Sir Syed CASE Institute of Technology, Islamabad

Fall 2024

Assignment 01
CS-3103 Smart Application Development

Announced Date: <u>Oct 23, 2024</u>   Due Date: <u>Oct 30, 2024</u>   Total Marks = 20

Learning Outcome: CLO 1   Marks Obtained =

Instructor Name: <u>Mr. Hamid Ashfaq</u>

Note: Do not copy other person's assignment. All similar copies will be marked zero.

Task Management Logic

Objective:

Implement the core logic for a task management system in Dart. The goal is to create a console-based application that handles tasks, allowing operations such as adding, updating, deleting, and retrieving tasks.

1. **Task Model:**

   o   Create a Task class with the following properties:

      ▪   String title

      ▪   String description

      ▪   bool isCompleted

   o   Implement a constructor and a method to return a string representation of the task.

2. **Task List Management:**

   o   Create a TaskManager class that manages a list of tasks.

      ▪   Implement the following methods:

         ▪   addTask(Task task): Adds a new task to the list.

         ▪   updateTask(int index, Task task): Updates a task at the given index.

         ▪   deleteTask(int index): Deletes a task at the given index.

         ▪   getTasks(): Returns a list of all tasks.

         ▪   getCompletedTasks(): Returns a list of completed tasks.

         ▪   getIncompleteTasks(): Returns a list of incomplete tasks.

3. **Task Operations:**

   o Implement a method to toggle the completion status of a task:

     ▪ toggleTaskCompletion(int index): Changes the status of the task at the given index.

4. **Persistence:**

   o Use the dart:io library to implement basic file operations:

     ▪ Save the list of tasks to a file in JSON format.

     ▪ Load the list of tasks from the file when the application starts.

   o Implement methods in the TaskManager to handle saving and loading tasks.

5. **User Input Handling:**

   o Implement a console menu system that allows users to:

     ▪ Add a new task

     ▪ Update a task

     ▪ Delete a task

     ▪ List all tasks

     ▪ List completed tasks

     ▪ List incomplete tasks

     ▪ Toggle the completion status of a task

     ▪ Exit the application

   o Use appropriate error handling for user inputs (e.g., invalid indices).

6. **Bonus Feature (Optional):**

   o Implement a search function that allows users to find tasks by title.

Deliverables:

• Source code hosted on a version control platform (like GitHub).

• A README file that includes:

- Project setup instructions

- Brief explanation of the app's architecture

- Sample output demonstrating the functionality of the task manager

Evaluation Criteria:

- Code quality and organization

- Functionality (meeting the requirements)

- Proper error handling

- Completeness of documentation