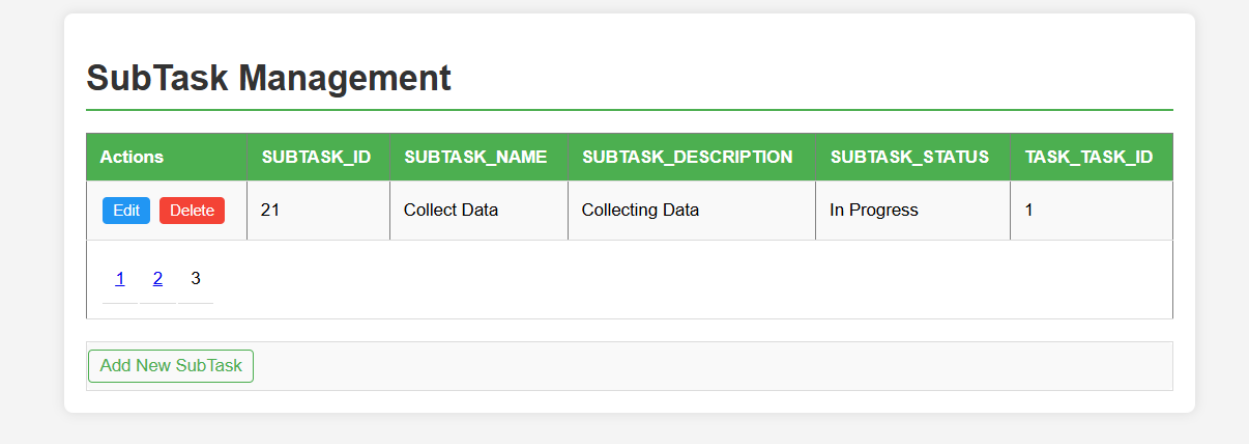


Table 16: Subtask added successfully!

Edit Subtask

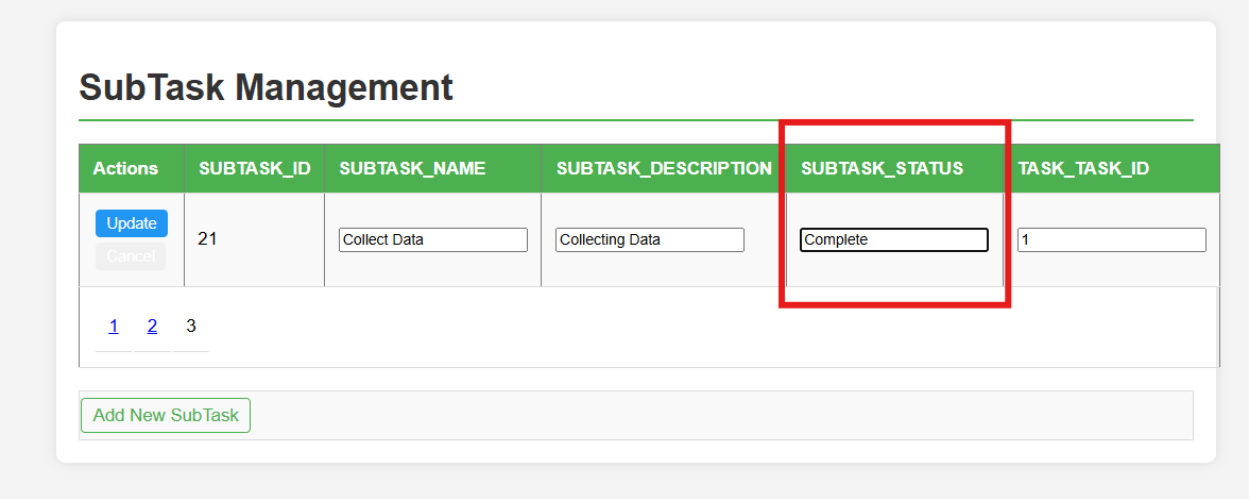


Table 17: Edit Subtask

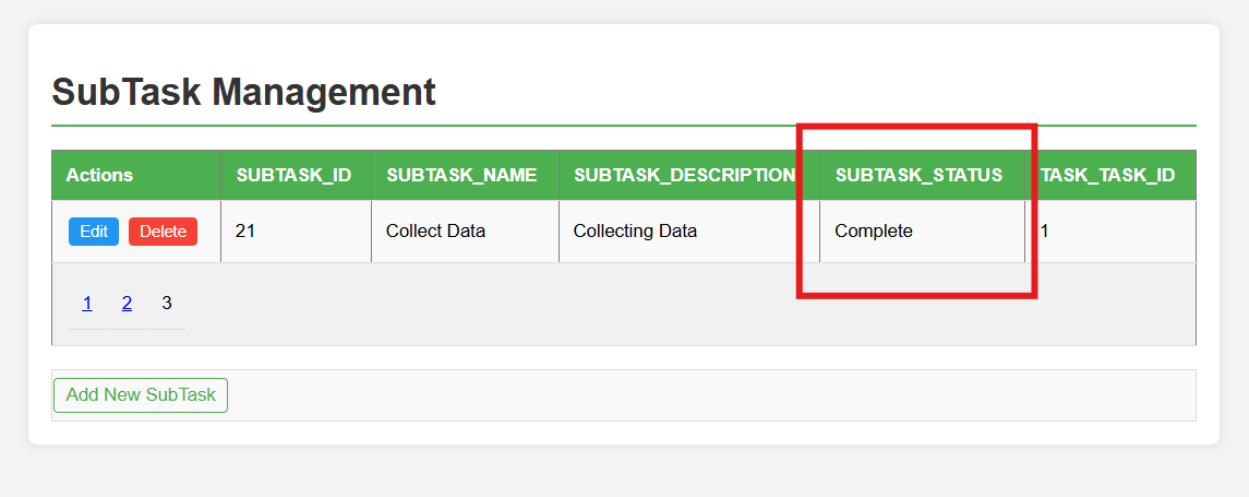


Table 18: Subtask Updated

Delete Subtask

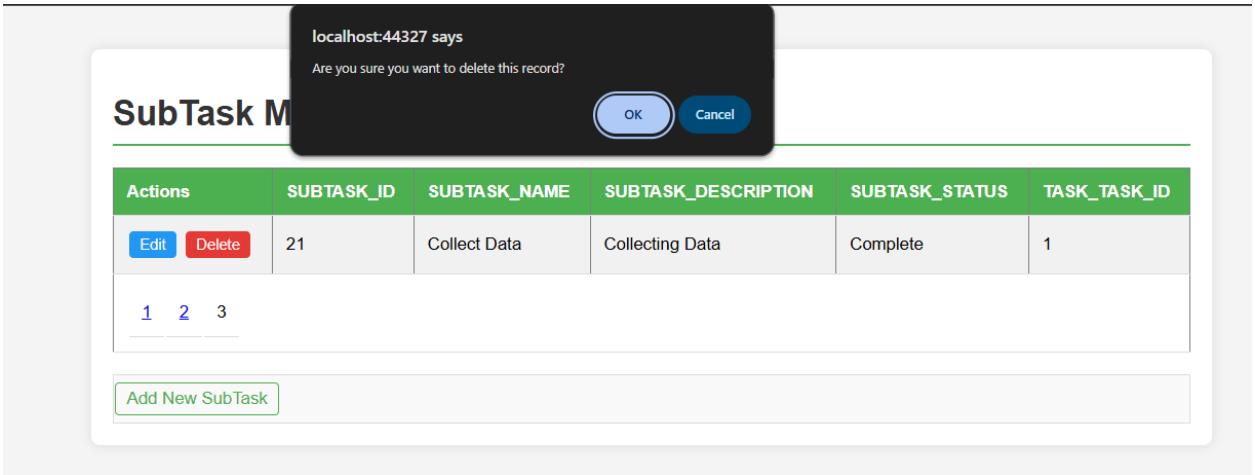


Table 19: Delete Subtask

11.2 Complex Form

11.2.1 Complex Form 1

Test no	1
Objective	To test the User Project complex form functionality for viewing projects associated with a specific user
Actions	➢ Search for “Bikash Poudel” in dropdown list. ➢ Tap on the Specific user.
Expected Results	Should display all the projects Bikash Poudel was assigned!
Actual Result	All projects associated to Bikash Poudel was displayed
Conclusion	Test Successful!

Table 20: Test Case 1: Complex form 1

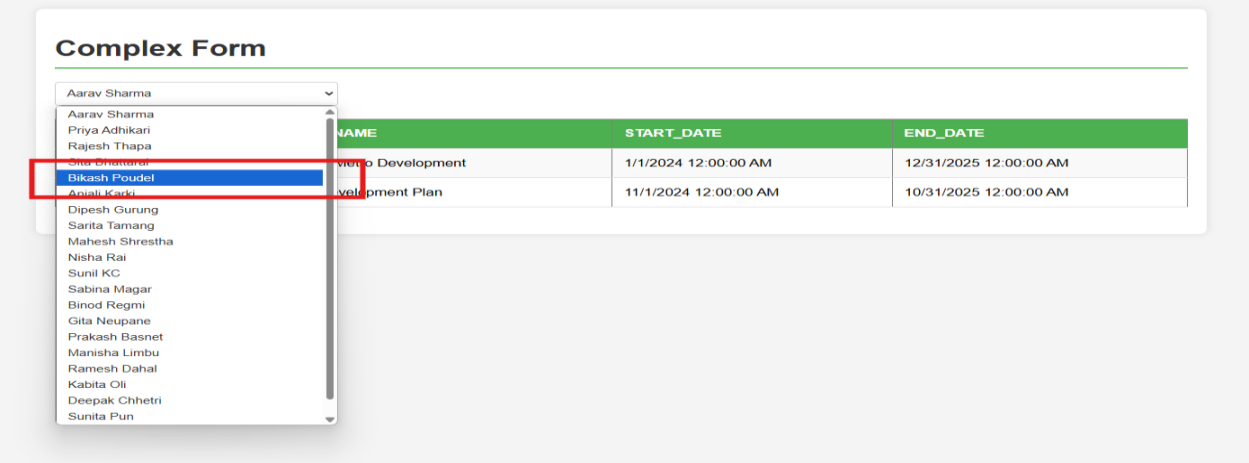


Figure 112: Search of specific user

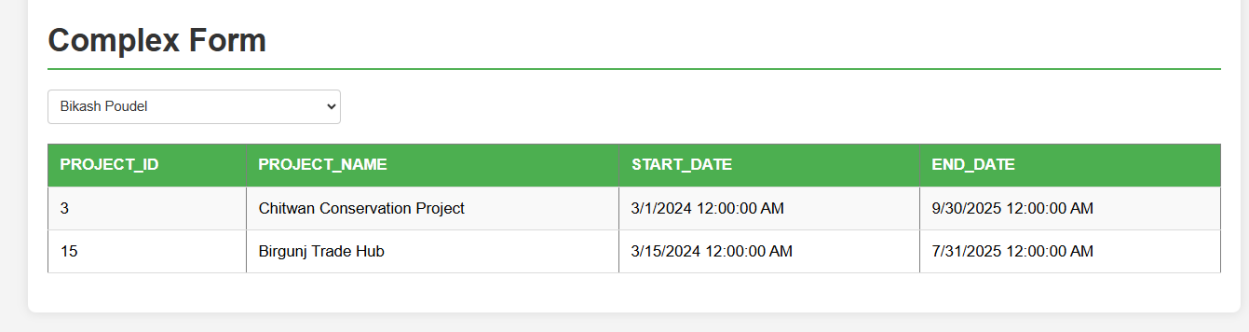


Figure 113: Result of specific user

11.2.2 Complex Form 2

Test no	2
Objective	To test the Project Milestone complex form functionality for viewing milestones associated with a specific project
Actions	➢ Search for “Illam Tea Garden” in dropdown list. ➢ Tap on the Specific Project.
Expected Results	Should display all the Milestone of project “Illam Tea Garden”.
Actual Result	All Milestone of the project was displayed.
Conclusion	Test Successful!

Table 21: Test Case 2: Complex form 2

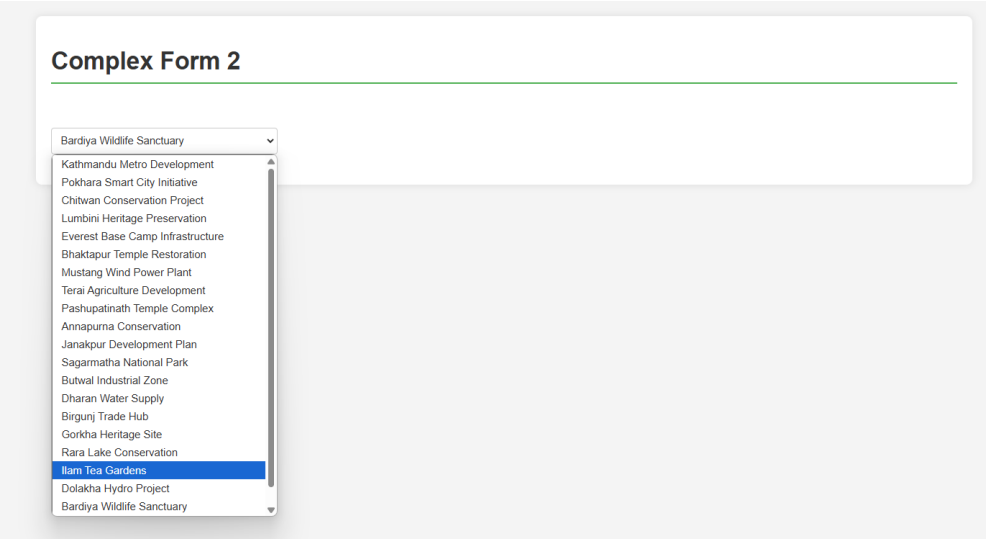


Table 22: Search for specific project

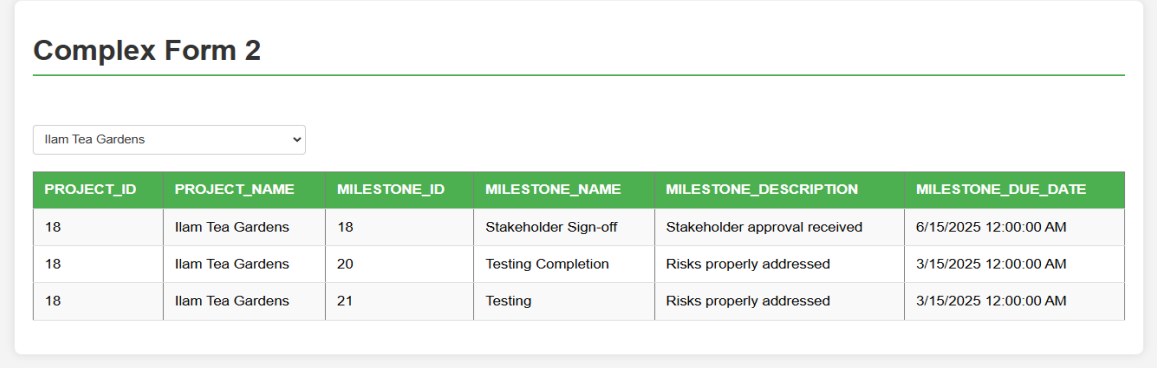


Table 23: Milestone for specific project

11.2.3 Complex form 3

Test no	3
Objective	To show the top performer of the task completed according to the project!
Actions	➢ Search for “Kathmandu Metropolitan Development” in dropdown list. ➢ Tap on the Specific Project.
Expected Results	Should display all the Performers of project “Kathmandu Metropolitan Development”.
Actual Result	Top performer of the project was displayed.
Conclusion	Test Successful!

Table 24: Complex Form: Test 3

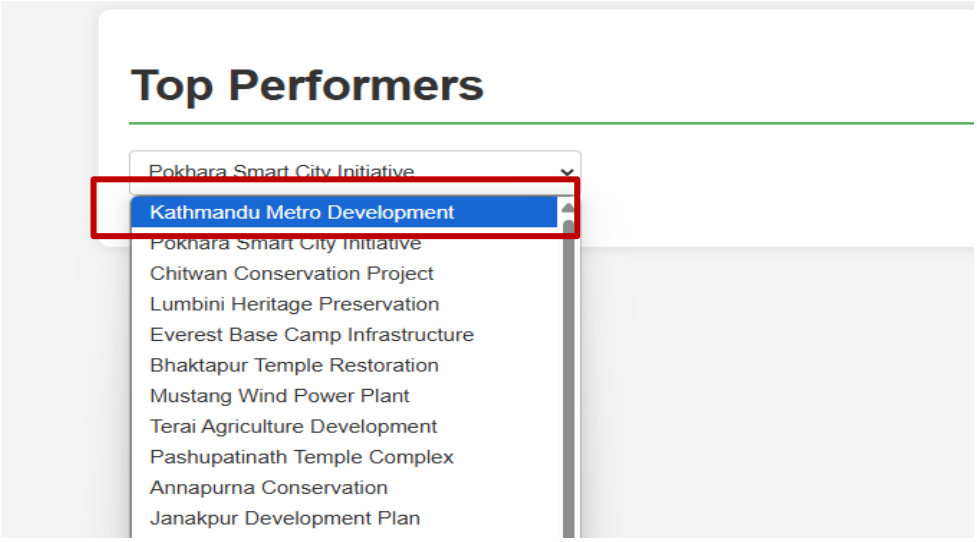


Figure 114: Search for specific project

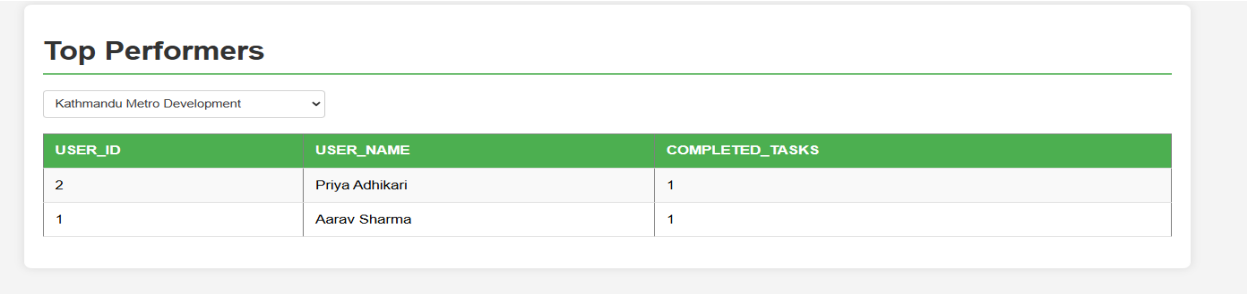


Figure 115: Top performer

11.3 Error Testing

11.3.1 Adding Subtask Error

Test no.	1
Objective	Fix while adding Task in Subtask
Action	xxi) Creating a new Sub Task ➢ Click on “Add New Sub Task” ➢ Fill in the values o SUBTASK_ID = 21 o SUBTASK_NAME = Test o TASK_DESCRIPTION = Test o TASK_STATUS = Test o TASK_TASK_ID = 21 xxii) Click on edit Form View xxiii) Add a new dropdown and data source in insert edit template xxiv) Configure the Data source to Task and select Task name and Task id xxv) Bound the Dropdown to the Data source.
Expected Result	CURD operation should be done successfully!
Actual Result	CURD operation was done successfully!
Conclusion	Test was Successful!

Table 25: Subtask error

Error:

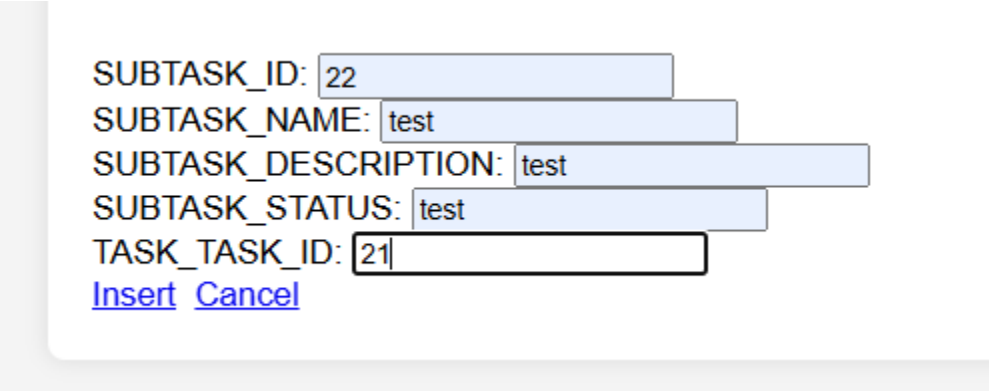


Figure 116: Adding Subtask

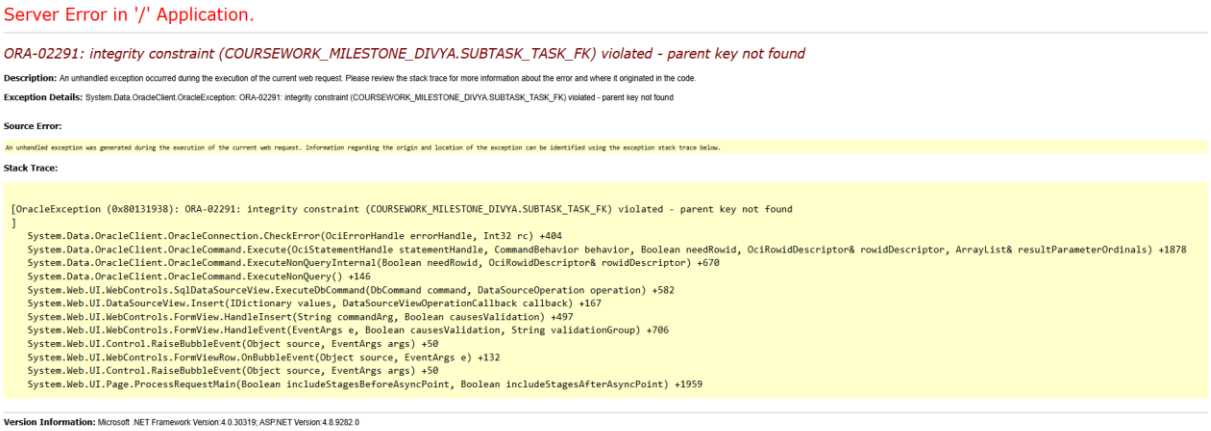


Figure 117: Subtask id error

Fixing Error:

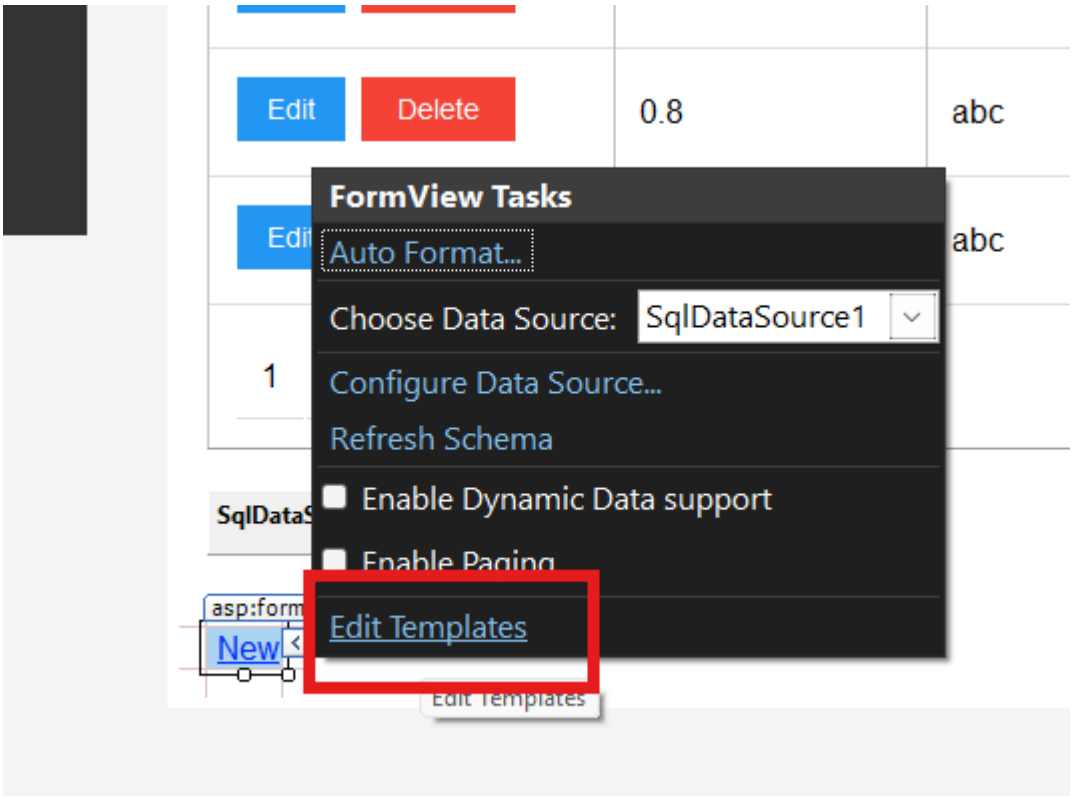
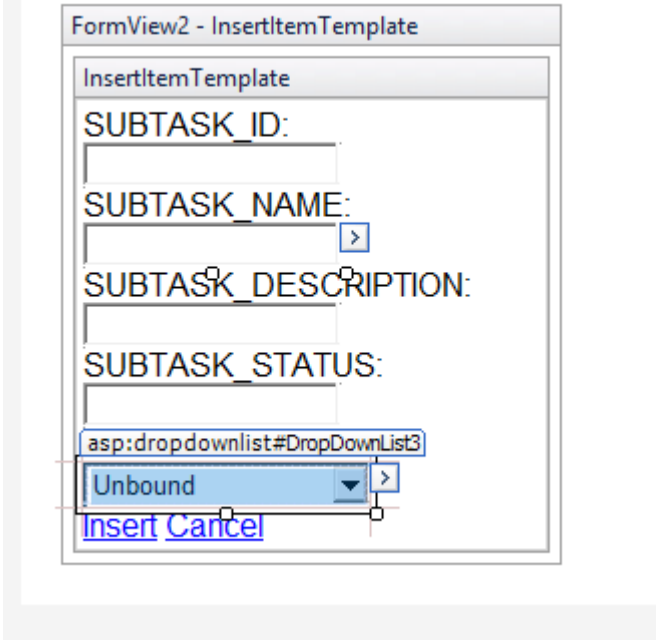


Figure 118: Edit Template



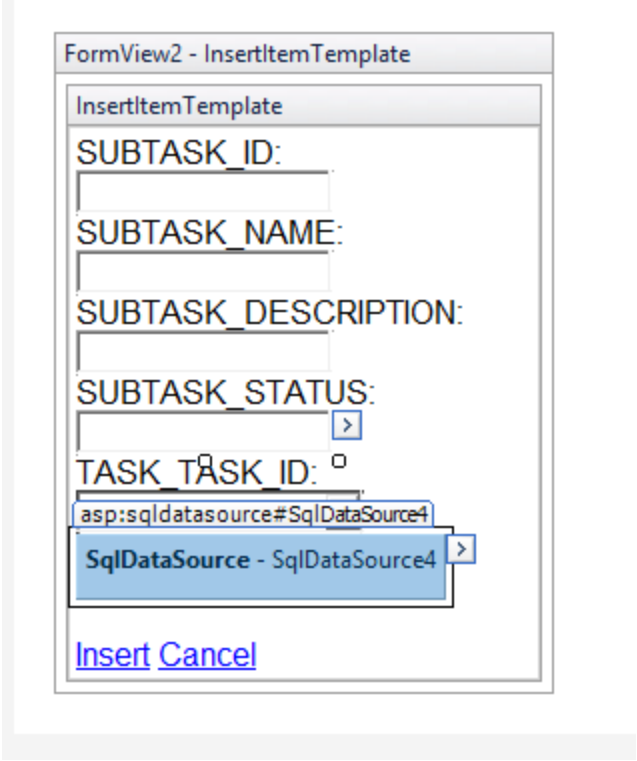


Figure 119: Add a data source of Task

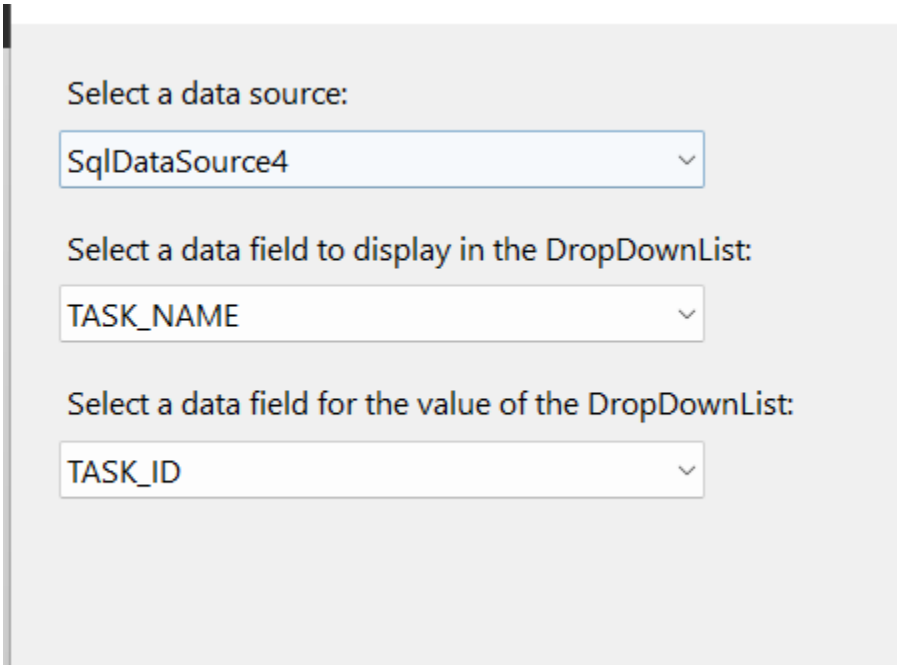


Figure 120: Bind tasked to the dropdown

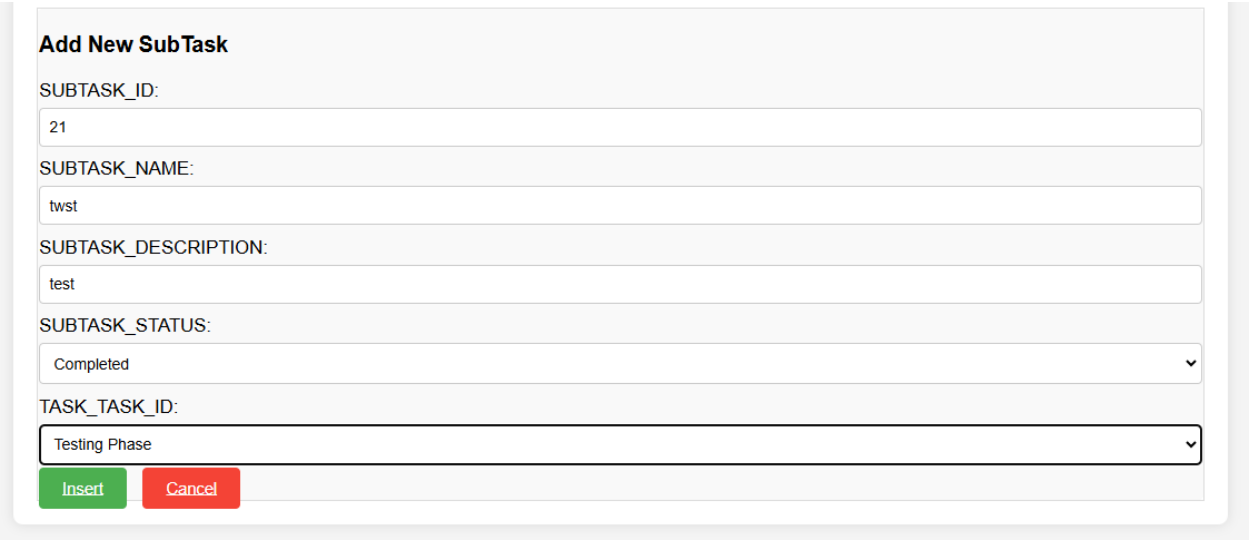


Figure 121: Adding subtask after fixing

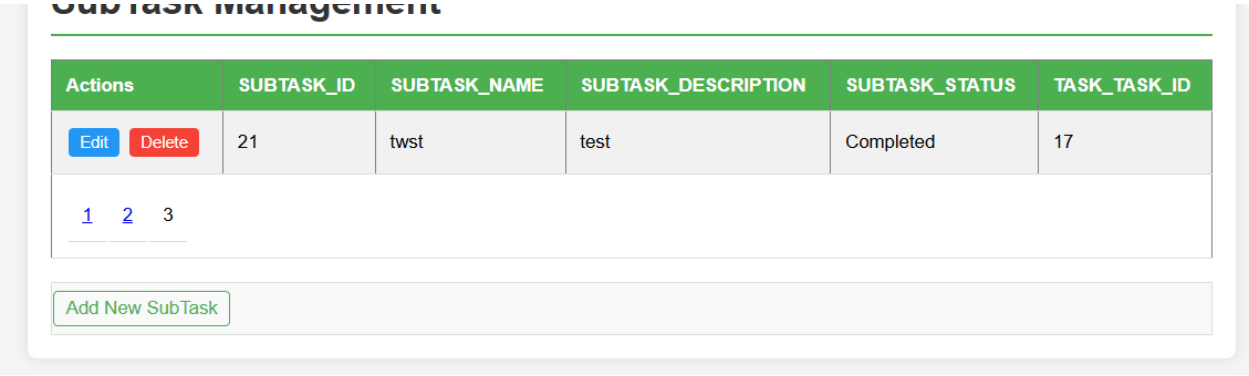


Figure 122: Error 1 fixed

12 Further Discussion

12.1 Tools and Technology

- ASP.NET – For developing the web-based database application
- C# Primary backend programming language.
- Oracle SQL Developer Data Modeler – Used for designing and modelling the database schema
- Oracle SQL Developer – For database management and execution of SQL queries.
- Microsoft Visual Studio – Integrated Development Environment (IDE) for coding and debugging the application.
- Microsoft Word – For documentation and report preparation.

13 Conclusion

The project required creating a web-based database application through combination of ASP.NET Complete and C programming language with Oracle SQL Developer technology. The project task involved creating an Entity-Relationship Diagram (ERD) alongside normalization steps and system development for controlling project task management efficiently. Hands-on work delivered practical abilities to model databases and perform SQL queries in addition to building entire web applications.

The project results proved that standardized database planning systems lead to better data security and integrity as well as system performance in actual business implementations. The opportunity to work with ASP.NET alongside C enabled us to discover important aspects of current web application creation methods. Our education has refined our capacity to create software properly while resolving problems effectively and handling databases proficiently which readies us for future workplace requirements in the field.

14 Bibliography

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Ramez Elmasri, S. B. (2024, December 23). *pearson*. Retrieved from pearson web site: https://www.pearson.com/en-us/subject-catalog/p/fundamentals-of-database-systems/P200000003546/9780137502523

15 Appendix

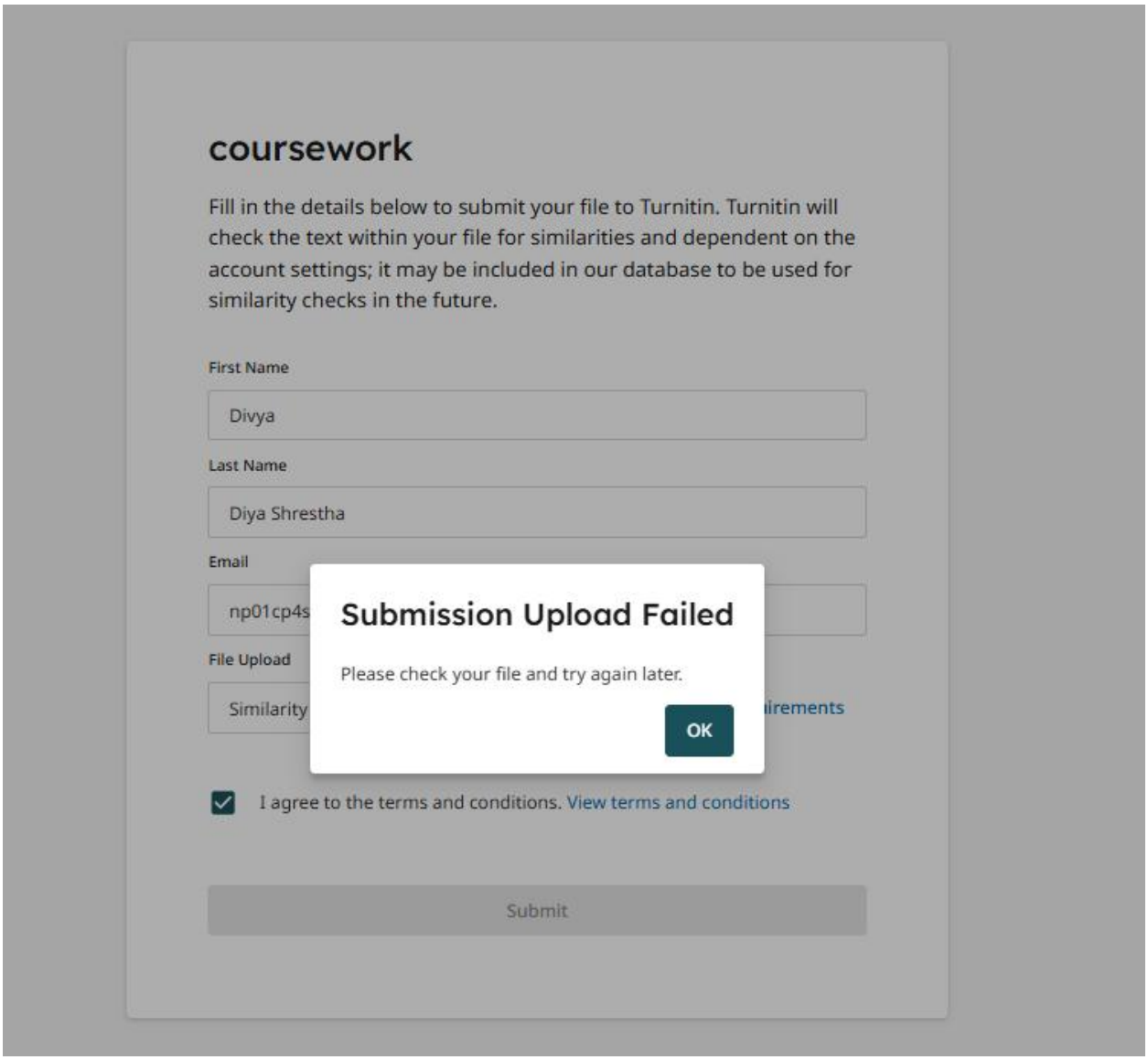

Figure 123: Turnitin Submission Fail