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IntroductiontoLinuxAssignment#2.

1. InvestigatingaCompromisedSystem.

Directorieslikelytocontainmodifiedconfigs,maliciousbinaries,andalogs:

-/etc:Systemconfigurationfiles(e.g.,/etc/passwd,/etc/shadow).Anattackermightmodifyfor persistence (e.g., add users). Evidence: Altered timestamps or unauthorized changes.

-/bin:Essentialbinaries(e.g.,ls,cp).Anattackermightreplacethemwithtrojansforbackdoors. Evidence: Unexpected file sizes or hashes.

-/var:Logfiles(e.g.,/var/log/auth.log). Anattackermightdeletelogstohide anintrusion.Evidence: Missing entries or unusual access.

Reasoningfor all:

- /bin:Essentialbinaries;attackersreplaceformaliciousexecution.
- /etc:Configfiles;attackersmodifyforprivilegeescalation.
- /var:Variabledata likelogs;attackerseraseseevidence.
- /usr:Secondarybinaries(/usr/bin);similar to /bin,attackerstargetfornon-essentialtools.
- /tmp:Temporaryfiles;attackersuseforstagingmalware,asit'swritable.
- /opt:Add-onsoftware;attackershidescustomtoolshere.
- /boot:Bootfiles(kernel);attackersmodifyforrootkits.
- /home:Userhomes;attackerstargetforuser-levelpersistence(e.g.,.sshkeys).

```
(Jacques@Jacques)-[~]
└$ cd /

(Jacques@Jacques)-[/]
└$ ls
bin          home          lib32          opt      srv    vmlinuz
boot         init          lib64          proc     sys    vmlinuz.old
dev          initrd..      lost+found    root     tmp    wslAacBcB
etc          initrd.img.old media        run     usr    wslaEHGhB
holehe-env   lib           mnt          sbin    var    wslaKpnjf

(Jacques@Jacques)-[/]
└$ |
```

2. Create the Exact Structure

mkdir-p

~/projects/{client_work/{web/{frontend,backend,database},mobile/{ios,android}},personal/{experiments,archive},shared/{templates,resources}}

```
(Jacques@Jacques) [~]
$ mkdir -p ~/projects/{client_work/{web/{frontend,backend,database},mobile/{ios,android}},personal/{experiments,archive},shared/{templates,resources}}
(Jacques@Jacques) [~]
$ tree projects/
projects/
├── client_work
│   ├── mobile
│   │   ├── android
│   │   └── ios
│   └── web
│       ├── backend
│       └── database
└── personal
    ├── archive
    └── experiments
└── shared
    ├── resources
    └── templates

15 directories, 0 files
```

3. NavigateWithoutAbsolutePaths

```
(Jacques@Jacques) [~]
└─$ cd projects/client_work/web/frontend/
(Jacques@Jacques) [~/projects/client_work/web/frontend]
└─$ pwd
/home/vegas/projects/client_work/web/frontend

(Jacques@Jacques) [~/projects/client_work/web/frontend]
└─$
```

1. cd ../../personal/experiments

pwd

```
(Jacques@Jacques) [~/projects/client_work/web/frontend]
└─$ cd ../../personal/experiments
(Jacques@Jacques) [~/projects/personal/experiments]
└─$ pwd
/home/vegas/projects/personal/experiments

(Jacques@Jacques) [~/projects/personal/experiments]
└─$
```

2. cd ../../shared/templates

pwd

```
[Jacques@Jacques]-(~/projects/personal/experiments]
$ cd ../../shared/templates

[Jacques@Jacques]-(~/projects/shared/templates]
$ pwd
/home/vegas/projects/shared/templates

[Jacques@Jacques]-(~/projects/shared/templates]
```

3. cd..../client_work/web/frontend

pwd

```
[Jacques@Jacques]-(~/projects/shared/templates]
$ cd ../../client_work/web/frontend

[Jacques@Jacques]-(~/projects/client_work/web/frontend]
$ pwd
/home/vegas/projects/client_work/web/frontend

[Jacques@Jacques]-(~/projects/client_work/web/frontend]
```

4. CreateRealisticWebProjectStructure

mkdir web_project

```
[Jacques@Jacques]-(~]
$ mkdir web_project

[Jacques@Jacques]-(~]
```

touchweb_project/{index,about,contact}.htmlweb_project/page_{001..012}.html

touchweb_project/{main,reset,theme_light,theme_dark,mobile,tablet,desktop,print}.css

touch web_project/{main,util,config,app,helper,setup}_script.js

touchweb_project/{a,b,c,d}{1..5}.{bak,tmp,old,save}

```

└──(Jacques@Jacques)-[~]
$ touch web_project/{index,about,contact}.html web_project/page_{001..012}.html

└──(Jacques@Jacques)-[~]
$ ls projects/
client_work personal shared

└──(Jacques@Jacques)-[~]
$ ls web_project/
about.html index.html page_002.html page_004.html page_006.html page_008.html page_010.html page_012.html
contact.html page_001.html page_003.html page_005.html page_007.html page_009.html page_011.html

└──(Jacques@Jacques)-[~]
$ touch web_project/{main,reset,theme_light,theme_dark,mobile,tablet,desktop,print}.css

└──(Jacques@Jacques)-[~]
$ touch web_project/{main,util,config,app,helper,setup}_script.js

└──(Jacques@Jacques)-[~]
$ touch web_project/{a,b,c,d}{1..5}.{bak,tmp,old,save}

└──(Jacques@Jacques)-[~]
$ 

```

lsweb_project/

```

└──(Jacques@Jacques)-[~]
$ ls web_project/
a1.bak a3.save about.html b3.bak b5.save c3.bak c5.save d2.save d5.bak page_001.html page_011.html
a1.old a3.tmp app_script.js b3.old b5.tmp c3.old c5.tmp d2.tmp d5.old page_002.html page_012.html
a1.save a4.bak b1.bak b3.save c1.bak c3.save config_script.js d3.bak d5.save page_003.html print.css
a1.tmp a4.old b1.old b3.tmp c1.old c3.tmp contact.html d3.old d5.tmp page_004.html reset.css
a2.bak a4.save b1.save b4.bak c1.save c4.bak d1.bak d3.save desktop.css page_005.html setup_script.js
a2.old a4.tmp b1.tmp b4.old c1.tmp c4.old d1.old d3.tmp helper_script.js page_006.html tablet.css
a2.save a5.bak b2.bak b4.save c2.bak c4.save d1.save d4.bak index.html page_007.html theme_dark.css
a2.tmp a5.old b2.old b4.tmp c2.old c4.tmp d1.tmp d4.old main.css page_008.html theme_light.css
a3.bak a5.save b2.save b5.bak c2.save c5.bak d2.bak d4.save main_script.js page_009.html util_script.js
a3.old a5.tmp b2.tmp b5.old c2.tmp c5.old d2.old d4.tmp mobile.css page_010.html

└──(Jacques@Jacques)-[~]
$ 

```

5. UseWildcardsforClutteredDirectory

mv *_[0-9][0-9][0-9].html archive/

```

└──(Jacques@Jacques)-[~/web_project]
$ mkdir archive

└──(Jacques@Jacques)-[~/web_project]
$ mv *_[0-9][0-9][0-9].html archive/

```

cp !(mobile|tablet).css desktop/

```

└──(Jacques@Jacques)-[~/web_project]
$ mkdir desktop

└──(Jacques@Jacques)-[~/web_project]
$ cp !(mobile|tablet).css desktop/

```

```
ls ???.*
```

```
(Jacques@Jacques)-[~/web_project]
$ ls ???.*
ls: cannot access '???.*': No such file or directory
```

```
ls[b-df-hj-np-tv-xzB-DF-HJ-NP-TV-XZ]*.*
```

```
(Jacques@Jacques)-[~/web_project]
$ ls [b-df-hj-np-tv-xzB-DF-HJ-NP-TV-XZ]*.*
b1.bak b2.save b4.bak b5.save c2.bak c3.save c5.bak d1.bak d2.save d4.bak d5.save mobile.css theme_light.css
b1.old b2.tmp b4.old b5.tmp c2.old c3.tmp c5.old d1.old d2.tmp d4.old d5.tmp print.css
b1.save b3.bak b4.save c1.bak c2.save c4.bak c5.save d1.save d3.bak d4.save desktop.css
b1.tmp b3.old b4.tmp c1.old c2.tmp c4.old c5.tmp d1.tmp d3.old d4.tmp helper_script.js
b2.bak b3.save b5.bak c1.save c3.bak c4.save config_script.js d2.bak d3.save d5.bak main.css
b2.old b3.tmp b5.old c1.tmp c3.old c4.tmp contact.html d2.old d3.tmp d5.old main_script.js
                                tablet.css
                                theme_dark.css
```

```
ls*.??
```

```
(Jacques@Jacques)-[~/web_project]
$ ls *.*?
app_script.js config_script.js helper_script.js main_script.js setup_script.js util_script.js
```

6. Brace Expansion for File Naming

```
touch log_2024-{01..03}-{01..31}.txt
```

```
touch{web,api,db}_{dev,stg,prod}.conf
```

```
touch{A,B,C}{10,11,12}_{input,output}.txt
```

```
(Jacques@Jacques)-[~/web_project]
$ touch log_2024-{01..03}-{01..31}.txt

(Jacques@Jacques)-[~/web_project]
$ touch {web,api,db}_{dev,stg,prod}.conf

(Jacques@Jacques)-[~/web_project]
$ touch {A,B,C}{10,11,12}_{input,output}.txt

(Jacques@Jacques)-[~/web_project]
$ ls
A10_input.txt api_prod.conf b5.save config_script.js index.html log_2024-01-28.txt log_2024-02-25.txt log_2024-03-22.txt
A10_output.txt api_stg.conf b5.tmp contact.html log_2024-01-01.txt log_2024-01-29.txt log_2024-02-26.txt log_2024-03-23.txt
A11_input.txt app_script.js C10_input.txt d1.bak log_2024-01-02.txt log_2024-01-30.txt log_2024-02-27.txt log_2024-03-24.txt
A11_output.txt archive C10_output.txt d1.old log_2024-01-03.txt log_2024-01-31.txt log_2024-02-28.txt log_2024-03-25.txt
A12_input.txt B10_input.txt C11_input.txt d1.save log_2024-01-04.txt log_2024-02-01.txt log_2024-02-29.txt log_2024-03-26.txt
A12_output.txt B10_output.txt C11_output.txt d1.tmp log_2024-01-05.txt log_2024-02-02.txt log_2024-02-30.txt log_2024-03-27.txt
a1.bak B11_input.txt C12_input.txt d2.bak log_2024-01-06.txt log_2024-02-03.txt log_2024-02-31.txt log_2024-03-28.txt
a1.old B11_output.txt C12_output.txt d2.old log_2024-01-07.txt log_2024-02-04.txt log_2024-03-01.txt log_2024-03-29.txt
a1.save B12_input.txt c1.bak d2.save log_2024-01-08.txt log_2024-02-05.txt log_2024-03-02.txt log_2024-03-30.txt
a1.tmp B12_output.txt c1.old d2.tmp log_2024-01-09.txt log_2024-02-06.txt log_2024-03-03.txt log_2024-03-31.txt
a2.bak b1.old c1.bak d3.bak log_2024-01-10.txt log_2024-02-07.txt log_2024-03-04.txt main.css
a2.old b1.old c1.tmp d3.old log_2024-01-11.txt log_2024-02-08.txt log_2024-03-05.txt main_script.js
a2.save b1.save c2.bak d3.save log_2024-01-12.txt log_2024-02-09.txt log_2024-03-06.txt mobile.css
a2.tmp b1.tmp c2.old d3.tmp log_2024-01-13.txt log_2024-02-10.txt log_2024-03-07.txt print.css
a3.bak b2.bak c2.save d4.bak log_2024-01-14.txt log_2024-02-11.txt log_2024-03-08.txt reset.css
a3.old b2.old c2.tmp d4.old log_2024-01-15.txt log_2024-02-12.txt log_2024-03-09.txt setup.script.js
a3.save b2.save c3.bak d4.save log_2024-01-16.txt log_2024-02-13.txt log_2024-03-10.txt tablet.css
a3.tmp b2.tmp c3.old d4.tmp log_2024-01-17.txt log_2024-02-14.txt log_2024-03-11.txt theme_dark.css
a4.bak b3.bak c3.save d5.bak log_2024-01-18.txt log_2024-02-15.txt log_2024-03-12.txt theme_light.css
a4.old b3.old c3.tmp d5.old log_2024-01-19.txt log_2024-02-16.txt log_2024-03-13.txt util_script.js
a4.save b3.save c4.bak d5.save log_2024-01-20.txt log_2024-02-17.txt log_2024-03-14.txt web_dev.conf
a4.tmp b3.tmp c4.old d5.tmp log_2024-01-21.txt log_2024-02-18.txt log_2024-03-15.txt web_prod.conf
a5.bak b4.bak c4.save db_dev.conf log_2024-01-22.txt log_2024-02-19.txt log_2024-03-16.txt web_stg.conf
a5.old b4.old c4.tmp db_prod.conf log_2024-01-23.txt log_2024-02-20.txt log_2024-03-17.txt
a5.save b4.save c5.bak db_stg.conf log_2024-01-24.txt log_2024-02-21.txt log_2024-03-18.txt
a5.tmp b4.tmp c5.old desktop log_2024-01-25.txt log_2024-02-22.txt log_2024-03-19.txt
about.html b5.bak c5.save desktop.css log_2024-01-26.txt log_2024-02-23.txt log_2024-03-20.txt
api_dev.conf b5.old c5.tmp helper_script.js log_2024-01-27.txt log_2024-02-24.txt log_2024-03-21.txt
```

```
ls
```

7. LineEndings Comparison

```
printf"Thisisatest\nLine2\nLine3\n">linux.txt  
printf"Thisisatest\r\nLine2\r\nLine3\r\n">windows.txt diff  
linux.txt windows.txt  
cmp linux.txt windows.txt  
comm linux.txt windows.txt
```

```
(Jacques@Jacques)-[~/web_project]  
$ printf "This is a test\nLine2\nLine3\n" > linux.txt  
  
(Jacques@Jacques)-[~/web_project]  
$ printf "This is a test\r\nLine2\r\nLine3\r\n" > windows.txt  
  
(Jacques@Jacques)-[~/web_project]  
$ diff linux.txt windows.txt  
1,3c1,3  
< This is a test  
< Line2  
< Line3  
---  
> This is a test  
> Line2  
> Line3  
  
(Jacques@Jacques)-[~/web_project]  
$ cmp linux.txt windows.txt  
linux.txt windows.txt differ: byte 15, line 1  
  
(Jacques@Jacques)-[~/web_project]  
$ comm linux.txt windows.txt  
This is a test  
comm: file 1 is not in sorted order  
Line2  
Line3  
      This is a test  
comm: file 2 is not in sorted order  
      Line2  
      Line3  
comm: input is not in sorted order
```

8. Security Audit with Find

```
mkdir-ptest_env/{dir1,dir2,dir3,dir4,dir5}
```

```
└─(Jacques@Jacques)-[~/web_project]
  └─$ mkdir -p test_env/{dir1,dir2,dir3,dir4,dir5}

└─(Jacques@Jacques)-[~/web_project]
  └─$ |
```

```
touchtest_env/dir1/file{1..5}
```

```
└─(Jacques@Jacques)-[~/web_project]
  └─$ touch test_env/dir1/file{1..5}

└─(Jacques@Jacques)-[~/web_project]
  └─$ |
```

```
touch-m -d "2daysago" test_env/dir1/file{1,2}
```

```
└─(Jacques@Jacques)-[~/web_project]
  └─$ touch test_env/dir1/file{1..5}

└─(Jacques@Jacques)-[~/web_project]
  └─$ |
```

```
touch-m-d "50daysago" test_env/dir1/file3
```

```
└─(Jacques@Jacques)-[~/web_project]
  └─$ touch -m -d "2 days ago" test_env/dir1/file{1,2}

└─(Jacques@Jacques)-[~/web_project]
  └─$ |
```

```
touchtest_env/dir2/largefile
```

```
[Jacques@Jacques]~[~/web_project]
└$ touch -m -d "50 days ago" test_env/dir1/file
```



```
[Jacques@Jacques]~[~/web_project]
└$ |
```

```
ddif=/dev/zeroof=test_env/dir2/largefilebs=1k count=10
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ sudo chmod 666 test_env/dir5/worldwritable
        chmod: cannot access 'test_env/dir5/worldwritable': No such file or directory

    └──(Jacques@Jacques)-[~/web_project]
        └──$ touch test_env/dir5/worldwritable

    └──(Jacques@Jacques)-[~/web_project]
        └──$ sudo chmod 666 test_env/dir5/worldwritable

    └──(Jacques@Jacques)-[~/web_project]
        └──$ |
```

```
touchtest_env/dir4/.hidden
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ touch test_env/dir4/.hidden
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ |
```

```
sudochownnobodytest_env/dir1/file4
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ sudo chown nobody test_env/dir1/file4
[sudo] password for jacques:
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ |
```

```
sudochmod666test_env/dir5/worldwritable
```

```
└──(Jacques@Jacques)-[~/web_project]
    └──$ sudo chmod 666 test_env/dir5/worldwritable
        chmod: cannot access 'test_env/dir5/worldwritable': No such file or directory

    └──(Jacques@Jacques)-[~/web_project]
        └──$ touch test_env/dir5/worldwritable

    └──(Jacques@Jacques)-[~/web_project]
        └──$ sudo chmod 666 test_env/dir5/worldwritable

    └──(Jacques@Jacques)-[~/web_project]
        └──$ |
```

```
findtest_env -typef -size+$(findtest_env -typef -printf "%s\n" | awk '{sum+=$0;n++} END {print int(sum/n)})c
└──(Jacques@Jacques)-[~/web_project]
    $ find test_env -type f -size +$(find test_env -type f -printf "%s\n" | awk '{sum+=$0; n++} END {print int(sum/n)})c
    test_env/dir2/largefile
└──(Jacques@Jacques)-[~/web_project]
    $
```

findtest_env-mtime-3-mtime +1

```
└──(Jacques@Jacques)-[~/web_project]
    $ find test_env -mtime -3 -mtime +1
    test_env/dir1/file1
    test_env/dir1/file2
└──(Jacques@Jacques)-[~/web_project]
    $ |
```

findtest_env-typed-empty-o\(-typed-name".*"-not-empty\)

```
└──(Jacques@Jacques)-[~/web_project]
    $ find test_env -type d -empty -o \(` -type d -name ".*" -not -empty `)
    test_env/dir3
└──(Jacques@Jacques)-[~/web_project]
    $ |
```

findtest_env-perm /o=w

```
└──(Jacques@Jacques)-[~/web_project]
    $ find test_env -perm /o=w
    test_env/dir5/worldwritable
└──(Jacques@Jacques)-[~/web_project]
    $ |
```

findtest_env-user!\$(whoami)-a-user! root

```
└──(vegas@VEGAS)-[~/web_project]
    $ find test_env -user ! $(whoami) -a -VEGAS ! root, ot
    find: invalid user name or UID argument to -user: '!', '!', '
    └──(vegas@VEGAS)-[~/web_project]
        $ |
```

```
findtest_env-name"*~-o-name"*.bak"-o-name"*.tmp"
```

```
└──(Jacques@Jacques)-[~/web_project]
    $ find test_env -user ! $(whoami) -a -VEGAS ! root
    find: invalid user name or UID argument to -user: '!'
```



```
└──(Jacques@Jacques)-[~/web_project]
    $ |
```

9. Analyze Large Log

```
seq1300> large_log.txt
```

```
└──(Jacques@Jacques)-[~/web_project]
    $ seq 1 300 > large_log.txt
```



```
└──(Jacques@Jacques)-[~/web_project]
    $ |
```

```
sed-n'126,175p'large_log.txt
```

```
(Jacques@Jacques)-[~/web_project]
$ sed -n '126,175p' large_log.txt
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
```

```
(Jacques@Jacques)-[~/web_project]
```

```
Jacques@Jacques-[ ~/web_project ]  
$ grep -n -m1 -B5 "error" large_log.txt | tail -n 6
```

```
Jacques@Jacques-[ ~/web_project ]  
$ |
```

```
grep-n-m1 -B5"error"large_log.txt| tail-n6
```

```
timecatlarge_log.txt>/dev/null
```

```
(Jacques@Jacques-[ ~/web_project ]  
$ time cat large_log.txt > /dev/null
```

```
real      0m0.039s  
user      0m0.008s  
sys       0m0.029s
```

```
(Jacques@Jacques-[ ~/web_project ]  
$ |
```

```
grep-n"error" large_log.txt
```

```
(Jacques@Jacques)-[~/web_project]
$ grep -n "error" large_log.txt

(Jacques@Jacques)-[~/web_project]
$ |
```

10. Automate with Find-exec

1. Permissions: sudo find . -typef -not -perm/a=x -exec chmod 644 {} \;

```
(Jacques@Jacques)-[~/web_project]
$ sudo find . -typef -not -perm /a=x -exec chmod 644 {} \;

(Jacques@Jacques)-[~/web_project]
$ |
```

sudo find . -typef -perm/a=x -exec chmod 755 {} \;

```
(Jacques@Jacques)-[~/web_project]
$ sudo find . -typef -perm /a=x -exec chmod 755 {} \;

(Jacques@Jacques)-[~/web_project]
$ |
```

2. Disk space old files:

```
find . -mtime+30 -exec du -c {} + | tail -1
```

```
(Jacques@Jacques)-[~/web_project]
$ find . -mtime +30 -exec du -c {} + | tail -1
0          total

(Jacques@Jacques)-[~/web_project]
$ |
```

3. Backup conf:

```
find . -name "*.conf" -exec cp {} {}.backup \;
```

```
[Jacques@Jacques]~[~/web_project]
$ find . -name "*.conf" -exec cp {} {}.backup \;
[Jacques@Jacques]~[~/web_project]
$ |
```

4. Removetemp:

```
find.-name "*tmp"-atime+7-print(preview)then-execrm{}\|;
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ find . -name "*tmp" -atime +7 -print 'preview' then -exec rm {} \;
        find: paths must precede expression: 'preview'
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ |
```

```
timetarczfcompressed/text.tar.gzcompressed/text du
```

```
-h compressed/text.*
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ mkdir -p compressed/{text,media}
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ seq 1 10000 > compressed/text/big_text.txt
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ dd if=/dev/urandom of=compressed/media/image.jpg bs=1M count=5
      5+0 records in
      5+0 records out
      5242880 bytes (5.2 MB, 5.0 MiB) copied, 0.134246 s, 39.1 MB/s
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ time tar czf compressed/text.tar.gz compressed/text
```

```
real    0m0.073s
user    0m0.014s
sys     0m0.056s
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ du -h compressed/text.*
      24K    compressed/text.tar.gz
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ |
```

12. InheritedArchives

```
mkdir-ptest_archive&&touchtest_archive/{file1.txt,file2.conf} tar -
```

```
czf archive.tar.gz test_archive/
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ find . -name "*tmp" -atime +7 -print 'preview' then -exec rm {} \;
        find: paths must precede expression: 'preview'
```

```
└──(Jacques@Jacques)-[~/web_project]
    └─$ |
```

zip-archive.zip.-itest_zip/

```
[Jacques@Jacques]-(~/web_project]
$ zip -r archive.zip . -i test_zip/
zip warning: zip file empty
```

Examine:tar-tfarchive.tar.gz

zip-larchive.zip

Extractpattern:tar-xfarchive.tar.gz--wildcards"*.conf"

```
[Jacques@Jacques]-(~/web_project]
$ mkdir -p test_archive && touch test_archive/{file1.txt,file2.conf}

[Jacques@Jacques]-(~/web_project]
$ tar -czf archive.tar.gz test_archive/

[Jacques@Jacques]-(~/web_project]
$ tar -tf archive.tar.gz
test_archive/
test_archive/file2.conf
test_archive/file1.txt
```

Update:tar-ufarchive.tarnewfile

zip -u archive.zip newfile

```
[Jacques@Jacques]-(~/web_project]
$ tar -cf new.tar *
tar: new.tar: archive cannot contain itself; not dumped
```

Corrupted:tar-tfcorrupted.tar

tar-xfarchive1.tar

unzip archive2.zip

tar -cf new.tar *

```
[Jacques@Jacques]-(~/web_project]
$ tar -cf new.tar *
tar: new.tar: archive cannot contain itself; not dumped
```

13. BackupRotation

```
mkdir-ptest_data&&touchtest_data/file1.txt
```

```
└──(Jacques@Jacques)-[~/projects]
    $ mkdir -p test_data && touch test_data/file1.txt

└──(Jacques@Jacques)-[~/projects]
    $ tar -cpf backups/daily/inc_$(date +%Y-%m-%d).tar --listed-incremental=backups/snapshot.file test_data/
tar-cpfbackups/daily/inc_$(date+%Y-%m-%d).tar--listed-incremental=snapshot.file/data
```

```
tar-cpfbackups/weekly/full_$(date+%Y-%W).tar--listed-incremental=snapshot.file/data
```

```
└──(Jacques@Jacques)-[~/projects]
    $ tar -cpf backups/weekly/full_$(date +%Y-%W).tar --listed-incremental=snapshot.file data

└──(Jacques@Jacques)-[~/projects]
    $
```

```
lsbackups
```

```
└──(Jacques@Jacques)-[~/projects]
    $ ls backups/
    daily  monthly  snapshot.file  weekly  weekly_snapshot.file

└──(Jacques@Jacques)-[~/projects]
    $ |
```

```
whoami&&id
```

```
└──(Jacques@Jacques)-[~/projects]
    $ whoami && id
Jacques
uid=1000(vegas) gid=1000(Jacques) groups=1000(Jacques),4(adm),24(cdrom),27(sudo),30(dip),46(plugdev),100(users)
```

```
cat/etc/passwd
```

```
└──(vegas@VEGAS)-[~/projects]
    $ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
_apt:x:42:65534::/nonexistent:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:998:998:systemd Network Management:/:/usr/sbin/nologin
dhcpcd:x:100:65534:DHCP Client Daemon,,,:/usr/lib/dhcpcd:/bin/false
messagebus:x:101:102::/nonexistent:/usr/sbin/nologin
tcpdump:x:102:103::/nonexistent:/usr/sbin/nologin
sshd:x:103:65534::/run/sshd:/usr/sbin/nologin
vegas:x:1000:1000,,,:/home/vegas:/bin/bash
_galera:x:104:65534::/nonexistent:/usr/sbin/nologin
mysql:x:105:106:MySQL Server,,,:/nonexistent:/bin/false
snort:x:106:107:Snort IDS:/var/log/snort:/usr/sbin/nologin
_sentrypeer:x:107:108::/var/lib/sentrypeer:/usr/sbin/nologin
cntlm:x:108:65534::/var/run/cntlm:/bin/sh
stunnel4:x:992:992:stunnel service system account:/var/run/stunnel4:/usr/sbin/nologin
_rpc:x:109:65534::/run/rpcbind:/usr/sbin/nologin
sslh:x:110:109::/nonexistent:/usr/sbin/nologin
```


sudouseraddbaributsa

```
[└( Jacques@Jacques )-[ ~/projects ]  
└$ sudo useradd Baributsa  
[sudo] password for Jacques:
```

```
[└( Jacques@Jacques )-[ ~/projects ]  
└$
```

Groups

```
[└( Jacques@Jacques )-[ ~/projects ]  
└$ groups  
vegas adm cdrom sudo dip plugdev users
```

```
[└( Jacques@Jacques )-[ ~/projects ]  
└$ |
```

groupsbaributsa

```
[└(vegas@VEGAS )-[ ~/projects ] |  
└$ groups ishimwe  
ishimwe : ishimwe
```

```
[└(vegas@VEGAS )-[ ~/projects ] |  
└$ |  
└$ |
```


