Lists Projects Solution

Problem Statement I -

```
# Initialize an empty list to store operations
operations = []

while True:
    print("\n===== Simple Calculator =====")
    print("1. Addition")
    print("2. Subtraction")
    print("3. Multiplication")
    print("4. Division")
    print("5. Display Operations")
    print("6. Quit")

    choice = input("Enter your choice (1/2/3/4/5/6): ")

    if choice == '1':
        num1 = float(input("Enter the first number: "))
        num2 = float(input("Enter the second number: "))
        result = num1 + num2
        operations.append(f"{num1} + {num2} = {result}")
        print(f"\nResult: {num1} + {num2} = {result}")
    elif choice == '2':
        num1 = float(input("Enter the first number: "))
        num2 = float(input("Enter the second number: "))
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    result = num1 - num2
    operations.append(f"{num1} - {num2} = {result}")
    print(f"\nResult: {num1} - {num2} = {result}")
elif choice == '3':
    num1 = float(input("Enter the first number: "))
    num2 = float(input("Enter the second number: "))
    result = num1 * num2
    operations.append(f"{num1} * {num2} = {result}")
    print(f"\nResult: {num1} * {num2} = {result}")
elif choice == '4':
    num1 = float(input("Enter the dividend: "))
    num2 = float(input("Enter the divisor: "))
    if num2 != 0:
        result = num1 / num2
        operations.append(f"{num1} / {num2} = {result}")
        print(f"\nResult: {num1} / {num2} = {result}")
    else:
        print("\nError: Division by zero")
elif choice == '5':
    print("\n===== Operations =====")
    if not operations:
        print("No operations performed yet.")
    else:
        count=1
        for operation in operations:
            print(f"{count}.{operation}")
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            count+=1
        print("====================")
    elif choice == '6':
        break
    else:
        print("\nInvalid choice. Please try again.")
```

Problem Statement II –

```
todo_list = []

while True:
    print("\n===== To-Do List Application =====")
    print("1. Display To-Do List")
    print("2. Add Task")
    print("3. Remove Task")
    print("4. Quit")
    choice = input("Enter your choice (1/2/3/4): ")

    if choice == '1':
        print("\n===== To-Do List =====")
        if not todo_list:
            print("No tasks in the list.")
        else:
            for i in range(len(todo_list)):
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            print(f"{i + 1}. {todo_list[i]}")
        print("====================")
    elif choice == '2':
        task = input("Enter the task: ")
        todo_list.append(task)
        print(f"\n'{task}' has been added to the To-Do list.")
    elif choice == '3':
        if todo_list:
            index = int(input("Enter the task number to remove: "))
            if 1 <= index <= len(todo_list):
                removed_task = todo_list.pop(index - 1)
                print(f"\n'{removed_task}' has been removed from the To-Do list.")
            else:
                print("\nInvalid task index.")
        else:
            print("\nNo tasks to remove.")
    elif choice == '4':
        break
    else:
        print("Invalid choice. Please try again.")
```

Problem Statement III –

```
students = []


while True:
    print("\n===== Student Management System =====")
    print("1. Add Student")
    print("2. View Students")
    print("3. Search Student")
    print("4. Remove Student")
    print("5. Quit")

    choice = input("Enter your choice (1/2/3/4/5): ")

    if choice == '1':
        name = input("Enter student name: ")
        age = int(input("Enter student age: "))
        grades = [int(x) for x in input("Enter grades (comma-separated): ").split(',')]
        students.append([name, age, grades])
        print(f"\nStudent '{name}' has been added to the system.")
    elif choice == '2':
        print("\n===== Students =====")
        if not students:
            print("No students in the system yet.")
        else:
            for student in students:
                print(f"Name: {student[0]}\nAge: {student[1]}\nGrades: {student[2]}")
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```
            print("====================")
    elif choice == '3':
        search_name = input("Enter student name to search: ")
        found = False
        for student in students:
            if student[0] == search_name:
                print("\n===== Student Found =====")
                print(f"Name: {student[0]}\nAge: {student[1]}\nGrades: {student[2]}")
                found = True
                break
        if not found:
            print(f"No student with the name '{search_name}' found.")
    elif choice == '4':
        remove_name = input("Enter student name to remove: ")
        removed = False
        for student in students:
            if student[0] == remove_name:
                students.remove(student)
                print(f"\nStudent '{remove_name}' has been removed from the
system.")
                removed = True
                break
        if not removed:
            print(f"No student with the name '{remove_name}' found.")
    elif choice == '5':
        break
    else:
```

```
print("\nInvalid choice. Please try again.")
```