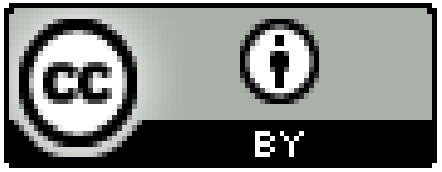
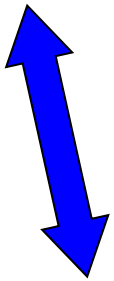
The Unix Shell

The Secure Shell

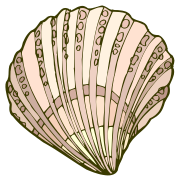


Copyright © Software Carpentry 2011
This work is licensed under the Creative Commons Attribution License
See http://software-carpentry.org/license.html for more information.

$ pwd

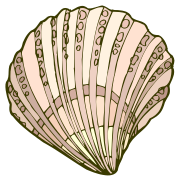


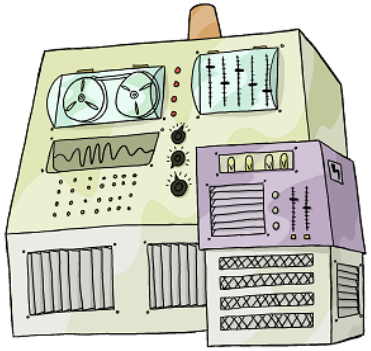
shell



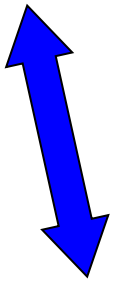
```
$ pwd
/users/vlad
$
```

shell

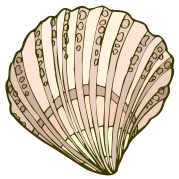




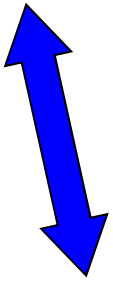
```
login as: vlad
Password: ********
```



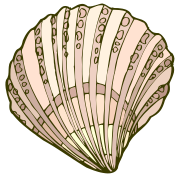
shell

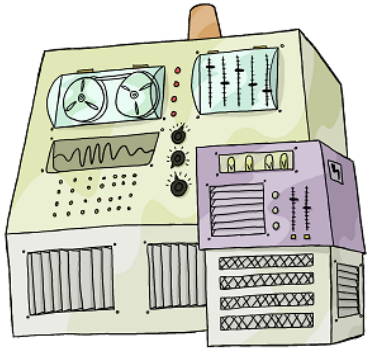


```
login as: vlad
Password: ********
$
```



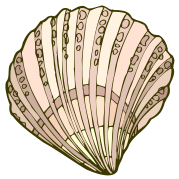
shell

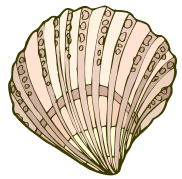


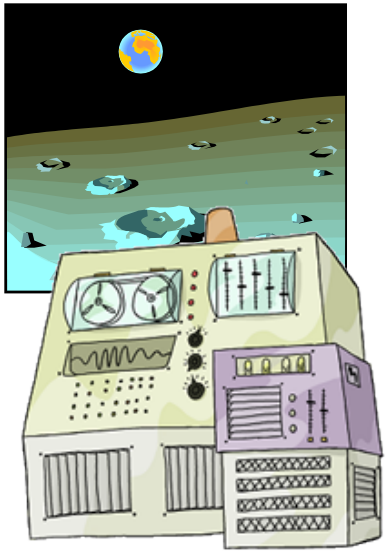


```
login as: vlad
Password: ********
moon>
```

shell

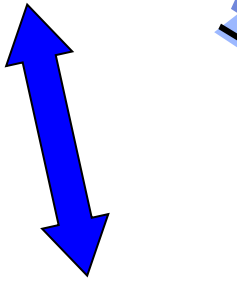


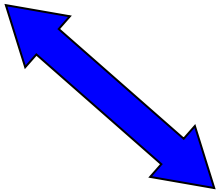


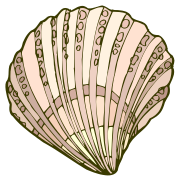


remote shell

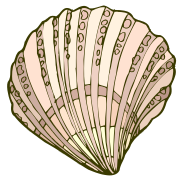
```
login as: vlad
Password: ********
moon>
```

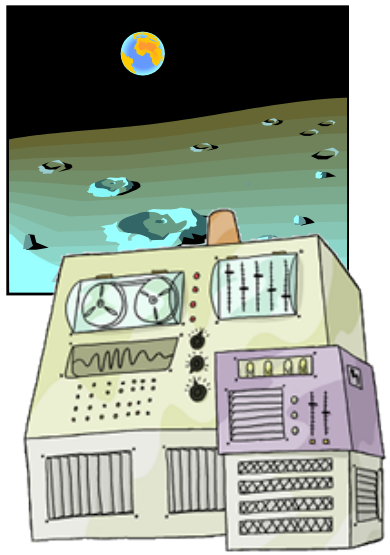






shell





remote shell

```
$ pwd
/users/vlad
$ ssh vlad@moon
Password:
```

```
$ pwd
/users/vlad
$ ssh vlad@moon
Password: ***
Access denied
Password:
```

```
$ pwd
/users/vlad
$ ssh vlad@moon
Password: ***
Access denied
Password: ********
moon> pwd
/home/vlad
moon> ls -F
bin/      cheese.txt    dark_side/    rocks.cfg
```

```
$ pwd
/users/vlad
$ ssh vlad@moon
Password: ***
Access denied
Password: ********
moon> pwd
/home/vlad
moon> ls -F
bin/      cheese.txt    dark_side/    rocks.cfg
moon> exit
$ pwd
/users/vlad
```

```
$ ssh vlad@moon
Password: ********
moon> pwd
/home/vlad
moon> ls -F
bin/      cheese.txt   dark_side/   rocks.cfg
moon> exit
$ pwd
/users/vlad
$ ls -F
bin/          data/     mail/       music/
notes.txt     papers/   pizza.cfg   solar/
solar.pdf     swc/
```

```
$ scp vlad@moon:/home/vlad/cheese.txt
      vlad@earth:/users/vlad
```

source file...

```
$ scp vlad@moon:/home/vlad/cheese.txt
      vlad@earth:/users/vlad
```

source file...

…to destination directory

```
$ scp vlad@moon:/home/vlad/cheese.txt
        vlad@earth:/users/vlad
```

source file...

…to destination directory

source and destination are written as

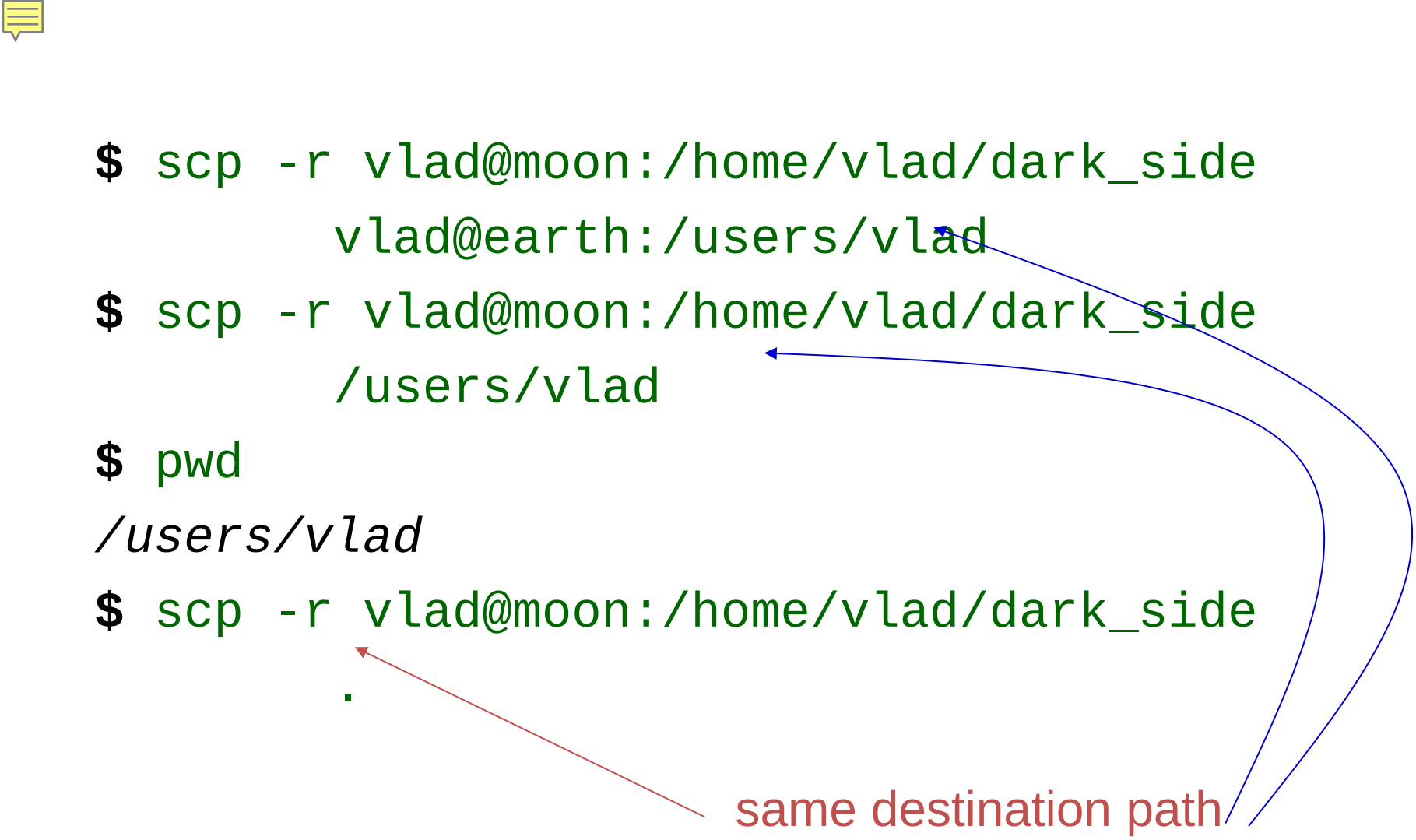
user@computer:path

```
$ scp vlad@moon:/home/vlad/cheese.txt
        vlad@earth:/users/vlad
Password: ********
cheese.txt                    100%  9   1.0 KB/s 00:00
```

```
$ scp vlad@moon:/home/vlad/cheese.txt
       vlad@earth:/users/vlad
$ scp -r vlad@moon:/home/vlad/dark_side
       vlad@earth:/users/vlad
```

-r indicates a directory and its contents

```
$ scp -r vlad@moon:/home/vlad/dark_side
        vlad@earth:/users/vlad
$ scp -r vlad@moon:/home/vlad/dark_side
        /users/vlad
$ pwd
/users/vlad
$ scp -r vlad@moon:/home/vlad/dark_side
        .
```



```
$ ssh vlad@moon
Password: ********
moon> df –h
Filesystem     Size  Used  Avail  Use% Mounted O
/dev/sda1      7.9G  2.1G  5.5G   28%  /
/dev/sda2      791G  150G  642G   19%  /home
moon> df –h > usage.txt
moon> exit
$ scp vlad@moon:/home/vlad/usage.txt .
Password: ********
usage.txt                    100%  134   1.0 KB/s 00:0
```

```
$ ssh vlad@moon 'df -h'
Password: ********
Filesystem      Size  Used  Avail  Use% Mounted O
/dev/sda1       7.9G  2.1G  5.5G   28%  /
/dev/sda2       791G  150G  642G   19%  /home
```

```
$ ssh vlad@moon 'df -h'
Password: ********
Filesystem      Size  Used  Avail  Use% Mounted O
/dev/sda1       7.9G  2.1G  5.5G   28%  /
/dev/sda2       791G  150G  642G   19%  /home
$ ssh vlad@moon 'df -h' >> usage.log
Password: ********
$ ls -F
bin/            data/       mail/        music/
notes.txt       papers/     pizza.cfg    solar/
solar.pdf       swc/        usage.log    usage.txt
```

same result

character stream

```
$ echo "open sesame, please"  |  ssh
   vlad@moon  'cat > magic.txt'
Password: ********
```

character stream

remote shell receives stream from pipe

```
$ echo "open sesame, please"  |  ssh
   vlad@moon  'cat > magic.txt'
Password: ********
```

redirection within remote shell

remote command receives input piped to ssh

cat repeats input stream as output

```
$ ssh vlad@moon 'ls -F /home/vlad'
Password: ********
bin/       cheese.txt   dark_side/   rocks.cfg
$ echo "open sesame, please"  |  ssh
   vlad@moon  'cat > magic.txt'
Password: ********
$ ssh vlad@moon 'ls -F /home/vlad'
Password: ********
bin/       cheese.txt   dark_side/   magic.txt
rocks.cfg
```

before

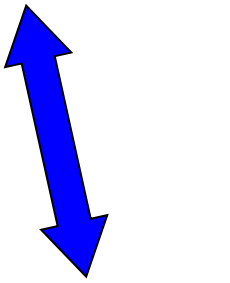
after

```
$ ssh vlad@moon 'ls -F /home/vlad'
Password: ********
bin/       cheese.txt   dark_side/   rocks.cfg
$ echo "open sesame, please"  |  ssh
   vlad@moon  'cat > magic.txt'
Password: ********
$ ssh vlad@moon 'ls -F /home/vlad'
Password: ********
bin/       cheese.txt   dark_side/   magic.txt
rocks.cfg
$ scp vlad@moon:/home/vlad/magic.txt .
Password: ********
```

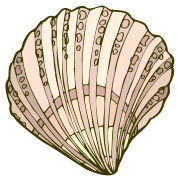
before

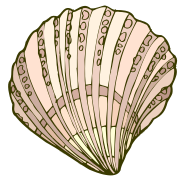
after

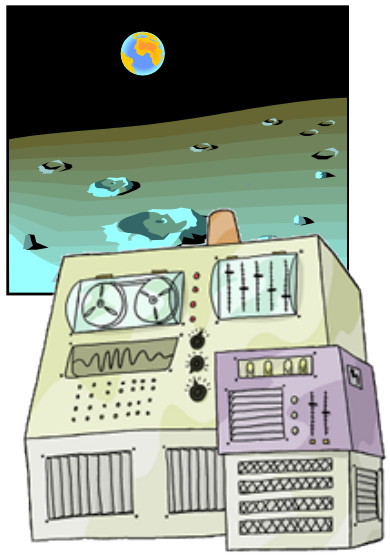
```
login as: vlad
Password: ********
```



shell

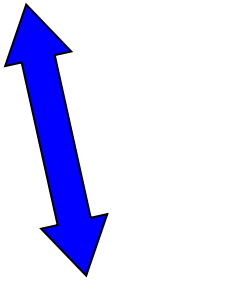


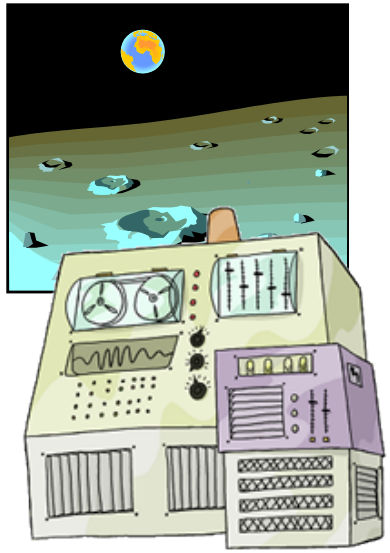




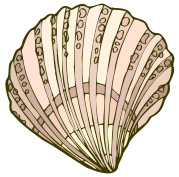
remote shell

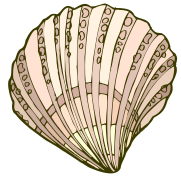
```
login as: vlad
Password: thriller
```





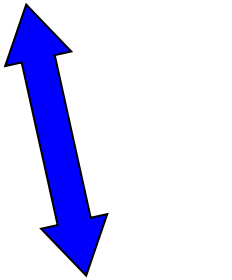
shell



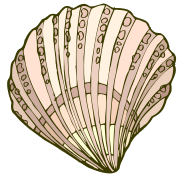


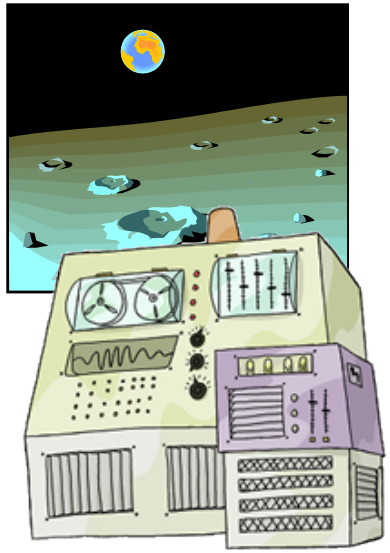
remote shell

```
login as: vlad
Password: thriller
```

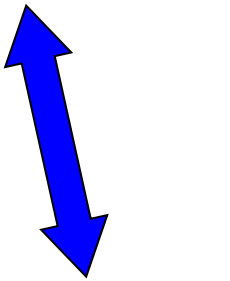


shell

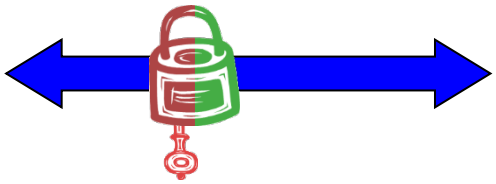


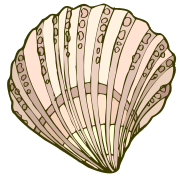


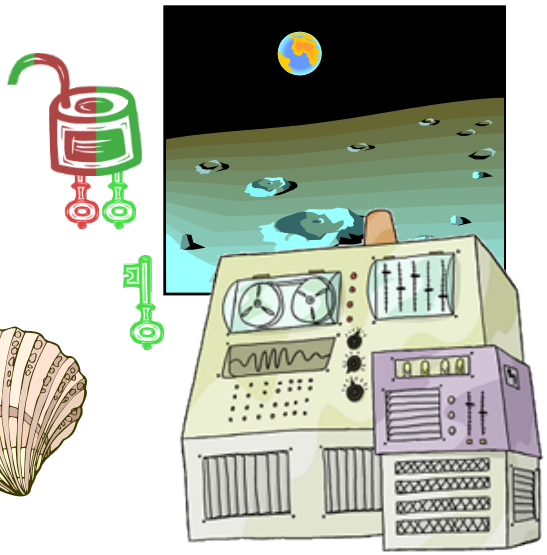
remote shell



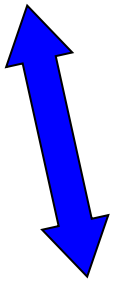
shell



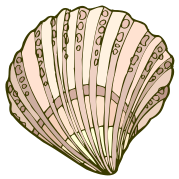


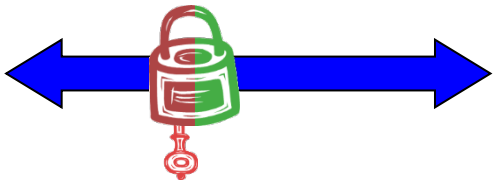


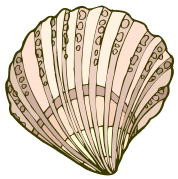
remote shell



shell







remote shell

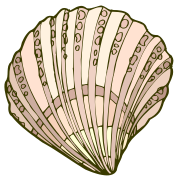
public key

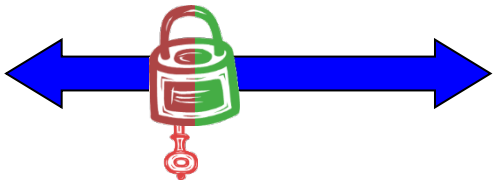
cannot decrypt
using public key

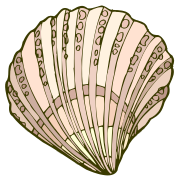
encryption using
public key

private key
(only 1 copy)

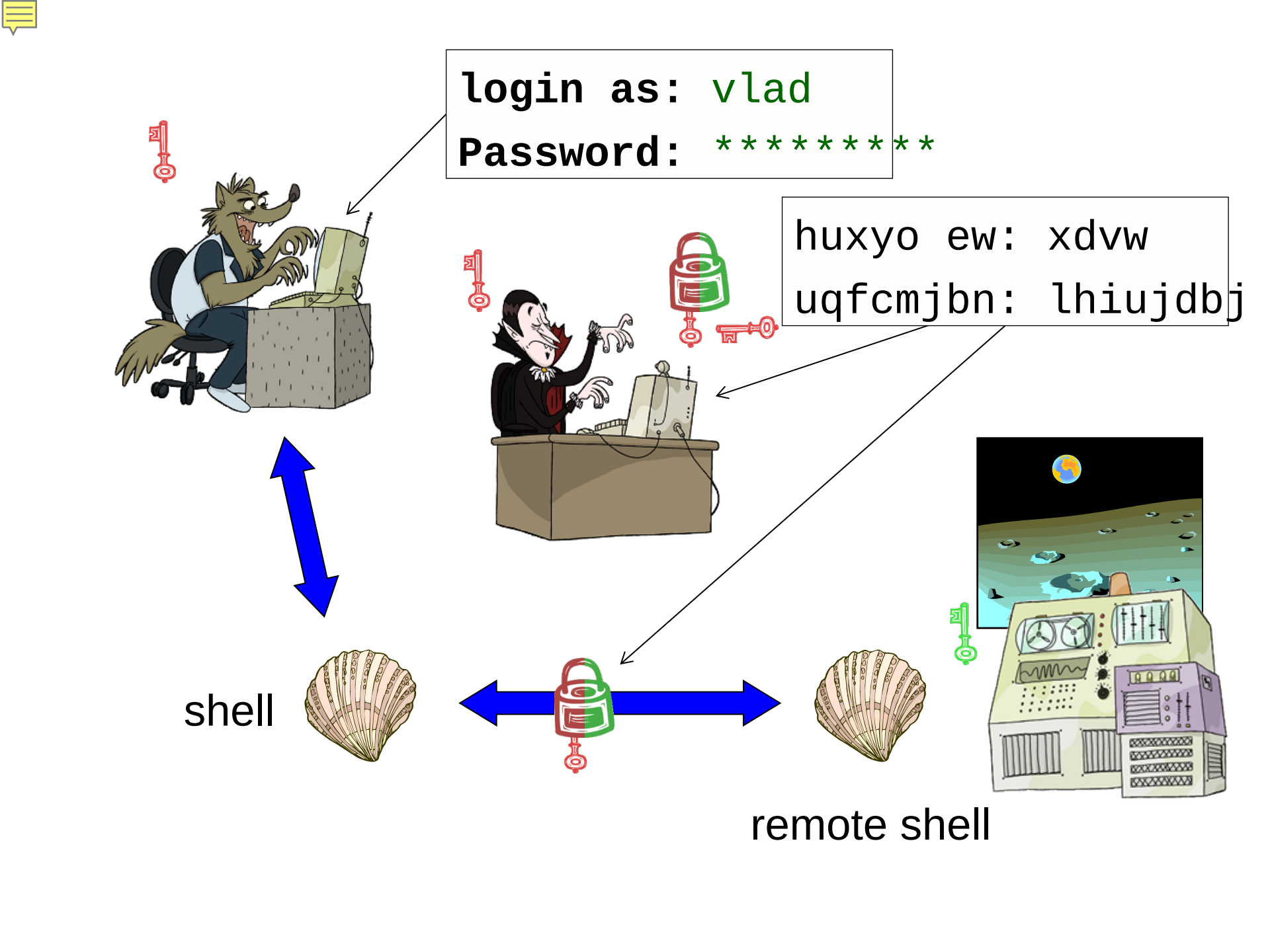
shell







remote shell

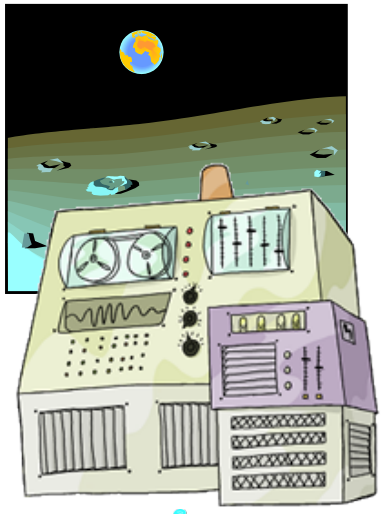

login as: vlad
Password: *********
huxyo ew: xdvw
uqfcmjbn: lhiujdbj
shell
remote shell

```
$ ssh vlad@moon
The authenticity of host ‘moon (10.1.2.3)‘
 can't be established.
RSA key fingerprint is
 f1:68:f5:90:47:dc:a8:e9:62:df:c9:21:f0:8b:c5:3
Are you sure you want to continue connecting
 (yes/no)? yes
Warning: Permanently added ‘moon,10.1.2.3' (RSA
 to the list of known hosts.
Password: ********
moon>
```

encryption using public keys

Send message to moon locked with moon's public key
(Only readable by moon)

Send message to Vlad locked with Vlad's public key
(Only readable by Vlad)



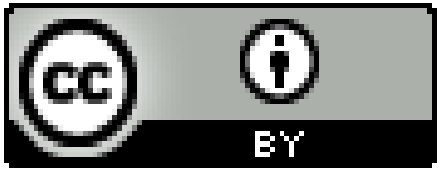
private key
(only 1 copy)

private key
(only 1 copy)

created by

Elango Cheran

February 2011



Copyright © Software Carpentry 2011
This work is licensed under the Creative Commons Attribution License
See http://software-carpentry.org/license.html for more information.