

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. `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 2462 bytes long, while a compact script would be no larger than 963.

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
2463 bytes or more	0%
1713 – 2462 bytes	5%
964 – 1712 bytes	15%
819 – 963 bytes	25%
less than 819 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-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 `unit1-solution2.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-wxrw`, owner `uucp`, group `news`
14. `ausgekraute/gewitzkeit/ausgekatztete`, 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-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 2330 bytes long, while a compact script would be no larger than 1194.

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
2331 bytes or more	0%
1763 – 2330 bytes	5%
1195 – 1762 bytes	15%
1015 – 1194 bytes	25%
less than 1015 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-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 `unit1-solution3.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 2315 bytes long, while a compact script would be no larger than 1209.

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
2316 bytes or more	0%
1763 – 2315 bytes	5%
1210 – 1762 bytes	15%
1028 – 1209 bytes	25%
less than 1028 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-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 `unit1-solution4.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 `rwxr-----x`, group `uucp`
9. `angehte/gerabarbarkeit`, mode `rw-rwx-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 `rw-rwx---`, 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 2442 bytes long, while a compact script would be no larger than 1110.

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
2443 bytes or more	0%
1777 – 2442 bytes	5%
1111 – 1776 bytes	15%
944 – 1110 bytes	25%
less than 944 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-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 anwitung
│       └─ (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-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/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 **/ausstehettest/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-wxrw-  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 "2YY13YY2YYYYY3Y3YY2Y22YY11Y2Y1YY2YYYY3Y3YY" | \
    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.