Part 2

a. In your own words, explain how filter is used in getActiveStudents.

- If isActive is true, it keeps that student in the new list. If it false, it ignores them.

b. In your own words, explain how reduce is used in calculateAverageGrade.

- Turns whole list into just one number. It loops through the students and adds their grades together to get total sum

c. What TypeScript error do you get if you remove isActive from one of the students in the array?

- It will get a “Property missing” error. TypeScript complains because every “student” must have an “isActive” property, it didn’t give one.

i. Why is this error helpful before running the code?

- It finds mistakes before you run code.

Part 3

1. In JSON.stringify(getActiveStudents(students), null, 2), what does each argument mean?

1. First argument:
    - This is the Value. It is the actual data that you want to convert into a text string.

2. Second argument (null):
    - This is the Replacer. It acts like a filter. Setting it to null.

3. Third argument (2):
    - This is the Space. It tells JavaScript to format the output with 2 spaces of indentation for every line.

2. If the JSON string is missing the grade field for one student, what could happen when you parse and use it in TypeScript?

1. Average calculation will fail and return NaN.
2. TypeScript cannot see the field is missing because its come from outside.
3. The values become undefined

Part 5

1. What is the difference between a JavaScript object in a .ts/.js file and JSON in a .json file?

- JS Object (.ts/.js) → Live data in memory. It contains functions, commnets, and variable. Keys don't always need quotes
- JSON → A text string used for storage or sending data. It has strict rules and can't contain functions or comments

2. Why is it better to use a specific type like Student instead of any when working with parsed
JSON data?

- Catches Erros and Autocomplete

3. What are the two main functions used to convert between JSON text and JavaScript/TypeScript objects?

- JSON.stringify() → Converts an Object to Text String
- JSON.parse() → Converts a Text String to Object

Git Repo

https://github.com/daydeda/LAB03-Interactive