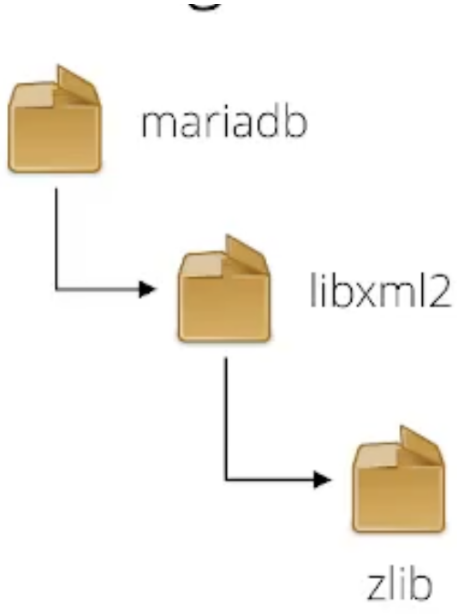
Package Managers (1)

- so in LINUX systems, software is nearly always installed via the **distributions package manager**
  - package managers are therefore an important tool be be familiar with




```
$ apk search | wc -l
10338

$ apk search maria
mariadb-static-10.3.23-r0
mariadb-connector-c-dev-
3.0.10-r0
mariadb-bench-10.3.23-r0
mariadb-10.3.23-r0
mariadb-server-utils-10.3.23-
r0
mariadb-backup-10.3.23-r0
mariadb-doc-10.3.23-r0
mariadb-openrc-10.3.23-r0
mariadb-client-10.3.23-r0
...
```

How to packages work?

- they contain **instructions** for automatically installing software from repositories
- they also keep track of **dependancies**
  - e.g. you have situations whereby one piece of software **relies** upn another piece of software in the above example: *mariadb relies on libxml2 to work*

- using a package manage to install a piece of software doesnt **just** install that software, it identifies the **dependencies** and makes sure that all of the required software is installed
    - in the above example, if you want to install mariadb the package manager would also install libzml2 and zlip as it knows ultimately you will need all of these for mariadb to funciton properly

Different LINUX distributions will use different package managers which will know about the repositories associated with that specific LINUX distribution

Some popular package managers:

apk - alpine package manager (not .apk files these are for Android development)

apt - for debian/Ubuntu/Mint systems

rpm - Red hat systems

pacman - Arch systems

So package managers work by searching software repositories...

Respositories

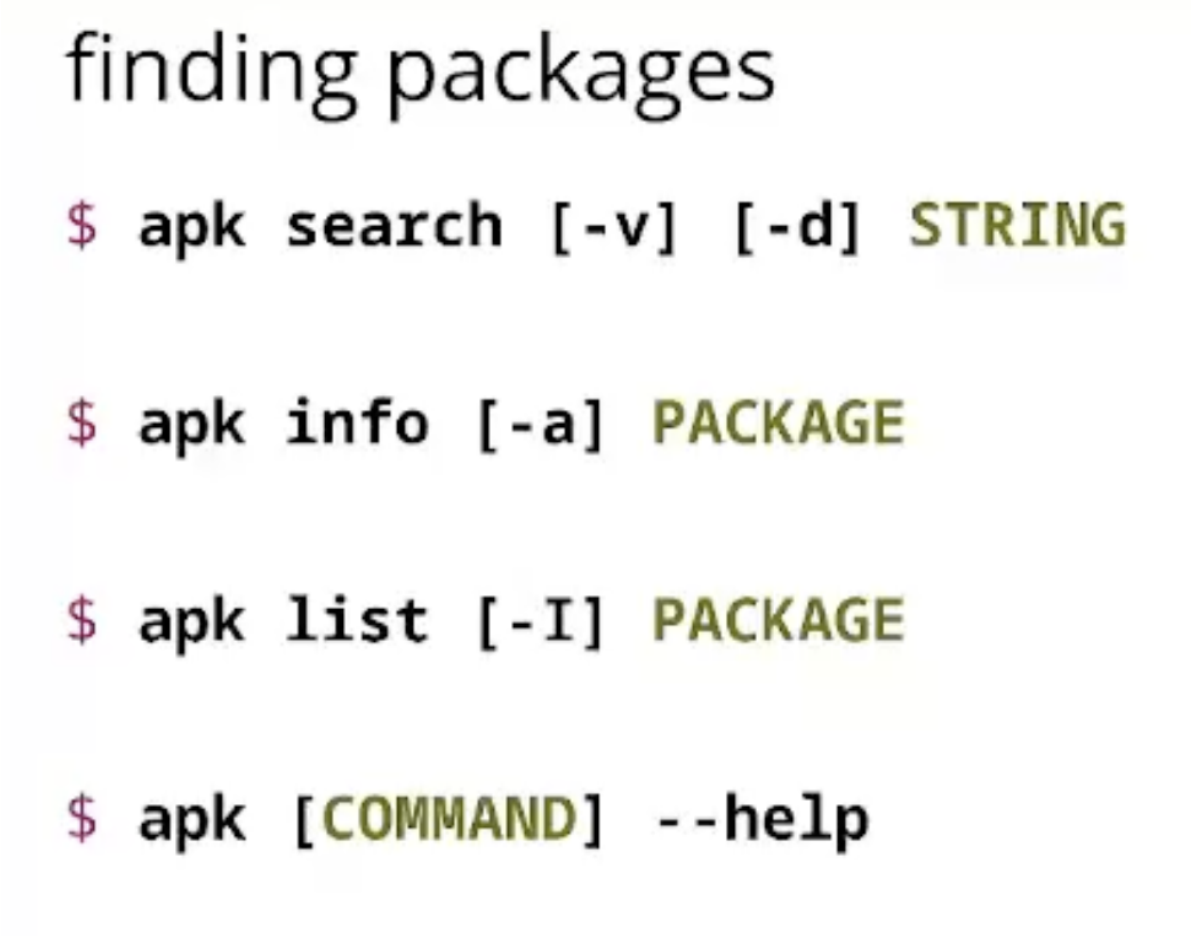
- you can view what repositories your package manager is searching through by looking at the configuration file

```
$ cat /etc/apk/repositories
https://sjc.edge.kernel.org/alpine/v3.10/main
https://sjc.edge.kernel.org/alpine/v3.10/community
```

Index of /alpine/v3.10/main/x86_64/

../		
APKINDEX.tar.gz	28-Sep-2020 10:25	739K
a2ps-4.14-r7.apk	08-May-2019 12:28	697K
a2ps-dev-4.14-r7.apk	08-May-2019 12:28	136K
a2ps-doc-4.14-r7.apk	08-May-2019 12:28	135K

`APKINDEX.tar.gz` lists all packages for a system



- the main ways you would want to use apk is:
  - search for a package by name
  - get info about a package
  - get a list of all installed packages
- apk [COMMAND] — help // this will give info about a given command

Update and Upgrade

- when managing updates there are two commands to pay attention to
  - they can also easily be **confused for one another**

`sudo apt upgrade` - **updates list of packages from the remote repository**

`sudo apt update` - **upgrades ALL installed packages to the newest version from the repo**

- fetches the latest version from the repo

Installing

- **one of the most common commands:**

```
sudo apt add PACKAGE [PACKAGE...]. // need actual example

EXAMPLE:

to install the package called redstone (assume it exists):

sudo apt install redstone
```

- way to add software to system **along with their dependancies** that allows them to run

Finding a command

- if you want to go backwards **from** a piece of software to find out **what package it came from**

```
apt info --who-owns /bin/bash
```

- i.e. which package provides this tool, the tool being /bin/bash which is the shell we are using