Week 9

File Permissions

- Consider the following output from the command '**ls -l ~cs1521**'

```
drwxr-x---  11 cs1521 cs1521 4096 Aug 27 11:59 17s2.work
drwxr-xr-x   2 cs1521 cs1521 4096 Aug 20 13:20 bin
-rw-r-----   1 cs1521 cs1521   38 Jul 20 14:28 give.spec
drwxr-xr-x   3 cs1521 cs1521 4096 Aug 20 13:20 lib
drwxr-x--x   3 cs1521 cs1521 4096 Jul 20 10:58 public_html
drwxr-xr-x  12 cs1521 cs1521 4096 Aug 13 17:31 spim
drwxr-x---   2 cs1521 cs1521 4096 Sep  4 15:18 tmp
lrwxrwxrwx   1 cs1521 cs1521   11 Jul 16 18:33 web -> public_html
```

- Who can access the **17s2.work** directory?
- What operations can a typical user (public / other users) perform in the **public_html** directory?
- What is the file **web?**

File Permissions

- r: read
  - Can run **ls** on a directory
- w: write
  - Change what files are in the directory (add / remove)
- x: execute
  - You can 'explore' the directory
  - I.e. you are able to **cd** into the directory

```
-                           rwx           rwx                rwx
- file/                     Owner         Owner's Group      Others (public)
d directory/
l symbolic link
```

stat and lstat

- The **stat()** and **lstat()** functions both take as arguments a pointer to a **struct stat** object, and fills it with the metadata for the specified file
- Some of the fields in **struct stat** include: (see '**man 7 inode**')

```
struct stat {
    ino_t st_ino;          /* inode number */
    mode_t st_mode;        /* protection */
    uid_t st_uid;          /* user ID of owner */
    gid_t st_gid;          /* group ID of owner */
    off_t st_size;         /* total size, in bytes */
    blksize_t st_blksize;  /* blocksize for filesystem I/O */
    blkcnt_t st_blocks;    /* number of 512B blocks allocated */
    time_t st_atime;       /* time of last access */
    time_t st_mtime;       /* time of last modification */
    time_t st_ctime;       /* time of last status change */
};
```

Changing permissions

- **chmod**

Environment variables

- Can be accessed via terminal with **$** (e.g. **$HOME**)
- **getenv()**
- **setenv()**