



## Back to the future

A time traveler got stuck in the past in the dinosaur era — that was the first human who travelled through time. Unfortunately, the engineers working on the time machine made a mistake and the time traveler had barely survived during his journey. Due to the issue, it's impossible for the poor man to get back. At the same time, nobody wants to risk and use a similar time machine to make a trip to the past in order to bring that person back before the problem is fixed.

The time traveler noticed that the time machine produced a lot of logs on the disk which may help the engineers with fixing the issue, in both textual and binary formats. In addition, he's noticed, that most of the files are of the same size, and some log files are binary identical to each other even though they are located in different folders and have different names. He was able to report this information to the nowadays engineers. It turns out, that the time machine is still capable to receive a single console application written in C++ (with additional libraries if needed), and to send only one file with data back. Nevertheless, it's running out of power, therefore the application must be effective, and the data size should be as minimal as possible.

Please help the time traveler to send the logs to the engineers and make such console application, which will be able

- to go through the file structure (with subfolders) starting from a specified folder
- produce a single file with the content of the folder (in an effective way in term of both the resource usage and produced file's size).
- to "unpack" the produced file to the exactly the same folders/files structure and content which was given to the application as an original input.

You may assume that:

- each file size doesn't exceed 2Gb
- the number of files doesn't exceed 1048576
- the disk capacity in the time machine is sufficient to at least make a copy of the whole logs folder.

The time traveler is starving and in a dangerous situation. So, hurry up!