

Unix System Administration Logbook

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Lab 01 - Introduction & Basic Commands

1. Name and explain one qualifier selected by you for each of the three commands

1. `ls -h` prints human readable file sizes (e.g. 1K, 2G, etc.) when used in conjunction with `-s` and `l`
2. `locate -c` prints the number of matching files instead of the absolute path (unless used in conjunction with `--print`)
3. `cd -` an argument of a single hyphen is converted to `$OLDPWD` returning the user to the last directory they were in. If the directory change was successful, the absolute pathname of the new working directory is written to stdout.
4. `pwd -P` prints the symbolically linked working directory as opposed to its symbolic location. See below.

```
# An example of pwd -P in an active session
mc@hearth ~/.config $ ls -lah | grep alacrity
lrwxrwxrwx 1 mc mc 36 Aug 29 16:50 alacrity ->
../dotfiles/config/.config/alacrity
mc@hearth ~/.config $ cd alacrity
mc@hearth ~/.config/alacrity (master) $ pwd
/home/mc/.config/alacrity
mc@hearth ~/.config/alacrity (master) $ pwd -P
/home/mc/dotfiles/config/.config/alacrity
```

2. Who are you (what is your user name) in this setup?

```
[student@UWS ~]$ whoami      # prints the username associated with the current
user's ID
student
```

3. What type of information does `df` display?

`df` reports file system disk space usage; It displays the amount of free space available on a file system matching the name argument.

4. What are the names of the different filesystems that are displayed? What is the mount-point for the `filesystem` source beginning `/dev/root`?

```
[student@UWS ~]$ df
```

Filesystem	1K-blocks	Used	Available	Use%	Mounted on
/dev/root	1048576	137428	911148	13%	/
devtmpfs	255020	228	254792	0%	/dev
tmpfs	255180	0	255180	0%	/dev/shm
tmpfs	255180	24	255156	0%	/tmp
tmpfs	255180	48	255132	0%	/run
/dev/sda1	3963	31	3728	1%	/media/disk1

- The names of the filesystems:

```
[student@UWS ~]$ df | awk '{print $1}'
Filesystem
/dev/root
devtmpfs
tmpfs
tmpfs
tmpfs
/dev/sda1
```

- `/dev/root` is mounted on the root directory `/`.

5. What do the `Used` and `Available` columns stand for?

`Used` is the number of used blocks on a system, and `Available` shows the number of available blocks. Blocks can be set to units of 1024 bytes, an overridden value using `-BG`, or 512 bytes if `POSIXLY_CORRECT` is set.

6. What is the directory name displayed by the `pwd` command?

```
/home/student/subdir
```

7. Use the `man` command `man ls` to find out what information is given by `ls -l`? Try to figure out which column shows file size. What is the size of the newly created file, `file2`?

- `ls -l` uses a long list format giving further info about each item
- `file1` is zero bytes in size
- `file2` is 20 bytes in size

8. Use the `pwd` command to find out what happened and in which directory you currently reside? What is the meaning of the double dot `..` if used in conjunction with the `cd` command?

```
[student@UWS subdir]$ cd ..      # change pwd to the parent directory
[student@UWS ~]$ pwd
/home/student                    # pwd is the parent dir
```

9. Use the `pwd` command to find out what happened and your current directory

```
[student@UWS ~]$ cd ./subdir    # from this dir, head to /subdir
[student@UWS subdir]$ pwd
/home/student/subdir            # pwd is now the subdir
```

The `.` in `cd ./subdir` represents the current directory. From this directory we moved into the sub-directory `subdir`.

10. In which directory did the command `cd` just move you?

```
[student@UWS subdir]$ pwd
/home/student/subdir            # currently in subdir
[student@UWS subdir]$ cd        # cd command with zero arguments ...
[student@UWS ~]$ pwd
/home/student                    # ... changes directory to the current user's
home dir
```

11. Are there any hidden files in the root directory called `/`?

```
[student@UWS ~]$ ls
Desktop  subdir
[student@UWS ~]$ ls -lah
total 24
drwxr-sr-x  4 student student 138 Sep 14 11:25 .           # hidden
drwxr-xr-x  3 root   root   61 Sep 14 11:25 ..          # hidden
-rw-----  1 student student 105 Sep 14 11:56 .bash_history # hidden
-r--r----- 1 student student 1004 Sep 14 11:25 .bashrc      # hidden
drwxr-xr-x  2 student student  37 Sep 14 11:25 Desktop
drwxr-sr-x  2 student student  81 Sep 14 11:55 subdir
```

Any directory name beginning with `.` represents a hidden directory. The listings for `.` and `..` represent the current and parent directories respectively, and are omitted by default when running `ls` with no arguments.

12. How many filesystems are there in total listed in the root directory called `/`?

The wording of this question is a little ambiguous.

```
[student@UWS ~]$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/root        1048576   137428    911148   13% /
devtmpfs         255020      228    254792    0% /dev
tmpfs            255180        0    255180    0% /dev/shm
tmpfs            255180       24    255156    0% /tmp
tmpfs            255180       48    255132    0% /run
/dev/sda1         3963        31      3728    1% /media/disk1
[student@UWS ~]$ df /
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/root        1048576   137428    911148   13% /
```

1. If the question is how many filesystems are mounted on the root directory, i.e. `/` then the answer is one: `/dev/root`
2. If, on the other hand, the question is how many filesystems are *contained within* `/` then the answer is four including `/dev/root`, given that `/dev`, `/tmp`, and `/run` are mount points for filesystems contained within immediate subdirectories within `/`