**Task Tracker with Categories - C# Project**

**Project Overview**

The Task Tracker with Categories is a command-line application that allows users to manage tasks in different categories, with the ability to add, view, edit, complete, and delete tasks. Each task can be categorized (e.g., Work, Personal, Study), and users can set due dates for each task. This project demonstrates core C# concepts such as object-oriented programming, collections, user input handling, and file handling.

**Technologies Used**

* **Programming Language**: C#
* **Framework**: .NET Core
* **Data Storage**: In-memory (or optionally, file storage for persistence)
* **Application Type**: Command-Line Interface (CLI)

**Features and Functionality**

1. **Add Task**:
   * Users can input a task with details such as the task name, description, category (e.g., "Work", "Personal", "Study"), and due date.
   * Tasks are stored in memory or written to a file for persistence.
2. **View Tasks**:
   * Users can view all tasks, with options to filter tasks based on category or task completion status (e.g., completed, pending).
   * Display task details such as name, description, category, due date, and status.
3. **Edit Task**:
   * Allows users to modify existing tasks, such as changing the due date or category, or updating the task’s description.
4. **Mark Task as Completed**:
   * Users can toggle the task’s completion status (completed/pending) to track progress.
5. **Delete Task**:
   * Users can delete tasks from the list once they’re completed or no longer needed.
6. **Persistent Data (Optional)**:
   * Users’ tasks can be saved to a file (JSON, text file, etc.) so that data persists between application sessions.

**Project Structure**

**1. Task Class:**

A class representing a task, with properties for:

* Task Name
* Task Description
* Task Category
* Due Date
* Completion Status

**2. TaskManager Class:**

A class responsible for managing tasks, with methods for:

* Adding a task
* Viewing tasks
* Editing tasks
* Marking tasks as completed
* Deleting tasks

**3. Program Class:**

The entry point of the application where the user interface (CLI) is implemented. It will handle:

* Displaying menus
* Getting user input
* Calling methods from the TaskManager class to manage tasks

**User Interface (CLI)**

The application runs in the terminal and provides the following menu options:

1. **Add Task**
2. **View Tasks**
3. **Edit Task**
4. **Mark Task as Completed**
5. **Delete Task**
6. **Exit**

The user can input their choice, and the program will respond accordingly, interacting with the TaskManager class to perform the desired operation.

**Sample Output**

Welcome to the Task Tracker!

Please choose an option:

1. Add Task

2. View Tasks

3. Edit Task

4. Mark Task as Completed

5. Delete Task

6. Exit

Your choice: 1

Enter Task Name: Buy Groceries

Enter Task Description: Buy milk, eggs, and bread.

Enter Task Category: Personal

Enter Due Date (YYYY-MM-DD): 2024-12-15

Task added successfully!

Please choose an option:

1. Add Task

2. View Tasks

3. Edit Task

4. Mark Task as Completed

5. Delete Task

6. Exit

Your choice: 2

Displaying tasks...

[1] Task: Buy Groceries

Category: Personal

Due Date: 2024-12-15

Status: Pending

**Challenges Faced**

* **User Input Validation**: Ensuring that users input valid data (e.g., valid dates, task descriptions) was a challenge. I implemented checks to ensure the data entered by users was correct.
* **Task Persistence**: Initially, I started with in-memory data storage, but later I added file-based storage to ensure the tasks persist even after the application is closed.

**Future Enhancements**

* **Task Priority**: Add a priority system to tasks (e.g., Low, Medium, High).
* **Search Functionality**: Implement a search feature to find tasks by name or description.
* **Task Sorting**: Allow sorting tasks by due date, priority, or category.
* **GUI**: Convert the CLI into a GUI application (using Windows Forms or WPF) for a better user experience.

**Next Step: Building the Project**

Let’s build the project!!!!