As with any filesystem, there exists the possibility that errors will be introduced. In Linux, these errors are resolved using a File System ChecKer (fsck). Each fsck is custom designed for the file system type so that it can examine everything to make sure it is consistent.

For this homework, I would like you to design a file system checker for our file system. You should call it csefsck. It will have to do the following:

1. The DeviceID is correct
2. All times are in the past, nothing in the future
3. Validate that the free block list is accurate this includes
   1. Making sure the free block list contains ALL of the free blocks
   2. Make sure than there are no files/directories stored on items listed in the free block list
4. Each directory contains . and .. and their block numbers are correct
5. Each directory’s link count matches the number of links in the filename\_to\_inode\_dict
6. If the data contained in a location pointer is an array, that indirect is one
7. That the size is valid for the number of block pointers in the location array. The three possibilities are:
   1. size<blocksize if indirect=0 and size>0
   2. size<blocksize\*length of location array if indirect!=0
   3. size>blocksize\*(length of location array-1) if indirect !=0

Provide the code in a SINGLE C++ file uploaded to newclasses on or before the due date. Your code will be inspected closely for cheating and any cheating will result in a zero grade and be reported to university administration.