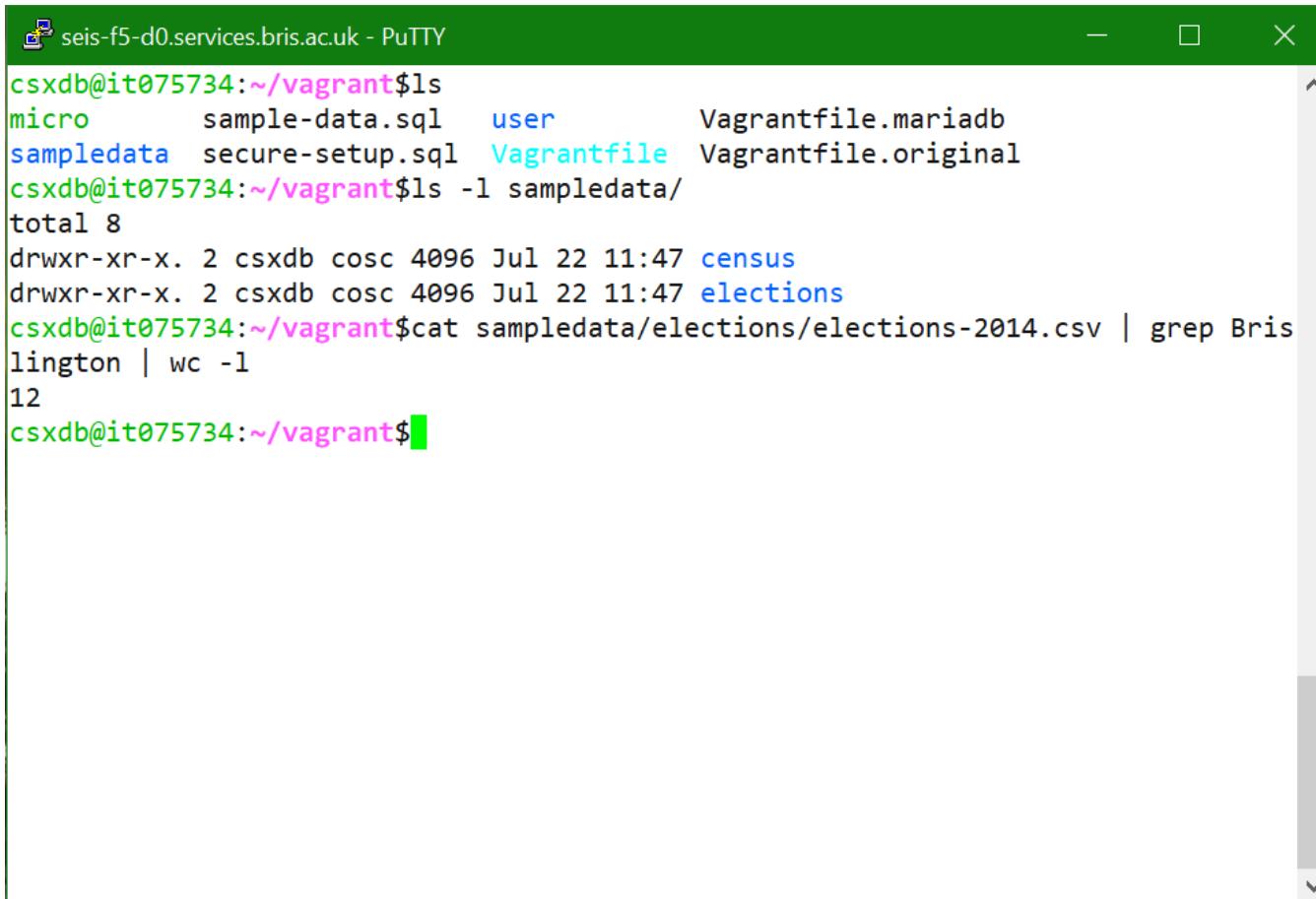


The shell

COMS10012 / COMSM0085

Software Tools

The shell



A screenshot of a PuTTY terminal window titled "seis-f5-d0.services.bris.ac.uk - PuTTY". The window shows a command-line session:

```
csxdb@it075734:~/vagrant$ls
micro      sample-data.sql    user          Vagrantfile.mariadb
sampledata  secure-setup.sql  Vagrantfile  Vagrantfile.original
csxdb@it075734:~/vagrant$ls -l sampledata/
total 8
drwxr-xr-x. 2 csxdb cosc 4096 Jul 22 11:47 census
drwxr-xr-x. 2 csxdb cosc 4096 Jul 22 11:47 elections
csxdb@it075734:~/vagrant$cat sampledata/elections/elections-2014.csv | grep Bris
lington | wc -l
12
csxdb@it075734:~/vagrant$
```

Terms

shell

xterm

terminal

rxvt

console

konsole

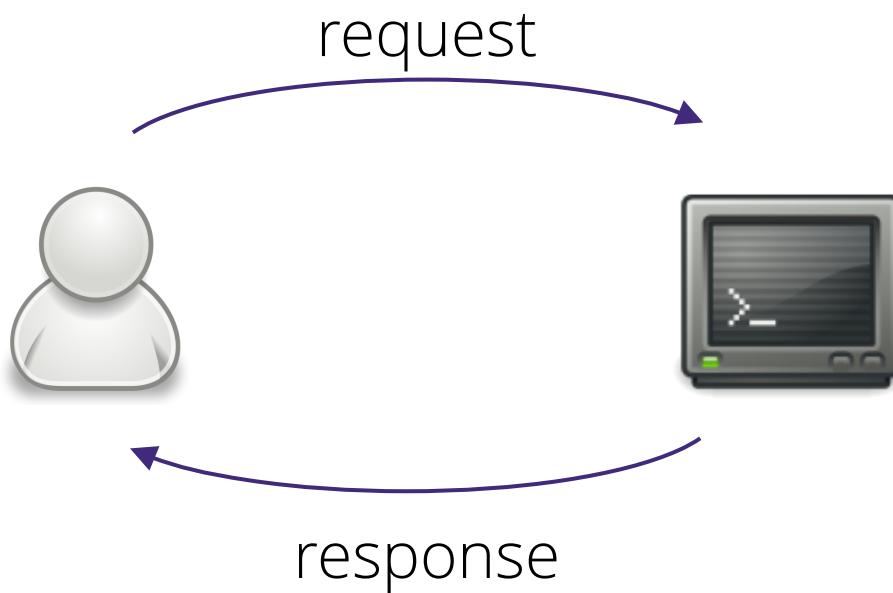
command line

(gnome)-terminal

(command) prompt

putty (Windows)

shell workflow



prompt

- \$ You are in a shell, most likely POSIX
(sh) compatible.
- # You are in a root shell. With great power
comes great responsibility.
- % You are probably in the C shell.
- > You are on a continuation line e.g.
inside a string.

shell tricks

TAB: complete command or filename

DOUBLE TAB: show list of possible completions

UP/DOWN: scroll through history

^R text: search history for command

builtins

```
$ which ls
```

```
/bin/ls
```

```
$ which cd
```

```
$
```

options and conventions

```
$ ls
```

```
file1           file2
```

```
$ ls -l
```

```
-rwx-----    1 vagrant ... 40 ... file1
-rwxr-----    1 vagrant ... 80 ... file2
```

```
$ ls -a
```

```
.           ..           file           file2
```

help

```
$ ls --help
```

BusyBox v1.30.1 multi-call binary.

Usage: ls [-1AaCxdLHRFplnshrSXvctu] [-w WIDTH] [FILE] ...

List directory contents

-1 One column output

-a Include entries which start with

.

...

...

manuals

\$ man [SECTION] COMMAND

- On lab machines: fairly user-friendly manual.
- On alpine: programmer's manual.

Section 1 is shell commands, section 2 system calls,
section 3 the C library etc.

e.g. `man 1 printf` and `man 3 printf` are different.

shell expansion

shell expansion



Separation of responsibility:

- shell deals with expanding pattern
- program deals with its arguments

shell expansion

- * all filenames in current scope
 - e.g. **a*** is filenames starting with a etc.
- ? single character in filename
 - e.g. **image???.jpg** matches
image001.jpg
- [ab] single character in list
 - e.g. **image[0-9].jpg**
- \$ variable name expansion

shell quoting

"double quotes" turn off pattern matching
keeps variable interpolation and backslashes on

'single quotes' turn off everything

*, \?, \[, \\$
do not treat as
pattern

example

cp [-rfi] SRC... DEST copy files

- r** recursive
- f** overwrite readonly
- i** ask before overwriting (interactive)

mv [-nf] SRC... DEST move files

- n** no overwrite
- f** force overwrite

examples

```
$ cp index.html style.css web  
$ cp * web
```

in empty folder:

```
$ cp * web  
cp: can't stat '*': No such file or  
directory
```

find files

\$ find DIR [EXPRESSION]

find all files in directory (recursively)
that match an expression

e.g. **find . -name "a*"**