# Overview of Screen-readers in Linux Operating Systems

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## Orca and Gnome

Here is a short list of important Orca keystrokes. In this document, the "Super" key refers to a system-customizable key which is usually the "Windows Key". The "Orca" key is the insert key by default but can also be changed within Orca's Settings dialog.

### Orca Keys

* Start and stop Orca: alt+ Super + s
* Open Orca Screen-reader Settings: Orca + Space bar
* Read Previous Line in Terminal: Numpad 7 in desktop layout, Orca + u in laptop layout.
* Read Next Line in Terminal: Numpad 9 in desktop layout, or Orca + o in laptop layout.
* If you are noticing that these match NVDA's screen-review keys, you are correct; ditto for many more Orca commands.
* View all of Orca's keyboard shortcuts at: <https://help.gnome.org/users/orca/stable/commands.html.en>

### Gnome keys

* Open terminal: ctrl + alt + t
* Open "Applications Menu": super + a
* Move keyboard focus to menu bar (like Mac OSX, system menu bar and application menu bar are combined): super + m
* Open a dialog analogous to the Windows "run" dialog box: alt + f2

## Emacspeak

Emacspeak can be run from within a graphical environment or a TTY environment. If run from within a graphical environment, graphical Emacs will be invoked and Emacspeak may not read all of the menus. Press ctrl + alt + f2 to enter a TTY environment, then log in.

To install Emacspeak, run the following apt command in the terminal. Note that there are a couple of setup screens, so if you are a screen-reader user, do this from another talking machine or do it from within the Gnome terminal environment while using Orca:

* sudo apt install Emacspeak

### *Some* useful Emacs and Emacspeak commands

* Run Emacspeak: type "Emacspeak" into the terminal
* Access Emacs' extensive set of menus: f10 key. These are useful before you have learned the Emacs editor and Emacspeak shortcuts.
* Access the Emacs help system: ctrl + h followed by ctrl + i
* Close Emacspeak and Emacs: ctrl + x followed by ctrl + c

## Fenrir

I cannot stress enough the "run this at your own peril" nature of this section. There are many bugs (security and otherwise) that need to be worked out with Fenrir; even so, it is worth it to have a TTY screen-reader on a Raspberry Pie. If you happen to be sighted and are feeling squeamish about running this screen-reader with elevated privileges, consider that in many cases the alternative is not getting to independently use a Raspberry Pie as a screen-reader user. If you are a screen-reader user, run the below from a talking system over an ssh connection. Screen-reader users, there are bugs in the setup / install scripts that not only result in a non-talking system, but in some cases a system with no sound at all. Fenrir is still worth it.

### Install Fenrir

First, install the following packages with apt using the following command:

* sudo apt install libespeak-dev espeak espeak-ng python3-pip python-daemon speech-dispatcher enchant git

Next, install the following python packages with pip:

* pip3 install evdev pyenchant configparser

Now clone the Fenrir Git repository with the following:

* git clone <https://github.com/chrys87/fenrir.git>

The below command should start Fenrir if you've done everything right. Once you have it installed, from a terminal session in a non-talking system where the above packages are installed you can press ctrl + r and type "/fenrir", then press Enter to search your bash history for and run the below command once you've entered it once:

* sudo python3 ~/fenrir/src/fenrir

To modify Fenrir's extensively customizable settings config file, (including setting laptop key layout if necessary) run the following:

* pico ~/fenrir/config/settings/settings.conf

### Some useful Fenrir Keys

"Fenrir" key is insert by default.

* Open Tutorial Mode: Fenrir + f1
* Screen review commands are mostly the same as desktop and laptop Orca keybindings.
* Fenrir + right arrow and Fenrir + left arrow: increase and decrease speech rate respectively
* For a complete list, see Fenrir man page: <https://manpages.ubuntu.com/manpages/bionic/man1/fenrir.1.html>