

Fossil's Technical Test #2

For Senior level and above

Overview

At senior level, besides strong programming skills, we expect our team member to excel at problem solving and technical writing skills. He/she needs to be able to transfer the solutions throughly to other colleagues, including junior members.

In this test, you will be put in a tough situation where you are required to write a solution/technical document for your team, so they can work on the concrete implementation of the problem (*with many weird technical constraints, of course*).

You do not have any other way to communicate with your team except this document. So, your document should be as detailed as possible, as easy to understand as possible that even junior members can confidently do it.

Don't forget that "A picture is worth a thousand words"!

The problem - A File Archiver

- You are required to design a program that be able to archive and unarchive a whole folder into/from a single file.
- It needs to preserve the original of the selected folder structure.
- It's expected to handle complex file, folder structure efficiently. (*ie. the OS's files system*)

Functional requirements

- Archiving a whole folder into a single file.
- Unarchiving/Extracting the file onto a target folder.
- Updating a file (*file content or file name*) in the archive without the need of re-creating the whole file again.
- Removing one or many files or folders (*and file within them*) in the archive. In this case, it should be able to reduce the file size, if applicable.

The challenge

- **Key requirement** - Single zip file only. Adding a second file will result in a fatal error.
- The generous client told us that we can be care-free about the storage. They will scale it as much as the file needs.
- Do not use any existing storage/database/zip-related libraries, even the built-in ones. You can only use the standard library for `I/O handling`. In other words, any `file read/write` function will be implemented by our team, using the language's basic `I/O functions`.
- System's `Serialization` are not allowed.

Test duration

- We expect the document be sent back in 1 week since you received the test.
- You are allowed to extend the test duration as you need. It will not affect your performance. We value the quality of the delivered solution. So do your best!