

Assignment 2:

30 Marks

For an engineer, problem solving is not about just solving a problem somehow but about solving the problem in the most effective and efficient way. One of the sophisticated skills that a software professional needs is to choose suitable data structures for developing programming solution of a given problem. Selection of a particular data structure greatly influences the characteristics of the obtained solution that include efficiency (performance, or speed), space (memory) requirements, scalability, reuse, and robustness (or reliability). The other equally important skill is to choose a suitable problem solving technique to apply to a particular problem.

Consider the following scenario.

You are the designer of a new operating system and you have dozens of programmers working for you. To your dismay, it seems one of your programmers hates the traditional file manager with the folder – file structure. He has developed the file manager in such a manner that any directory / folder can store up to a maximum of two objects (the file and folder) and only a folder can store either a file or folder. You cannot ask your other developers to fix this as they are already overloaded. So as a computer science engineer, it is up to you to solve this. Team up with your friends for this task. You need to

1. Replicate the data structure used by your programmer
2. Create a new data structure that solves the problem
3. You have to display both the data structures in a meaningful manner.

Better hurry. The deadline for your OS release is 9th April 2015. The file manager has to be ready by at least 8th April 2015.