



The Unix Shell

The Secure Shell



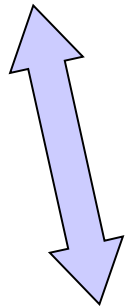
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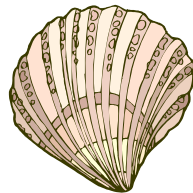
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```
$ pwd
```

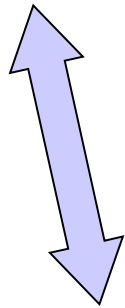


shell

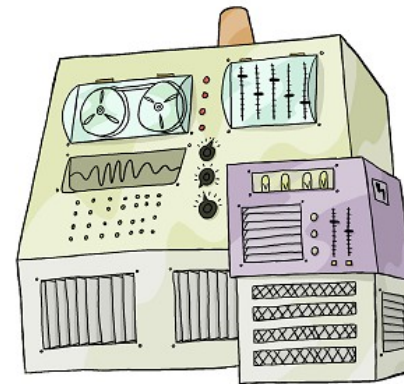
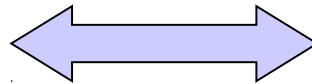
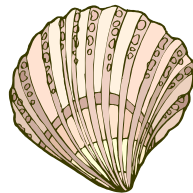




```
$ pwd  
/users/vlad  
$
```

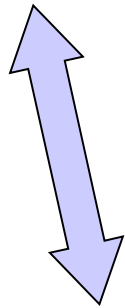


shell

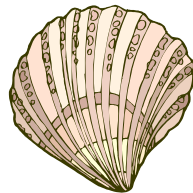




login as: vlad
Password: *****

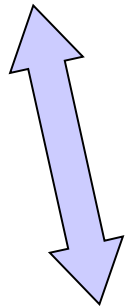


shell

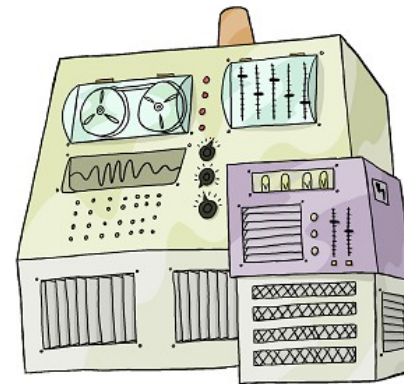
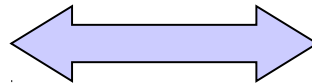
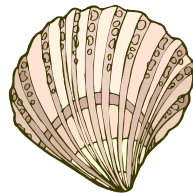




login as: vlad
Password: *****
\$

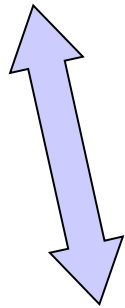


shell

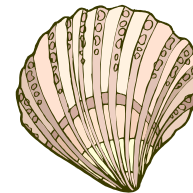
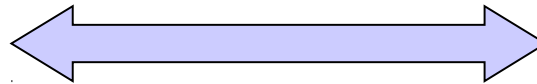
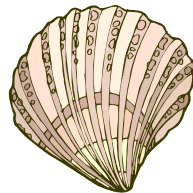




```
login as: vlad  
Password: *****  
moon>
```



shell

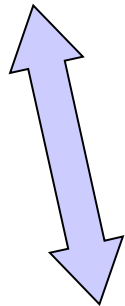


remote shell

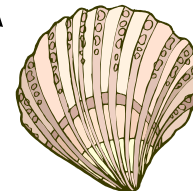
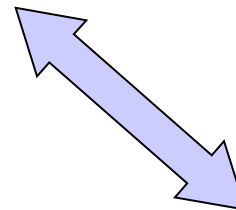
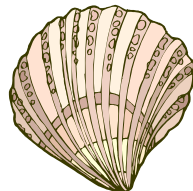




```
login as: vlad  
Password: *****  
moon>
```



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
    .
```

same destination path



```
$ ssh vlad@moon
```

```
Password: *****
```

```
moon> df -h
```

<i>Filesystem</i>	<i>Size</i>	<i>Used</i>	<i>Avail</i>	<i>Use%</i>	<i>Mounted On</i>
<i>/dev/sda1</i>	<i>7.9G</i>	<i>2.1G</i>	<i>5.5G</i>	<i>28%</i>	<i>/</i>
<i>/dev/sda2</i>	<i>791G</i>	<i>150G</i>	<i>642G</i>	<i>19%</i>	<i>/home</i>

```
moon> df -h > usage.txt
```

```
moon> exit
```

```
$ scp vlad@moon:/home/vlad/usage.txt .
```

```
Password: *****
```

```
usage.txt                100% 134 1.0 KB/s 00:00
```

```
$ ssh vlad@moon 'df -h'
```

```
Password: *****
```

<i>Filesystem</i>	<i>Size</i>	<i>Used</i>	<i>Avail</i>	<i>Use%</i>	<i>Mounted On</i>
<i>/dev/sda1</i>	<i>7.9G</i>	<i>2.1G</i>	<i>5.5G</i>	<i>28%</i>	<i>/</i>
<i>/dev/sda2</i>	<i>791G</i>	<i>150G</i>	<i>642G</i>	<i>19%</i>	<i>/home</i>

```
$ ssh vlad@moon 'df -h'
```

```
Password: *****
```

```
Filesystem      Size  Used Avail Use% Mounted On
/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

before

```
$ 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
```

after

before

```
$ 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
```

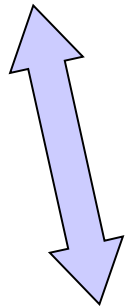
```
$ scp vlad@moon:/home/vlad/magic.txt .
```

```
Password: *****
```

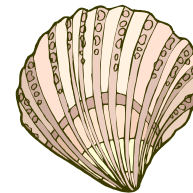
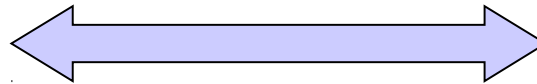
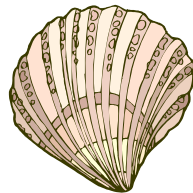
after



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



shell

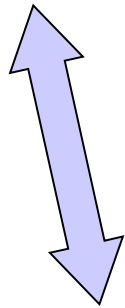


remote shell

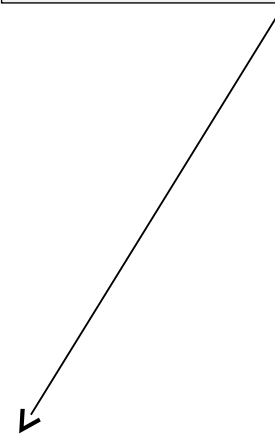
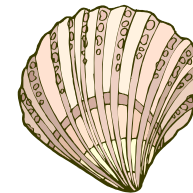
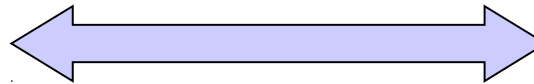
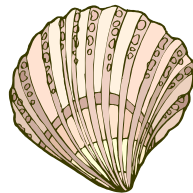




```
login as: vlad  
Password: thriller
```



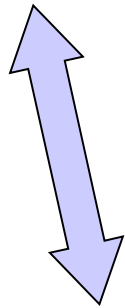
shell



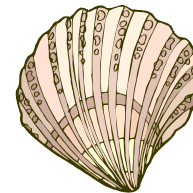
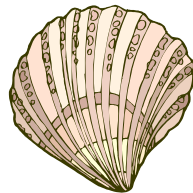
remote shell



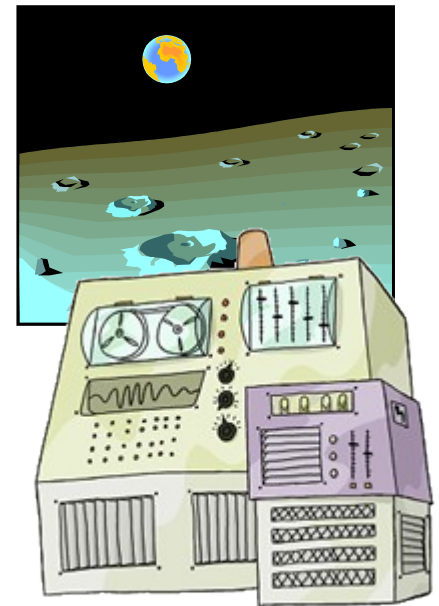
```
login as: vlad  
Password: thriller
```

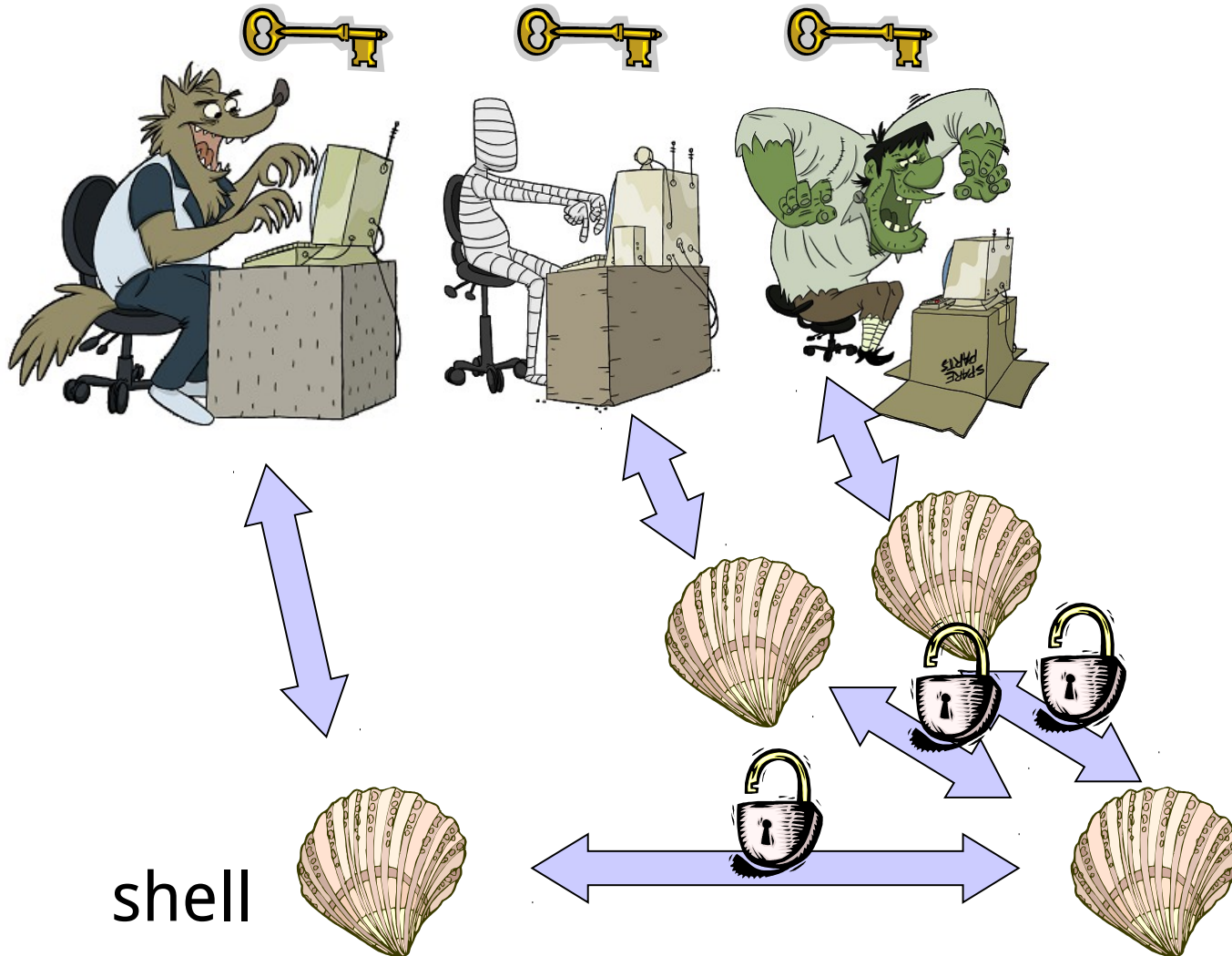


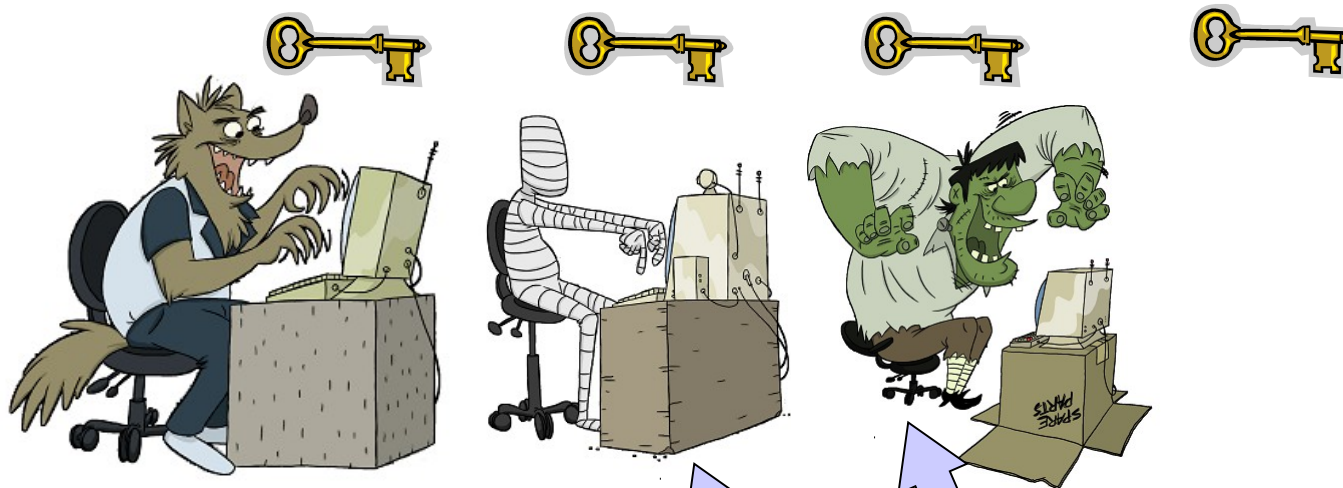
shell



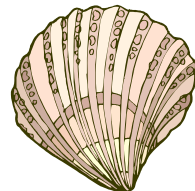
remote shell





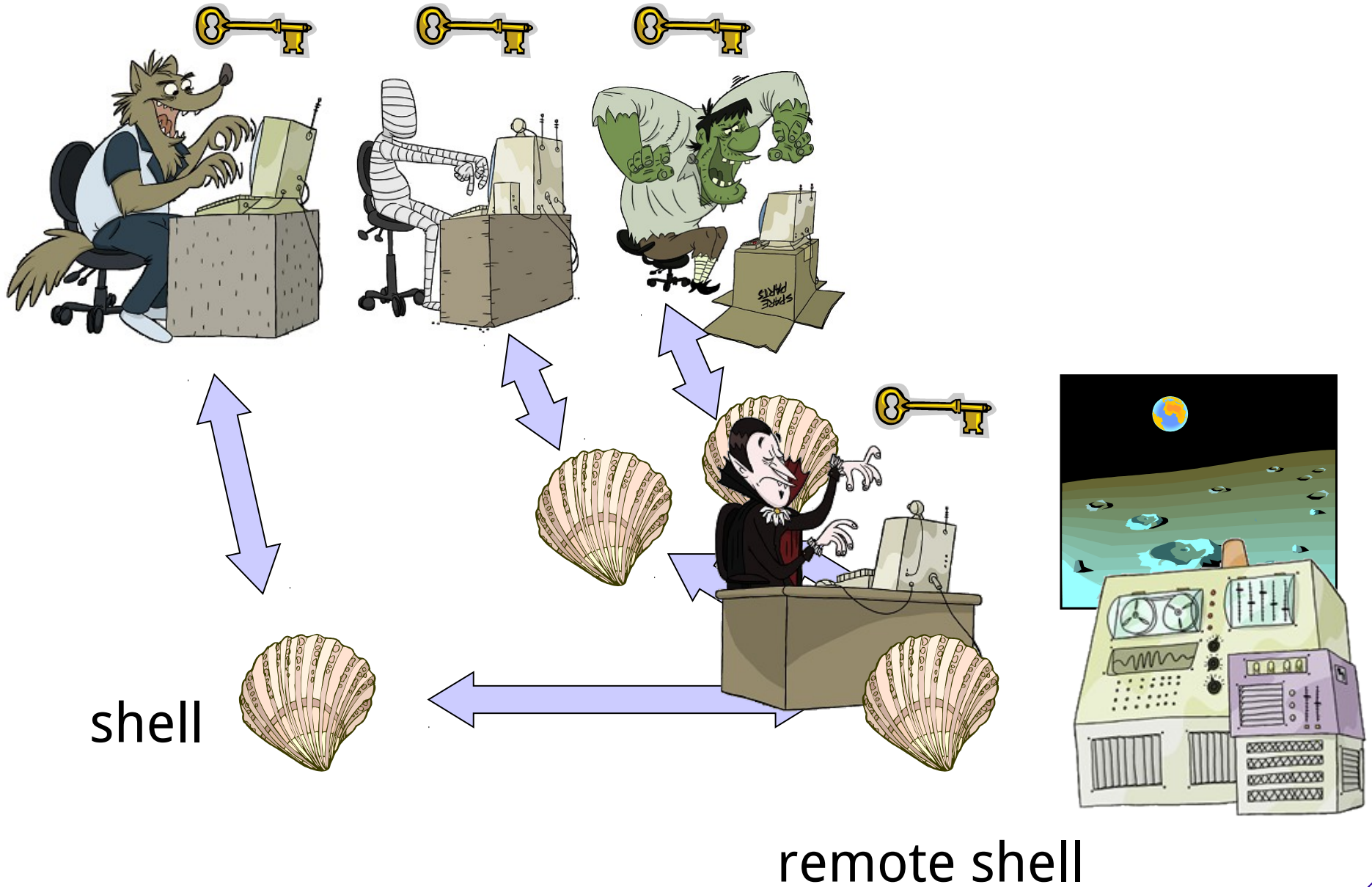


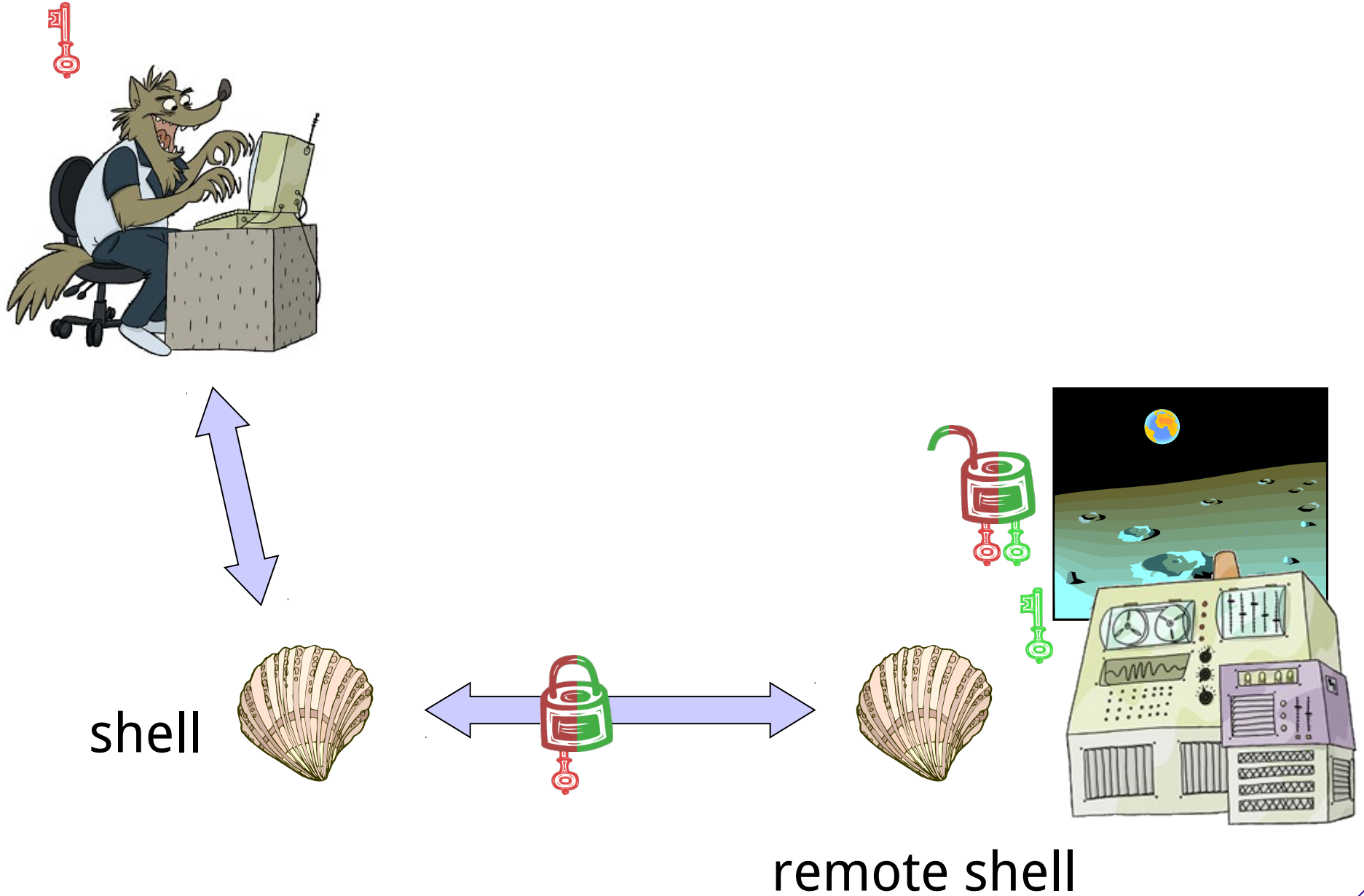
shell

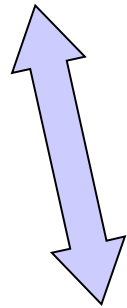


remote shell

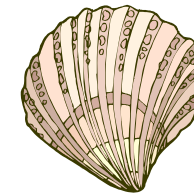
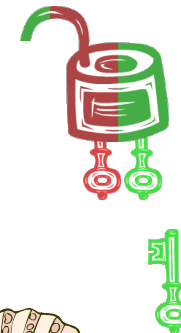
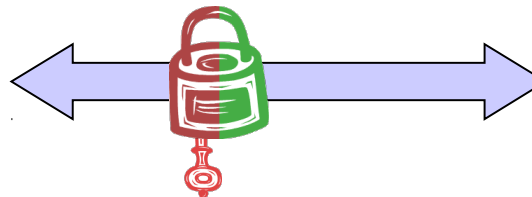
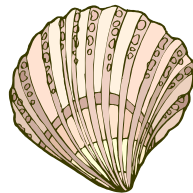




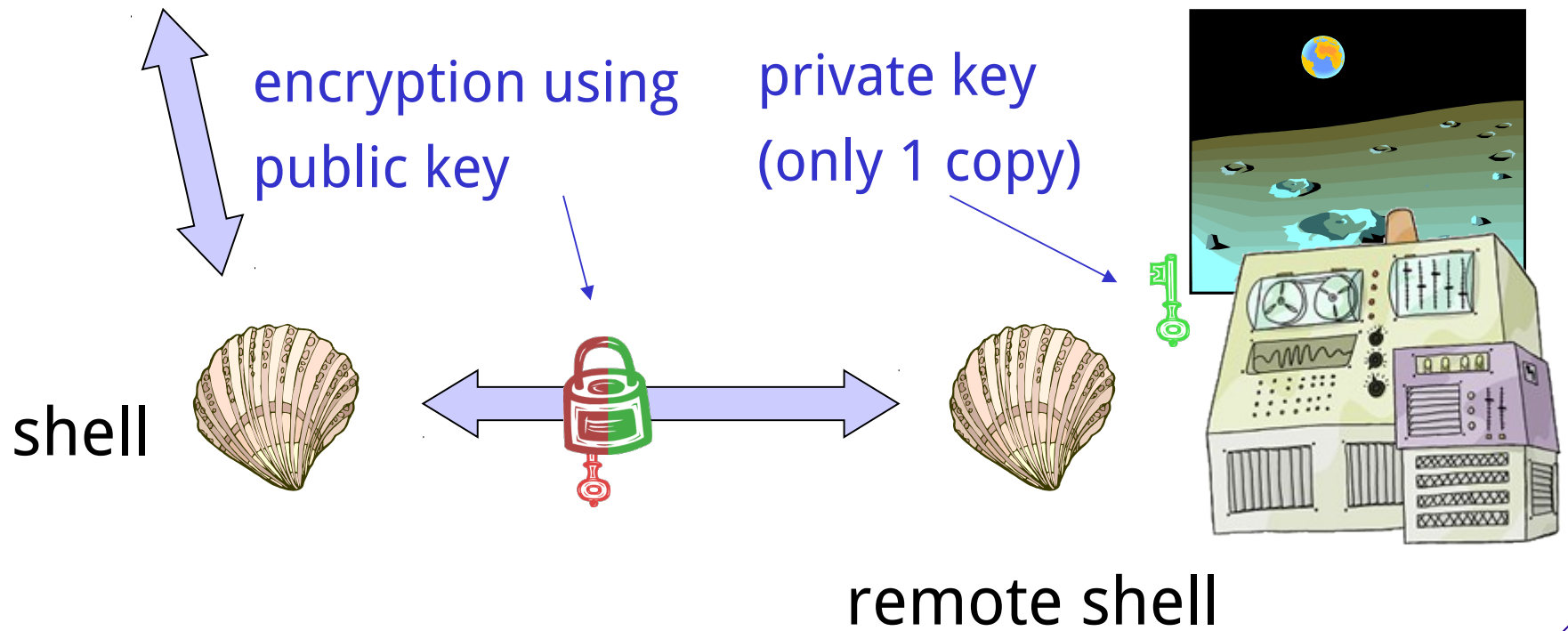
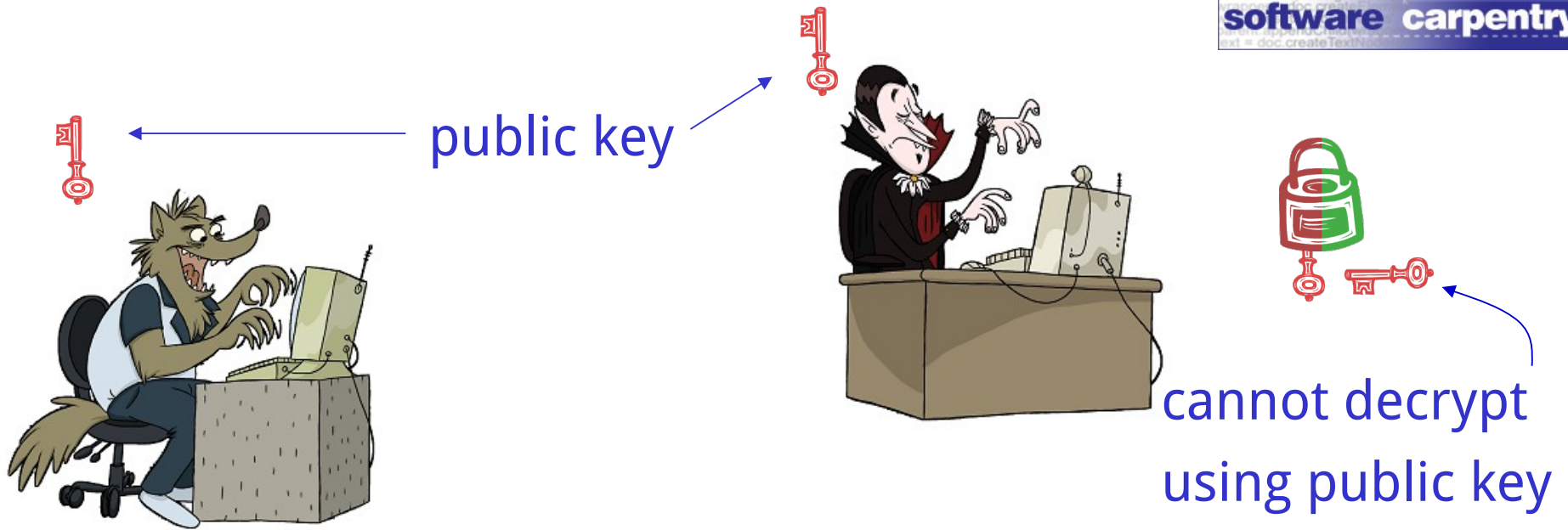




shell

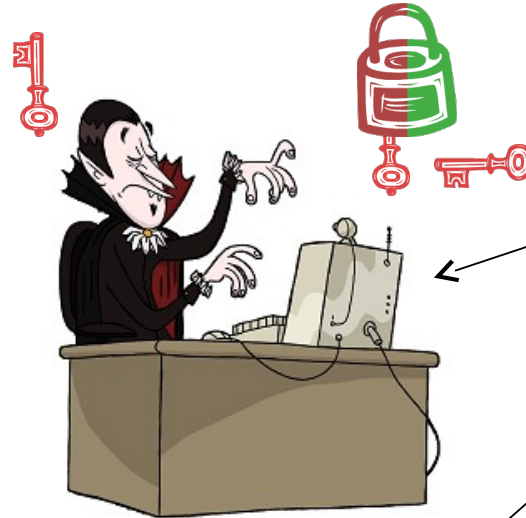


remote shell



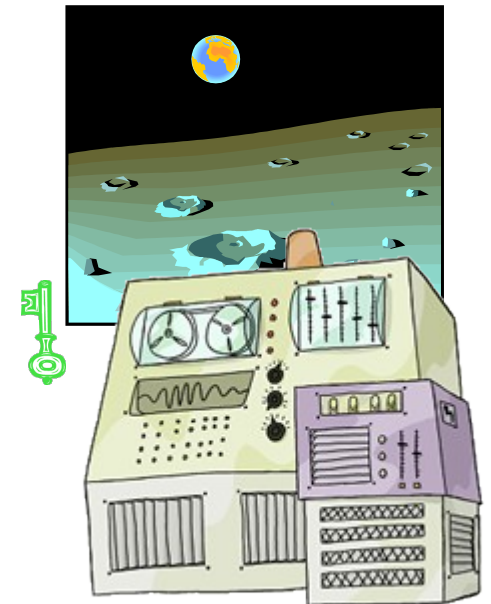
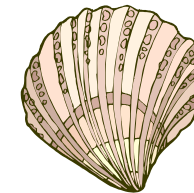
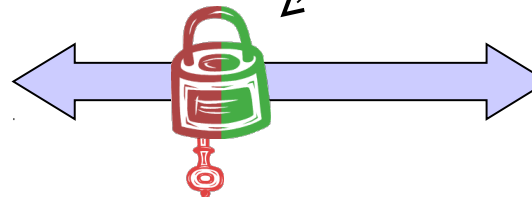
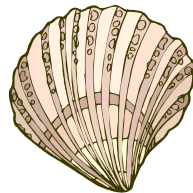


login as: **vlad**
Password: *********



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:c5:39.
```

```
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>
```

```
while true:  
    ...  
    if time.mins == 30:  
        ssh vlad@moon 'df -h' >> usage.log  
    ...
```

```
while true:
```

```
...
```

```
if time.mins == 30:
```

```
    ssh vlad@moon 'df -h' >> usage.log
```

```
...
```

```
$ ssh vlad@moon 'df -h' >> usage.log
```

Password:

Connection closed by 10.1.2.3

← waited too long

```
$
```



user key pair 1



host key pair
only 1 copy
default if user has no user key pair



user key pair 2



```
$ ssh-keygen -t rsa
```

Generating public/private rsa key pair.

Enter file in which to save the key

(/users/vlad/.ssh/id_rsa):

← press enter

Enter passphrase (empty for no

passphrase): *********

Enter same passphrase again: *********

Your identification has been saved in

/users/vlad/.ssh/id_rsa.

Your public key has been saved in

/users/vlad/.ssh/id_rsa.pub.

The key fingerprint is:

d3:1a:27:38:aa:54:e8:a5:03:db:79:2f:b2:c3:c9:3d


```
$ ssh vlad@moon
```

```
Enter passphrase for key
```

```
  '/users/vlad/.ssh/id_rsa': *****
```

```
moon>
```

```
$ ssh-keygen -t rsa
```

Generating public/private rsa key pair.

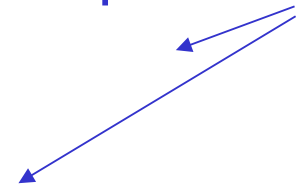
Enter file in which to save the key

(/users/vlad/.ssh/id_rsa):

← press enter

Enter passphrase (empty for no passphrase):

Enter same passphrase again:



Your identification has been saved in
/users/vlad/.ssh/id_rsa.

Your public key has been saved in
/users/vlad/.ssh/id_rsa.pub.

The key fingerprint is:

d3:1a:27:38:aa:54:e8:a5:03:db:79:2f:b2:c3:c9:3d

```
$ scp ~/.ssh/id_rsa.pub vlad@moon
```

```
Password: *****
```

```
$ ssh vlad@moon
```

```
Password: *****
```

```
moon> cat id_rsa.pub >> ~/.ssh/authorized_keys
```

```
moon> exit
```

```
$ cat ~/.ssh/id_rsa.pub | ssh vlad@moon
```

```
'cat >> ~/.ssh/authorized_keys'
```

```
Password: *****
```

```
$ ssh-copy-id vlad@moon
```

```
Password: *****
```

```
$ ssh vlad@moon
```

```
moon>
```



```
while true:
```

```
...
```

```
if time.mins == 30:
```

```
    ssh vlad@moon 'df -h' >> usage.log
```

```
...
```



created by

Elango Cheran

February 2011



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