

# 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 `unit1-solution1.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 2410 bytes long, while a compact script would be no larger than 969.

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
2411 bytes or more	0%
1690 – 2410 bytes	5%
970 – 1689 bytes	15%
824 – 969 bytes	25%
less than 824 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1-solution1.tgz unit1exercisel
./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 unit1-solution1.tgz unit1exercisel
git add unit1-solution1.sh unit1-solution1.tgz
git commit unit1-solution1689.sh unit1-solution2060361144.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 `unit1-solution2.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-xrw`, 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 2302 bytes long, while a compact script would be no larger than 1226.

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
2303 bytes or more	0%
1765 – 2302 bytes	5%
1227 – 1764 bytes	15%
1043 – 1226 bytes	25%
less than 1043 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1-solution2.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 unit1-solution2.tgz unit1exercise2
git add unit1-solution2.sh unit1-solution2.tgz
git commit unit1-solution1764.sh unit1-solution2060361144.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 `unit1-solution3.tgz`

1. `bekatzest`, mode `r---w--w-`, owner `nobody`, group `news`, `setuid`
2. `aufgekletten`, mode `r--r-----`, owner `news`, group `audio`
3. `gerabarbung`, 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 2372 bytes long, while a compact script would be no larger than 1217.

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
2373 bytes or more	0%
1795 – 2372 bytes	5%
1218 – 1794 bytes	15%
1035 – 1217 bytes	25%
less than 1035 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1-solution3.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 unit1-solution3.tgz unit1exercise3
git add unit1-solution3.sh unit1-solution3.tgz
git commit unit1-solution1794.sh unit1-solution2060361144.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 `unit1-solution4.tgz`

1. `aufgesitzen`, mode `---rwx--x`, group `voice`, `setgid`
2. `aufgepflumheit`, mode `--xr-xrwx`, group `tape`, `setgid`
3. `angעהheit`, 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/aufklettete`, 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/enklettete`, mode `r---w--wx`, group `cdrom`, `setgid`

16. zerrauchse/angeschmeckt/zerlaufen, mode r--r-xr-x, group fax, setgid
17. aussinnst/bepflums/ausgesitzt, mode rwxrwx-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 2446 bytes long, while a compact script would be no larger than 1108.

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
2447 bytes or more	0%
1778 – 2446 bytes	5%
1109 – 1777 bytes	15%
942 – 1108 bytes	25%
less than 942 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1-solution4.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 unit1-solution4.tgz unit1exercise4
git add unit1-solution4.sh unit1-solution4.tgz
git commit unit1-solution1777.sh unit1-solution2060361144.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 `/austrittttest/ausgerauchs/ausgefahrst`? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr--r-xrw-  student  floppy  0 austrittttest
│
├─ (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 verrabarbtest

```

## 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/einsitzheit/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 einsitzheit
│       └─ (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-wrxwx--x    proxy  student    0 auskatzetete
│   └─ (2)   dr-x-w-r-x    games   tape       0 einklettkeit
│       └─ (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--rwx     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 **/aufgekrauheit/zerlaufkeit/einrabarbtete**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xr---wx     news    uucp       0 aufgekrauheit
│   └─ (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 entstehst

```

### 5.15

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

```

/
├─ (1)      dr-x--x--x    uucp    tape    0 gekatztet
│   └─ (2)      d-w--wxrwx  mail    voice    0 engehen
│       └─ (3)  --wx--xrwx    lp    uucp    0 entstehkeit

```

### 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/ausfahrt/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 ausfahrt
│       └─ (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-wxrw-   proxy    voice    0 einschmecken

```

## 5.21

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

```

/
├─ (1)      dr-x-w---x   nobody    news     0 aufgekatztetest
│   └─ (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/enhundt/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 enhundt
│
└─ (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 **/zerrabarbung/ausgehalter/aufgehundung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xrwxr-x      mail     voice     0 zerrabarbung
│
├─ (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 angekrauung
│       └─ (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 **/zersitztete/aufrabarbtte/berabarbkkeit**? If not, which of the three directories blocks access (Y|1|2|3)



```

/
├─ (1)      dr-x-wxr-x    news    cdrom    0 zersitztete
│   └─ (2)      d-----wx  nobody  student    0 aufrabarbte
│       └─ (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/aufgekatztst**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d-wxrw-x-w-   student student 0 ausgesetzer
│   └─ (2)   dr-xr--rwx    mail     tape    0 einfahrer
│       └─ (3) -r-xrwxrwx   news      dip     0 aufgekatztst
```

### 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/betrittkkeit/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 betrittkkeit
│       └─ (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/enwitzzt/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 enwitzzt
│       └─ (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 "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.