# With great power comes great responsibility

One of these deletes the tmp-data directory and any files that start with "aligned-reads". The other deletes EVERYTHING in the current directory.

```
$ rm -rf tmp-data/ aligned-reads*
$ rm -rf tmp-data/ aligned-reads *
```

Undo is not an available shell command. Get smart about protecting your data.

# Protect your data

- Backups for your own computer
  - External hard drive
    - Mac – Time Machine
    - Windows – Backup and Restore
  - Online backup software that is automated
    - iDrive, BackBlaze, Carbonite, etc
    - Costs money

https://www.techopedia.com/2/29440/trends/cloud-computing/cloud-vs-local-backup-which-do-you-need
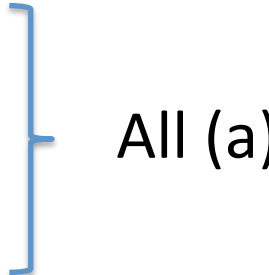
Cloud Services

# Protect your data

- Backups of data
  - External hard drive – these do fail, consider using 2
  - ACF backs up home directories but not project directories
  - Low likelihood of loss unless a major disaster happens!
  - Keep an eye on project end date – you may lose data. No emails are sent right now.
- But what if you delete it?
- Linux Permissions
  - Can use these to prevent yourself or someone else from overwriting or deleting the data
  - Read-only permission



READ ONLY

# Linux Permissions

- File permissions are broken down into three user types:
  - User/Owner (u)
  - Group (g)          All (a)
  - World/Other (o)
- Permissions can control how each user type can interact with the file
  - Read (r)
  - Write (w)
  - Execute (x)

# Execute?

- For a file
  - Run the file as a program (execute the code)
- For a folder
  - The ability to cd into the directory
  - The ability to access the contents of a directory

Mnemonic device built right in!

# Linux Permissions

Viewing permissions with `ls –l`

A file with completely open permissions:

`–rwxrwxrwx mstaton1 tug2222 file.txt`

User | Group | World

User and group can read/write:

`-rw-rw---- mstaton1 tug2222 file.txt`

User and group and outsiders can read:

`-r--r--r-- mstaton1 tug2222 file.txt`

# Linux Permissions

- Changing owner

  ```
  chown mestato file.txt
  ```

- Changing owner + group

  ```
  chown mestato:statongroup file.txt
  ```

- Removing write permission from user

  ```
  chmod u-w file.txt
  ```

- Removing execute permission from everyone

  ```
  chmod a+x file.txt
  ```