Activity 04: List and Tuple

Create a record management program given a list of students records. Each record must be a tuple consist of the following:

- Student ID: This must be a six digit number
- Student Name: Consist of first name and last name (you may set the fullname as tuple)
- Student Class Standing: The student class standing grade
- Major Exam Grade: Exam grade of the student

The program must provide the following menu

- Open File
- Save File
- Save As File
- Show All Students Record
  - Order by last name
  - Order by grade (grade must be the 60% of Class Standing and 40% of Major Exam)
- Show Student Record
- Add Record
- Edit Record
- Delete Record

SOURCE CODE:

```
import os

# Initialize records list
records = []

while True:
    print("\nMenu:")
    print("1. Open File")
    print("2. Save File")
    print("3. Save As File")
    print("4. Show All Students Record")
    print("5. Order by Last Name")
    print("6. Order by Grade")
    print("7. Show Student Record")
    print("8. Add Record")
    print("9. Edit Record")
    print("10. Delete Record")
    print("11. Exit")

    choice = input("Enter your choice: ")

    if choice == "1":
        filename = input("Enter filename: ")
        try:
            with open(filename, 'r') as file:
                for line in file:
                    student_id, first_name, last_name, class_standing,
major_exam_grade = line.strip().split(',')
                    records.append({
                        'student_id': student_id,
                        'first_name': first_name,
                        'last_name': last_name,
                        'class_standing': float(class_standing),
                        'major_exam_grade': float(major_exam_grade)
                    })
            print(f"File {filename} opened successfully.")
        except FileNotFoundError:
            print(f"File {filename} not found.")

    elif choice == "2":
        filename = input("Enter filename (default: records.txt): ") or
"records.txt"
        with open(filename, 'w') as file:
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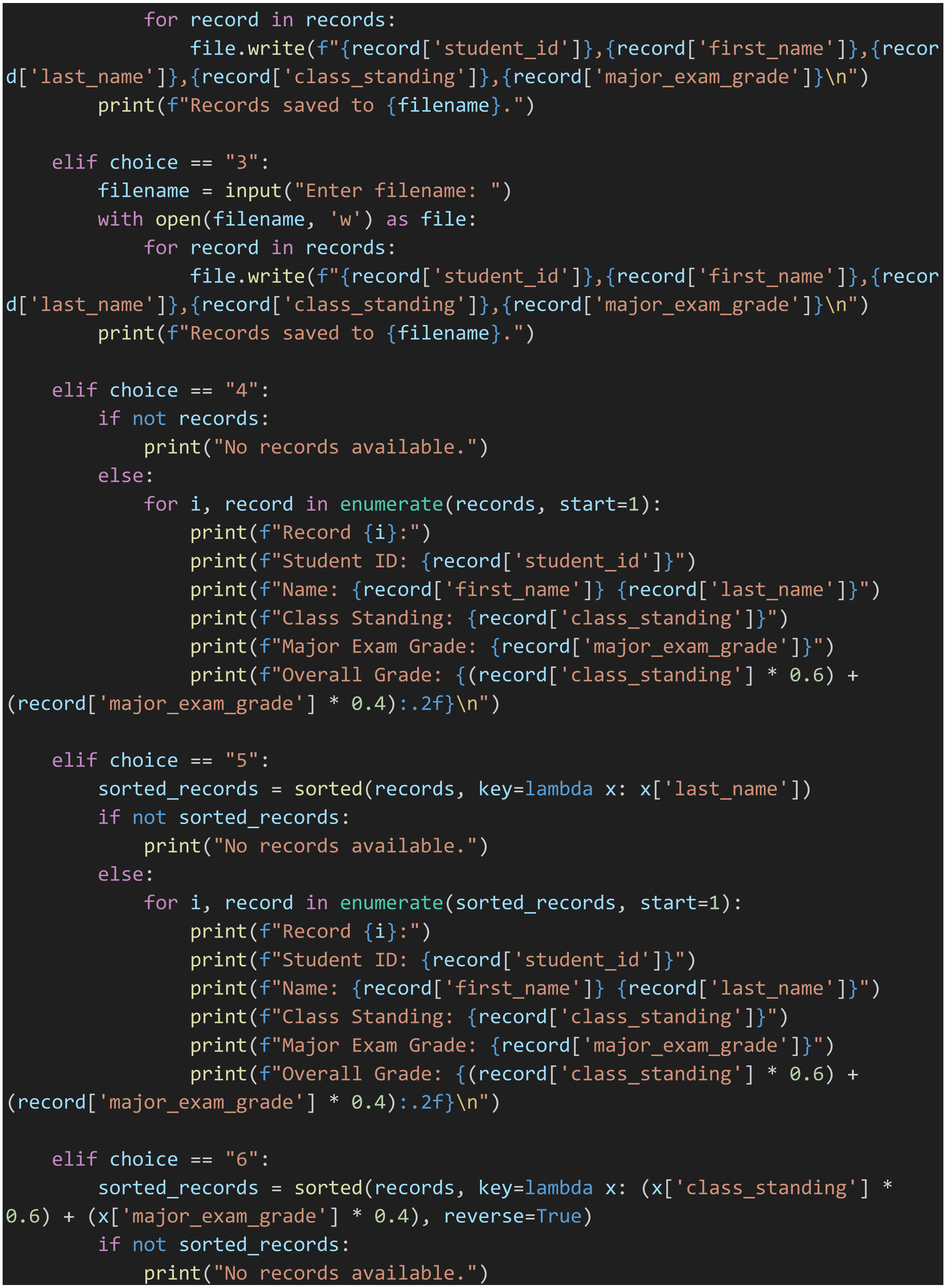

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            for record in records:
                file.write(f"{record['student_id']},{record['first_name']},{record['last_name']},{record['class_standing']},{record['major_exam_grade']}\n")
        print(f"Records saved to {filename}.")

    elif choice == "3":
        filename = input("Enter filename: ")
        with open(filename, 'w') as file:
            for record in records:
                file.write(f"{record['student_id']},{record['first_name']},{record['last_name']},{record['class_standing']},{record['major_exam_grade']}\n")
        print(f"Records saved to {filename}.")

    elif choice == "4":
        if not records:
            print("No records available.")
        else:
            for i, record in enumerate(records, start=1):
                print(f"Record {i}:")
                print(f"Student ID: {record['student_id']}")
                print(f"Name: {record['first_name']} {record['last_name']}")
                print(f"Class Standing: {record['class_standing']}")
                print(f"Major Exam Grade: {record['major_exam_grade']}")
                print(f"Overall Grade: {(record['class_standing'] * 0.6) + (record['major_exam_grade'] * 0.4):.2f}\n")

    elif choice == "5":
        sorted_records = sorted(records, key=lambda x: x['last_name'])
        if not sorted_records:
            print("No records available.")
        else:
            for i, record in enumerate(sorted_records, start=1):
                print(f"Record {i}:")
                print(f"Student ID: {record['student_id']}")
                print(f"Name: {record['first_name']} {record['last_name']}")
                print(f"Class Standing: {record['class_standing']}")
                print(f"Major Exam Grade: {record['major_exam_grade']}")
                print(f"Overall Grade: {(record['class_standing'] * 0.6) + (record['major_exam_grade'] * 0.4):.2f}\n")

    elif choice == "6":
        sorted_records = sorted(records, key=lambda x: (x['class_standing'] * 0.6) + (x['major_exam_grade'] * 0.4), reverse=True)
        if not sorted_records:
            print("No records available.")
```

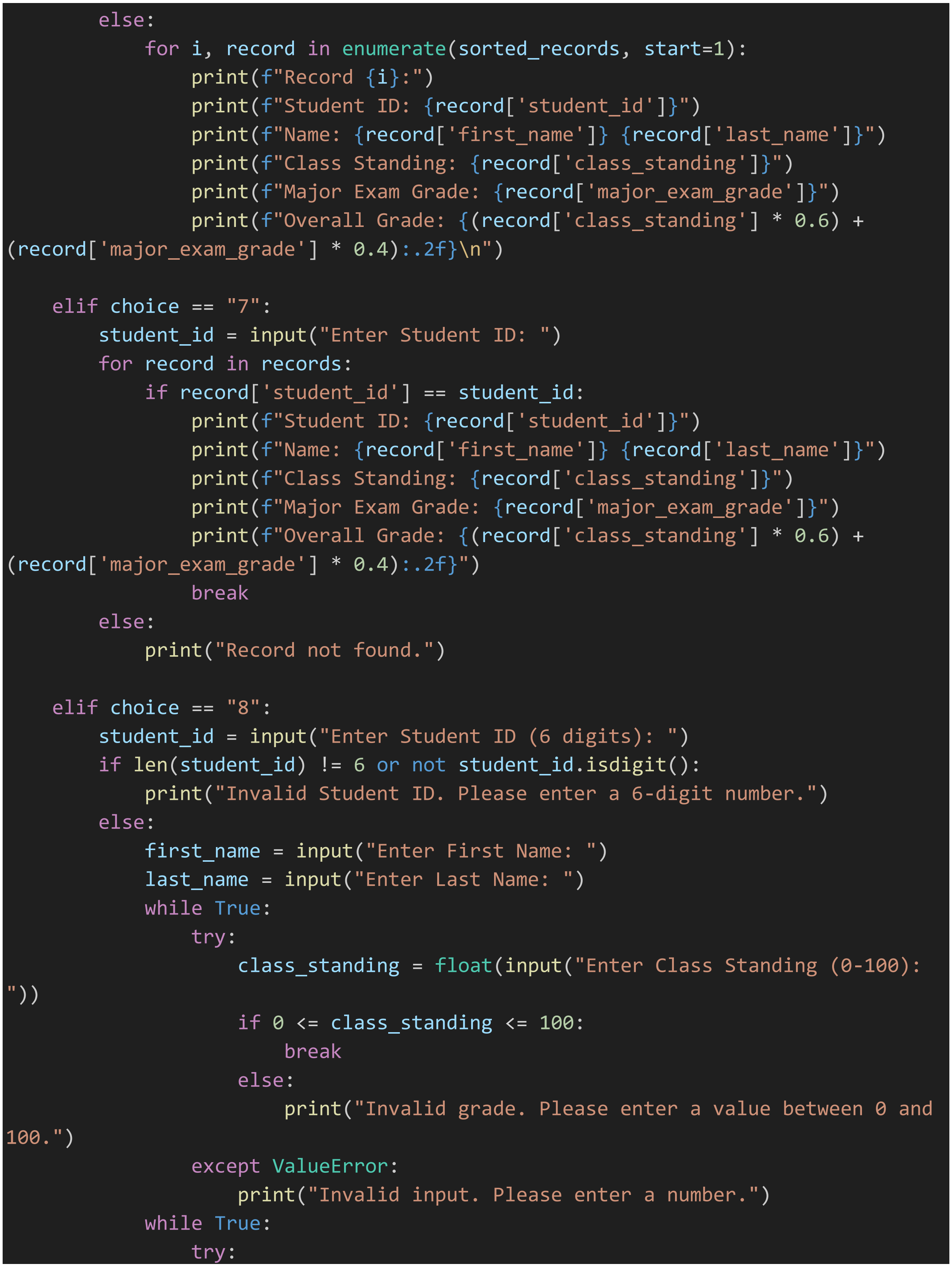

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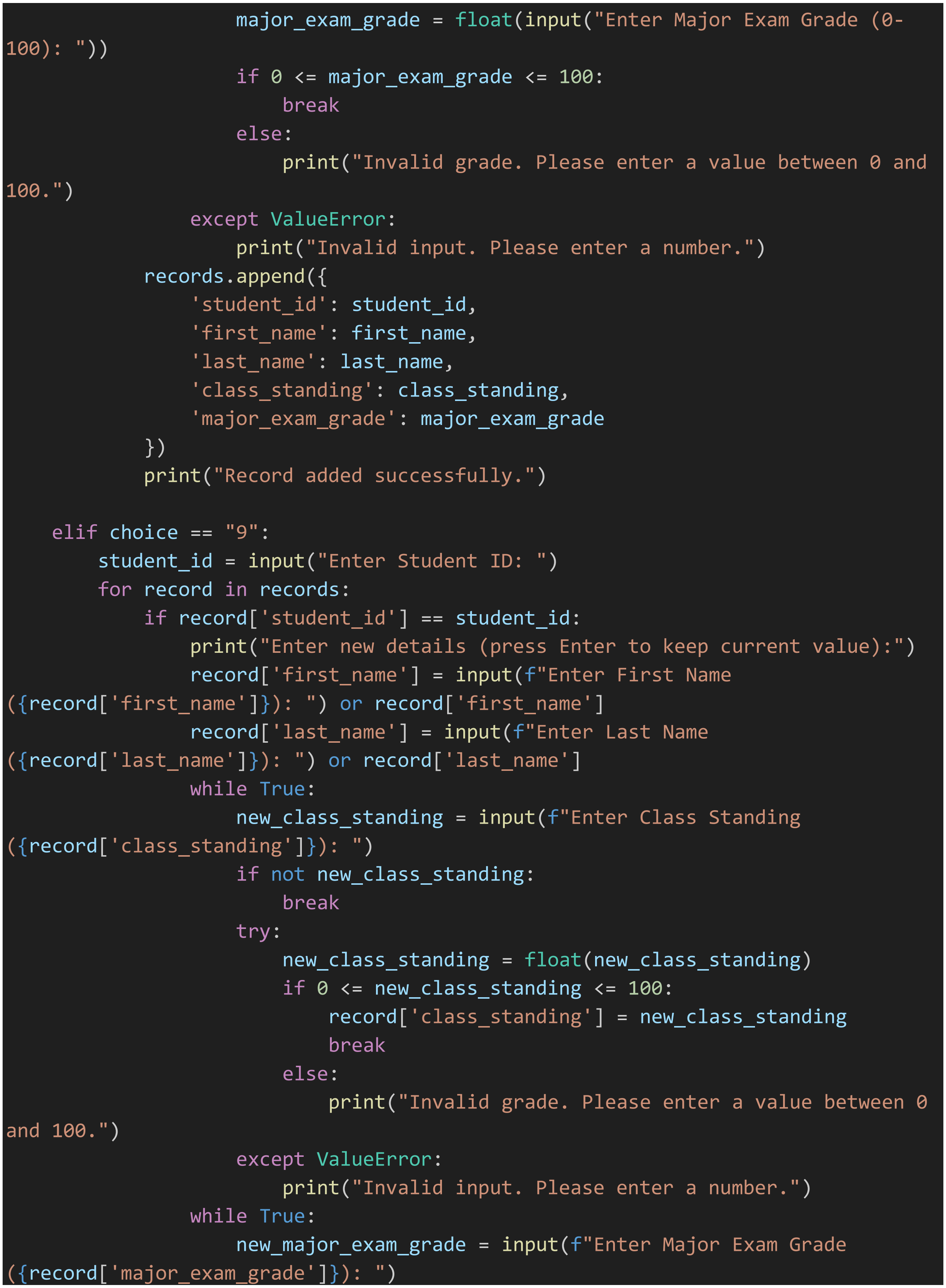
        else:
            for i, record in enumerate(sorted_records, start=1):
                print(f"Record {i}:")
                print(f"Student ID: {record['student_id']}")
                print(f"Name: {record['first_name']} {record['last_name']}")
                print(f"Class Standing: {record['class_standing']}")
                print(f"Major Exam Grade: {record['major_exam_grade']}")
                print(f"Overall Grade: {(record['class_standing'] * 0.6) +
(record['major_exam_grade'] * 0.4):.2f}\n")

    elif choice == "7":
        student_id = input("Enter Student ID: ")
        for record in records:
            if record['student_id'] == student_id:
                print(f"Student ID: {record['student_id']}")
                print(f"Name: {record['first_name']} {record['last_name']}")
                print(f"Class Standing: {record['class_standing']}")
                print(f"Major Exam Grade: {record['major_exam_grade']}")
                print(f"Overall Grade: {(record['class_standing'] * 0.6) +
(record['major_exam_grade'] * 0.4):.2f}")
                break
        else:
            print("Record not found.")

    elif choice == "8":
        student_id = input("Enter Student ID (6 digits): ")
        if len(student_id) != 6 or not student_id.isdigit():
            print("Invalid Student ID. Please enter a 6-digit number.")
        else:
            first_name = input("Enter First Name: ")
            last_name = input("Enter Last Name: ")
            while True:
                try:
                    class_standing = float(input("Enter Class Standing (0-100):
"))
                    if 0 <= class_standing <= 100:
                        break
                    else:
                        print("Invalid grade. Please enter a value between 0 and
100.")
                except ValueError:
                    print("Invalid input. Please enter a number.")
            while True:
                try:
```



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                    major_exam_grade = float(input("Enter Major Exam Grade (0-
100): "))
                    if 0 <= major_exam_grade <= 100:
                        break
                    else:
                        print("Invalid grade. Please enter a value between 0 and
100.")
                except ValueError:
                    print("Invalid input. Please enter a number.")
            records.append({
                'student_id': student_id,
                'first_name': first_name,
                'last_name': last_name,
                'class_standing': class_standing,
                'major_exam_grade': major_exam_grade
            })
            print("Record added successfully.")

    elif choice == "9":
        student_id = input("Enter Student ID: ")
        for record in records:
            if record['student_id'] == student_id:
                print("Enter new details (press Enter to keep current value):")
                record['first_name'] = input(f"Enter First Name
({record['first_name']}): ") or record['first_name']
                record['last_name'] = input(f"Enter Last Name
({record['last_name']}): ") or record['last_name']
                while True:
                    new_class_standing = input(f"Enter Class Standing
({record['class_standing']}): ")
                    if not new_class_standing:
                        break
                    try:
                        new_class_standing = float(new_class_standing)
                        if 0 <= new_class_standing <= 100:
                            record['class_standing'] = new_class_standing
                            break
                        else:
                            print("Invalid grade. Please enter a value between 0
and 100.")
                    except ValueError:
                        print("Invalid input. Please enter a number.")
                while True:
                    new_major_exam_grade = input(f"Enter Major Exam Grade
({record['major_exam_grade']}): ")
```

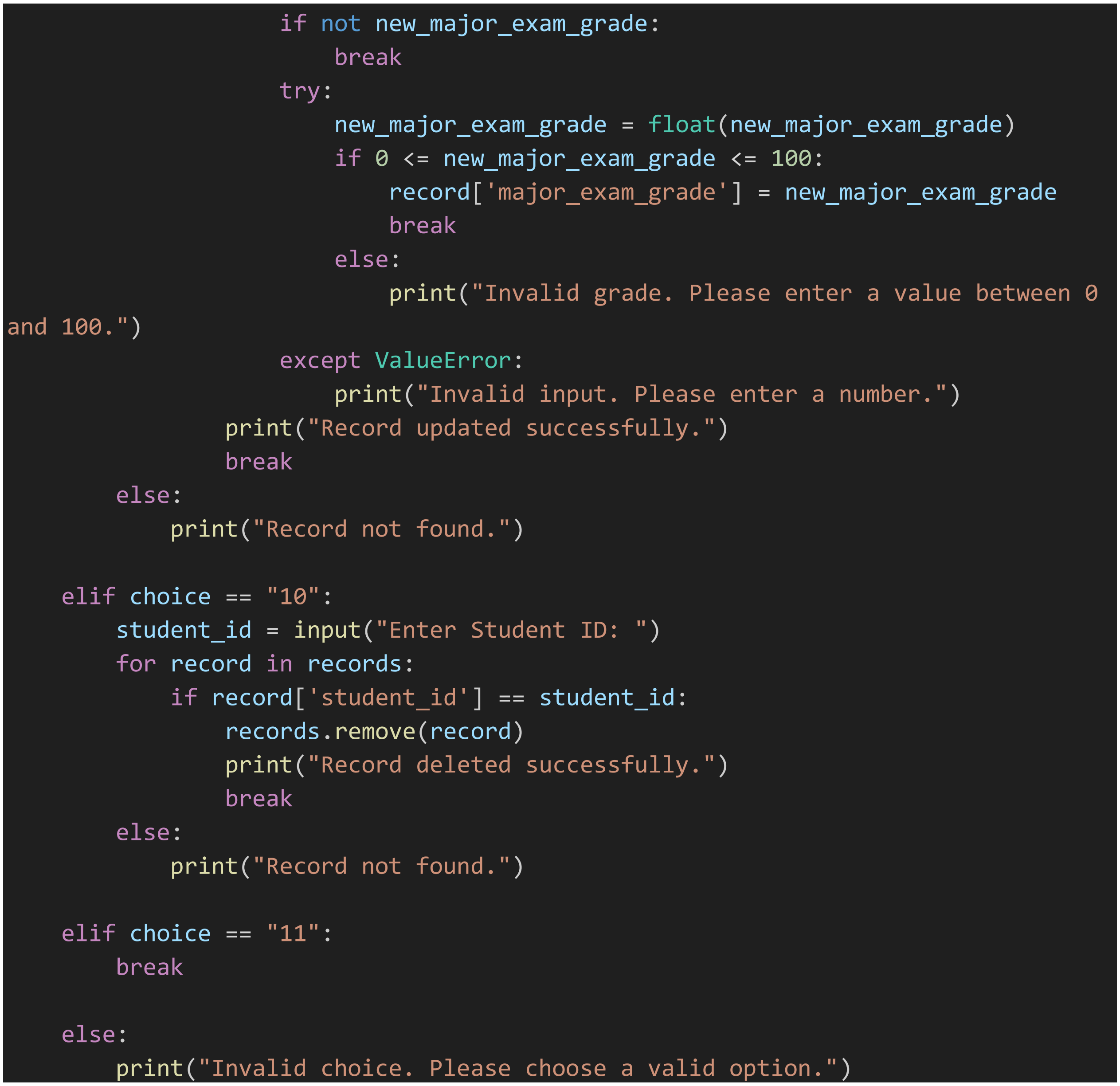

```python
                    if not new_major_exam_grade:
                        break
                    try:
                        new_major_exam_grade = float(new_major_exam_grade)
                        if 0 <= new_major_exam_grade <= 100:
                            record['major_exam_grade'] = new_major_exam_grade
                            break
                        else:
                            print("Invalid grade. Please enter a value between 0 and 100.")
                    except ValueError:
                        print("Invalid input. Please enter a number.")
                print("Record updated successfully.")
                break
        else:
            print("Record not found.")

    elif choice == "10":
        student_id = input("Enter Student ID: ")
        for record in records:
            if record['student_id'] == student_id:
                records.remove(record)
                print("Record deleted successfully.")
                break
        else:
            print("Record not found.")

    elif choice == "11":
        break

    else:
        print("Invalid choice. Please choose a valid option.")
```