```
# Class
class Student:
    def __init__(self, student_id, name):
        self.student_id = student_id
        self.name = name
        self.marks = []

    def add_marks(self, marks):
        self.marks.extend(marks)

    def calculate_average(self):
        return sum(self.marks) / len(self.marks) if self.marks else 0

    def __str__(self):
        avg = self.calculate_average()
        return f"ID: {self.student_id}, Name: {self.name}, Average Marks: {avg:.3f}"

# File Handling
def load_students(filename):
    students = []
    try:
        with open(filename, 'r') as file:
            for line in file:
                data = line.strip().split(',')
```

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            student = Student(data[0], data[1])
            if len(data) > 2:
                student.add_marks(map(int, data[2:]))
            students.append(student)
    except FileNotFoundError:
        print(f"No file found. Starting fresh.")
    return students

def add_student(students, student_id, name):
    students.append(Student(student_id, name))
    print(f"Added student: {student_id} and {name}")

def add_marks_to_student(students, student_id, marks):
    for student in students:
        if student.student_id == student_id:
            student.add_marks(marks)
            print(f"Updated marks for {student.name}")
            return
    print(f"No student found with ID {student_id}")

def show_students(students):
    if not students:
        print("No students available.")
    for student in students:
```

```
        print(student)


def calculate_class_average(students):
    if not students:
        return 0
    return sum(student.calculate_average() for student in students) /
len(students)


def find_top_student(students):
    if not students:
        return None
    return max(students, key=lambda student: student.calculate_average())



def main():
    filename = "student.txt"
    students = load_students(filename)

    while True:
        print("\n++++++++++ Enter Your Choice ++++++++++")
        print("\n1. Add Student")
        print("2. Add Marks")
        print("3. Show Students")
        print("4. Class Average")
        print("5. Top Student")
```

```
    print("6. Exit")

    choice = input("Choose an option: ")

    if choice == "1":
        student_id = input("Enter student ID: ")
        name = input("Enter student name: ")
        add_student(students, student_id, name)

    elif choice == "2":
        student_id = input("Enter student ID: ")
        try:
            marks = list(map(int, input("Enter marks (comma-separated):
").split(',')))
            add_marks_to_student(students, student_id, marks)
        except ValueError:
            print("Please enter valid marks.")

    elif choice == "3":
        show_students(students)

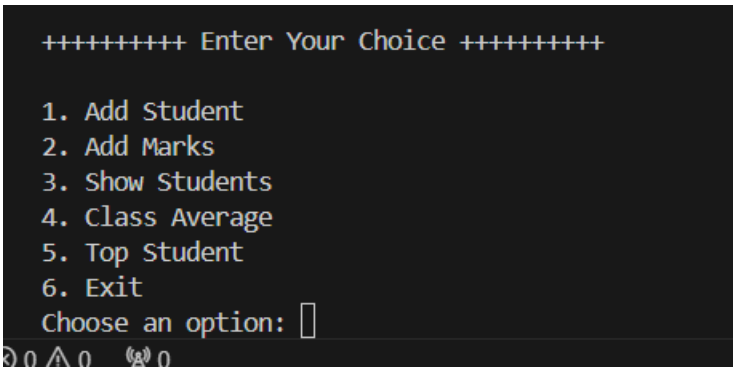
    elif choice == "4":
        avg = calculate_class_average(students)
        print(f"Class Average: {avg:.3f}")
```

```
    elif choice == "5":
        top_student = find_top_student(students)
        if top_student:
            print(f"Top Student: {top_student}")
        else:
            print("No students found.")

    elif choice == "6":
        exit()
        break

    else:
        print("Invalid choice.Please Try again.")

if __name__ == "__main__":
    main()
```



Test Case 1

```
++++++++++ Enter Your Choice ++++++++++

1. Add Student
2. Add Marks
3. Show Students
4. Class Average
5. Top Student
6. Exit
Choose an option: 1
Enter student ID: S123
Enter student name: Alice
```

Test Case 2

```
++++++++++ Enter Your Choice ++++++++++

1. Add Student
2. Add Marks
3. Show Students
4. Class Average
5. Top Student
6. Exit
Choose an option: 2
Enter student ID: S123
Enter marks (comma-separated): 34,55,78
Updated marks for Alice
```

Test Case 3

```
 1. Add Student
 2. Add Marks
 3. Show Students
 4. Class Average
 5. Top Student
 6. Exit
 Choose an option: 3
 ID: S001, Name: John Doe, Average Marks: 84.333
 ID: S002, Name: Jane Smith, Average Marks: 88.000
 ID: S003, Name: Bob Johnson, Average Marks: 75.000
 ID: S123, Name: Alice, Average Marks: 55.667
```

Test Case 4

```
++++++++++ Enter Your Choice ++++++++++

1. Add Student
2. Add Marks
3. Show Students
4. Class Average
5. Top Student
6. Exit
Choose an option: 2
Enter student ID: S003
Enter marks (comma-separated): abc
Please enter valid marks.
```

Test Case 5

```
 1. Add Student
 2. Add Marks
 3. Show Students
 4. Class Average
 5. Top Student
 6. Exit
 Choose an option: 4
 Class Average: 75.750
```

Test Case 6

```
++++++++++ Enter Your Choice ++++++++++

1. Add Student
2. Add Marks
3. Show Students
4. Class Average
5. Top Student
6. Exit
Choose an option: 5
Top Student: ID: S002, Name: Jane Smith, Average Marks: 88.000
```

Test Case 7

```
1. Add Student
2. Add Marks
3. Show Students
4. Class Average
5. Top Student
6. Exit
Choose an option: 5
No students found.
```