VaultofCodes

Mini Project:

Develop a basic to-do list application using functions and data structures

Project Overview:

Objective: Develop a simple to-do list application using Java with an emphasis on functions and data structures.

Key Components:

1. Functions (Methods): In Java, functions are referred to as methods. You'll be implementing various methods to handle different aspects of the to-do list application. Methods are modular blocks of code that perform specific tasks, making your code more organized and easier to understand.

Method to add a task
Method to delete a task
Method to display the list of tasks
Method to mark a task as complete

2. Data Structures: Utilize appropriate data structures to store and manage the to-do list. Common choices in Java include ArrayList, LinkedList, or HashMap, but you can explore other options based on your creativity and understanding.

Submission guidelines: Submit in pdf format with images of the output. You can via app or submit via google form link given in the telegram group. Share your work on LinkedIn through a post, it has images or a short video/slideshow(Don’t forget to tag us).

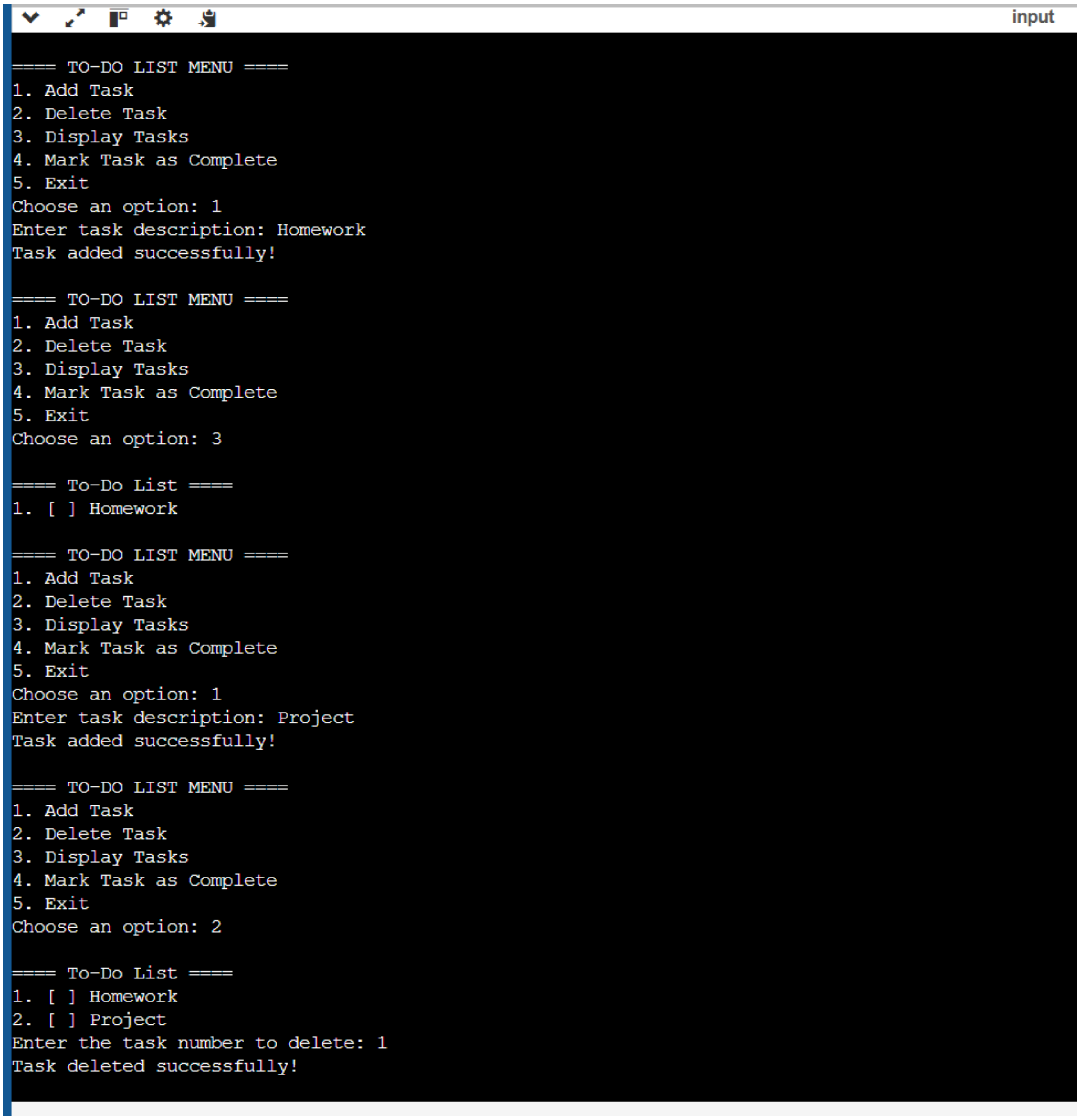
JAVA PROGRAM

```
import java.util.ArrayList;

import java.util.Scanner;
```

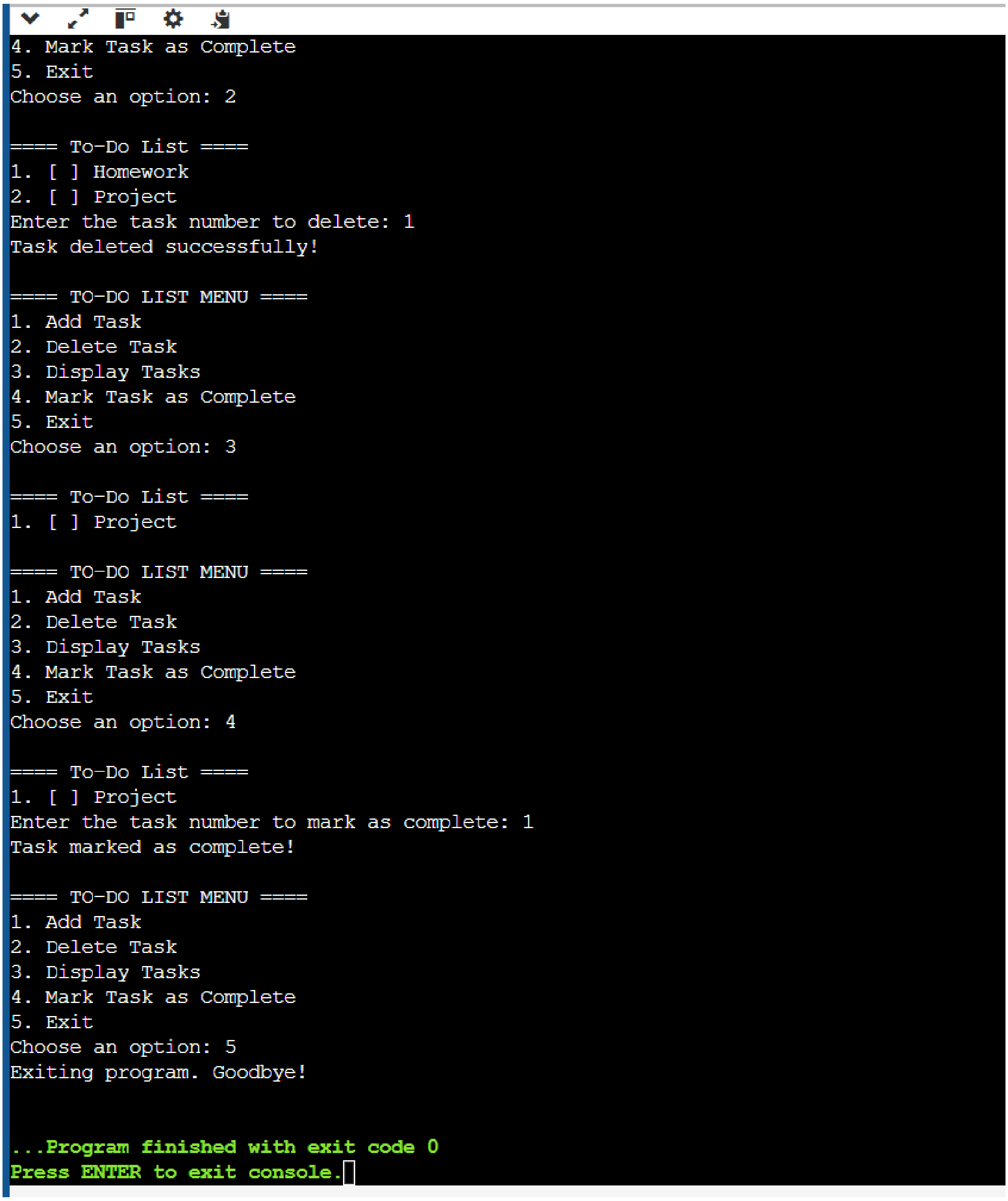
```java
class Task {
    String description;
    boolean isCompleted;

    Task(String description) {
        this.description = description;
        this.isCompleted = false; // default is incomplete
    }
}

public class ToDoListApp {
    static ArrayList<Task> tasks = new ArrayList<>();
    static Scanner scanner = new Scanner(System.in);

    // Method to add a task
    public static void addTask() {
        System.out.print("Enter task description: ");
        String description = scanner.nextLine();
        tasks.add(new Task(description));
        System.out.println("Task added successfully!");
    }

    // Method to delete a task
    public static void deleteTask() {
        displayTasks();
        if (tasks.isEmpty()) return;

        System.out.print("Enter the task number to delete: ");
        int index = scanner.nextInt();
        scanner.nextLine(); // consume newline
        if (index > 0 && index <= tasks.size()) {
            tasks.remove(index - 1);
            System.out.println("Task deleted successfully!");
        } else {
            System.out.println("Invalid task number.");
        }
    }

    // Method to display tasks
    public static void displayTasks() {
        if (tasks.isEmpty()) {
            System.out.println("No tasks in the list.");
        } else {
            System.out.println("\n==== To-Do List ====");
            for (int i = 0; i < tasks.size(); i++) {
                Task t = tasks.get(i);
                String status = t.isCompleted ? "[✓]" : "[ ]";
                System.out.println((i + 1) + ". " + status + " " + t.description);
            }
        }
    }

    // Method to mark a task as complete
    public static void markTaskComplete() {
        displayTasks();
        if (tasks.isEmpty()) return;

        System.out.print("Enter the task number to mark as complete: ");
        int index = scanner.nextInt();
        scanner.nextLine(); // consume newline
        if (index > 0 && index <= tasks.size()) {
            tasks.get(index - 1).isCompleted = true;
            System.out.println("Task marked as complete!");
        } else {
            System.out.println("Invalid task number.");
        }
    }

    // Method to display menu
    public static void displayMenu() {
        System.out.println("\n==== TO-DO LIST MENU ====");
        System.out.println("1. Add Task");
        System.out.println("2. Delete Task");
        System.out.println("3. Display Tasks");
        System.out.println("4. Mark Task as Complete");
        System.out.println("5. Exit");
        System.out.print("Choose an option: ");
    }

    public static void main(String[] args) {
        boolean running = true;

        while (running) {
            displayMenu();

            while (!scanner.hasNextInt()) {
                System.out.println("Please enter a valid number (1-5).");
                scanner.next();
            }
            int choice = scanner.nextInt();
```

```
            scanner.nextLine(); // consume newline

            switch (choice) {
                case 1 -> addTask();
                case 2 -> deleteTask();
                case 3 -> displayTasks();
                case 4 -> markTaskComplete();
                case 5 -> {
                    System.out.println("Exiting program. Goodbye!");
                    running = false;
                }
                default -> System.out.println("Invalid choice. Try again.");
            }
        }
        scanner.close();
    }
}
```

OUTPUT:



```
==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 1
Enter task description: Homework
Task added successfully!

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 3

==== To-Do List ====
1. [ ] Homework

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 1
Enter task description: Project
Task added successfully!

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 2

==== To-Do List ====
1. [ ] Homework
2. [ ] Project
Enter the task number to delete: 1
Task deleted successfully!
```



```
4. Mark Task as Complete
5. Exit
Choose an option: 2

==== To-Do List ====
1. [ ] Homework
2. [ ] Project
Enter the task number to delete: 1
Task deleted successfully!

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 3

==== To-Do List ====
1. [ ] Project

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 4

==== To-Do List ====
1. [ ] Project
Enter the task number to mark as complete: 1
Task marked as complete!

==== TO-DO LIST MENU ====
1. Add Task
2. Delete Task
3. Display Tasks
4. Mark Task as Complete
5. Exit
Choose an option: 5
Exiting program. Goodbye!


...Program finished with exit code 0
Press ENTER to exit console.
```