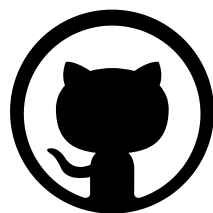# DERECK LAM HON WAH

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DISCLAIMER 🐧

WORKING WITH SYSTEMD SERVICES

SYSTEMD

- An **Init system** and a **service manager** from boot to shutdown for **Linux OS**.
- Handle **services**, **processes, network, authentication**, **logging** etc...

SYSTEMD UNITS

- Entities or objects managed by **systemd**.
- Unit types that **systemd** can manage :
  - service
  - socket
  - device
  - mount or automount point
  - swap file
  - timer
  - startup target (runlevel)
  - path etc...

UNIT FILE LOCATIONS

/lib/systemd/system   standard systemd unit files

/usr/lib/systemd/system   from locally installed package

/etc/systemd/system   custom unit files

SYSTEMCTL

- To manage services on a **systemd** enabled server.

To list all units listed as "**active**"

$ systemctl list-units

SYSTEMCTL

To list all units listed as "**active**"

$ systemctl list-units -all

```
UNIT                                          LOAD   ACTIVE  SUB     DESCRIPTION
proc-sys-fs-binfmt_misc.automount             loaded active  running Arbitrary Executable File Formats File System Automount Point
dev-disk-by\x2ddiskseq-1.device               loaded active  plugged /dev/disk/by-diskseq/1
dev-disk-by\x2ddiskseq-13.device              loaded active  plugged /dev/disk/by-diskseq/13
dev-disk-by\x2ddiskseq-14.device              loaded active  plugged /dev/disk/by-diskseq/14
dev-disk-by\x2ddiskseq-15.device              loaded active  plugged /dev/disk/by-diskseq/15
dev-disk-by\x2ddiskseq-16.device              loaded active  plugged /dev/disk/by-diskseq/16
dev-disk-by\x2ddiskseq-17.device              loaded active  plugged /dev/disk/by-diskseq/17
dev-disk-by\x2ddiskseq-18.device              loaded active  plugged /dev/disk/by-diskseq/18
dev-disk-by\x2ddiskseq-19.device              loaded active  plugged /dev/disk/by-diskseq/19
dev-disk-by\x2ddiskseq-2.device               loaded active  plugged /dev/disk/by-diskseq/2
dev-disk-by\x2ddiskseq-20.device              loaded active  plugged /dev/disk/by-diskseq/20
dev-disk-by\x2ddiskseq-21.device              loaded active  plugged /dev/disk/by-diskseq/21
dev-disk-by\x2ddiskseq-22.device              loaded active  plugged /dev/disk/by-diskseq/22
dev-disk-by\x2ddiskseq-23.device              loaded active  plugged /dev/disk/by-diskseq/23
dev-disk-by\x2ddiskseq-24.device              loaded active  plugged /dev/disk/by-diskseq/24
dev-disk-by\x2ddiskseq-25.device              loaded active  plugged /dev/disk/by-diskseq/25
dev-disk-by\x2ddiskseq-26.device              loaded active  plugged /dev/disk/by-diskseq/26
dev-disk-by\x2ddiskseq-27.device              loaded active  plugged /dev/disk/by-diskseq/27
dev-disk-by\x2ddiskseq-28.device              loaded active  plugged /dev/disk/by-diskseq/28
dev-disk-by\x2ddiskseq-29.device              loaded active  plugged /dev/disk/by-diskseq/29
dev-disk-by\x2ddiskseq-3.device               loaded active  plugged /dev/disk/by-diskseq/3
dev-disk-by\x2ddiskseq-30.device              loaded active  plugged /dev/disk/by-diskseq/30
dev-disk-by\x2ddiskseq-31.device              loaded active  plugged /dev/disk/by-diskseq/31
dev-disk-by\x2ddiskseq-32.device              loaded active  plugged /dev/disk/by-diskseq/32
dev-disk-by\x2ddiskseq-33.device              loaded active  plugged /dev/disk/by-diskseq/33
lines 1-26
```

SYSTEMCTL

To list all unit installed in BEAUTIFUL way

$ systemctl list-unit-files

```
UNIT FILE                                         STATE       PRESET
proc-sys-fs-binfmt_misc.automount                 static      -
-.mount                                           generated   -
boot-efi.mount                                    generated   -
boot.mount                                        generated   -
dev-hugepages.mount                               static      -
dev-mqueue.mount                                  static      -
proc-sys-fs-binfmt_misc.mount                     disabled    disabled
snap-bare-5.mount                                 enabled     enabled
snap-core-15419.mount                             enabled     enabled
snap-core-15511.mount                             enabled     enabled
snap-core18-2751.mount                            enabled     enabled
snap-core18-2785.mount                            enabled     enabled
snap-core20-1950.mount                            enabled     enabled
snap-core20-1974.mount                            enabled     enabled
snap-core22-806.mount                             enabled     enabled
snap-core22-817.mount                             enabled     enabled
snap-dbeaver\x2dce-241.mount                      enabled     enabled
snap-dbeaver\x2dce-243.mount                      enabled     enabled
snap-drawio-180.mount                             enabled     enabled
snap-drawio-181.mount                             enabled     enabled
snap-firefox-2880.mount                           enabled     enabled
snap-firefox-2908.mount                           enabled     enabled
snap-gnome\x2d3\x2d28\x2d1804-198.mount           enabled     enabled
snap-gnome\x2d3\x2d34\x2d1804-93.mount            enabled     enabled
snap-gnome\x2d3\x2d38\x2d2004-140.mount           enabled     enabled
lines 1-26
```

SYSTEMCTL STATUS COMMAND

To check if a service is running

$ sudo systemctl status <service_name>

Output:

```
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; preset: enabled)
     Active: active (running) since Sat 2023-07-15 12:10:48 +04; 13s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 13601 (apache2)
      Tasks: 55 (limit: 9059)
     Memory: 5.4M
        CPU: 20ms
     CGroup: /system.slice/apache2.service
             ├─13601 /usr/sbin/apache2 -k start
             ├─13602 /usr/sbin/apache2 -k start
             └─13603 /usr/sbin/apache2 -k start

zil 15 12:10:48 dodoadmin-Inspiron-15-3511 systemd[1]: Starting The Apache HTTP Server...
zil 15 12:10:48 dodoadmin-Inspiron-15-3511 apachectl[13600]: AH00558: apache2: Could not reli
zil 15 12:10:48 dodoadmin-Inspiron-15-3511 systemd[1]: Started The Apache HTTP Server.
~
```

SYSTEMCTL COMMANDS

To start a service
$ systemctl status <service_name>

To stop a service
$ systemctl stop <service_name>

To restart a service
$ systemctl restart <service_name>

To reload a service
$ systemctl reload <service_name>

SYSTEMCTL ENABLE/DISABLE COMMAND

To enable the service to start at boot
$ systemctl enable <service_name>

To disable the service to start at boot
$ systemctl disable <service_name>

MINIMAL SERVICE UNIT FILE EXAMPLE

[Unit]
Description=A very simple service
After=network.target

[Service]
Type=simple
ExecStart=/usr/local/bin/exampleProgram

[Install]
WantedBy=multi-user.target

SYSTEMCTL

To make systemd re-read all unit files
$ systemctl daemon-reload

DEMO
CREATING A CUSTOM UNIT FILE

JOURNALCTL

- Log information from applications and the kernel

To see all log entries from the general system state
$ journalctl

Flags:
- -b (current boot)
- -k (only kernel message)
- -k -b (only kernel message of current boot)

JOURNALCTL

QUERYING UNIT STATES AND LOGS

To see log entries for a specific unit
$ journalctl -u <service_name>

To see log entries for a specific unit of the current boot
$ journalctl -b -u <service_name>

To see updated log entries for a specific unit as they are generated
$ journalctl -u <service_name> -f