Homework #5

1. Do "cd ~", then do "man passwd", then you can see the manual page of passwd command. Navigate the manual, find the meaning of the exit value "1", then press "q" to turn back to the shell prompt.

- What is the meaning of the exit value "1"?

명령어나 스크립트가 실패하거나 오류가 발생한 경우에 반환되는 종료 코드

2. Do "man –f passwd", then do "whatis passwd". Then do "man –k passwd", then do "apropos passwd".

- Take a screenshot

  man -f passed

```
passwd(1)                    - modify a user's password
passwd(5), master.passwd(5) - format of the password file
slapd-passwd(5)              - /etc/passwd backend to slapd
passwd(1)                    - modify a user's password
passwd(5), master.passwd(5) - format of the password file
slapd-passwd(5)              - /etc/passwd backend to slapd
(END)
```

  man -k passwd

```
mysqlrouter_passwd(1)      - MySQL Router Password Tool
chkpasswd(8)               - verifies user password against various sy
stems
firmwarepasswd(8)          - tool for setting and removing firmware pa
sswords on a system
htpasswd(1)                - Manage user files for basic authenticatio
n
kpasswd(1)                 - Kerberos 5 password changing program
kpasswdd(8)                - Kerberos 5 password changing server
ldappasswd(1)              - change the password of an LDAP entry
passwd(1)                  - modify a user's password
passwd(5), master.passwd(5) - format of the password file
slapd-passwd(5)            - /etc/passwd backend to slapd
slappasswd(8)              - OpenLDAP password utility
CURLOPT_KEYPASSWD(3)       - passphrase to private key
CURLOPT_PROXY_KEYPASSWD(3) - passphrase for the proxy private key
chkpasswd(8)               - verifies user password against various sy
stems
firmwarepasswd(8)          - tool for setting and removing firmware pa
sswords on a system
htpasswd(1)                - Manage user files for basic authenticatio
n
kpasswd(1)                 - Kerberos 5 password changing program
kpasswdd(8)                - Kerberos 5 password changing server
ldappasswd(1)              - change the password of an LDAP entry
passwd(1)                  - modify a user's password
passwd(5), master.passwd(5) - format of the password file
slapd-passwd(5)            - /etc/passwd backend to slapd
slappasswd(8)              - OpenLDAP password utility
(END)
```

- What is the difference between "-f" and "-k" option?

-f는 간단한 설명을 보여주고, -k는 man페이지에서 키워드에 관련된 가능한 모든 페이지를 간단하게 리스트업한다.

3. Do "man 5 passwd", then press "q" to exit from the manual. Then do "man 1 passwd", then press "q" to exit from the manual.

- What is the meaning of "1" and "5"?

section 번호이다

- When you do "man –a passwd", what happens?

section에 상관없이 모든 passwd man페이지를 보여준다.

4. Do "man –k zip", then do "man –k zip | wc", then do "man –k gzip", then do "man –k gzip|wc".

5. Do "man –aw passwd", then do "man gzip", then press "q" to exit from the manual, then do "man –aw gzip", , then do "man –aw zcat", then do "man –aw gunzip", then do "ls –al /usr/share/man/man1/gzip.1.gz", then do "ls –al /usr/share/man/man1/gunzip.1.gz", then do "ls –al /usr/share/man/man1/zcat.1.gz".

- Take a screenshot

```
▶ man -aw passwd
/usr/share/man/man1/passwd.1
/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/share/man/ma
n1/passwd.1
/usr/share/man/man5/passwd.5
/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/share/man/ma
n5/passwd.5
 mtak ❯ ~
▶ man gzip
 mtak ❯ ~
▶ man -aw gzip
/usr/share/man/man1/gzip.1
/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/share/man/ma
n1/gzip.1
 mtak ❯ ~
▶ man -aw zcat
/usr/share/man/man1/zcat.1
/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/share/man/ma
n1/zcat.1
 mtak ❯ ~
▶ man -aw gunzip
/usr/share/man/man1/gunzip.1
/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/share/man/ma
n1/gunzip.1
 mtak ❯ ~
▶ ls -al /usr/share/man/man1/gzip.1.gz
ls: /usr/share/man/man1/gzip.1.gz: No such file or directory
 ✘ mtak ❯ ~
▶ ls -al /usr/share/man/man1/gunzip.1.gz
ls: /usr/share/man/man1/gunzip.1.gz: No such file or directory
 ✘ mtak ❯ ~
▶ ls -al /usr/share/man/man1/zcat.1.gz
ls: /usr/share/man/man1/zcat.1.gz: No such file or directory
 ✘ mtak ❯ ~
```

- When you run "man gzip", which names are listed on the NAME section of the manual?

gzip, gunzip, zcat – compression/decompression tool using Lempel-Ziv coding (LZ77)

6.Do "clear", then do "dpkg –l", then do "dpkg –l | grep ssh", then do "man –k ssh".

- Take a screenshot

```
mtak@a9995750994e:/$ dpkg -l
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/halF-conf/Half-inst/trig-aWait
/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name                    Version                    Architectur
e Description
+++-=======================-==========================-===========
=-==========================================================
======
ii  adduser               3.118ubuntu2               all
  add and remove users and groups
ii  apt                   2.0.9                      amd64
  commandline package manager
ii  base-files            11ubuntu5.6                amd64
  Debian base system miscellaneous files
ii  base-passwd           3.5.47                     amd64
  Debian base system master password and group files
ii  bash                  5.0-6ubuntu1.2             amd64
  GNU Bourne Again SHell
ii  bsdutils              1:2.34-0.1ubuntu9.3        amd64
  basic utilities from 4.4BSD-Lite
ii  bzip2                 1.0.8-2                    amd64
  high-quality block-sorting file compressor - utilities
ii  coreutils             8.30-3ubuntu2              amd64
  GNU core utilities
ii  dash                  0.5.10.2-6                 amd64
  POSIX-compliant shell
ii  debconf               1.5.73                     all
  Debian configuration management system
ii  debianutils           4.9.1                      amd64
  Miscellaneous utilities specific to Debian
ii  diffutils             1:3.7-3                    amd64
  File comparison utilities
ii  dpkg                  1.19.7ubuntu3.2            amd64
  Debian package management system
ii  e2fsprogs             1.45.5-2ubuntu1.1          amd64
  ext2/ext3/ext4 file system utilities
```

```
ii  fdisk                      2.34-0.1ubuntu9.3          amd64
  collection of partitioning utilities
ii  findutils                  4.7.0-1ubuntu1             amd64
  utilities for finding files--find, xargs
ii  gcc-10-base:amd64          10.3.0-1ubuntu1~20.04      amd64
  GCC, the GNU Compiler Collection (base package)
ii  gpgv                       2.2.19-3ubuntu2.2          amd64
  GNU privacy guard - signature verification tool
ii  grep                       3.4-1                      amd64
```

```
mtak@a9995750994e:/$ dpkg -l ¦ grep ssh
ii  openssh-client                    1:8.2p1-4ub
untu0.5                amd64          secure shell
  (SSH) client, for secure access to remote
machines
ii  openssh-server                    1:8.2p1-4ub
untu0.5                amd64          secure shell
  (SSH) server, for secure access from remot
e machines
ii  openssh-sftp-server               1:8.2p1-4ub
untu0.5                amd64          secure shell
  (SSH) sftp server module, for SFTP access
from remote machines
ii  ssh-import-id                     5.10-0ubunt
u1                     all           securely ret
rieve an SSH public key and install it loca
lly
mtak@a9995750994e:/$
```

```
git-shell(1)            - Restricted login shell for Git-only SSH access
apple_ssh_and_fips(7)   - Configuring SSH for FIPS algorithms
crosshair(n)            - Crosshairs for Tk canvas
scp(1)                  - OpenSSH secure file copy
sftp(1)                 - OpenSSH secure file transfer
sftp-server(8)          - OpenSSH SFTP server subsystem
ssh(1)                  - OpenSSH remote login client
ssh-add(1)              - adds private key identities to the OpenSSH auth
entication agent
ssh-agent(1)            - OpenSSH authentication agent
ssh-copy-id(1)          - use locally available keys to authorise logins
on a remote machine
ssh-keychain(8), ssh-keychain.dylib(8) - smartcard/keychain support librar
```

```
y
ssh-keygen(1)             - OpenSSH authentication key utility
ssh-keyscan(1)            - gather SSH public keys from servers
ssh-keysign(8)            - OpenSSH helper for host-based authentication
ssh-pkcs11-helper(8)      - OpenSSH helper for PKCS#11 support
ssh_config(5)             - OpenSSH client configuration file
sshd(8)                   - OpenSSH daemon
sshd_config(5)            - OpenSSH daemon configuration file
upsshutdown(8)            - UPS emergency low power shutdown script
CURLINFO_APPCONNECT_TIME(3) - get the time until the SSL/SSH handshake is
completed
CURLINFO_APPCONNECT_TIME_T(3) - get the time until the SSL/SSH handshake i
s completed
CURLOPT_SSH_AUTH_TYPES(3) - auth types for SFTP and SCP
CURLOPT_SSH_COMPRESSION(3) - enable SSH compression
CURLOPT_SSH_HOSTKEYDATA(3) - pointer to pass to the SSH host key callback
CURLOPT_SSH_HOSTKEYFUNCTION(3) - callback to check host key
CURLOPT_SSH_HOST_PUBLIC_KEY_MD5(3) - MD5 checksum of SSH server public key
CURLOPT_SSH_HOST_PUBLIC_KEY_SHA256(3) - SHA256 hash of SSH server public k
ey
CURLOPT_SSH_KEYDATA(3)    - pointer passed to the SSH key callback
CURLOPT_SSH_KEYFUNCTION(3) - callback for known host matching logic
CURLOPT_SSH_KNOWNHOSTS(3) - file name holding the SSH known hosts
CURLOPT_SSH_PRIVATE_KEYFILE(3) - private key file for SSH auth
CURLOPT_SSH_PUBLIC_KEYFILE(3) - public key file for SSH auth
Net::DNS::RR::SSHFP(3pm) - DNS SSHFP resource record
Tcl_NewObj(3tcl), Tcl_DuplicateObj(3tcl), Tcl_IncrRefCount(3tcl), Tcl_Decr
RefCount(3tcl), Tcl_IsShared(3tcl), Tcl_InvalidateStringRep(3tcl) - manipu
late Tcl objects
apple_ssh_and_fips(7)     - Configuring SSH for FIPS algorithms
crosshair(n)              - Crosshairs for Tk canvas
glIsShader(3G)            - Determines if a name corresponds to a shader ob
ject
scp(1)                    - OpenSSH secure file copy
sftp(1)                   - OpenSSH secure file transfer
sftp-server(8)            - OpenSSH SFTP server subsystem
ssh(1)                    - OpenSSH remote login client
ssh-add(1)                - adds private key identities to the OpenSSH auth
entication agent
ssh-agent(1)              - OpenSSH authentication agent
ssh-copy-id(1)            - use locally available keys to authorise logins
on a remote machine
ssh-keychain(8), ssh-keychain.dylib(8) - smartcard/keychain support librar
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ssh-keygen(1)             - OpenSSH authentication key utility
ssh-keyscan(1)            - gather SSH public keys from servers
ssh-keysign(8)            - OpenSSH helper for host-based authentication
ssh-pkcs11-helper(8)      - OpenSSH helper for PKCS#11 support
ssh_config(5)             - OpenSSH client configuration file
sshd(8)                   - OpenSSH daemon
sshd_config(5)            - OpenSSH daemon configuration file
upsshutdown(8)            - UPS emergency low power shutdown script
~
```

7. Do "tail /etc/apt/sources.list", then do "vi /var/log/dpkg.log", then provide command "/ssh" to find ssh related installation activity, then press ":q!" to exit from the vi editor.

- Take a screenshot when you find "openssh-client" installation log

```
2023-04-12 03:55:11 install openssh-sftp-server:amd64 <none> 1:8.2p1-4ubuntu0.5
```

8. Do "clear", then do "ls /etc/rsyslog.*", then do "head –20 /etc/rsyslog.d/50–default.conf", then do "tail /var/log/kern.log", then do "ls /var/log".

- Take a screenshot of the result of "ls /var/log"

```
mtak@a9995750994e:~$ ls /var/log
alternatives.log  bootstrap.log  dpkg.log  journal  private
apt               btmp           faillog   lastlog  wtmp
```

9. Do "clear", then "cat /etc/logrotate.d/rsyslog".

- Take a screenshot

```
mtak@a9995750994e:~$ cat /etc/logrotate.d/rsyslog
/var/log/syslog
{
        rotate 7
        daily
        missingok
        notifempty
        delaycompress
        compress
        postrotate
                /usr/lib/rsyslog/rsyslog-rotate
        endscript
}

/var/log/mail.info
/var/log/mail.warn
/var/log/mail.err
/var/log/mail.log
/var/log/daemon.log
/var/log/kern.log
/var/log/auth.log
/var/log/user.log
/var/log/lpr.log
/var/log/cron.log
/var/log/debug
/var/log/messages
{
        rotate 4
        weekly
        missingok
        notifempty
        compress
        delaycompress
        sharedscripts
        postrotate
                /usr/lib/rsyslog/rsyslog-rotate
        endscript
}
mtak@a9995750994e:~$
```

- What is the value of "rotate"? and what is the meaning of this setting?

로그 파일은 크기가 4MB에 도달하면 회전해야 한다는 의미다.

10. How '/etc/passwd' file is used? Write what contents are stored in the '/etc/passwd' file.

시스템이 사용자의 정보를 저장할 때 사용하고 다음과 같은 정보를 포함한다.

1. Username
2. Password: x로 나와있다. 암호화된 것이라도 궁금하면 `cat /etc/shadow`
3. User ID (UID): 사용자 식별번호
4. Group ID (GID): user's primary group의 식별 번호
5. User information (GECOS): user의 full name 같은 정보.
6. Home directory: 사용자의 home directory.logging in 후에 시작하는 위치.
7. Login shell: 사용자의 default shell,사용자가 로그인하면 시작된다.