To do this you need to use the FS Format.doc file to understand how the file system is laid out. You may do this assignment in PHP,Python, C,C++ or Java. You must submit ONLY ONE file. Preferably the code. If your program, absolutely cannot fit in one file, you may submit a zip, but this should be an exceptional case.

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. The file system will never be mounted during an fsck operation, so don’t worry about it being changed outside of any changes you may make.

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, correcting errors whenever possible, and reporting everything it does to the user:

1. The DeviceID is correct (20)
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. If indirect is 1, that the data in the block pointed to by location pointer is an array
6. That the size is valid for the number of block pointers in the location array. The three possibilities are:
   1. size<blocksize should have indirect=0 and size>0
   2. if indirect!=0, size should be less than (blocksize\*length of location array)
   3. if indirect!=0, size should be greater than (blocksize\*length of location array-1)

Your code will be inspected closely for cheating and any cheating will result in a zero grade and be reported to university administration.