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3.6 Describe the differences among short-term, medium-term, and long-term scheduling.

The difference's among a short-term, medium-term, and long term schedulers are as follows. A long-term scheduler, also known as job scheduler, is that it selects processes from the queue pool and loads them into memory for execution. Short-term scheduler, also known as CPU scheduler, selects from among the processes that are ready to execute and allocates the CPU to one of them. The key idea behind a medium-term scheduler is that it removes a process from memory and can later reintroduce it. This is advantageous for some systems.

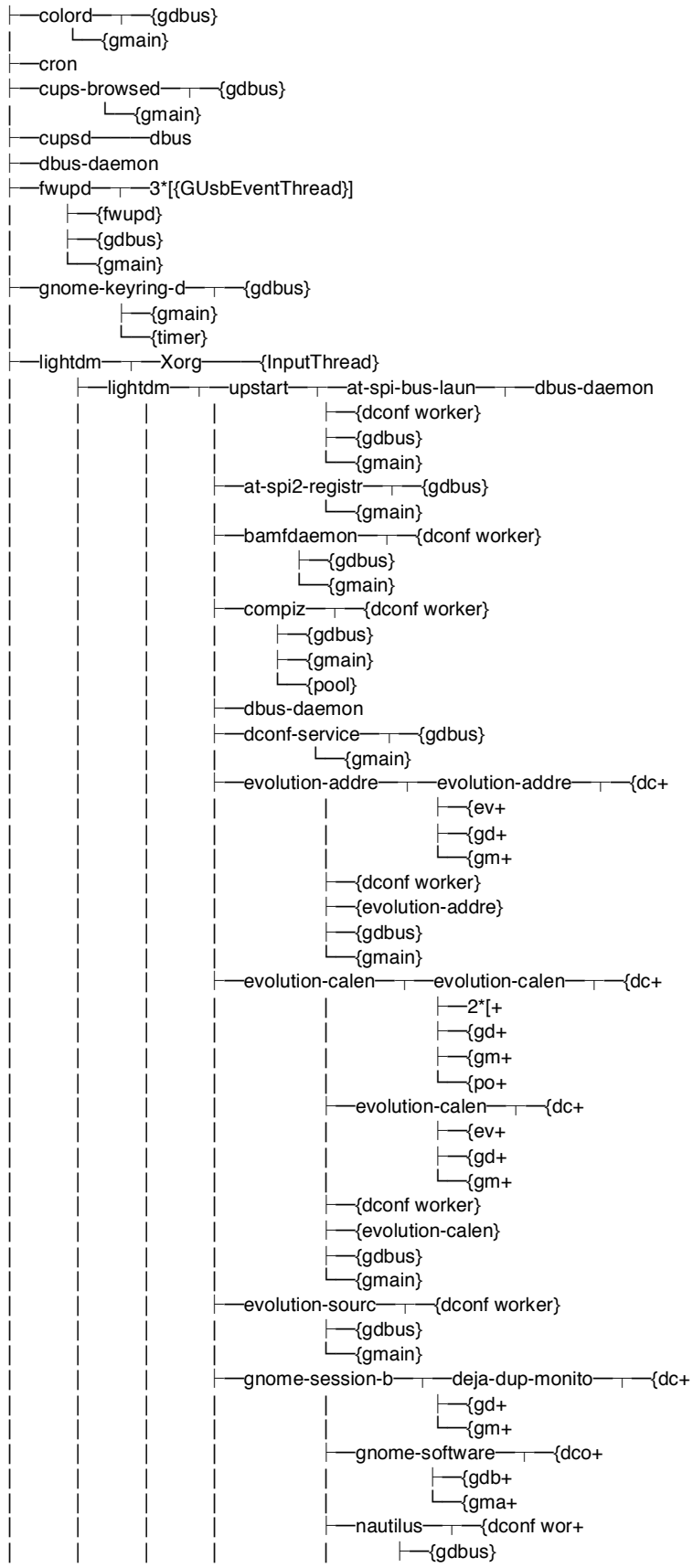
3.7 Describe the actions taken by a kernel to context-switch between processes.

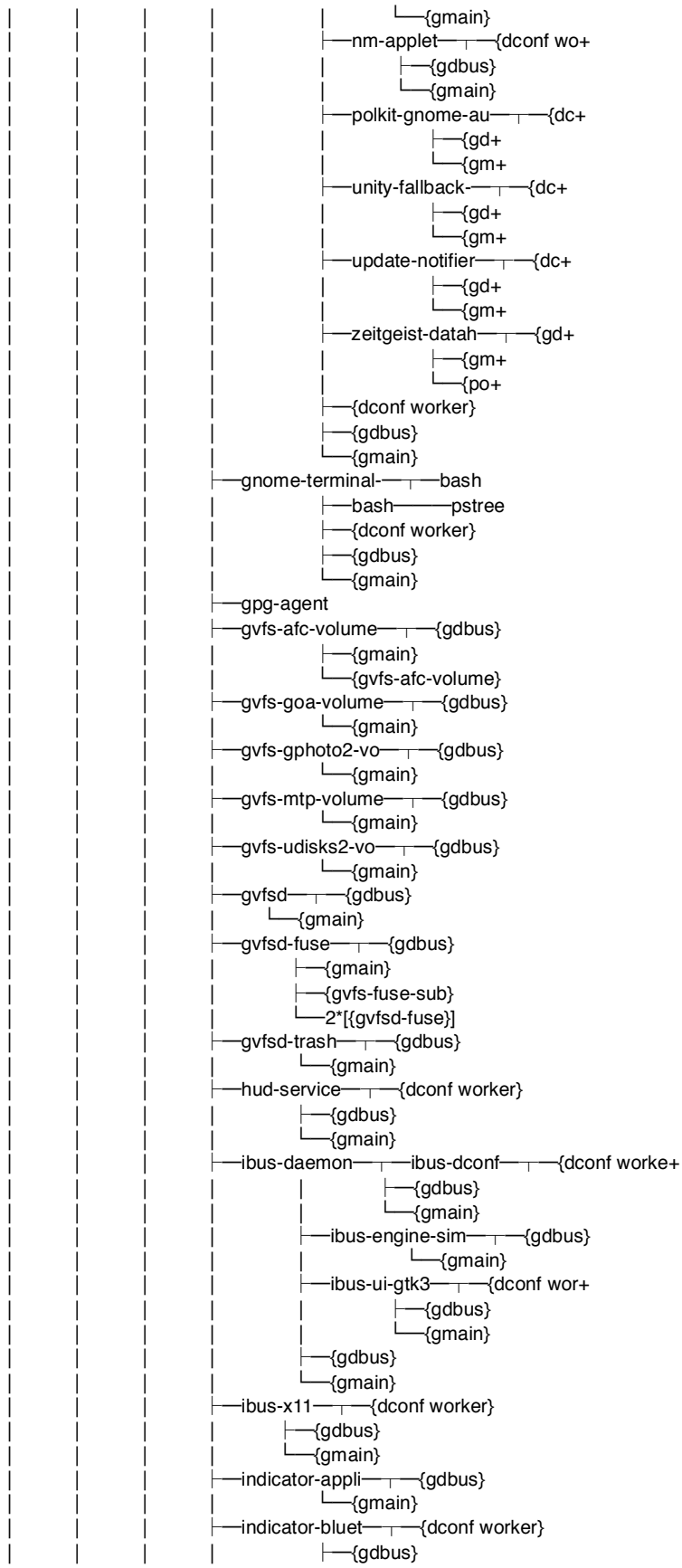
The kernel saves the context of the old process in its PCB and loads the saved context of the new process scheduled to run. Context-switch time is pure overhead, because the system does no useful work while switching.

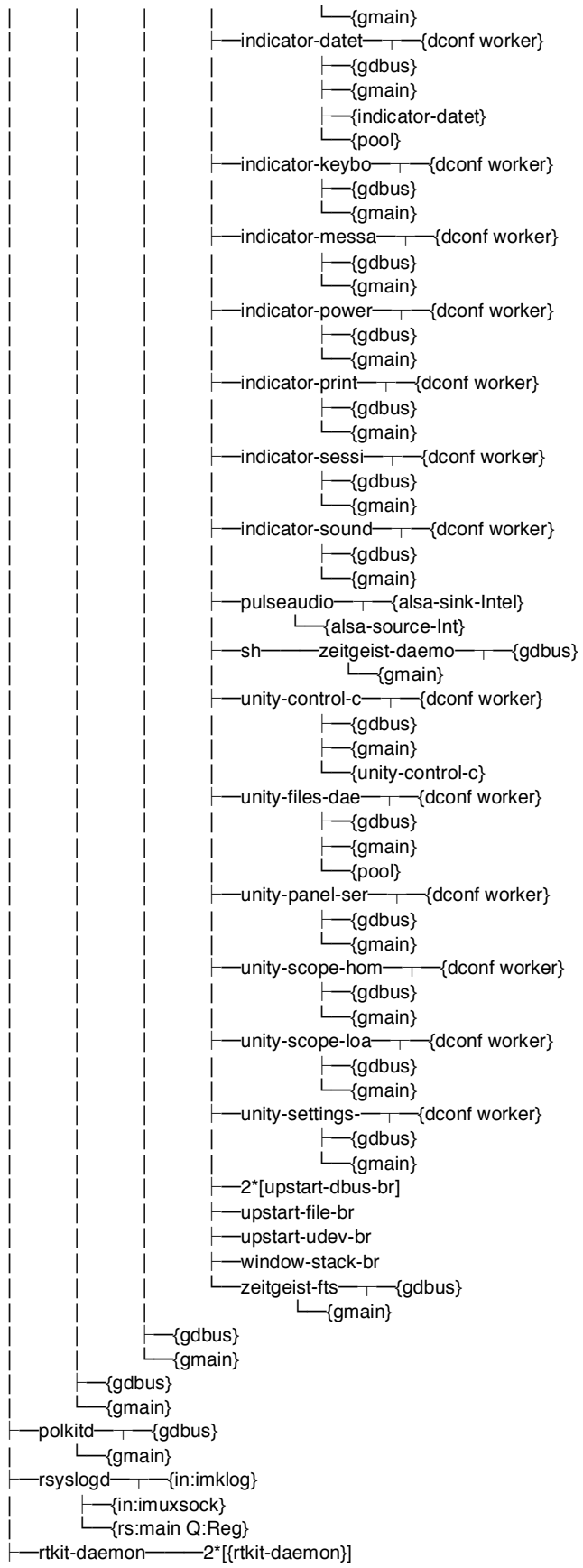
3.8 Construct a process tree similar to Figure 3.9. To obtain process information for the UNIX or Linux system, use the command ps -ael. Use the command man ps to get more information about the ps command. The task manager on Windows systems does not provide the parent process id,yet the processmonitor tool available fromtechnet.microsoft.com provides a process tree tool.

Not sure if this is correct.

```
systemd─┬─ModemManager─┬─{gdbus}
        │              └─{gmain}
        ├─NetworkManager─┬─dhclient
        │                ├─dnsmasq
        │                ├─{gdbus}
        │                └─{gmain}
        ├─accounts-daemon─┬─{gdbus}
        │                 └─{gmain}
        ├─acpid
        ├─agetty
        ├─anacron
        ├─aptd─────{gmain}
        ├─avahi-daemon─────avahi-daemon
```


├─colord─┬─{gdbus}
│ └─{gmain}
├─cron
├─cups-browsed─┬─{gdbus}
│ └─{gmain}
├─cupsd───dbus
├─dbus-daemon
├─fwupd─┬─3*[{GUsbEventThread}]
│ ├─{fwupd}
│ ├─{gdbus}
│ └─{gmain}
├─gnome-keyring-d─┬─{gdbus}
│ ├─{gmain}
│ └─{timer}
├─lightdm─┬─Xorg───{InputThread}
│ ├─lightdm─┬─upstart─┬─at-spi-bus-laun─┬─dbus-daemon
│ │ │ │ ├─{dconf worker}
│ │ │ │ ├─{gdbus}
│ │ │ │ └─{gmain}
│ │ │ ├─at-spi2-registr─┬─{gdbus}
│ │ │ │ └─{gmain}
│ │ │ ├─bamfdaemon─┬─{dconf worker}
│ │ │ │ ├─{gdbus}
│ │ │ │ └─{gmain}
│ │ │ ├─compiz─┬─{dconf worker}
│ │ │ │ ├─{gdbus}
│ │ │ │ ├─{gmain}
│ │ │ │ └─{pool}
│ │ │ ├─dbus-daemon
│ │ │ ├─dconf-service─┬─{gdbus}
│ │ │ │ └─{gmain}
│ │ │ ├─evolution-addre─┬─evolution-addre─┬─{dc+
│ │ │ │ ├─{ev+
│ │ │ │ ├─{gd+
│ │ │ │ └─{gm+
│ │ │ ├─{dconf worker}
│ │ │ ├─{evolution-addre}
│ │ │ ├─{gdbus}
│ │ │ └─{gmain}
│ │ │ ├─evolution-calen─┬─evolution-calen─┬─{dc+
│ │ │ │ ├─2*[+
│ │ │ │ ├─{gd+
│ │ │ │ ├─{gm+
│ │ │ │ └─{po+
│ │ │ ├─evolution-calen─┬─{dc+
│ │ │ │ ├─{ev+
│ │ │ │ ├─{gd+
│ │ │ │ └─{gm+
│ │ │ ├─{dconf worker}
│ │ │ ├─{evolution-calen}
│ │ │ ├─{gdbus}
│ │ │ └─{gmain}
│ │ │ ├─evolution-sourc─┬─{dconf worker}
│ │ │ ├─{gdbus}
│ │ │ └─{gmain}
│ │ │ ├─gnome-session-b─┬─deja-dup-monito─┬─{dc+
│ │ │ ├─{gd+
│ │ │ └─{gm+
│ │ │ ├─gnome-software─┬─{dco+
│ │ │ ├─{gdb+
│ │ │ └─{gma+
│ │ │ ├─nautilus─┬─{dconf wor+
│ │ │ ├─{gdbus}


└──{gmain}
├──nm-applet─┬─{dconf wo+
├──{gdbus}
└──{gmain}
├──polkit-gnome-au─┬─{dc+
├──{gd+
└──{gm+
├──unity-fallback-─┬─{dc+
├──{gd+
└──{gm+
├──update-notifier─┬─{dc+
├──{gd+
└──{gm+
├──zeitgeist-datah─┬─{gd+
├──{gm+
└──{po+
├──{dconf worker}
├──{gdbus}
└──{gmain}
├──gnome-terminal-─┬─bash
├──bash─────pstree
├──{dconf worker}
├──{gdbus}
└──{gmain}
├──gpg-agent
├──gvfs-afc-volume─┬─{gdbus}
├──{gmain}
└──{gvfs-afc-volume}
├──gvfs-goa-volume─┬─{gdbus}
└──{gmain}
├──gvfs-gphoto2-vo─┬─{gdbus}
└──{gmain}
├──gvfs-mtp-volume─┬─{gdbus}
└──{gmain}
├──gvfs-udisks2-vo─┬─{gdbus}
└──{gmain}
├──gvfsd─┬─{gdbus}
└──{gmain}
├──gvfsd-fuse─┬─{gdbus}
├──{gmain}
├──{gvfs-fuse-sub}
└──2*[{gvfsd-fuse}]
├──gvfsd-trash─┬─{gdbus}
└──{gmain}
├──hud-service─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──ibus-daemon─┬─ibus-dconf─┬─{dconf worke+
├──{gdbus}
└──{gmain}
├──ibus-engine-sim─┬─{gdbus}
└──{gmain}
├──ibus-ui-gtk3─┬─{dconf wor+
├──{gdbus}
└──{gmain}
├──{gdbus}
└──{gmain}
├──ibus-x11─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-appli─┬─{gdbus}
└──{gmain}
├──indicator-bluet─┬─{dconf worker}
├──{gdbus}


└──{gmain}
├──indicator-datet─┬─{dconf worker}
├──{gdbus}
├──{gmain}
├──{indicator-datet}
└──{pool}
├──indicator-keybo─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-messa─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-power─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-print─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-sessi─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──indicator-sound─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──pulseaudio─┬─{alsa-sink-Intel}
└──{alsa-source-Int}
├──sh────zeitgeist-daemo─┬─{gdbus}
└──{gmain}
├──unity-control-c─┬─{dconf worker}
├──{gdbus}
├──{gmain}
└──{unity-control-c}
├──unity-files-dae─┬─{dconf worker}
├──{gdbus}
├──{gmain}
└──{pool}
├──unity-panel-ser─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──unity-scope-hom─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──unity-scope-loa─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──unity-settings-─┬─{dconf worker}
├──{gdbus}
└──{gmain}
├──2*[upstart-dbus-br]
├──upstart-file-br
├──upstart-udev-br
├──window-stack-br
└──zeitgeist-fts─┬─{gdbus}
└──{gmain}
├──{gdbus}
└──{gmain}
├──{gdbus}
└──{gmain}
├──polkitd─┬─{gdbus}
└──{gmain}
├──rsyslogd─┬─{in:imklog}
├──{in:imuxsock}
└──{rs:main Q:Reg}
├──rtkit-daemon────2*[{rtkit-daemon}]

```
├──snapd─────5*[{snapd}]
├──systemd─────(sd-pam)
├──systemd-journal
├──systemd-logind
├──systemd-timesyn─────{sd-resolve}
├──systemd-udevd
├──udisksd─┬─{cleanup}
│          ├─{gdbus}
│          ├─{gmain}
│          └─{probing-thread}
├──upowerd─┬─{gdbus}
│          └─{gmain}
└──whoopsie─┬─{gdbus}
            └─{gmain}
```

3.9 What are the pid values? Run the following code to prove your guess. Submit the result of the screen shot.

I am not sure exactly what I was looking for. However, I did run the code and attached a screen shot. I am running Virtual Box on a Mac and tend to get varying results.