

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:

```
./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. `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 rwxr---wx, owner games, group mail
13. ausgekraute/einfahrkeit, mode rwx-wxrw, owner uucp, group news
14. ausgekraute/gewitzkeit/ausgekatzetete, mode rw--w--w-, owner mail, group news
15. ausgekraute/gewitzkeit/zerwarfte, mode rwx--x---, owner proxy, group news
16. aufhaltung/angekatzest/zersinnte, 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 rwx-wxrw, 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:

```
./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. `angesetzst`, 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. `angepflunt`, 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. `angepflunt/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:

```
./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. `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:

```
./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 **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 **/verwitzttest/zersitzst/befahrte**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrw--w-    mail      mail     0  verwitzttest
│   └─ (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-wxrwxrwx      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/zersetzete/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 zersetzete
│       └─ (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/ausgekletts**? 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/zersetzse/auslaufetest**? 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 zersetzse
│       └─ (3) --w--wxr--    news    tape    0 auslaufetest
```

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  aufrachheit
│   └─ (2)      d-wx-w-rw-    uucp    floppy  0  austrittte
│       └─ (3)  -rwxrw-r-x    games    mail    0  ansprache

```

5.26

Can the user **nobody**, who is a member of the **uucp** group, **execute** the file **/bepflumt/anraucht/aufgegehete**? 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--xrw  nobody    fax      0  anrauchttest
│       └─ (3)  -----x  nobody    tape     0  aufgegehete

```

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--rw  mail  student  0  beschmeckt
│   └─ (2)      dr-x-wxrw  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  ausstehetest
│   └─ (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--xrwx   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-wxrwx   news     floppy     0  bewarfheit
│       └─ (3) ----r-xrwx 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 begehler
│   └─ (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/bewarftest/angehalttheit**? 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 bewarftest
│
└─ (3)      ---xr-xr-x    uucp     proxy    0 angehalttheit

```

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 bewitztheit

```

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.