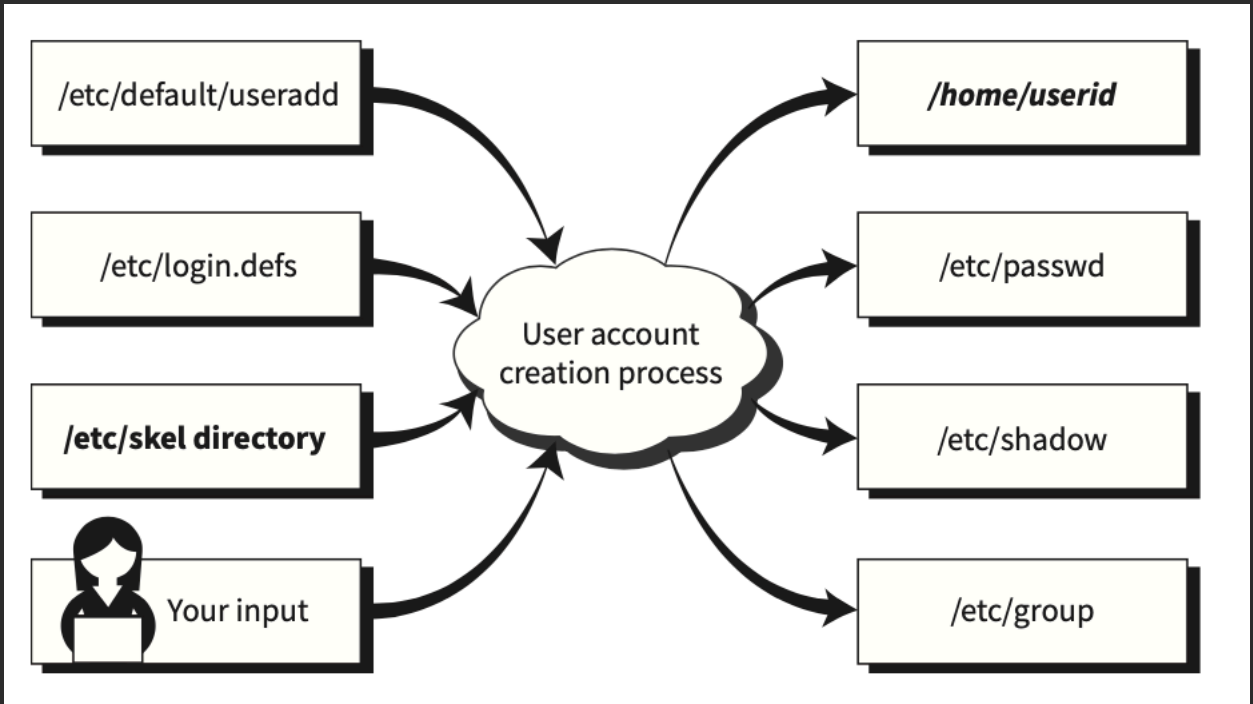
Lesson 8: Administering the System

Objectives covered

- 107.1 Manage user and group accounts and related system files (weight: 5)
- 108.3 Mail Transfer Agent (MTA) basics (weight: 3)
- 108.2 System logging (weight: 4)
- 108.1 Maintain system time (weight: 3)

Manage user and group accounts and related system files

User creation process



/etc/login.defs

Name	Description
PASS_MAX_DAYS	Number of days until a password change is required. This is the password's expiration date.
PASS_MIN_DAYS	Number of days after a password is changed until the password may be changed again.
PASS_MIN_LENGTH	Minimum number of characters required in password.
PASS_WARN_AGE	Number of days a warning is issued to the user prior to a password's expiration.
CREATE_HOME	Default is no. If set to yes, a user account home directory is created.
ENCRYPT_METHOD	The method used to hash account passwords.

```
$ grep -v ^$ /etc/login.defs | grep -v ^\#
MAIL_DIR        /var/spool/mail
PASS_MAX_DAYS   99999
PASS_MIN_DAYS   0
PASS_MIN_LEN    5
PASS_WARN_AGE   7
UID_MIN                  1000
UID_MAX                 60000
SYS_UID_MIN               201
SYS_UID_MAX               999
GID_MIN                  1000
GID_MAX                 60000
SYS_GID_MIN               201
SYS_GID_MAX               999
CREATE_HOME     yes
UMASK           077
USERGROUPS_ENAB yes
ENCRYPT_METHOD SHA512
```

/etc/default/useradd

```
$ cat /etc/default/useradd
# useradd defaults file
GROUP=100
HOME=/home
INACTIVE=-1
EXPIRE=
SHELL=/bin/bash
SKEL=/etc/skel
CREATE_MAIL_SPOOL=yes
```

```
$ sudo useradd -D
GROUP=100
HOME=/home
INACTIVE=-1
EXPIRE=
SHELL=/bin/bash
SKEL=/etc/skel
CREATE_MAIL_SPOOL=yes
```

Name	Description
HOME	Base directory for user account directories.
INACTIVE	Number of days after a password has expired and has not been changed until the account will be deactivated. See PASS_MAX_DAYS in Table 7.1.
SKEL	The skeleton directory.
SHELL	User account default shell program.

/etc/skel

.bash_profile

.bashrc

.bash_logout

/etc/passwd

```
$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
[…]
tcpdump:x:72:72::/:/sbin/nologin
user1:x:1000:1000:User One:/home/user1:/bin/bash
Christine:x:1001:1001:Christine B:/home/Christine:/bin/bash
[…]
```

Field No.	Description
1	User account's username.
2	Password field. Typically this file is no longer used to store passwords. An x in this field indicates passwords are stored in the /etc/shadow file.
3	User account's user identification number (UID).
4	User account's group identification number (GID).
5	Comment field. This field is optional. Traditionally it contains the user's full name.
6	User account's home directory.
7	User account's default shell. If set to /sbin/nologin or /bin/false, then the user cannot interactively log into the system.

/etc/shadow

```
$ sudo cat /etc/shadow
root:!::0:99999:7:::
bin:*:17589:0:99999:7:::
daemon:*:17589:0:99999:7:::
[…]
user1: $6$bvqdqU[…]:17738:0:99999:7:::
Christine: Wb8I8Iw$6[…]:17751:0:99999:7:::
[…]
```

Field No.	Description
1	User account's username.
2	Password field. The password is a salted and hashed password. A !! or ! indicates a password has not been set for the account. A ! or an * indicates the account cannot use a password to log in. A ! in front of a password indicates the account has been locked.
3	Date of last password change in Unix Epoch time (days) format.
4	Number of days after a password is changed until the password may be changed again.
5	Number of days until a password change is required. This is the password's expiration date.
6	Number of days a warning is issued to the user prior to a password's expiration (see field #5).
7	Number of days after a password has expired (see field #5) and has not been changed until the account will be deactivated.
8	Date of account's expiration in Unix Epoch time (days) format.
9	Called the special flag. It is a field for a special future use, is currently not used, and is blank.

Creating user with useradd

```
$ sudo useradd -md /home/JKirk -s /bin/bash JKirk
[sudo] password for Christine:
$
$ grep ^JKirk /etc/passwd
JKirk:x:1002:1002::/home/JKirk:/bin/bash
$
$ sudo grep ^JKirk /etc/shadow
JKirk:!:17806:0:99999:7:::
$
$ sudo ls -a /home/JKirk/
.  ..  .bash_logout  .bashrc  examples.desktop  .profile
$
$ sudo ls -a /etc/skel
.  ..  .bash_logout  .bashrc  examples.desktop  .profile
```

Short	Long	Description
-c	--comment	Comment field contents. Traditionally it contains the user's full name. Optional.
-d	--home or --home-dir	User's home directory specification. Default action is set by the HOME and CREATE_HOME directives.
-D	--defaults	Display /etc/default/useradd directives.
-e	--expiredate	Date of account's expiration in *YYYY-MM-DD* format. Default action is set by the EXPIRE directive.
-f	--inactive	Number of days after a password has expired and has not been changed until the account will be deactivated. A -1 indicates account will never be deactivated. Default action is set by the INACTIVE directive.
-g	--gid	Account's group membership, which is active when user logs into system (default group).
-G	--groups	Account's additional group memberships.
-m	--create-home	If it does not exist, create the user account's home directory. Default action is set by the CREATE_HOME directive.
-M	N/A or --no-create-home	Do *not* create the user account's home directory. Default action is set by the CREATE_HOME directive.
-s	--shell	Account's shell. Default action is set by the SHELL directive.
-u	--uid	Account's user identification (UID) number.
-r	--system	Create a system account instead of a user account.

Managing passwords

```
$ sudo passwd DAdams
Changing password for user DAdams.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
```

```
$ sudo passwd -S DAdams
DAdams PS 2018-10-01 0 99999 7 -1 (Password set, SHA512 crypt.)
```

```
$ sudo chage -l DAdams
Last password change                                    : Oct 02, 2018
Password expires                                        : never
Password inactive                                       : never
Account expires                                         : never
Minimum number of days between password change          : 0
Maximum number of days between password change          : 99999
Number of days of warning before password expires       : 7
```

passwd options

Short	Long	Description
-d	--delete	Removes the account's password.
-e	--expire	Sets an account's password as expired. User is required to change account password at next login.
-i	--inactive	Sets the number of days after a password has expired and has not been changed until the account will be deactivated.
-l	--lock	Places an exclamation point (!) in front of the account's password within the /etc/shadow file, effectively preventing the user from logging into the system using the account's password.
-n	--minimum	Sets the number of days after a password is changed until the password may be changed again.
-S	--status	Displays the account's password status.
-u	--unlock	Removes a placed exclamation point (!) from the account's password within the /etc/shadow file.
-w	-warning or --warndays	Sets the number of days a warning is issued to the user prior to a password's expiration.
-x	--maximum or -maxdays	Sets the number of days until a password change is required. This is the password's expiration date.

Modifying accounts with usermod

```
$ sudo usermod -L  DAdams
$
$ sudo passwd -S DAdams
DAdams LK 2018-10-01 5 30 15 3 (Password locked.)
$
$ sudo getent shadow DAdams
DAdams:!$6$B/zCaNx[…]:17806:5:30:15:3::
$
$ sudo usermod -U  DAdams
$
$ sudo passwd -S DAdams
DAdams PS 2018-10-01 5 30 15 3 (Password set, SHA512 crypt.)
$ sudo usermod -s /bin/bash DBowman
```

Short	Long	Description
-c	--comment	Modify the comment field contents.
-d	--home	Set a new user home directory specification. Use with the -m option to move the current directory's files to the new location.
-e	--expiredate	Modify the account's expiration date. Use *YYYY-MM-DD* format.
-f	--inactive	Modify the number of days after a password has expired and has not been changed that the account will be deactivated. A -1 indicates account will never be deactivated.
-g	--gid	Change the account's default group membership.
-G	--groups	Update the account's additional group memberships. If only specifying new group membership, use the -a option to avoid removing the other group memberships.
-l	--login	Modify the account's username to the specified one. Does not modify the home directory.
-L	--lock	Lock the account by placing an exclamation point in front of the password within the account's /etc/shadow file record.
-s	--shell	Change the account's shell.
-u	--uid	Modify the account's user identification (UID) number.
-U	--unlock	Unlock the account by removing the exclamation point from the front of the password within the account's /etc/shadow file record.

Deleting accounts

```
$ sudo ls -a /home/DBowman
.  ..  .bash_logout  .bashrc  examples.desktop  .profile
$
$ sudo getent passwd DBowman
DBowman:x:1003:1003::/home/DBowman:/bin/bash
$
$ sudo userdel -r DBowman
userdel: DBowman mail spool (/var/mail/DBowman) not found
$
$ sudo ls -a /home/DBowman
ls: cannot access '/home/DBowman': No such file or directory
$
$ sudo getent passwd DBowman
$
```

Deleting accounts

```
$ sudo ls -a /home/DBowman
.  ..  .bash_logout  .bashrc  examples.desktop  .profile
$
$ sudo getent passwd DBowman
DBowman:x:1003:1003::/home/DBowman:/bin/bash
$
$ sudo userdel -r DBowman
userdel: DBowman mail spool (/var/mail/DBowman) not found
$
$ sudo ls -a /home/DBowman
ls: cannot access '/home/DBowman': No such file or directory
$
$ sudo getent passwd DBowman
$
```

Managing groups

Creating groups

```
$ sudo groupadd -g 1042 Project42
$
$ getent group Project42
Project42:x:1042:
$
$ grep Project42 /etc/group
Project42:x:1042:
$
```

Modifying groups

```
$ getent group Project42
Project42:x:1042:DAdams
$
$ sudo groupmod -g 1138 Project42
$
$ getent group Project42
Project42:x:1138:DAdams
$
```

Deleting groups

```
$ sudo groupdel Project42
$
```

Adding users to groups

```
$ sudo groups DAdams
DAdams : DAdams
$
$ sudo usermod -aG Project42 DAdams
$
$ sudo groups DAdams
DAdams : DAdams Project42
$
$ getent group Project42
Project42:x:1042:DAdams
$
```

Question...