Sprint Planning Tool Domain Documentation

1. Description of the Chosen Domain and its Relevance:

The chosen domain is a project management system, which is relevant in various industries to efficiently plan, execute, and monitor projects. This system is designed to streamline the workflow involved in managing projects, sprints, user stories, tasks, and users involved in a project development cycle. It helps in organizing and tracking the progress of tasks, ensuring collaboration among team members, and maintaining a clear hierarchy of project components.

2. Background Study and Requirement Analysis:

Before designing the database schema, a thorough background study and requirement analysis were conducted to understand the key entities and their relationships in the project management domain. This involved identifying the main components of a project, user roles, and the flow of tasks from project creation to completion. The requirements were gathered to ensure that the database schema would effectively support the functionalities required for project management.

3. Entity-Relationship Diagram (ERD):

The Entity-Relationship Diagram (ERD) is designed using MySQL Workbench, illustrating the relationships between various entities in the project management system.

Entities:

- **Project:**
    - ProjectID (Primary Key)
    - ManagedBy (Foreign Key referencing User.UserID)
    - ProjectName
    - Description
    - CreatedDate
    - StartDate

- o EndDate
- **Sprint:**
    - o SprintID (Primary Key)
    - o ProjectID (Foreign Key referencing Project.ProjectID)
    - o CreatedBy (Foreign Key referencing User.UserID)
    - o SprintName
    - o CreatedDate
    - o StartDate
    - o EndDate
    - o Status
- **User:**
    - o UserID (Primary Key)
    - o FirstName
    - o LastName
    - o Email
    - o Role
- **UserStory:**
    - o StoryID (Primary Key)
    - o SprintID (Foreign Key referencing Sprint.SprintID)
    - o CreatedBy (Foreign Key referencing User.UserID)
    - o Title
    - o Description
    - o Priority
    - o Points
    - o Status
    - o CreatedDate
- **Task:**
    - o TaskID (Primary Key)
    - o AssignedTo (Foreign Key referencing User.UserID)
    - o StoryID (Foreign Key referencing UserStory.StoryID)
    - o Description
    - o CreatedDate
    - o EstimatedHours
    - o ActualHours
    - o Status

4. Detailed Explanations of Tables:

Project Table:

- **ProjectID:** Unique identifier for each project.
- **ManagedBy:** Foreign key referencing the User table, indicating the user managing the project.
- **ProjectName:** Name of the project.
- **Description:** Brief description of the project.
- **CreatedDate:** Date when the project was created.
- **StartDate:** Start date of the project.
- **EndDate:** End date of the project.

Sprint Table:

- **SprintID:** Unique identifier for each sprint.
- **ProjectID:** Foreign key referencing the Project table, specifying the project to which the sprint belongs.
- **CreatedBy:** Foreign key referencing the User table, indicating the user who created the sprint.
- **SprintName:** Name of the sprint.
- **CreatedDate:** Date when the sprint was created.
- **StartDate:** Start date of the sprint.
- **EndDate:** End date of the sprint.
- **Status:** Current status of the sprint.

User Table:

- **UserID:** Unique identifier for each user.
- **FirstName:** First name of the user.
- **LastName:** Last name of the user.
- **Email:** Email address of the user.
- **Role:** Role or position of the user in the project.

UserStory Table:

- **StoryID:** Unique identifier for each user story.
- **SprintID:** Foreign key referencing the Sprint table, specifying the sprint to which the user story belongs.

- **CreatedBy:** Foreign key referencing the User table, indicating the user who created the user story.
- **Title:** Title or name of the user story.
- **Description:** Detailed description of the user story.
- **Priority:** Priority level of the user story.
- **Points:** Points assigned to the user story.
- **Status:** Current status of the user story.
- **CreatedDate:** Date when the user story was created.

Task Table:

- **TaskID:** Unique identifier for each task.
- **AssignedTo:** Foreign key referencing the User table, specifying the user to whom the task is assigned.
- **StoryID:** Foreign key referencing the UserStory table, indicating the user story to which the task belongs.
- **Description:** Detailed description of the task.
- **CreatedDate:** Date when the task was created.
- **EstimatedHours:** Estimated time required to complete the task.
- **ActualHours:** Actual time spent on the task.
- **Status:** Current status of the task.

5. Normalization Process:

Normalization is the process of organizing data to reduce redundancy and improve data integrity. The tables in the project management system are normalized to ensure that they adhere to the third normal form (3NF). The normalization process involves:

- **First Normal Form (1NF):** Ensuring that each column contains atomic (indivisible) values, and there are no repeating groups.
- **Second Normal Form (2NF):** Meeting 1NF requirements and ensuring that all non-key attributes are fully functionally dependent on the primary key.
- **Third Normal Form (3NF):** Meeting 2NF requirements and eliminating transitive dependencies between non-key attributes.

The normalization steps were applied systematically to each table, resulting in a well-structured and normalized database schema that minimizes data redundancy and maintains data integrity.