

# Network Engineering 2019 Exercises - Unit 1

## 1 Basic POSIX file permissions

Write a shell-script called `unit1-solution1.sh` that creates **directories** inside a directory called `unit1exercise1` with the following properties, and then creates a **compressed tar file** called `unit1exercise1.tgz`

1. `ensetztete`, mode `--xrw--w-`
2. `vertrittst`, mode `rwX--x-w-`
3. `verhunden`, mode `--xr---wx`
4. `anfahrs`, mode `r-x--x-w-`
5. `angekaeskeit`, mode `rw----r--`
6. `aussprachse`, mode `rwX--xr-x`
7. `aufkaeskeit`, mode `r---wx--x`
8. `angewitzung`, mode `---rw--w-`
9. `angewitzung/belauft`, mode `r--r---w-`
10. `aussprachse/ausschmeckkeit`, mode `rw--w-r-x`
11. `angekaeskeit/aufrennkeit`, mode `--xr-x-wx`
12. `angewitzung/ausrabarbt`, mode `rwXrw--w-`
13. `anfahrs/eintrauer`, mode `rw----rw-`
14. `anfahrs/eintrauer/zertrittttest`, mode `---r-x-wx`
15. `anfahrs/eintrauer/auswitzte`, mode `r--rw-rwx`
16. `anfahrs/eintrauer/auskatzeheit`, mode `rw-r-x-w-`
17. `angewitzung/belauft/anpflumer`, mode `r-x-wx--x`
18. `anfahrs/eintrauer/gekrause`, mode `--xrw--wx`
19. `angewitzung/ausrabarbt/ensitzse`, mode `--xrw----`
20. `angekaeskeit/aufrennkeit/ausgekrautete`, mode `-w-r-----`

Your work will be **automatically marked** by comparing the contents of the compressed tar file against a template. Therefore it is important that you have every detail correct.

This exercise can be completed using the `cd`, `mkdir`, `chown`, `chmod` and `sudo` shell commands, although you can use other shell commands if you wish.

An unsophisticated script to complete this would be 2409 bytes long, while a compact script would be no larger than 968.

Grading for this exercise for you is according to the following guide:

Requirement	Percentage
Correctness of solution	60%
Compactness of solution	40%

The compactness scores are according to the following table:

Length of script	Percentage
2410 bytes or more	0%
1689 – 2409 bytes	5%
969 – 1688 bytes	15%
823 – 968 bytes	25%
less than 823 bytes	40%

To test your solution, use a command like:

```
./unit1-exercise-1-grade.sh unit1-solution1.sh
```

To submit your solution (which you can do as many times as you like), use a command like:

```
sudo tar zcf unit1exercise1.tgz unit1exercise1
git add unit1-solution1.sh unit1-solution1.tgz
git commit unit1-solution1.sh unit1-solution1.tgz
git push origin master
```

## 2 User and groups

Write a shell-script called `unit1-solution2.sh` that creates **directories** inside a directory called `unit1exercise2` with the following properties, and then creates a **compressed tar file** called `unit1exercise2.tgz`

1. `aufsinner`, mode `rw-r-xr--`, owner `lp`, group `mail`
2. `ausgesprachkeit`, mode `rw---xrw`, owner `games`, group `student`
3. `aufgestehst`, mode `---r--rw-`, owner `news`, group `fax`
4. `angelaufs`, mode `-w-r-----`, owner `nobody`, group `dip`
5. `angepflumer`, mode `-wxrw-rwx`, owner `proxy`, group `student`
6. `auskraus`, mode `-----xr--`, owner `lp`, group `dip`
7. `auftraukeit`, mode `rw-rw--wx`, owner `student`, group `news`

8. aussetzer, mode `r--r--r--`, owner `uucp`, group `floppy`
9. auskraus/zersetzen, mode `--xr--rwx`, owner `lp`, group `student`
10. aufsinner/einsinner, mode `-----x--x`, owner `uucp`, group `proxy`
11. aufsinner/enhalter, mode `-wxrw-rw-`, owner `proxy`, group `tape`
12. angelaufs/berennkeit, mode `-wx----wx`, owner `news`, group `tape`
13. auskraus/aufgekrauen, mode `--xr-xrwx`, owner `mail`, group `voice`
14. angelaufs/berennkeit/aufgesinns, mode `r-x-----`, owner `nobody`, group `tape`
15. aufsinner/enhalter/angehtete, mode `-wxr-x-w-`, owner `uucp`, group `cdrom`
16. aufsinner/einsinner/angesetzen, mode `r---wxrw-`, owner `news`, group `uucp`
17. aufsinner/einsinner/verkatzekeit, mode `rw-rw-rwx`, owner `games`, group `cdrom`
18. angelaufs/berennkeit/ausgerauchse, mode `r-xr-xrw-`, owner `student`, group `audio`
19. angelaufs/berennkeit/angespracher, mode `-----x`, owner `nobody`, group `audio`
20. auskraus/zersetzen/angekatzetete, mode `r-x--xr-x`, owner `news`, group `uucp`

Your work will be **automatically marked** by comparing the contents of the compressed tar file against a template. Therefore it is important that you have every detail correct.

This exercise can be completed using the `cd`, `mkdir`, `chown`, `chmod` and `sudo` shell commands, although you can use other shell commands if you wish.

An unsophisticated script to complete this would be 2301 bytes long, while a compact script would be no larger than 1225.

Grading for this exercise for you is according to the following guide:

Requirement	Percentage
Correctness of solution	60%
Compactness of solution	40%

The compactness scores are according to the following table:

Length of script	Percentage
2302 bytes or more	0%
1764 – 2301 bytes	5%
1226 – 1763 bytes	15%
1042 – 1225 bytes	25%
less than 1042 bytes	40%

To test your solution, use a command like:

```
./unit1-exercise-2-grade.sh unit1-solution2.sh
```

To submit your solution (which you can do as many times as you like), use a command like:

```
sudo tar zcf unit1exercise2.tgz unit1exercise2
git add unit1-solution2.sh unit1-solution2.tgz
git commit unit1-solution2.sh unit1-solution2.tgz
git push origin master
```

### 3 Set-user and Set-group ID

Write a shell-script called `unit1-solution3.sh` that creates **directories** inside a directory called `unit1exercise3` with the following properties, and then creates a **compressed tar file** called `unit1exercise3.tgz`

1. `bekatzest`, mode `r---w--w-`, owner `nobody`, group `news`, `setuid`
2. `aufgekletten`, mode `r--r-----`, owner `news`, group `audio`
3. `gerababung`, mode `-wx-w----`, owner `student`, group `audio`
4. `befahrheit`, mode `rwxr--rwx`, owner `nobody`, group `uucp`
5. `enkatzet`, mode `rwx-wxr--`, owner `nobody`, group `mail`
6. `berabarber`, mode `r---wx-w-`, owner `nobody`, group `mail`, `setuid`
7. `zerhaltst`, mode `---rw--w-`, owner `lp`, group `proxy`, `setuid`
8. `zersitzt`, mode `--xr-x---`, owner `games`, group `fax`
9. `zerhaltst/ausgehundtete`, mode `---rwx-w-`, owner `mail`, group `fax`, `setuid`
10. `zersitzt/aussinner`, mode `---r-x-w-`, owner `student`, group `floppy`, `setuid`
11. `zerhaltst/aussinntest`, mode `rw-rwx-w-`, owner `lp`, group `uucp`
12. `aufgekletten/ausgekraut`, mode `--x---r-x`, owner `games`, group `dip`, `setuid`

13. befahrheit/einkraute, mode -w---xr--, owner mail, group floppy, setuid
14. zerhaltst/ausgehundtete/zertrauen, mode rw--wxrwx, owner mail, group voice
15. zerhaltst/ausgehundtete/einstehse, mode rwxrwxr--, owner mail, group dip, setuid
16. aufgekletten/ausgekraut/aussitzer, mode -wxrw-rwx, owner news, group student
17. befahrheit/einkraute/angerabarbs, mode rw-r-x--x, owner student, group fax, setuid
18. aufgekletten/ausgekraut/angesprachung, mode r-x-wx---, owner news, group cdrom
19. befahrheit/einkraute/entraust, mode rwx--xrw, owner proxy, group voice, setuid
20. zerhaltst/aussinntest/ausgesitztete, mode ----wx---, owner news, group student, setuid

Your work will be **automatically marked** by comparing the contents of the compressed tar file against a template. Therefore it is important that you have every detail correct.

This exercise can be completed using the `cd`, `mkdir`, `chown`, `chmod` and `sudo` shell commands, although you can use other shell commands if you wish.

An unsophisticated script to complete this would be 2371 bytes long, while a compact script would be no larger than 1216.

Grading for this exercise for you is according to the following guide:

Requirement	Percentage
Correctness of solution	60%
Compactness of solution	40%

The compactness scores are according to the following table:

Length of script	Percentage
2372 bytes or more	0%
1794 – 2371 bytes	5%
1217 – 1793 bytes	15%
1034 – 1216 bytes	25%
less than 1034 bytes	40%

To test your solution, use a command like:

```
./unit1-exercise-3-grade.sh unit1-solution3.sh
```

To submit your solution (which you can do as many times as you like), use a command like:

```
sudo tar zcf unit1exercise3.tgz unit1exercise3
git add unit1-solution3.sh unit1-solution3.tgz
git commit unit1-solution3.sh unit1-solution3.tgz
git push origin master
```

## 4 Set-group ID Directories

Write a shell-script called `unit1-solution4.sh` that creates **directories** inside a directory called `unit1exercise4` with the following properties, and then creates a **compressed tar file** called `unit1exercise4.tgz`

1. `aufgesitzen`, mode `---rwx--x`, group `voice`, `setgid`
2. `aufgepflumheit`, mode `--xr-xrwx`, group `tape`, `setgid`
3. `angenhheit`, mode `r-xr--r--`, group `tape`
4. `anrabarbs`, mode `-w----rw-`, group `news`, `setgid`
5. `aussinnst`, mode `r-----rw-`, group `fax`, `setgid`
6. `angelaufheit`, mode `----w----`, group `cdrom`, `setgid`
7. `angelauft`, mode `r---wx--x`, group `fax`, `setgid`
8. `zerrauchse`, mode `r--rw-r-x`, group `proxy`
9. `zerrauchse/aufklettte`, mode `rwx-----`, group `voice`
10. `anrabarbs/zerschmecktete`, mode `----wxr-x`, group `mail`, `setgid`
11. `aussinnst/aufpflumte`, mode `r-xrwx-wx`, group `mail`, `setgid`
12. `aussinnst/bepflums`, mode `--xr-x--x`, group `cdrom`
13. `zerrauchse/angeschmeckt`, mode `-w-----w-`, group `news`, `setgid`
14. `aussinnst/aufpflumte/einrauchkeit`, mode `----w-rwx`, group `floppy`, `setgid`
15. `zerrauchse/angeschmeckt/enkletttete`, mode `r---w--wx`, group `cdrom`, `setgid`
16. `zerrauchse/angeschmeckt/zerlaufen`, mode `r--r-xr-x`, group `fax`, `setgid`
17. `aussinnst/bepflums/ausgesitzt`, mode `rwrxwx-w-`, group `cdrom`
18. `zerrauchse/angeschmeckt/ausgekletttest`, mode `rw-rwxrw-`, group `voice`, `setgid`

19. `anrabarbs/zerschmecktete/angewitzt`, mode `---r--rwx`, group `news`, `setgid`
20. `zerrauchse/angeschmeckt/ensinnheit`, mode `-----rwx`, group `mail`

Your work will be **automatically marked** by comparing the contents of the compressed tar file against a template. Therefore it is important that you have every detail correct.

This exercise can be completed using the `cd`, `mkdir`, `chown`, `chmod` and `sudo` shell commands, although you can use other shell commands if you wish.

An unsophisticated script to complete this would be 2445 bytes long, while a compact script would be no larger than 1107.

Grading for this exercise for you is according to the following guide:

Requirement	Percentage
Correctness of solution	60%
Compactness of solution	40%

The compactness scores are according to the following table:

Length of script	Percentage
2446 bytes or more	0%
1777 – 2445 bytes	5%
1108 – 1776 bytes	15%
941 – 1107 bytes	25%
less than 941 bytes	40%

To test your solution, use a command like:

```
./unit1-exercise-4-grade.sh unit1-solution4.sh
```

To submit your solution (which you can do as many times as you like), use a command like:

```
sudo tar zcf unit1exercise4.tgz unit1exercise4
git add unit1-solution4.sh unit1-solution4.tgz
git commit unit1-solution4.sh unit1-solution4.tgz
git push origin master
```

## 5 Interpreting File Permissions

For each of the following exercises, determine whether the given file or directory can be accessed in the manner described. Remember that file or directory access can be mediated by owner, group or other permissions, and that the first matching item applies.

As you have a 50% chance of getting each item correct, you must score more than 50% to obtain a positive result for this section. There are 40 questions, and your score will be  $(n - 20)/20$ , where  $n$  is the number of correct responses.

You should record your answers in a single text file called `unit1-answers.txt`, consisting of 40 consecutive Y, 1, 2 or 3 characters on a single line.

To submit your answers (which you can do as many times as you like), commit your answer file to your git repository, and push it to github, e.g.:

```
git add unit1-answers.txt ; git commit unit1-answers.txt ; git push
origin master
```

At the end of this section there is a hash which reflects the hash of the correct result of all 40 questions. You can use this to check if you have all answers correct. However, it will not tell you how many you have correct (that would let you work out which ones were wrong through a process of elimination).

## 5.1

Can the user **uucp**, who is a member of the **floppy** group, **execute** the file `/austritttest/ausgerauchs/ausgefahrst`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--r-xrw-  student  floppy  0 austritttest
│
├─ (2)      dr-x-w-r--   uucp     mail    0 ausgerauchs
│
└─ (3)      -r---wxrwx   news     floppy  0 ausgefahrst
```

## 5.2

Can the user **student**, who is a member of the **uucp** group, **execute** the file `/zersitzst/ausgekrause/aufkaesung`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrw-rw-  student  tape    0 zersitzst
│
├─ (2)      d-wxr--r-x   news     cdrom   0 ausgekrause
│
└─ (3)      ----rwxrw-  student  mail    0 aufkaesung
```

## 5.3

Can the user **uucp**, who is a member of the **tape** group, **execute** the file `/geraucher/anwitzte/versitzse`? If not, which of the three directories blocks access (Y|1|2|3)



```

/
├─ (1)      dr-x--x-w-   uucp      fax      0 geraucher
│
│   └─ (2)      dr-xrw-rwx   uucp      dip      0 anwitzte
│       │
│       └─ (3)  -rw----rwx   uucp      audio     0 versitzse

```

## 5.4

Can the user **proxy**, who is a member of the **proxy** group, **execute** the file **/einkaesung/enlaufheit/enkletten**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxr--r--   proxy     audio     0 einkaesung
│
│   └─ (2)      d-wx-w-rwx student   voice     0 enlaufheit
│       │
│       └─ (3)  --w--w-rwx proxy      dip      0 enkletten

```

## 5.5

Can the user **proxy**, who is a member of the **floppy** group, **read from** the file **/einrennst/zerschmecks/aufgerauchtest**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxr--r-x    lp        dip      0 einrennst
│
│   └─ (2)      dr-xr--r-- proxy     fax      0 zerschmecks
│       │
│       └─ (3)  -r----xr-x proxy     proxy    0 aufgerauchtest

```

## 5.6

Can the user **news**, who is a member of the **uucp** group, **execute** the file **/versinntete/angegetest/verrabarbttest**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wx---r-x    proxy     tape      0 versinntete
│
│   └─ (2)      drwxr-x--x news      fax      0 angegetest
│       │
│       └─ (3)  --w-r--rw- news      voice    0 verrabarbttest

```

## 5.7

Can the user **student**, who is a member of the **floppy** group, **write to** the file **/angerenns/vergehs/ausgekaesen**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d-wxrwxr-x      uucp   floppy   0 angerenns
│
│   └─ (2)   dr-x-wx-wx     student  audio    0 vergehs
│
│       └─ (3) --wx-wxrw-   student  news     0 ausgekaesen
```

## 5.8

Can the user **proxy**, who is a member of the **audio** group, **write to** the file **/ausgekaess/einsitzzeit/einkaestete**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xr-x-w-     student  student  0 ausgekaess
│
│   └─ (2)   drwxrwx-wx     news     audio    0 einsitzzeit
│
│       └─ (3) -rwx----wx   mail     student  0 einkaestete
```

## 5.9

Can the user **proxy**, who is a member of the **mail** group, **execute** the file **/einsprachst/einsinnkeit/verschmeckkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-x-w---x     proxy    dip     0 einsprachst
│
│   └─ (2)   d-w-r-xrw-    uucp     mail    0 einsinnkeit
│
│       └─ (3) --wx-wxr-x   games     mail    0 verschmeckkeit
```

## 5.10

Can the user **games**, who is a member of the **student** group, **read from** the file **/auskatzetete/einklettkeit/angepflumung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wxrw--x    proxy  student    0 auskatzetete
│   └─ (2)      dr-x-w-r-x    games    tape      0 einklettkkeit
│       └─ (3)  --wxrw-r-x    uucp    student    0 angepflumung

```

### 5.11

Can the user **mail**, who is a member of the **audio** group, **read from** the file **/angetraust/verwarfung/auspflumer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--r--rw-    news    uucp      0 angetraust
│   └─ (2)      drwx-w--w-    proxy    audio     0 verwarfung
│       └─ (3)  -rwxr---w-    nobody   audio     0 auspflumer

```

### 5.12

Can the user **news**, who is a member of the **dip** group, **write to** the file **/aufgekraueit/zerlaufkeit/einrabarbtete**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xr---wx    news    uucp      0 aufgekraueit
│   └─ (2)      d-wx---r-x    games    dip       0 zerlaufkeit
│       └─ (3)  -r-xrwx-w-    uucp     dip       0 einrabarbtete

```

### 5.13

Can the user **proxy**, who is a member of the **audio** group, **execute** the file **/antraukeit/bekletttete/anschmeckte**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrw-rwx    proxy    fax       0 antraukeit
│   └─ (2)      drwxrwxr-x    nobody   mail      0 bekletttete
│       └─ (3)  ---xr--r-x    proxy    mail      0 anschmeckte

```

### 5.14

Can the user **news**, who is a member of the **fax** group, **write to** the file **/betrause/einkletttete/enstehst**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwx--x-w-   news   audio   0 betrause
│   └─ (2)      d-----   uucp    fax     0 einkletttete
│       └─ (3)  --wxrwxrwx news student 0 enstehst
```

### 5.15

Can the user **uucp**, who is a member of the **floppy** group, **write to** the file **/gekatzet/engehen/enstehkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-x--x---x   uucp    tape    0 gekatzet
│   └─ (2)      d-w--wxrwx mail    voice   0 engehen
│       └─ (3)  --wx--xrwX lp      uucp    0 enstehkeit
```

### 5.16

Can the user **proxy**, who is a member of the **student** group, **read from** the file **/aufgekatzese/angerennung/zerwitzs**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwxrwxr--   proxy   voice    0 aufgekatzese
│   └─ (2)      dr-x-wxr-x lp      proxy    0 angerennung
│       └─ (3)  ---x-w---- proxy   tape     0 zerwitzs
```

### 5.17

Can the user **nobody**, who is a member of the **tape** group, **write to** the file **/aufwitztest/ausfahung/verstehung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xr-x--x      news      tape      0 aufwitztest
│   └─ (2)      d---rw-rwx  student  student    0 ausfahrtung
│       └─ (3)  -rwxr-x-w-   nobody   voice      0 verstehung

```

### 5.18

Can the user **games**, who is a member of the **uucp** group, **execute** the file **/besinner/zerfahrheit/enpflumst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d---r-x---      news  student    0 besinner
│   └─ (2)      d-w-r-xrwx   news  student    0 zerfahrheit
│       └─ (3)  --wx--x---   proxy   uucp      0 enpflumst

```

### 5.19

Can the user **lp**, who is a member of the **tape** group, **read from** the file **/geraucht/ausgerenner/angepflumst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x-wx-w-   student  voice      0 geraucht
│   └─ (2)      drw-rwxr-x  nobody   dip        0 ausgerenner
│       └─ (3)  -rw----rw-   lp        proxy      0 angepflumst

```

### 5.20

Can the user **proxy**, who is a member of the **audio** group, **execute** the file **/gewarfkeit/angehundtest/enschmecken**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xr-x-w-   nobody   audio      0 gewarfkeit
│   └─ (2)      drwx-w-rw-   mail     audio      0 angehundtest
│       └─ (3)  -rwx-wxrwxx  proxy    voice      0 enschmecken

```

## 5.21

Can the user **lp**, who is a member of the **voice** group, **execute** the file `/aufgesitztete/geklettse/enkrauer`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-rwx---      news      voice      0 aufgesitztete
    │
    └─ (2)      d--x---r-x      games      voice      0 geklettse
        │
        └─ (3) -rw-r-x--x      proxy      voice      0 enkrauer

```

## 5.22

Can the user **student**, who is a member of the **uucp** group, **read from** the file `/einkrautest/zerrabarbst/angepflumt`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrwxrw-      games      uucp      0 einkrautest
    │
    └─ (2)      d---rwxr--      mail      uucp      0 zerrabarbst
        │
        └─ (3) --w-r-x-w-      nobody     uucp      0 angepflumt

```

## 5.23

Can the user **nobody**, who is a member of the **student** group, **write to** the file `/aufgekatzetest/angewarfs/aufgeklettst`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x-w---x      nobody     news      0 aufgekatzetest
    │
    └─ (2)      d--x-----x student student      0 angewarfs
        │
        └─ (3) --w--w-rw-      nobody     mail      0 aufgeklettst

```

## 5.24

Can the user **lp**, who is a member of the **tape** group, **read from** the file `/auslaufse/enhundert/anhaltkeit`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d----wxrwx      mail      floppy    0 auslaufse
    │
    └─ (2)      d-wx---rw-      games      tape      0 enhundert
        │
        └─ (3) -rwxr-xr--      news      fax      0 anhaltkeit

```

### 5.25

Can the user **student**, who is a member of the **fax** group, **execute** the file **/aufgesprachen/angesinntest/angekaeser**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d--xr--r-x      news      proxy      0 aufgesprachen
│   └─ (2)   dr---w-rw-      games      fax        0 angesinntest
│       └─ (3) -rwxrw--w-    student    floppy     0 angekaeser
```

### 5.26

Can the user **nobody**, who is a member of the **student** group, **execute** the file **/ausklettung/belaufs/aufgeschmeckte**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d-----xrwX      proxy      fax        0 ausklettung
│   └─ (2)   dr---w-r-x      proxy      student     0 belaufs
│       └─ (3) ---x--x-w-      uucp      student     0 aufgeschmeckte
```

### 5.27

Can the user **nobody**, who is a member of the **voice** group, **execute** the file **/zerrababung/ausgehalter/aufgehundung**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d--xrwXr-x      mail      voice      0 zerrababung
│   └─ (2)   dr-x---r--      lp        voice      0 ausgehalter
│       └─ (3) -rwx--xr-x    nobody     tape       0 aufgehundung
```

### 5.28

Can the user **uucp**, who is a member of the **student** group, **execute** the file **/auftraut/angekrauung/versitzer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-r-x---   news    voice    0 auftraut
│   └─ (2)   dr-x-w--w-   uucp    floppy   0 angekraung
│       └─ (3) -r--rwx-w-   lp     student  0 versitzer

```

### 5.29

Can the user **nobody**, who is a member of the **uucp** group, **execute** the file **/enkletttest/eintraus/angehaltst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x---rwx   nobody    fax      0 enkletttest
│   └─ (2)   drwxr---w-   nobody    audio    0 eintraus
│       └─ (3) -----xr-- nobody    news     0 angehaltst

```

### 5.30

Can the user **uucp**, who is a member of the **floppy** group, **read from** the file **/auflaufte/auftraute/gesprachte**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xrwxr-x   nobody    floppy   0 auflaufte
│   └─ (2)   drwx---r--   student   floppy   0 auftraute
│       └─ (3) -rwx--xr-x student    cdrom    0 gesprachte

```

### 5.31

Can the user **uucp**, who is a member of the **student** group, **write to** the file **/zersitttete/aufrabarbtte/berabarbkkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x-wxr-x   news     cdrom    0 zersitttete
│   └─ (2)   d-----wx   nobody    student  0 aufrabarbtte
│       └─ (3) --wx--x---   uucp     voice    0 berabarbkkeit

```



### 5.32

Can the user **news**, who is a member of the **fax** group, **execute** the file **/angerenns/aushalter/zerkletttest**? If not, which of the three directories blocks access (Y|1|2|3)

/					
└─ (1)	d---rwx---	proxy	proxy	0	angerenns
└─ (2)	dr-x--xr-x	lp	proxy	0	aushalter
└─ (3)	-r--rwx-wx	lp	fax	0	zerkletttest

### 5.33

Can the user **games**, who is a member of the **student** group, **read from** the file **/bepflumte/auswarfse/vergehtest**? If not, which of the three directories blocks access (Y|1|2|3)

/					
└─ (1)	dr-xrw-rwx	proxy	uucp	0	bepflumte
└─ (2)	d---r-xrwx	nobody	student	0	auswarfse
└─ (3)	---x-wxrwx	proxy	fax	0	vergehtest

### 5.34

Can the user **proxy**, who is a member of the **mail** group, **read from** the file **/zersinnst/ausgefahrt/einrennen**? If not, which of the three directories blocks access (Y|1|2|3)

/					
└─ (1)	d-wxr--rwx	nobody	student	0	zersinnst
└─ (2)	d-w-r-xrwx	uucp	voice	0	ausgefahrt
└─ (3)	---x-----x	proxy	tape	0	einrennen

### 5.35

Can the user **uucp**, who is a member of the **dip** group, **read from** the file **/eintraut/ausrenntete/zerpflums**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-----xr-x   games   news   0 eintraust
│   └─ (2)  d--xrwxrwx   nobody   tape   0 ausrenntete
│       └─ (3) --w-r--r-x   mail     dip    0 zerpflums

```

### 5.36

Can the user **news**, who is a member of the **cdrom** group, **execute** the file **/ausgesetzer/einfahrer/aufgekatzt**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wxrwx-w-   student student 0 ausgesetzer
│   └─ (2)  dr-xr--rwx   mail     tape   0 einfahrer
│       └─ (3) -r-xrwxrw-   news     dip    0 aufgekatzt

```

### 5.37

Can the user **proxy**, who is a member of the **student** group, **read from** the file **/angeklettte/gesinnse/begehkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x--x---   proxy   audio   0 angeklettte
│   └─ (2)  drwxrwx---   proxy   dip     0 gesinnse
│       └─ (3) -rwxr----x proxy   news    0 begehkeit

```

### 5.38

Can the user **nobody**, who is a member of the **news** group, **execute** the file **/ankaesen/bekrause/angestehkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wxr-xrw-   lp      news    0 ankaesen
│   └─ (2)  d-wx-w-rwx   uucp    news    0 bekrause
│       └─ (3) --w-rwx--x lp      news    0 angestehkeit

```

### 5.39

Can the user **mail**, who is a member of the **audio** group, **read from** the file **/angetrause/betrittheit/aufhalts**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwx--x-w-      mail  student    0 angetrause
│
├─ (2)      d-wx---rwx      uucp   audio      0 betrittheit
│
└─ (3)      -r---wx-wx      mail  student    0 aufhalts
```

### 5.40

Can the user **lp**, who is a member of the **cdrom** group, **execute** the file **/enfahrkeit/enwitzt/ausgehundtest**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwxrwx-w-      lp     floppy     0 enfahrkeit
│
├─ (2)      drw-r-xrw-      games  cdrom      0 enwitzt
│
└─ (3)      --wxrwx-w-      nobody  cdrom      0 ausgehundtest
```

### Hash for checking if you have all 40 correct

af8026270e43b19227566b27c698e22ab04b0dbbaeb04c513a454bcc75a3c169

You can check your result with a command like:

```
echo "2YY13YY2YYYY3Y3YY2Y22YY11Y2Y1YY2YYY3Y3YY" | \
    shasum -a 512 | cut -c1-64
```

(But don't forget to put your string of Y's and N's in place of those)

If the output of that command matches the hash at the end of this section, then you almost certainly have all 40 correct.