Sean Crowley
Lab 12
CIS 452

File System Interface: Information

1. **Answer the questions and perform the following operations:**

   A. What is the difference between stat(1) and stat(3)?

   Stat(3) is a POSIX system call and also writes its output to a buffer which is a stat structure. Stat(3) can also provide information on a symbolic link and the file it points to if it exists.

   B. What *exactly* does Sample Program 1 do?

   Sample program 1 provides the numeric value for the file type.

   C. Start a script file and verify that your program works. Submit the script file.

   ```
   #!/bin/bash

   echo -n "Enter a file name : "
   read text

   stat $text
   echo
   ./a.out $text
   ```

   ```
   [eos19:~/Documents/git_repos/cis452/lab12]$ ./script.sh
   Enter a file name : dir
     File: 'dir'
     Size: 4096            Blocks: 8          IO Block: 1048576 directory
   Device: 26h/38d Inode: 22745847    Links: 2
   Access: (0711/drwx--x--x)  Uid: ( 7494/crowleys)   Gid: (  500/   users)
   Access: 2016-04-07 10:54:57.145237853 -0400
   Modify: 2016-04-07 10:54:57.145237853 -0400
   Change: 2016-04-07 10:54:57.145237853 -0400
    Birth: -

   value is: 16841
   file is a directory
   [eos19:~/Documents/git_repos/cis452/lab12]$
   ```

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2. Complete the following operations:

A. What *exactly* does Sample Program 2 do?

Program 2 prints the the current files and directories in the current directory.

B. Start a script file and verify that your program works. Submit the script file.

#!/bin/bash

ls -l
echo
./a.out

```
[eos19:~/Documents/git_repos/cis452/lab12]$ ./script2.sh
total 32
-rwxr-xr-x 1 crowleys users 8883 Apr  7 11:45 a.out
drwx--x--x 2 crowleys users 4096 Apr  7 10:54 dir
-rw-r--r-- 1 crowleys users  498 Apr  7 11:10 sample1.c
-rw-r--r-- 1 crowleys users  432 Apr  7 11:44 sample2.c
-rwxr-xr-x 1 crowleys users   85 Apr  7 11:22 script1.sh
-rwxr-xr-x 1 crowleys users   32 Apr  7 11:45 script2.sh

498 bytes       sample1.c
432 bytes       sample2.c
85 bytes        script1.sh
8883 bytes      a.out
4096 bytes      ..
4096 bytes      .
32 bytes        script2.sh
4096 bytes      dir
```

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3. Answer the following questions:

A. Based on the *order* of information provided, which of the two tree traversal algorithms does du use?

Depth-First Search is the algorithm that du uses.

B. What is the default block size used by du?

The default block size is 1024 bytes.

C. Speculate: given the intended purpose of du, why is the usage reported in blocks, instead of bytes?

I believe the reason that du reports in blocks because this is the actual space they are taking up on the filesystem. Even though a file takes up only 2KB of disk space it is actually using up 8KB on the system due to the block size. This gives a better sense of how much space the file is using.