

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. `aushundtest`, mode `-w-rw-rwx`
2. `zerpflumst`, mode `rwX-w-r-x`
3. `aufsitzung`, mode `rwX---w-`
4. `enfahrer`, mode `r--r---wX`
5. `zerrennheit`, mode `-w-----x`
6. `besprachs`, mode `r--r-----`
7. `begehse`, mode `r--r-----`
8. `aufgeschmeckheit`, mode `---rwX-w-`
9. `zerrennheit/antrauung`, mode `r-----r-x`
10. `enfahrer/zerhundertete`, mode `r--rwX-wX`
11. `enfahrer/angegehst`, mode `r-x---r--`
12. `besprachs/ausfahrte`, mode `-w--wXr--`
13. `begehse/bekraukeit`, mode `r-----r-x`
14. `enfahrer/zerhundertete/gelaufstest`, mode `-wXr-x-w-`
15. `zerrennheit/antrauung/besetztheit`, mode `-w--wX---`
16. `enfahrer/zerhundertete/ausgekaesst`, mode `---r--r--`
17. `begehse/bekraukeit/angewarft`, mode `-wXr-x-wX`
18. `enfahrer/zerhundertete/aufgehundertete`, mode `r-----`
19. `besprachs/ausfahrte/ausrauchheit`, mode `-w----r--`
20. `zerrennheit/antrauung/einsetztheit`, mode `--x-w-r-x`

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 2419 bytes long, while a compact script would be no larger than 975.

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
2420 bytes or more	0%
1698 – 2419 bytes	5%
976 – 1697 bytes	15%
829 – 975 bytes	25%
less than 829 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. `besetzst`, mode `----w----`, owner `games`, group `voice`
2. `ausgetrautete`, mode `-wx-wx--x`, owner `news`, group `floppy`
3. `angewarftest`, mode `r--rw----`, owner `uucp`, group `mail`
4. `gesitzse`, mode `r--r--rw-`, owner `student`, group `dip`
5. `aufgehundkeit`, mode `--x----wx`, owner `nobody`, group `proxy`
6. `aushaltheit`, mode `-wx-w--wx`, owner `games`, group `news`

7. angesinner, mode ---r--rw-, owner lp, group audio
8. verfahren, mode r-xrw-r--, owner news, group floppy
9. besetzst/angesteht, mode ---rwx---, owner games, group tape
10. angesinner/gegehtest, mode rw--w----, owner mail, group tape
11. verfahren/ausgesinntest, mode -w----r--, owner proxy, group floppy
12. verfahren/aufgekraukeit, mode rwxr--r-x, owner uucp, group news
13. angesinner/enrennt, mode r---w-rw-, owner nobody, group student
14. angesinner/enrennt/zerhaltkeit, mode rwxrw----, owner news, group student
15. verfahren/aufgekraukeit/zerschmeckung, mode --x-----x, owner proxy, group audio
16. besetzst/angesteht/antraute, mode rwxrw-r--, owner mail, group voice
17. angesinner/enrennt/angetraut, mode rw-r-xrwx, owner uucp, group tape
18. angesinner/gegehtest/angelaufs, mode r-xr--rwx, owner student, group proxy
19. verfahren/ausgesinntest/verrenns, mode rw-r-x--x, owner proxy, group cdrom
20. verfahren/ausgesinntest/angeklettt, mode rwx-w----, owner nobody, group student

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 2338 bytes long, while a compact script would be no larger than 1210.

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
2339 bytes or more	0%
1775 – 2338 bytes	5%
1211 – 1774 bytes	15%
1029 – 1210 bytes	25%
less than 1029 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. `anstehet`, mode `--xr-x-w-`, owner `games`, group `tape`
2. `aufsetzkeit`, mode `-w-rw---x`, owner `games`, group `floppy`, `setuid`
3. `aufgehen`, mode `--x-wx--x`, owner `student`, group `audio`
4. `ausgegehst`, mode `rw--w-rw-`, owner `games`, group `floppy`, `setuid`
5. `anrabarbt`, mode `rw-rw--wx`, owner `student`, group `tape`
6. `anwitzheit`, mode `rw--w----`, owner `proxy`, group `cdrom`, `setuid`
7. `aufgehunder`, mode `r--rwx-w-`, owner `proxy`, group `proxy`, `setuid`
8. `enkaess`, mode `r-xr---w-`, owner `news`, group `voice`
9. `aufsetzkeit/eintrittung`, mode `-w-rwx--x`, owner `proxy`, group `proxy`
10. `aufgehen/zerpflumkeit`, mode `r-x---rw-`, owner `games`, group `voice`
11. `aufsetzkeit/enhaltung`, mode `r-----w-`, owner `uucp`, group `audio`
12. `aufsetzkeit/anfahrtete`, mode `rw-rw----`, owner `nobody`, group `tape`
13. `enkaess/einwurfse`, mode `-w-rw---x`, owner `mail`, group `cdrom`, `setuid`

14. aufsetzkeit/anfahrtete/ausgekatzetest, mode ----w---x, owner games, group cdrom, setuid
15. aufsetzkeit/eintrittung/aufrauchtete, mode rwxrwx-w-, owner games, group cdrom
16. aufgehen/zerpflumkeit/versitzer, mode --x-w-rw-, owner nobody, group mail, setuid
17. enkaess/einwarfse/aufsinnung, mode r-x--xrw-, owner uucp, group mail, setuid
18. enkaess/einwarfse/anschmeckst, mode r-x----wx, owner student, group uucp
19. aufsetzkeit/enhaltung/auftrittung, mode -w-rw-rwx, owner nobody, group proxy, setuid
20. aufsetzkeit/eintrittung/bepflumer, mode rwxrw--w-, owner lp, group proxy, 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 2355 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
2356 bytes or more	0%
1783 – 2355 bytes	5%
1210 – 1782 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. `eingehs`, mode `rwrxwrx--`, group `audio`, `setgid`
2. `verhalttt`, mode `--x---rw-`, group `tape`
3. `berennte`, mode `rw----r--`, group `proxy`, `setgid`
4. `zersinntest`, mode `--xrwrxw`, group `proxy`
5. `anhundung`, mode `r-x--x-wx`, group `dip`, `setgid`
6. `angerennst`, mode `-w---xrw-`, group `tape`
7. `aussetzttest`, mode `--xr--rwx`, group `dip`
8. `angehunder`, mode `r-x-wx---`, group `voice`, `setgid`
9. `aussetzttest/angewitztest`, mode `--x-w-r--`, group `audio`
10. `berennte/einkaeste`, mode `r--r-xrw`, group `tape`
11. `eingehs/angewarfse`, mode `r----xrw-`, group `audio`
12. `zersinntest/aufgerabarbheit`, mode `rwrxw-rw-`, group `voice`
13. `berennte/ausgehaltkeit`, mode `r---wxr-x`, group `news`, `setgid`
14. `zersinntest/aufgerabarbheit/verspracher`, mode `-w--wxrw-`, group `mail`
15. `berennte/ausgehaltkeit/angesprachung`, mode `r-xr-----`, group `news`
16. `eingehs/angewarfse/einlaufen`, mode `-wxrw-wx`, group `cdrom`
17. `zersinntest/aufgerabarbheit/besetzen`, mode `-wxr--rwx`, group `proxy`
18. `berennte/einkaeste/verklettst`, mode `--x-----x`, group `floppy`, `setgid`
19. `eingehs/angewarfse/ausgeht`, mode `rwrx--rw-`, group `cdrom`

20. `zersinntest/aufgerabarbheit/enkraust`, mode `rwxr-x--x`, group `fax`,
`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 2413 bytes long, while a compact script would be no larger than 1121.

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
2414 bytes or more	0%
1768 – 2413 bytes	5%
1122 – 1767 bytes	15%
953 – 1121 bytes	25%
less than 953 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, **execute** the file `/aussitzs/gerauchheit/austrauung`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-r-x---      uucp      cdrom      0 aussitzs
    │
    └─ (2)      d-wxr-x-wx      mail      cdrom      0 gerauchheit
        │
        └─ (3)  ---xrwxrwx      nobody     voice      0 austrauung

```

5.2

Can the user **uucp**, who is a member of the **proxy** group, **write to** the file `/ausgesitzte/befahrttest/aufrenntete`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--rwx-w-      mail      fax      0 ausgesitzte
    │
    └─ (2)      drw-rwxr-x      lp      proxy      0 befahrttest
        │
        └─ (3)  --w--wx-w-      uucp      uucp      0 aufrenntete

```

5.3

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

```

/
├─ (1)      d-wxr-x-w-      news      mail      0 gerennheit
    │
    └─ (2)      drwxrw--w-      proxy      proxy      0 angesinntest
        │
        └─ (3)  -rw--wxrwx      proxy      voice      0 aufgehaltt

```


5.4

Can the user **mail**, who is a member of the **audio** group, **write to** the file **/geklettkeit/zersetzkeit/besitzs**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwxr-x--x      mail      fax      0 geklettkeit
│   └─ (2)   drwxrw-r-x      mail      uucp      0 zersetzkeit
│       └─ (3) -rw--wxrwx      lp      audio      0 besitzs
```

5.5

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

```
/
├─ (1)      drwx-wxr--      proxy      uucp      0 enfahrheit
│   └─ (2)   dr-x-w-rwx      news      proxy      0 einklettung
│       └─ (3) -----w--wx  nobody    voice      0 anhalts
```

5.6

Can the user **news**, who is a member of the **voice** group, **write to** the file **/ausgesetzt/angehalten/ensinnst**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-x-wxrwx      uucp      mail      0 ausgesetzt
│   └─ (2)   d-----rwx      lp      voice      0 angehalten
│       └─ (3) -rw---x---      news      audio      0 ensinnst
```

5.7

Can the user **lp**, who is a member of the **floppy** group, **execute** the file **/berarbeitung/ausgeschmecktete/auspflumst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xrw-rwx    proxy    news    0 berarbeitung
│   └─ (2)      drwxrw-rwx      lp      news    0 ausgeschmecktete
│       └─ (3) -r---wx-wx      games    cdrom    0 auspflumst

```

5.8

Can the user **nobody**, who is a member of the **dip** group, **write to** the file **/zersitzkeit/aussitzer/bewitzst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wxrw-x-      mail      dip      0 zersitzkeit
│   └─ (2)      d-wxr-xrwx    proxy      tape      0 aussitzer
│       └─ (3) --w-r-x-w-      nobody      dip      0 bewitzst

```

5.9

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

```

/
├─ (1)      d-wxrwxrwx      lp      mail      0 angerennst
│   └─ (2)      dr-x-----w-  nobody      tape      0 aufgetrittt
│       └─ (3) -rwx-wxr-x      nobody      mail      0 aufgesinner

```

5.10

Can the user **uucp**, who is a member of the **dip** group, **read from** the file **/einrenns/engehtete/angepflumkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx-wx---      lp      student    0 einrenns
│   └─ (2)      dr---wxrwx    proxy      mail      0 engehtete
│       └─ (3) -rwxr--rw-      uucp      proxy      0 angepflumkeit

```

5.11

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

```
/
├─ (1)      d--xrwx-w-   mail    cdrom    0 aufgetraust
│
├─ (2)      drwxrwxrw-   uucp     cdrom    0 einwarftest
│
└─ (3)      -r-xrwxr-x   uucp     cdrom    0 antrauen
```

5.12

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

```
/
├─ (1)      d---r-x-w-   lp      student  0 aufkaeskeit
│
├─ (2)      d---r-x---   proxy    dip      0 vertrause
│
└─ (3)      --w-r-x--x   uucp     cdrom    0 zerwitzst
```

5.13

Can the user **uucp**, who is a member of the **dip** group, **write to** the file **/zerlaufkeit/aufgepflumtete/verfahrung**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrwx-w-   games    fax      0 zerlaufkeit
│
├─ (2)      d---rwx-w-   nobody    dip      0 aufgepflumtete
│
└─ (3)      ---x-w--wx   student   voice    0 verfahrung
```

5.14

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

```

/
├─ (1)      d-wxr-xr-x    proxy    dip    0 angewitzse
│   └─ (2)   dr--r-x---    mail     dip    0 angeschmecktest
│       └─ (3) ---x-w--wx   games    tape    0 aufgerababung

```

5.15

Can the user **news**, who is a member of the **uucp** group, **write to** the file **/besprachung/aufstehen/angelaufkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwx--x-w-    news    student    0 besprachung
│   └─ (2)   d-----wx    uucp     uucp     0 aufstehen
│       └─ (3) --wxr--rwx   news     dip     0 angelaufkeit

```

5.16

Can the user **student**, who is a member of the **cdrom** group, **read from** the file **/aufgerabarbs/auskletttete/besinnen**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrw-----    games    news    0 aufgerabarbs
│   └─ (2)   dr-x--xr-x    student   audio    0 auskletttete
│       └─ (3) --w----rwx   games     uucp     0 besinnen

```

5.17

Can the user **uucp**, who is a member of the **fax** group, **execute** the file **/eintraute/enkaest/angepflumt**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-w-rwx-w-    proxy    fax    0 eintraute
│   └─ (2)   d-wxrwx--x    mail     fax    0 enkaest
│       └─ (3) --wx--x-wx   uucp    student    0 angepflumt

```

5.18

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

```
/
├─ (1)      drwx---r--  nobody    fax      0 gewarfung
│   └─ (2)   dr-x-w--w-   mail      news     0 austrause
│       └─ (3) --wx-wxrwx  proxy     news     0 enrauchen
```

5.19

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

```
/
├─ (1)      drw-rwxrw-    lp        dip      0 anrabararbeit
│   └─ (2)   dr-x-wx---    uucp    student  0 zerwitzte
│       └─ (3) -r---wx-wx  nobody    dip      0 berennst
```

5.20

Can the user **uucp**, who is a member of the **floppy** group, **execute** the file **/gerabarabte/bewitzs/besetzung**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d--xrwx---    nobody    floppy   0 gerabarabte
│   └─ (2)   d-wxr-xrwx    mail      proxy     0 bewitzs
│       └─ (3) -----w-r-x  proxy     audio     0 besetzung
```

5.21

Can the user **news**, who is a member of the **dip** group, **read from** the file **/enwitzt/auftraust/austritten**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-xrw-rwx      news      cdrom      0 enwitz
    │
    └─ (2)      d---rwxr-x      games      cdrom      0 auftraust
        │
        └─ (3)  -----wxrwx      news      student      0 austritten

```

5.22

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

```

/
├─ (1)      dr--r-xrwx      proxy      audio      0 aufgeplums
    │
    └─ (2)      dr--r-xr-x      proxy      uucp      0 gesitzttest
        │
        └─ (3)  ---x---xrwx      student      news      0 ausgesetzs

```

5.23

Can the user **student**, who is a member of the **audio** group, **write to** the file `/bekatzes/ausgewitzst/aufgerauchung`? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d--xrw-wx      lp      audio      0 bekatzes
    │
    └─ (2)      dr--rwxrwx      mail      news      0 ausgewitzst
        │
        └─ (3)  -r--rw---x      student      student      0 aufgerauchung

```

5.24

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

```

/
├─ (1)      dr-x--xr-x      mail      tape      0 aufwarfte
    │
    └─ (2)      d-----r-x      uucp      mail      0 angegeher
        │
        └─ (3)  -rw--w--w-      mail      news      0 enfahrst

```

5.25

Can the user **uucp**, who is a member of the **fax** group, **read from** the file **/angesitztete/auspflumung/aufgekatzeung**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      d-wrxwx---  nobody    fax      0 angesitztete
│
│   └─ (2)   d--x-w-rwx   mail      fax      0 auspflumung
│
│       └─ (3) -r--r-x-wx  proxy     fax      0 aufgekatzeung
```

5.26

Can the user **lp**, who is a member of the **proxy** group, **read from** the file **/aussprachst/aufsteher/ausgetraust**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      dr-xrw--w-   lp        audio    0 aussprachst
│
│   └─ (2)   drwx-w-rwx   uucp      proxy    0 aufsteher
│
│       └─ (3) --w-rwx--x  uucp      proxy    0 ausgetraust
```

5.27

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

```
/
├─ (1)      dr-x---rwx   proxy     uucp      0 enrennen
│
│   └─ (2)   drwxrwxrw-  student   news      0 ausgehalts
│
│       └─ (3) -r-----xr--  news     student  0 behalts
```

5.28

Can the user **nobody**, who is a member of the **dip** group, **read from** the file **/angeschmeckst/ansinnse/zerkletttete**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrw--w-   nobody   mail     0 angeschmeckst
│
├─ (2)      dr-x-----x  nobody   mail     0 ansinnse
│
└─ (3)      --wxrwxr--   student   cdrom    0 zerkletttete

```

5.29

Can the user **games**, who is a member of the **student** group, **write to** the file **/angehunden/angesinns/aufrauchung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr-x----w-   games    floppy   0 angehunden
│
├─ (2)      d---rwx-w-   student  student  0 angesinns
│
└─ (3)      -r-x-wxr--   games     fax      0 aufrauchung

```

5.30

Can the user **mail**, who is a member of the **news** group, **read from** the file **/angehaltse/gehaltung/zerhundung**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--r-xrwx   uucp     news     0 angehaltse
│
├─ (2)      dr-x-w--wx   games    news     0 gehaltung
│
└─ (3)      --wxrwxrw-   nobody    news     0 zerhundung

```

5.31

Can the user **nobody**, who is a member of the **tape** group, **read from** the file **/gegeht/ausgestehtest/aufsetzer**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wxrwxr-x   news     student  0 geht
│
├─ (2)      d-w---xrwx   student  cdrom    0 ausgestehtest
│
└─ (3)      --w-rwx--x   lp       tape     0 aufsetzer

```


5.32

Can the user **uucp**, who is a member of the **mail** group, **write to** the file **/aufstehkeit/auflaufen/aufgekatzt**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drw--w-rwx    news    dip    0 aufstehkeit
│   └─ (2)  dr-x-w-rwx    games   floppy  0 auflaufen
│       └─ (3) -r----xrw-   news    audio   0 aufgekatzt

```

5.33

Can the user **student**, who is a member of the **proxy** group, **execute** the file **/antrautete/verwarfheit/einpflumtest**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-wx---rwx    mail     audio   0 antrautete
│   └─ (2)  dr-xrwx-w-    games    proxy   0 verwarfheit
│       └─ (3) -rwxrw--wx  uucp     news    0 einpflumtest

```

5.34

Can the user **news**, who is a member of the **tape** group, **execute** the file **/aufgerabarbttest/ausrabarbheit/aufrabarbkheit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxrw-rwx    news     fax     0 aufgerabarbttest
│   └─ (2)  dr-xrwx-wx    nobody    tape    0 ausrabarbheit
│       └─ (3) -r----xrwx   news     audio   0 aufrabarbkheit

```

5.35

Can the user **games**, who is a member of the **tape** group, **execute** the file **/angesetzkeit/aufwarfung/vergehheit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      drwxr-----   games      dip      0 angesetzkeit
│   └─ (2)      dr-x-wx--x   games      cdrom     0 aufwarfung
│       └─ (3)      ----r-----   games      audio     0 vergehheit

```

5.36

Can the user **games**, who is a member of the **fax** group, **read from** the file **/aufgelaufse/ankaeste/gesitzkeit**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      dr--r-xr--   nobody      fax      0 aufgelaufse
│   └─ (2)      d--x---rwx   uucp        fax      0 ankaeste
│       └─ (3)      -r-xrwxrwx   games      audio     0 gesitzkeit

```

5.37

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

```

/
├─ (1)      dr-x-w-r-x      lp      mail      0 ausrauchtete
│   └─ (2)      drwx-w--wx   nobody    dip      0 gefahrheit
│       └─ (3)      -rw---x-wx   nobody    tape     0 belauft

```

5.38

Can the user **games**, who is a member of the **cdrom** group, **write to** the file **/aufkaesung/beraucher/bewarfst**? If not, which of the three directories blocks access (Y|1|2|3)

```

/
├─ (1)      d-----r-x      news      news      0 aufkaesung
│   └─ (2)      dr-xrwxr--   uucp      cdrom     0 beraucher
│       └─ (3)      --wx-wx-w-   games      uucp      0 bewarfst

```

5.39

Can the user **uucp**, who is a member of the **student** group, **execute** the file **/berauchst/zerwarfheit/einkrauer**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drwxrw---x    uucp    tape    0  berauchst
│
├─ (2)      dr-xrwxrwx    nobody  student  0  zerwarfheit
│
└─ (3)      -rwx-----x    uucp    voice    0  einkrauer
```

5.40

Can the user **nobody**, who is a member of the **audio** group, **read from** the file **/zertraus/enkraukeit/auswarftest**? If not, which of the three directories blocks access (Y|1|2|3)

```
/
├─ (1)      drw-r-xr-x    student  audio    0  zertraus
│
├─ (2)      d-w-----wx    proxy   audio    0  enkraukeit
│
└─ (3)      -r--rw-rw-    lp        audio    0  auswarftest
```

Hash for checking if you have all 40 correct

c86a7663398e7a7f5b07076f681102785fc6f778f7eeef2455084b4a0d2e2d2

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.