Network Engineering 2021 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. `angesetzen`, mode `r-x-w----`

2. `gekaeser`, mode `r--rwxrwx`

3. `ausgesinnung`, mode `rw-rw----`

4. `aufpflumheit`, mode `r---wx-w-`

5. `getraukeit`, mode `r--rw-rwx`

6. `besetzs`, mode `r--r-x---`

7. `anstehtete`, mode `-w-r-x---`

8. `auswarfung`, mode `r--rw-r-x`

9. `auswarfung/aufgetritter`, mode `r---w-r-x`

10. `ausgesinnung/aufwitzer`, mode `--xrwxrw-`

11. `auswarfung/zertritts`, mode `r-x-wxr--`

12. `angesetzen/verstehst`, mode `r-xrw----`

13. `getraukeit/geschmeckkeit`, mode `rwxr--rw-`

14. `ausgesinnung/aufwitzer/zersteht`, mode `----w-r-x`

15. `ausgesinnung/aufwitzer/verrabarbs`, mode `rw--w-r-x`

16. `angesetzen/verstehst/ankatzet`, mode `-wxrw-rw-`

17. `auswarfung/aufgetritter/austrittte`, mode `-wxrwx-w-`

18. `auswarfung/zertritts/aufsetzheit`, mode `r-xr--rwx`

19. `ausgesinnung/aufwitzer/gefahrst`, mode `--xr----x`

20. `auswarfung/zertritts/anrennen`, mode `-wxr-----`

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 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 2432 bytes long, while a compact script would be no larger than 961.

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
2433 bytes or more	0%
1697 – 2432 bytes	5%
962 – 1696 bytes	15%
817 – 961 bytes	25%
less than 817 bytes	40%

To test your solution, use a command like:

```
sudo tar zcf unit1-solution1.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 unit1-solution1.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 unit1-solution2.tgz

1. ensetzung, mode r---wx-w-, owner mail, group dip

2. einrabarbte, mode r-xr-x---, owner student, group cdrom

3. geschmecks, mode rwxr--r-x, owner mail, group mail

4. einhaltung, mode -w-r--rw-, owner mail, group floppy

5. gepflumen, mode --xr----x, owner news, group proxy

6. einsinntest, mode -w----rwx, owner student, group uucp

7. ausgesinnse, mode `r-x--x--x`, owner `news`, group `mail`

8. enpflums, mode `rwx-w--w-`, owner `lp`, group `cdrom`

9. enpflums/zerrenntest, mode `r---w-r--`, owner `nobody`, group `tape`

10. ensetzung/einhundt, mode `--xr-xr--`, owner `news`, group `floppy`

11. gepflumen/engehung, mode `r--r--rwx`, owner `news`, group `proxy`

12. enpflums/gesinntest, mode `-----x-w-`, owner `student`, group `cdrom`

13. einsinntest/bekletts, mode `---r-x-wx`, owner `uucp`, group `proxy`

14. ensetzung/einhundt/gesetztest, mode `-w----rwx`, owner `lp`, group `tape`

15. ensetzung/einhundt/gesprachkeit, mode `r-x--x-w-`, owner `proxy`, group `news`

16. enpflums/gesinntest/zerklettkeit, mode `r--rwx-wx`, owner `student`, group `student`

17. einsinntest/bekletts/aushaltte, mode `rw-rw-rw-`, owner `news`, group `uucp`

18. enpflums/zerrenntest/verlaufs, mode `r-----rwx`, owner `nobody`, group `proxy`

19. einsinntest/bekletts/angegehst, mode `-w-r-xrw-`, owner `lp`, group `uucp`

20. einsinntest/bekletts/anrauchen, mode `r-x--x-wx`, owner `lp`, group `audio`

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 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 2268 bytes long, while a compact script would be no larger than 1192.

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
2269 bytes or more	0%
1731 – 2268 bytes	5%
1193 – 1730 bytes	15%
1014 – 1192 bytes	25%
less than 1014 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. `aufgesitzkeit`, mode `-wx-w---x`, owner `games`, group `dip`, setuid

2. `zerklettst`, mode `rw--w---x`, owner `proxy`, group `student`, setuid

3. `aufgerennheit`, mode `r-xr-xrw-`, owner `proxy`, group `voice`, setuid

4. `aufgerabarbs`, mode `---r-x--x`, owner `proxy`, group `uucp`

5. `gekrauen`, mode `rw-rwx--x`, owner `uucp`, group `fax`, setuid

6. `verhundst`, mode `--x-wx-w-`, owner `nobody`, group `uucp`, setuid

7. `aufgewitzer`, mode `-------w-`, owner `lp`, group `mail`

8. `vertritten`, mode `--x-w-r--`, owner `proxy`, group `floppy`

9. `aufgesitzkeit/ausrennst`, mode `r-xrwxrw-`, owner `student`, group `uucp`

10. `aufgerabarbs/aufpflumst`, mode `r-xr--r--`, owner `nobody`, group `cdrom`, setuid

11. `vertritten/zerrennse`, mode `-wx-wx---`, owner `proxy`, group `student`, setuid

12. `gekrauen/ausgeschmecks`, mode `rw-rwx--x`, owner `nobody`, group `news`

13. `aufgerennheit/gelaufte`, mode `r----x-w-`, owner `news`, group `voice`, `setuid`

14. `gekrauen/ausgeschmecks/zerwarfse`, mode `rwx-w----`, owner `games`, group `news`

15. `vertritten/zerrennse/einkrauer`, mode `r-xrwxrw-`, owner `games`, group `cdrom`

16. `aufgerabarbs/aufpflumst/ensitzkeit`, mode `----wxrwx`, owner `proxy`, group `dip`, `setuid`

17. `vertritten/zerrennse/angerennt`, mode `-w-rw-r-x`, owner `games`, group `voice`

18. `vertritten/zerrennse/aufgehundtete`, mode `r-xrw---x`, owner `news`, group `uucp`, `setuid`

19. `vertritten/zerrennse/zertrause`, mode `-w----rwx`, owner `nobody`, group `voice`

20. `aufgesitzkeit/ausrennst/zerkraute`, mode `---rwx-w-`, owner `student`, group `cdrom`

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 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 2389 bytes long, while a compact script would be no larger than 1232.

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
2390 bytes or more	0%
1811 – 2389 bytes	5%
1233 – 1810 bytes	15%
1048 – 1232 bytes	25%
less than 1048 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. `aufgefahrung`, mode `r-x-----x`, group `floppy`, setgid

2. `auftritten`, mode `r-xr--r--`, group `fax`, setgid

3. `enklettt`, mode `r-x-wx-w-`, group `fax`, setgid

4. `aufgepflumtete`, mode `-wxrw-rw-`, group `tape`

5. `aufgewitzt`, mode `r--rw---x`, group `proxy`, setgid

6. `enrauchs`, mode `------rwx`, group `voice`

7. `aufwitzse`, mode `----w-r--`, group `voice`, setgid

8. `einkletttest`, mode `r-x--xr--`, group `uucp`, setgid

9. `auftritten/angegehte`, mode `rwx-w----`, group `tape`

10. `enrauchs/einsinnung`, mode `r--r-----`, group `audio`

11. `einkletttest/angesetzung`, mode `-wxr-xr--`, group `student`

12. `aufgefahrung/anschmecktest`, mode `-wx--xr--`, group `cdrom`, setgid

13. `enrauchs/ankletts`, mode `r-x-----x`, group `tape`

14. `einkletttest/angesetzung/ausschmecks`, mode `--xrwx--x`, group `uucp`, setgid

15. `einkletttest/angesetzung/auswarfheit`, mode `rw-rw--wx`, group `uucp`, setgid

16. `auftritten/angegehte/gehalttest`, mode `-w-r-x-wx`, group `floppy`

17. `enrauchs/einsinnung/aufgewitzs`, mode `---r-x--x`, group `mail`, setgid

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18. `enrauchs/einsinnung/einrabarber`, mode `rw---x-wx`, group `news`

19. `enrauchs/ankletts/angewarftest`, mode `-w-r--r-x`, group `student`, `setgid`

20. `enrauchs/einsinnung/zerhundung`, mode `r-xrwxrwx`, group `tape`, `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 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 2414 bytes long, while a compact script would be no larger than 1152.

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
2415 bytes or more	0%
1784 – 2414 bytes	5%
1153 – 1783 bytes	15%
980 – 1152 bytes	25%
less than 980 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 **nobody**, who is a member of the **cdrom** group, **read from** the file /angewarfst/gekrautest/aufkrauheit? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└─ (1)        drwx-w-rw-   nobody    cdrom     0 angewarfst
   └─ (2)    drwxr-xr--   nobody    audio     0 gekrautest
      └─ (3) -r-xr-x-w-       lp    cdrom     0 aufkrauheit
```

5.2

Can the user **lp**, who is a member of the **mail** group, **read from** the file /antritttest/zerkaest/gekraut? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└─ (1)        d--xr-x-wx  student    mail     0 antritttest
   └─ (2)    d--x---rwx    proxy    news     0 zerkaest
      └─ (3) --wxr-xrwx    games    mail     0 gekraut
```

5.3

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

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```
/
└─ (1)        drwxr--r--   nobody    voice      0 aufkaest
   └─ (2)   d--xr-xrw-    proxy     news      0 einhaltkeit
      └─ (3) -rwx--x-wx    games     news      0 antraukeit
```

5.4

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

```
/
└─ (1)        drw----rwx    mail    cdrom      0 antrittte
   └─ (2)    dr-x----w-    proxy    tape      0 berabarbte
      └─ (3) -rwxr-x---  student    tape      0 einlaufer
```

5.5

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

```
/
└─ (1)        d-w-rwx---  student  student    0 eintraust
   └─ (2)    d-wx---r-x    proxy    proxy     0 auffahrse
      └─ (3) --w-r--rw-    proxy   floppy     0 aufwarfer
```

5.6

Can the user **lp**, who is a member of the **student** group, **read from** the file /belauft/enkaestest/ausgerabarber? If not, which of the three directories blocks access (Y|1|2|3)
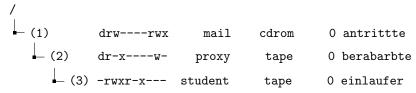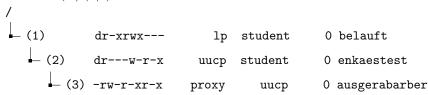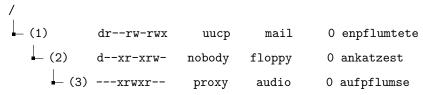
```
/
└─ (1)        dr-xrwx---      lp  student     0 belauft
   └─ (2)    dr---w-r-x    uucp  student     0 enkaestest
      └─ (3) -rw-r-xr-x    proxy    uucp      0 ausgerabarber
```

5.7

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

```
/
└─ (1)        drwxr-x--x     mail    cdrom    0 aussetzkeit
   └─ (2)     drwx-w-rwx     uucp    cdrom    0 besinnte
      └─ (3) -rwxrwx--x       lp     cdrom    0 angekaesung
```

5.8

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

```
/
└─ (1)        dr--rw-rwx     uucp     mail    0 enpflumtete
   └─ (2)     d--xr-xrw-   nobody   floppy    0 ankatzest
      └─ (3) ---xrwxr--     proxy    audio    0 aufpflumse
```

5.9

Can the user **proxy**, who is a member of the **mail** group, **write into** the file
/bekaesheit/auffahrung/aufhalten? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└─ (1)        d-w-r-xr-x     mail     tape    0 bekaesheit
   └─ (2)     dr-xrwx--x    proxy      fax    0 auffahrung
      └─ (3) -r--rw--wx     uucp       fax    0 aufhalten
```

5.10

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

```
/
└─ (1)        d------r-x     uucp  student    0 zerschmeckheit
   └─ (2)   d---r-xrwx     news     uucp     0 ausstehs
      └─ (3) -rwx-w-r-x   games    proxy     0 aushalts
```

5.11

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

```
/
└─ (1)        drwxrwxr-x     mail    floppy    0 angerennst
   └─ (2)    dr-x---r-x    games    floppy    0 befahrte
      └─ (3) -r----xr--      lp       fax     0 ausgetrittheit
```

5.12

Can the user **mail**, who is a member of the **student** group, **write into** the
file /zersetzt/angehaltt/gefahrkeit? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└─ (1)        d---rwx-w-     news     tape     0 zersetzt
   └─ (2)    drwxrwxr-x    games     uucp     0 angehaltt
      └─ (3) ---xrw-rw-    proxy     uucp     0 gefahrkeit
```

5.13

Can the user **games**, who is a member of the **dip** group, **read from** the file
/betrauheit/verkaestete/angelaufkeit? If not, which of the three directo-
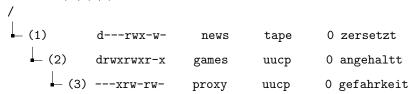ries blocks access (Y|1|2|3)

```
/
└─ (1)        drwxrwxr-x     news      dip     0 betrauheit
   └─ (2)    drwxr-x-w-    games    cdrom    0 verkaestete
      └─ (3) --wxrwxr--    games     tape     0 angelaufkeit
```
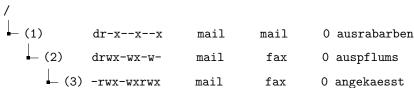
5.14

Can the user **news**, who is a member of the **audio** group, **write into** the file
/ausgesetzst/aufkatzest/enrabarbt? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└ (1)        d--xr-xr--     uucp     audio     0 ausgesetzst
   └ (2)     drwxr----x     news     cdrom     0 aufkatzest
      └ (3) -r------wx   student      mail     0 enrabarbt
```

5.15

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

```
/
└ (1)        d-wxrwxrwx       lp     audio     0 einlaufkeit
   └ (2)     d-wx--xrwx   nobody      mail     0 aussinnst
      └ (3) ---xr--rwx    proxy      news     0 ausrauchung
```

5.16

Can the user **mail**, who is a member of the **audio** group, **execute** the file
/ausrabarben/auspflums/angekaesst? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└ (1)        dr-x--x--x     mail      mail     0 ausrabarben
   └ (2)     drwx-wx-w-     mail       fax     0 auspflums
      └ (3) -rwx-wxrwx     mail       fax     0 angekaesst
```

5.17

Can the user **lp**, who is a member of the **dip** group, **read from** the file
/verhaltt/aufpflumen/getrittte? If not, which of the three directories blocks
access (Y|1|2|3)

```
/
└─ (1)        drwx-wx-w-      lp   student     0 verhaltt
    └─ (2)    dr-x-w-rw-      lp    floppy     0 aufpflumen
        └─ (3) --w-r--rw-     lp      fax      0 getrittte
```

5.18

Can the user **uucp**, who is a member of the **fax** group, **write into** the file
/zerstehen/zerrennt/aufgekrauheit? If not, which of the three directories
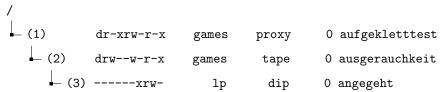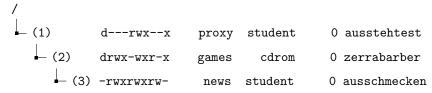blocks access (Y|1|2|3)

```
/
└─ (1)        drwx---rwx     uucp      dip     0 zerstehen
    └─ (2)    dr-x---rwx     news    floppy    0 zerrennt
        └─ (3) ---xrw-rw-    games      fax     0 aufgekrauheit
```

5.19

Can the user **mail**, who is a member of the **tape** group, **read from** the file
/aufgekletttest/ausgerauchkeit/angegeht? If not, which of the three di-
rectories blocks access (Y|1|2|3)

```
/
└─ (1)        dr-xrw-r-x     games     proxy    0 aufgekletttest
    └─ (2)    drw--w-r-x     games      tape    0 ausgerauchkeit
        └─ (3) ------xrw-     lp        dip     0 angegeht
```

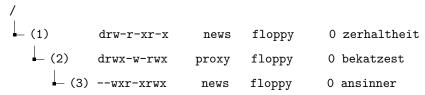## 5.20

Can the user **uucp**, who is a member of the **student** group, **write into** the
file /ausstehtest/zerrabarber/ausschmecken? If not, which of the three
directories blocks access (Y|1|2|3)

```
/
└─ (1)        d---rwx--x     proxy  student     0 ausstehtest
    └─ (2)    drwx-wxr-x     games    cdrom     0 zerrabarber
        └─ (3) -rwxrwxrw-     news   student     0 ausschmecken
```

5.21

Can the user **uucp**, who is a member of the **voice** group, **execute** the file /angekatzes/angekletten/aushundte? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└ (1)        dr--rw-r-x    news      fax     0 angekatzes
   └ (2)    drwxrw--wx    uucp    cdrom     0 angekletten
      └ (3) -rwx-wx---     lp    voice     0 aushundte
```

5.22

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

```
/
└ (1)        drw-r-xr-x    news   floppy     0 zerhaltheit
   └ (2)    drwx-w-rwx    proxy   floppy     0 bekatzest
      └ (3) --wxr-xrwx     news   floppy     0 ansinner
```
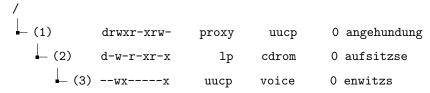
5.23

Can the user **mail**, who is a member of the **tape** group, **write into** the file /enpflumse/zertritten/aufgesetzst? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└ (1)        d-w--wx---   nobody    cdrom     0 enpflumse
   └ (2)    dr-xr--rwx   nobody     mail     0 zertritten
      └ (3) -r-xrw--w-   student      dip     0 aufgesetzst
```

5.24

Can the user **lp**, who is a member of the **dip** group, **write into** the file /auskrautete/einpflumung/aufgesprachung? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└── (1)          d-wx-wx---      mail    audio     0 auskrautete
    └── (2)   drwx--xrw-      lp    floppy     0 einpflumung
        └── (3) ---xrw---x    news      dip     0 aufgesprachung
```

5.25

Can the user **uucp**, who is a member of the **uucp** group, **read from** the file /angehundung/aufsitzse/enwitzs? If not, which of the three directories blocks access (Y|1|2|3)
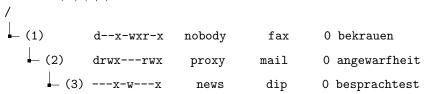
```
/
└── (1)          drwxr-xrw-    proxy     uucp     0 angehundung
    └── (2)   d-w-r-xr-x      lp    cdrom     0 aufsitzse
        └── (3) --wx-----x    uucp    voice     0 enwitzs
```

5.26

Can the user **lp**, who is a member of the **audio** group, **read from** the file /aufgesetztete/angesetzen/zersetzer? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└── (1)          drwx-w-r--      lp    voice     0 aufgesetztete
    └── (2)   dr--rwx-wx    games    audio     0 angesetzen
        └── (3) --w-rw---x    proxy    audio     0 zersetzer
```
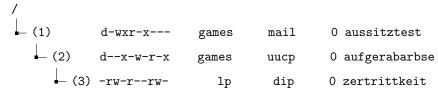
5.27

Can the user **news**, who is a member of the **floppy** group, **write into** the file /bekrauen/angewarfheit/besprachtest? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└── (1)          d--x-wxr-x    nobody     fax     0 bekrauen
    └── (2)   drwx---rwx    proxy    mail     0 angewarfheit
        └── (3) ---x-w---x    news      dip     0 besprachtest
```

5.28

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

```
/
└─ (1)        d-wxrwxrwx      news      fax     0 auflaufkeit
   └─ (2)     dr-xr-x-w-       lp       mail    0 berabarbtest
      └─ (3) -rw-----wx      proxy      fax     0 enraucher
```

5.29

Can the user **mail**, who is a member of the **mail** group, **read from** the file
/aussitztest/aufgerabarbse/zertrittkeit? If not, which of the three di-
rectories blocks access (Y|1|2|3)

```
/
└─ (1)        d-wxr-x---      games     mail    0 aussitztest
   └─ (2)     d--x-w-r-x      games     uucp    0 aufgerabarbse
      └─ (3) -rw-r--rw-        lp       dip     0 zertrittkeit
```
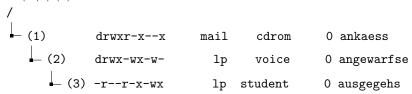
5.30

Can the user **lp**, who is a member of the **student** group, **read from** the file
/eintrittst/auflaufen/verkrauung? If not, which of the three directories
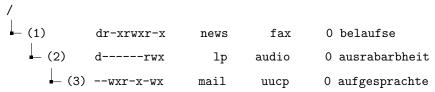blocks access (Y|1|2|3)

```
/
└─ (1)        dr-xrw-r-x       lp       voice   0 eintrittst
   └─ (2)     drwxrwxrw-       lp       proxy   0 auflaufen
      └─ (3) ---xr-xr-x        lp       mail    0 verkrauung
```

5.31

Can the user **uucp**, who is a member of the **audio** group, **read from** the
file /befahrs/aufschmeckt/ausgeschmeckkeit? If not, which of the three
directories blocks access (Y|1|2|3)

```
/
└── (1)        dr--rwx---    proxy    voice    0 befahrs
    └── (2)   drwxr-x-w-    nobody    audio    0 aufschmeckt
        └── (3) -rw---x-w-    uucp     uucp    0 ausgeschmeckkeit
```

5.32

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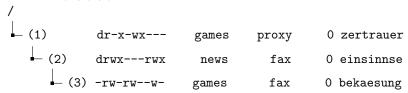/ankaess/angewarfse/ausgegehs? If not, which of the three directories blocks
access (Y|1|2|3)

```
/
└── (1)        drwxr-x--x    mail    cdrom    0 ankaess
    └── (2)   drwx-wx-w-      lp    voice    0 angewarfse
        └── (3) -r--r-x-wx      lp   student    0 ausgegehs
```

5.33

Can the user **mail**, who is a member of the **fax** group, **read from** the file
/belaufse/ausrabarbheit/aufgesprachte? If not, which of the three direc-
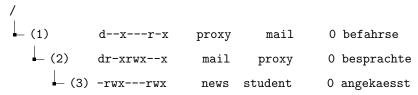tories blocks access (Y|1|2|3)

```
/
└── (1)        dr-xrwxr-x    news     fax    0 belaufse
    └── (2)   d------rwx      lp    audio    0 ausrabarbheit
        └── (3) --wxr-x-wx    mail    uucp    0 aufgesprachte
```

5.34

Can the user **games**, who is a member of the **fax** group, **write into** the
file /zertrauer/einsinnse/bekaesung? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└── (1)        dr-x-wx---    games    proxy    0 zertrauer
    └── (2)   drwx---rwx    news      fax    0 einsinnse
        └── (3) -rw-rw--w-    games      fax    0 bekaesung
```

5.35

Can the user **uucp**, who is a member of the **uucp** group, **read from** the file /berauchtete/aufgewitztete/auskatzeen? If not, which of the three directories blocks access (Y|1|2|3)
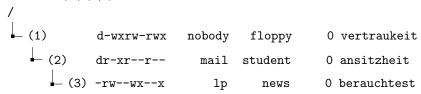
```
/
└─ (1)          drwxrw----      uucp    proxy     0 berauchtete
   └─ (2)     dr-x-w--w-      games     uucp     0 aufgewitztete
      └─ (3) -rwx----w-      uucp      fax      0 auskatzeen
```

5.36

Can the user **mail**, who is a member of the **news** group, **execute** the file /befahrse/besprachte/angekaesst? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└─ (1)          d--x---r-x      proxy    mail      0 befahrse
   └─ (2)     dr-xrwx--x      mail     proxy     0 besprachte
      └─ (3) -rwx---rwx      news    student    0 angekaesst
```
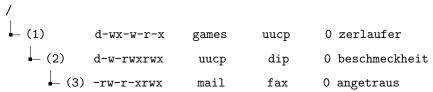
5.37

Can the user **mail**, who is a member of the **news** group, **execute** the file /vertraukeit/ansitzheit/berauchtest? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└─ (1)          d-wxrw-rwx   nobody   floppy     0 vertraukeit
   └─ (2)     dr-xr--r--      mail    student    0 ansitzheit
      └─ (3) -rw--wx--x       lp      news      0 berauchtest
```
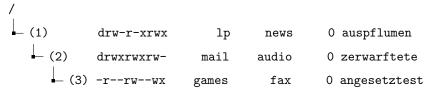
5.38

Can the user **mail**, who is a member of the **floppy** group, **read from** the file /ensetzer/aufrauchheit/betritter? If not, which of the three directories blocks access (Y|1|2|3)

```
/
└─ (1)        d-w-r--rwx      uucp     tape     0 ensetzer
    └─ (2)   dr-xrwx-w-      mail     voice    0 aufrauchheit
        └─ (3) --wxr-xr-x    mail     audio    0 betritter
```

5.39

Can the user **mail**, who is a member of the **tape** group, **execute** the file
`/zerlaufer/beschmeckheit/angetraus`? If not, which of the three directories
blocks access (Y|1|2|3)

```
/
└─ (1)        d-wx-w-r-x     games     uucp     0 zerlaufer
    └─ (2)   d-w-rwxrwx     uucp      dip      0 beschmeckheit
        └─ (3) -rw-r-xrwx    mail      fax      0 angetraus
```

5.40

Can the user **games**, who is a member of the **audio** group, **write into** the file
`/auspflumen/zerwarftete/angesetztest`? If not, which of the three directo-
ries blocks access (Y|1|2|3)

```
/
└─ (1)        drw-r-xrwx       lp      news     0 auspflumen
    └─ (2)   drwxrwxrw-      mail     audio    0 zerwarftete
        └─ (3) -r--rw--wx    games     fax      0 angesetztest
```

Hash for checking if you have all 40 correct

8dbf251f4ddecf90c38dad9bff2945a8ac1a4848056e550b0f82c0365f0300e2
You can check your result with a command like:
```
echo -n "2YY13YY2YYYY3Y3YY2Y22YY11Y2Y1YY2YYY3Y3YY" | \
       shasum -a 512 | cut -c1-64
```
(But don't forget to put your string of Y's and N's in place of those)
If the output of that command matches the hash at the end of this section,
then you almost certainly have all 40 correct.