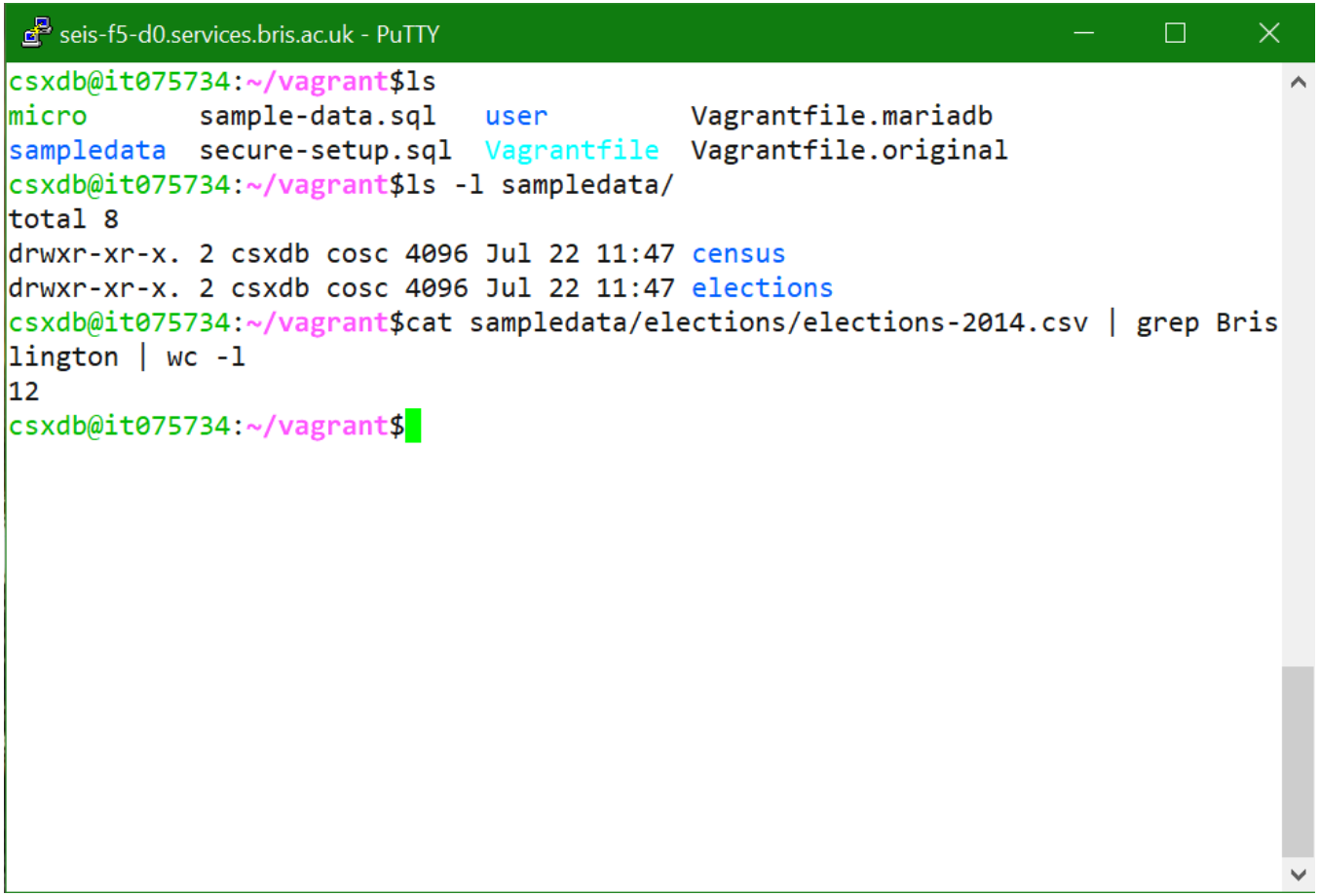
The shell

COMS10012 Software Tools

The shell


seis-f5-d0.services.bris.ac.uk - PuTTY
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

terminal

console

command line

(command) prompt

xterm

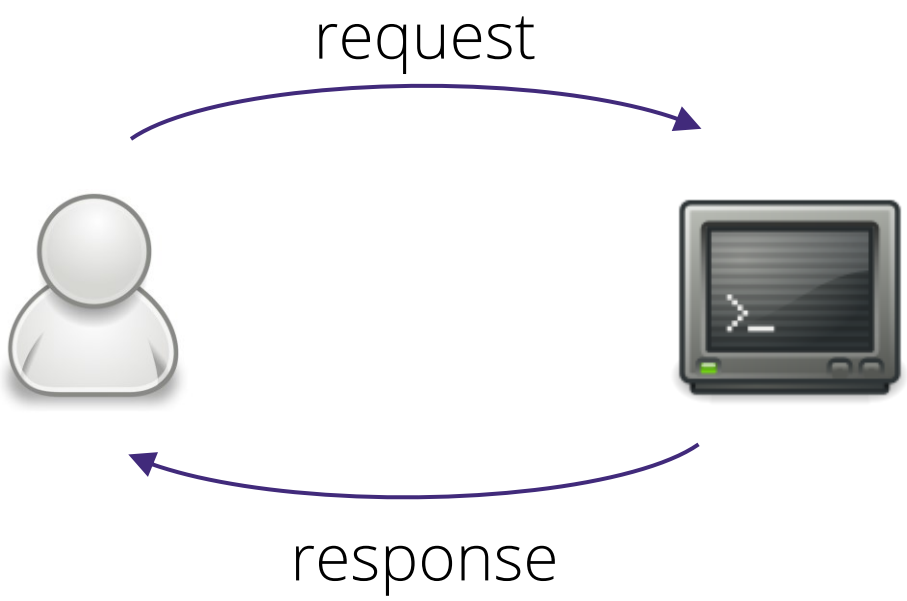
rxvt

konsole

(gnome)-terminal

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 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 [-1AaCxdLHRFplinshrSXvctu] [-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 folder
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*"`**