

# 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. `bekatzetete`, mode `--x--x--x`
2. `aufgerauchkeit`, mode `-w--w----`
3. `ansetzte`, mode `r--r--rwx`
4. `angekraut`, mode `r-xr-x---`
5. `gehaltung`, mode `--x--x---`
6. `einhaltheit`, mode `-w-r--rw-`
7. `zerhalttete`, mode `-wx-wxrw`
8. `gestehs`, mode `rwxrw---x`
9. `zerhalttete/zerschmecktest`, mode `-w---xrw`
10. `gehaltung/ansteher`, mode `-w-r--rwx`
11. `einhaltheit/auskrauen`, mode `-wx----w-`
12. `zerhalttete/angeht`, mode `--xr-xr--`
13. `aufgerauchkeit/beschmeckkeit`, mode `rw-r--rwx`
14. `zerhalttete/zerschmecktest/aussitztest`, mode `rwxr-xr-x`
15. `aufgerauchkeit/beschmeckkeit/angekatzeung`, mode `r--rw-r-x`
16. `zerhalttete/angeht/zerkatzetete`, mode `r-x--x---`
17. `zerhalttete/angeht/anstehs`, mode `---rwxr-x`
18. `einhaltheit/auskrauen/angegehen`, mode `r--rw---x`
19. `zerhalttete/angeht/anhaltung`, mode `--x-wxrw-`
20. `gehaltung/ansteher/angelauftete`, mode `r----x-wx`

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 2461 bytes long, while a compact script would be no larger than 962.

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
2462 bytes or more	0%
1712 – 2461 bytes	5%
963 – 1711 bytes	15%
818 – 962 bytes	25%
less than 818 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1exercise1.tgz unit1exercise1
./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-solution1711.sh unit1-solution1456672572.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. `versitztete`, mode `r---w-r--`, owner `proxy`, group `uucp`
2. `ausgekraute`, mode `rw-rw--wx`, owner `uucp`, group `fax`
3. `zerrennst`, mode `r-x---r-x`, owner `mail`, group `news`
4. `anpflumheit`, mode `r---wxrwx`, owner `uucp`, group `mail`
5. `eingehse`, mode `rw-r-x-wx`, owner `uucp`, group `student`
6. `einkatzest`, mode `-wxrw-r--`, owner `games`, group `news`

7. `angegehnheit`, mode `r---w-r--`, owner `proxy`, group `floppy`
8. `aufhaltung`, mode `r----x--x`, owner `news`, group `cdrom`
9. `ausgekraute/gewitzkeit`, mode `r-xrw-r-x`, owner `games`, group `uucp`
10. `zerrennst/ausstehse`, mode `-w--wxr--`, owner `uucp`, group `voice`
11. `aufhaltung/angekatzest`, mode `--xrw--x`, owner `student`, group `student`
12. `zerrennst/zersetzte`, mode `rxwr---wx`, owner `games`, group `mail`
13. `ausgekraute/einfahrkeit`, mode `rxw-wrxwx`, owner `uucp`, group `news`
14. `ausgekraute/gewitzkeit/ausgekatzetete`, mode `rw--w--w-`, owner `mail`, group `news`
15. `ausgekraute/gewitzkeit/zerwarfte`, mode `rxw--x---`, owner `proxy`, group `news`
16. `aufhaltung/angekatzest/zersinnste`, mode `--xrw-w-`, owner `mail`, group `news`
17. `zerrennst/ausstehse/befahrst`, mode `----w--w-`, owner `nobody`, group `proxy`
18. `zerrennst/zersetzte/auftrittt`, mode `-w-----wx`, owner `proxy`, group `floppy`
19. `zerrennst/zersetzte/angeklettete`, mode `rxw-wrxwx`, owner `games`, group `audio`
20. `zerrennst/ausstehse/entraust`, mode `-----rw-`, owner `uucp`, 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 2329 bytes long, while a compact script would be no larger than 1193.

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
2330 bytes or more	0%
1762 – 2329 bytes	5%
1194 – 1761 bytes	15%
1015 – 1193 bytes	25%
less than 1015 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1exercise2.tgz unit1exercise2
./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-solution1761.sh unit1-solution1456672572.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. `angesetztst`, mode `----wx-wx`, owner `lp`, group `student`
2. `austritter`, mode `r-x-w-r-x`, owner `nobody`, group `news`
3. `berabarbkeit`, mode `-wx-w---x`, owner `proxy`, group `voice`, `setuid`
4. `ausgerauchs`, mode `rwxr-x-w-`, owner `lp`, group `proxy`
5. `angepflumt`, mode `rw--w--wx`, owner `student`, group `mail`
6. `enrabarbkeit`, mode `rw---x-wx`, owner `lp`, group `floppy`
7. `verfahrer`, mode `r-x--xrw`, owner `news`, group `fax`
8. `ausschmeckte`, mode `----w--wx`, owner `uucp`, group `voice`
9. `angepflumt/zertraut`, mode `rw---x-wx`, owner `news`, group `tape`
10. `verfahrer/ensteher`, mode `r-----r--`, owner `news`, group `news`, `setuid`
11. `verfahrer/vergeher`, mode `r-----r-x`, owner `nobody`, group `audio`
12. `berabarbkeit/aufgewarfer`, mode `--x-wx---`, owner `proxy`, group `cdrom`, `setuid`

13. `ausgerauchs/einraucher`, mode `r-xr-x--x`, owner `proxy`, group `proxy`
14. `ausgerauchs/einraucher/ankatzes`, mode `-wxr-x---`, owner `mail`, group `uucp`
15. `angepflumt/zertraut/aufgesetzt`, mode `rw--w-rwx`, owner `mail`, group `cdrom`, `setuid`
16. `berabarbkeit/aufgewarfer/zergehs`, mode `rw--w-rw-`, owner `nobody`, group `proxy`
17. `verfahrer/vergeher/enkatzest`, mode `rwxr-x-wx`, owner `lp`, group `dip`
18. `angepflumt/zertraut/ausgehalten`, mode `---r--r--`, owner `uucp`, group `cdrom`, `setuid`
19. `ausgerauchs/einraucher/geschmeckse`, mode `r-----xr--`, owner `mail`, group `student`, `setuid`
20. `verfahrer/ensteher/bewarfte`, mode `-w-r-xr-x`, owner `news`, group `fax`, `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 2314 bytes long, while a compact script would be no larger than 1208.

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
2315 bytes or more	0%
1762 – 2314 bytes	5%
1209 – 1761 bytes	15%
1027 – 1208 bytes	25%
less than 1027 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1exercise3.tgz unit1exercise3
./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-solution1761.sh unit1-solution1456672572.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. `angewarfse`, mode `r-----r--`, group `dip`, `setgid`
2. `verstehheit`, mode `-w--w----`, group `fax`, `setgid`
3. `angegehst`, mode `-w-rwx---`, group `floppy`, `setgid`
4. `angetrauer`, mode `--x---rwx`, group `floppy`
5. `angehundte`, mode `r----xr-x`, group `audio`
6. `aufgekatzeer`, mode `r-x-w--wx`, group `cdrom`
7. `angehte`, mode `r----xr--`, group `news`, `setgid`
8. `ankletter`, mode `rwxrw---x`, group `uucp`
9. `angehte/gerabarbarkeit`, mode `rwxrwx-w-`, group `cdrom`, `setgid`
10. `angehundte/angerabarber`, mode `-wx-w----`, group `audio`
11. `angetrauer/gekaeser`, mode `-wxr-xrw-`, group `audio`, `setgid`
12. `aufgekatzeer/einsetzst`, mode `-w-r-xr--`, group `fax`
13. `angewarfse/ausgesprachen`, mode `rwxrwx---`, group `proxy`, `setgid`
14. `angewarfse/ausgesprachen/angehalttest`, mode `r-xrwxr--`, group `dip`, `setgid`
15. `angewarfse/ausgesprachen/ausgestehte`, mode `-w-rwx-w-`, group `fax`, `setgid`
16. `angehundte/angerabarber/enwarfen`, mode `--xr--r-x`, group `news`
17. `angewarfse/ausgesprachen/auslauft`, mode `rw--w-rw-`, group `proxy`, `setgid`
18. `angetrauer/gekaeser/aufgerennheit`, mode `-wxr--r-x`, group `voice`

19. aufgekatzeer/einsetzst/zertraust, mode rwx--x-w-, group floppy, setgid
20. aufgekatzeer/einsetzst/aufgetrauer, mode r--rw----, group news, setgid

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 2441 bytes long, while a compact script would be no larger than 1109.

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
2442 bytes or more	0%
1776 – 2441 bytes	5%
1110 – 1775 bytes	15%
943 – 1109 bytes	25%
less than 943 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1exercise4.tgz unit1exercise4
./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-solution1775.sh unit1-solution1456672572.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 **student** group, **write to** the file `/geschmeckte/angehst/verkatzese`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--rwx---x    mail  student    0 geschmeckte
│
├─ (2)      drwxrwxrwx     uucp   proxy      0 angehst
│
└─ (3)      --wxrw-r--     uucp      dip      0 verkatzese

```

## 5.2

Can the user **nobody**, who is a member of the **dip** group, **execute** the file `/auskatzet/enrennung/ausschmeckse`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx-w-r-x     nobody  cdrom      0 auskatzet
│
├─ (2)      d-w-r-xr-x     lp      uucp      0 enrennung
│
└─ (3)      ---x-wxr-x     news     tape      0 ausschmeckse

```

## 5.3

Can the user **nobody**, who is a member of the **student** group, **read from** the file `/angegeht/anwitzung/ausrabarbtete`? If not, which of the three directories blocks access (Y|1|2|3)



```

/
├─ (1)      drwxrwx---   games  student  0 angegeht
│   └─ (2)      d--xrwxr-x      lp      tape    0 anwitzung
│       └─ (3)  -rwx--xr-x   nobody   mail     0 ausrabarbtete

```

#### 5.4

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

```

/
├─ (1)      dr-x-wx---x   news     dip      0 auflaufung
│   └─ (2)      d--x---r-x   proxy    dip      0 anschmecks
│       └─ (3)  -rw---x--x   news     mail     0 verhundertete

```

#### 5.5

Can the user **student**, who is a member of the **dip** group, **execute** the file **/aufgesetzen/bekatzetest/aufgerabarbt**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xr-xrw-   games     dip      0 aufgesetzen
│   └─ (2)      d-w--w-rw-   proxy    dip      0 bekatzetest
│       └─ (3)  ---x-wx-w-   student   uucp     0 aufgerabarbt

```

#### 5.6

Can the user **proxy**, who is a member of the **tape** group, **write to** the file **/verwitztest/zersitzst/befahrte**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrw--w-   mail      mail     0 verwitztest
│   └─ (2)      dr-xrw-r-x      lp      dip     0 zersitzst
│       └─ (3)  --w-r---wx   mail     floppy  0 befahrte

```

## 5.7

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

```
/
├─ (1)      dr-x--x-w-   proxy   voice   0 ausgewitzer
│   └─ (2)   dr-xrw--wx   proxy    news    0 zertritts
│       └─ (3) --w-rwx--x   uucp    proxy    0 ankraute
```

## 5.8

Can the user **nobody**, who is a member of the **student** group, **read from** the file **/versinnheit/versetzer/aufpflumer**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrwxr--   student student 0 versinnheit
│   └─ (2)   d-wxrw-r-x   news    cdrom   0 versetzer
│       └─ (3) -r-x-wx---   nobody   cdrom   0 aufpflumer
```

## 5.9

Can the user **proxy**, who is a member of the **fax** group, **read from** the file **/austrauheit/verpflums/zerlaufs**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drw-r-xr--   nobody    fax     0 austrauheit
│   └─ (2)   d-w----rwx   uucp      fax     0 verpflums
│       └─ (3) -rwxrw-rwx   games     fax     0 zerlaufs
```

## 5.10

Can the user **news**, who is a member of the **tape** group, **read from** the file **/belauftete/aufrenntest/enstehse**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrw-rw-   news    tape    0 belauftete
│   └─ (2)      d--x-w-r-x   mail    uucp    0 aufrenntest
│       └─ (3)  --wxrw-r--   proxy   audio    0 entstehse

```

### 5.11

Can the user **lp**, who is a member of the **news** group, **write to** the file **/versitzt/berennen/belaufse**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx---r-x    lp     audio    0 versitzt
│   └─ (2)      dr-xrwxrwx  games  cdrom    0 berennen
│       └─ (3)  -r---wx---   mail    news     0 belaufse

```

### 5.12

Can the user **lp**, who is a member of the **news** group, **execute** the file **/aufgeschmeckte/austrauen/auftritt**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr----x---    uucp   student   0 aufgeschmeckte
│   └─ (2)      d--xr--rwx   uucp   cdrom     0 austrauen
│       └─ (3)  ----r-x--x   nobody  news      0 auftrittung

```

### 5.13

Can the user **nobody**, who is a member of the **fax** group, **execute** the file **/anrennse/angerabarbtest/zersinnkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrw--w-   student  proxy    0 anrennse
│   └─ (2)      drwx-w--wx  nobody   audio    0 angerabarbtest
│       └─ (3)  -rwxrwxr-x   news     uucp     0 zersinnkeit

```

### 5.14

Can the user **lp**, who is a member of the **audio** group, **read from** the file **/ausgewarfs/aussinnheit/verhaltkeit**? If not, which of the three directories

blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-rwxrw-  nobody  audio    0 ausgewarfs
    │
    └─ (2)      d-wxrwxx  nobody   uucp     0 aussinnheit
        │
        └─ (3)  -rw-r--rw-   news    audio    0 verhaltkeit

```

## 5.15

Can the user **lp**, who is a member of the **floppy** group, **read from** the file **/verwitzung/ausgekletter/einlaufer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drw-r-x--x   games   floppy    0 verwitzung
    │
    └─ (2)      d-w--w-rwx  uucp    floppy    0 ausgekletter
        │
        └─ (3)  -rw--w-rw-   lp      tape     0 einlaufer

```

## 5.16

Can the user **games**, who is a member of the **cdrom** group, **read from** the file **/einkletten/enwitzztete/zerwarfer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrwx---   proxy   audio    0 einkletten
    │
    └─ (2)      d---rw-r-x  proxy   tape     0 enwitzztete
        │
        └─ (3)  -rwxrw----   news    cdrom    0 zerwarfer

```

## 5.17

Can the user **uucp**, who is a member of the **proxy** group, **read from** the file **/zerstehst/aufgetraung/auftrautest**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrwx--x   uucp    floppy    0 zerstehst
    │
    └─ (2)      dr-x-w-r--  uucp    tape     0 aufgetraung
        │
        └─ (3)  ----r--r-x  uucp    fax     0 auftrautest

```

### 5.18

Can the user **student**, who is a member of the **audio** group, **read from** the file **/getrause/angetrauen/einfahren**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr--r-xrwx      lp      tape      0 getrause
│   └─ (2)   drwxr-xrw-  student  cdrom      0 angetrauen
│       └─ (3) -rwxr--rwx      mail      dip      0 einfahren
```

### 5.19

Can the user **lp**, who is a member of the **fax** group, **read from** the file **/besinnt/aufgerabarber/besteht**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrwxr--  nobody      fax      0 besinnt
│   └─ (2)   d-w-rw-rwx   proxy      mail      0 aufgerabarber
│       └─ (3) --w-rwxr-x  nobody      fax      0 besteht
```

### 5.20

Can the user **nobody**, who is a member of the **voice** group, **write to** the file **/einrennse/zersetzte/ausgehaltheit**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d--xrwx-w-  student      voice      0 einrennse
│   └─ (2)   d--x-w-rwx   games      floppy      0 zersetzte
│       └─ (3) -r-x-wx-wx   games      cdrom      0 ausgehaltheit
```

### 5.21

Can the user **lp**, who is a member of the **floppy** group, **read from** the file **/angerauchse/angekaesung/ausgeklebts**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx--x-w-   uucp    cdrom    0 angerauchse
│   └─ (2)      drwxr-x-w-   proxy   floppy   0 angekaesung
│       └─ (3)  --w-rw---x   uucp    floppy   0 ausgekletts

```

## 5.22

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

```

/
├─ (1)      drwxr-xr-x   uucp     mail     0 zerrrauchst
│   └─ (2)      d-w-rw-r-x   mail    uucp     0 zersetze
│       └─ (3)  --w--wxr--   news    tape     0 auslauftest

```

## 5.23

Can the user **student**, who is a member of the **tape** group, **read from** the file **/behalttest/enpflumheit/angesitztete**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--rw-rwx   lp       dip      0 behalttest
│   └─ (2)      drwx-w-rwx   games    tape     0 enpflumheit
│       └─ (3)  -rw-rw---x   nobody   tape     0 angesitztete

```

## 5.24

Can the user **games**, who is a member of the **fax** group, **write to** the file **/ausgewarfen/anhundheit/einrabarben**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx-wxr-x   student   proxy    0 ausgewarfen
│   └─ (2)      d-wxr-x-wx   mail     fax      0 anhundheit
│       └─ (3)  -rw-r-x-wx   games    cdrom    0 einrabarben

```

## 5.25

Can the user **games**, who is a member of the **floppy** group, **execute** the file **/aufrauchheit/austrittte/ansprachte**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrwxrwx   nobody    fax      0 aufrauchheit
│   └─ (2)   d-wx-w-rw-   uucp     floppy   0 austrittte
│       └─ (3) -rwxrw-r-x   games     mail     0 ansprachte
```

## 5.26

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

```
/
├─ (1)      d-wxr-xr-x   student   uucp     0 bepflumt
│   └─ (2)   dr-x--xrwx   nobody    fax      0 anrauchttest
│       └─ (3) -----x   nobody    tape     0 aufgegehte
```

## 5.27

Can the user **nobody**, who is a member of the **mail** group, **write to** the file **/beschmeckt/angewitzer/anstehst**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr--r--rwx   mail     student  0 beschmeckt
│   └─ (2)   dr-x-wxrwx   news     audio   0 angewitzer
│       └─ (3) -r-x-w--wx   lp       proxy   0 anstehst
```

## 5.28

Can the user **proxy**, who is a member of the **uucp** group, **read from** the file **/ausstehetest/einkraute/angerennheit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x-----      news      audio      0 ausstehtest
│   └─ (2)      d-----r-x      lp      voice      0 einkraute
│       └─ (3) -rw-rw---x student      uucp      0 angerennheit

```

## 5.29

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

```

/
├─ (1)      drwxrwx--x      proxy student      0 ausgetrause
│   └─ (2)      drwxr-x-w-      proxy  voice      0 zertritttheit
│       └─ (3) -rwxr-----      proxy floppy      0 ausgefahren

```

## 5.30

Can the user **nobody**, who is a member of the **floppy** group, **read from** the file `/ausgekaesst/zerkrauen/einsprachs`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrwx-wx      uucp  floppy      0 ausgekaesst
│   └─ (2)      drwx--xrw-      nobody voice      0 zerkrauen
│       └─ (3) --wxr-x--x student floppy      0 einsprachs

```

## 5.31

Can the user **news**, who is a member of the **floppy** group, **write to** the file `/angerabarbst/bewarfheit/ausgerabarber`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx--xrw-      news      news      0 angerabarbst
│   └─ (2)      dr-x-wxrw-      news      floppy      0 bewarfheit
│       └─ (3) ----r-xrw-      uucp      tape      0 ausgerabarber

```



### 5.32

Can the user **nobody**, who is a member of the **fax** group, **write to** the file **/begeher/betraute/eintritten**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrwxr-x   games    fax    0 begeher
│   └─ (2)      d-w-rw-r-x   proxy    mail    0 betraute
│       └─ (3)  --wx-w--w-   nobody    dip    0 eintritten

```

### 5.33

Can the user **mail**, who is a member of the **voice** group, **write to** the file **/entraute/betraum/zersprach**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx---r-x    mail     uucp    0 entraute
│   └─ (2)      d-wxr-x-w-   uucp    voice    0 betraum
│       └─ (3)  -rw-----wx   mail     voice    0 zersprach

```

### 5.34

Can the user **lp**, who is a member of the **mail** group, **execute** the file **/angetrittt/ausgelaufen/gewarfung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x---r--    lp       uucp    0 angetrittt
│   └─ (2)      d-w-r-x--x   proxy    mail    0 ausgelaufen
│       └─ (3)  -r-x-wxr-w-   lp       fax    0 gewarfung

```

### 5.35

Can the user **proxy**, who is a member of the **voice** group, **read from** the file **/angesitzst/angesetzen/auftritten**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-rwxr-x    uucp     voice    0 angesitzst
│   └─ (2)      dr--rwxr--   student  voice    0 angesetzen
│       └─ (3)  -r-xrw-r-x    proxy     proxy    0 auftritten

```

### 5.36

Can the user **nobody**, who is a member of the **proxy** group, **read from** the file **/angerabarbte/angesitztheit/zerhaltkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d---rw-r-x    proxy    voice    0 angerabarbte
│
│   └─ (2)   dr-x--xr-x   student  student  0 angesitztheit
│
│       └─ (3) -r--r-x-wx    uucp    proxy    0 zerhaltkeit
```

### 5.37

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

```
/
├─ (1)      drwxr---wx    proxy    uucp     0 auftrittter
│
│   └─ (2)   d-wx---rwx   student  mail     0 aufgehalttete
│
│       └─ (3) ----rwx-wx    proxy    fax     0 gegeher
```

### 5.38

Can the user **uucp**, who is a member of the **dip** group, **execute** the file **/angekrauer/bewarfttest/angehaltheit**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drw-rwxrwx    news     floppy   0 angekrauer
│
│   └─ (2)   dr-x-w-rw-    games     dip     0 bewarfttest
│
│       └─ (3) ---xr-xr-x    uucp     proxy    0 angehaltheit
```

### 5.39

Can the user **proxy**, who is a member of the **mail** group, **write to** the file **/angespracher/ausgesprachung/bewitztheit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d---r--r-x    news    audio    0 angespracher
│   └─ (2)  dr-xrw--wx    proxy    uucp     0 ausgesprachung
│       └─ (3) --w---xr--    proxy    news     0 bewitzheit

```

## 5.40

Can the user **nobody**, who is a member of the **audio** group, **execute** the file **/enrenntete/aufklettt/auffahrer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--r--rwx  student  floppy    0 enrenntete
│   └─ (2)  d---r--rwx   mail     voice     0 aufklettt
│       └─ (3) -rw-r-x--x nobody   mail      0 auffahrer

```

## Hash for checking if you have all 40 correct

ee8d54c799fd07dd8752b0e9bcc223cebac19b8534502537024e394e47e62203

You can check your result with a command like:

```
echo "2YY13YY2YYYYY3Y3YY2Y22YY11Y2Y1YY2YYY3Y3YY" | \
    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.