

**CSCI.4210 Operating Systems**  
**Fall, 2008**  
**Programming Assignment 7**  
**Extra Credit**

Take the program that you wrote for project 6 and add two features to it.

1. The user should be able to make changes to an already existing file. This would be done with the `replace` command. This takes three arguments, the first argument is the name of the file, the second is the string to be replaced (which is currently in the file) and the third is the new string. Since there can be spaces in either of the strings, the second two arguments must be in quotes. Note that the new string may be either longer or shorter than the string that it replaces.

For example

```
replace abc 'Lehman Bros' 'Morgan Stanley'
```

This command says to replace the string `Lehman Bros` with the string `Morgan Stanley` in the file `abc`.

It is only necessary to replace the first instance of a string.

2. The second feature is to make the file system truly distributed. Files can be on any one of three different computers. For each command, the client connects with a central service on one of the three computers which keeps track of the location of all of the files (all of the information on a particular file, including the inode, should be stored on a single computer). This central service returns the name of the computer to the client, and the client then connects to the appropriate computer.

For any command which would create a new file or directory, such as `write`, `copy`, or `mkdir`, the central service returns the name of one of the computers selected at random, and the file is written to that computer.

Note that for the `list` command, it may be necessary for the client to connect to several different computers to gather all the information that it needs.

If you did not get project 6 working, you should spend more time on project 6 rather than this. I will tell the graders not to take off more than ten points for lateness.

This program is due by Wed Dec 10. It can be used to replace the lowest or missing project grade or two missed or bad quizzes.