1 OPERATING SYSTEMS LABORATORY XI - File System II

1.1 MOSS Simulator

- Study the user guide for "File System Simulator".

- Follow the steps below for installation of the software

  1. Create a directory in which you wish to install the simulator (e.g., "moss/filesys").

     ```
     $ mkdir moss
     $ cd moss
     $ mkdir filesys
     $ cd filesys
     ```

  2. Download the compressed tar archive (filesys.tgz) into the directory.

  3. Expand the compressed tar archive.

     ```
     $ tar -zxvf filesys.tgz
     ```

  4. Export the classpath

     ```
     $ export CLASSPATH=.
     ```

  5. Using File System Simulator;
     - java mkfs file-name block-size blocks
     - java mkdir directory-path
     - java ls path-name ...
     - java tee file-path
     - java cp input-file-name output-file-name
     - java cat file-name
     - java dump file-name

     see the user guide.

  6. Hint: If you want to compile java codes as given in the manual files, you may be faced with some errors. A suggested solution is that: If there is any import statement that is used for including user-defined class, erase it. (i.e. //import Common;)

Lab work:

1. Use *mkfs* to create a file system with a block size of 64 bytes and having a total of 8 blocks. How many index nodes will fit in a block? How many directory entries will fit in a block? Use dump to examine the file system backing file, and note the value in byte 64. What does this value represent? Use mkdir to create a directory (e.g., /usr), and then use dump to examine byte 64 again. What do you notice? Repeat the process of creating a directory (e.g., /bin, /lib, /var, /etc, /home, /mnt, etc.) and examining with dump. How many directories can you create before you fill up the file system? Explain why.

2. Enhance *ls.java* to display for each file the uid and gid as decimal numbers, and the 9 low-order bits of mode as a 3-digit octal number (i.e., 000..777).