

Take Home Test

Set 1 - Test duration: 2 weeks

Background

Company A has many projects to work on. Each project is assigned to multiple employees.

These employees have a tree hierarchy. An employee may have a manager to report. An employee may have direct report(s). An employee having manager may not have any direct report. An employee not having manager need to have direct report(s). An employee not having any direct report, need to have a manager.

Company A wants to create an EmployeeTree application to display the employee followed by the managers hierarchy up to the root of the tree for a specified employee.

The EmployeeTree application works as follow:

1. The input:
 - a. Multiple projects are specified in the input.
 - b. For each project, the full employee hierarchy is provided.
 - c. For each project, after the full employee hierarchy is provided, specific employees are specified to be displayed in the output.
2. The output:
 - a. For each specified employee in a project, display the managers hierarchy up to the root of the tree.

Assignment

Create an Employee Tree application having these specifications:

1. Application can be written in OOP based language such as, but not limited to: C#, java, Javascript, Typescript, C++, python.
2. Application read from an input JSON file named "input.json". The attached input JSON file is only a sample for example purpose. The JSON properties name should already explain what their intentions are.
3. Application write an output JSON file named "output.json". The attached output JSON file is the result of the sample input JSON file. The JSON properties name should already explain what their intentions are.
4. Provide unit tests. More coverage is the better.
5. The aim of this test is to create the code as readable, modular, maintainable, and testable as possible.
6. Another aim for this test is to check the candidate's defensive programming skill. The more edge cases handled, even if not specified in the example input file, the better.
7. Candidate can submit this test in a single zip file within the given test duration. The zip file should include:
 - a. The code itself,
 - b. Instruction how to build and run the application,
 - c. Instruction how to run the unit tests,
 - d. Providing Demo video / screenshots of the application and unit tests coverage are a plus (optional, helpful).

8. It is up to the candidate how to send this single zip file. Sending via email might be blocked by the email provider due to security reason regarding uploading a code file or executable. Candidate can share the zip file via google drive (shared link), or the code itself via github **private repo**, or gitlab **private repo**, etc.
9. Adding github coverage is a plus (optional).

Assessment

- Code originality
- Code readability, modularity, maintainability, and testability
- Unit tests coverage
- Defensive programming on unspecified edge cases
- Creativity. Surprise us. If the application can be made better, then feel free to upgrade it. As long as the application intention is still the same as described above; which is to display the employee followed by the managers hierarchy up to the root of the tree for a specified employee.