

Installing Python, virtualenv, and Jupyter Notebook on your computer

1. What are they?

Python

Python is one of the most popular coding languages in the world and we are going to use this language for this lab. There are many versions of python and they are different in many ways. To make sure the lab could proceed properly, please make sure the python version on your computer is higher or equal to 3.6 -- or, you could negate whatever installed on your computer and get a new one by following this instruction.

Virtualenv

Virtualenv is a software to create python running environments -- a folder that holds python and installed python packages. It allows you to have multiple python running environments on your computer without messing up your file system. Generally speaking, whenever you want to start a new project, you could always create a new virtual environment and install python packages required by this specific project. When you do not need this python virtual environment, just delete the whole virtual environment folder and all packages for the project would be gone. It is also very useful when you want to deploy some code from GitHub on your computer and the code you find is written in a different python version or package version.

Jupyter Notebook

Jupyter Notebook is a software that allows you to write and run python code with in-line markdown notes, very much like a web-based IDE. Because the code and note could be organized in separate cells and each cell can be run individually, it is very beginner-friendly and particularly handy for tutoring.

2. Install

If you are already familiar with these, please feel free to skip.

Python

The official python install website is:

<https://www.python.org/downloads/>

Again, we recommend python version ≥ 3.6 .

You can check your python installment by running following command in Terminal:

```
python --version
```

Installing coding environments is one of the most basic yet important skills in coding. There are already too many tutorials on the internet teaching how to install the software on all kinds of operating systems. Here we just point out 2 links either of which you can take as you like:

Youtube:

<https://www.youtube.com/watch?v=YYXdXT2l-Gg>

LinkedIn Learning:

https://www.linkedin.com/learning/python-statistics-essential-training?trk=share_android_course_learning

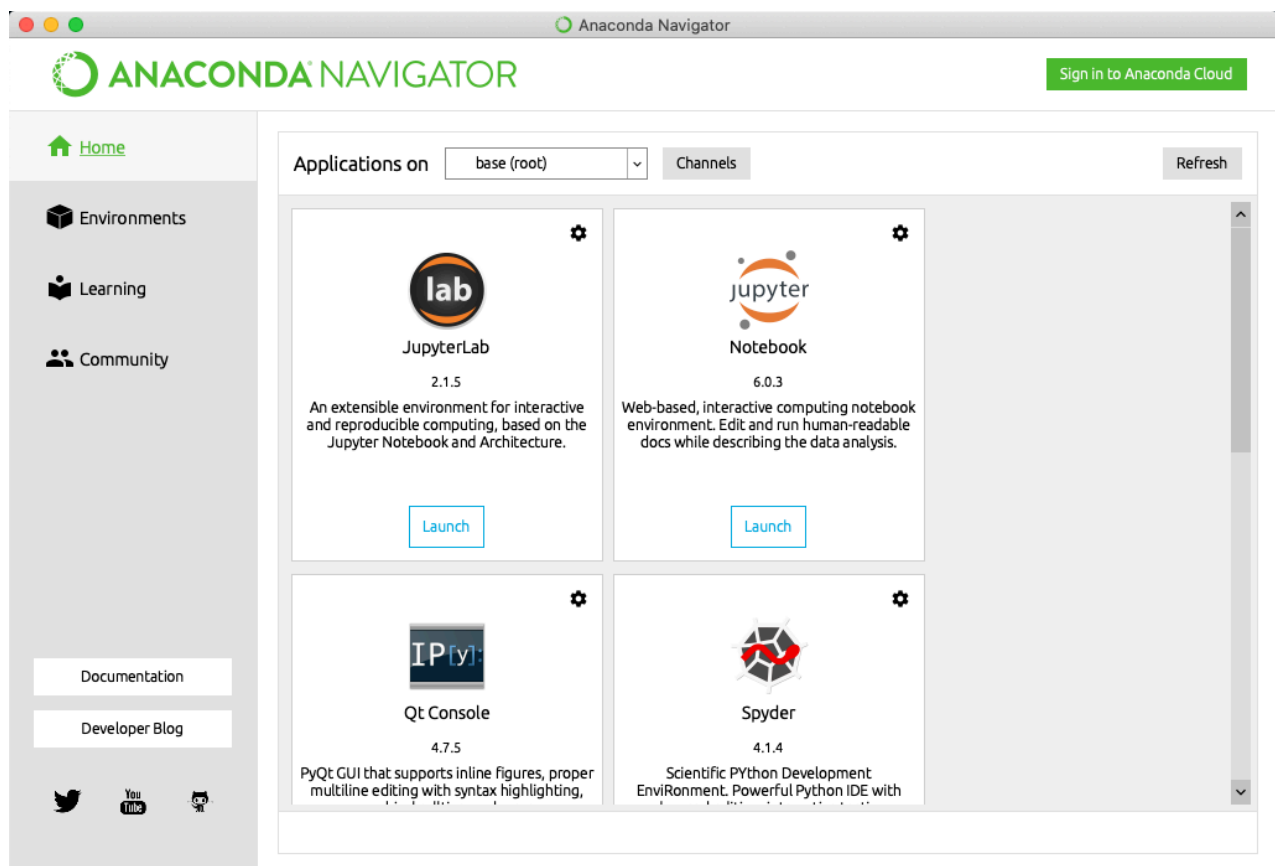
Manage your Virtualenv: anaconda

Anaconda is a software that combines virtualenv and python package management tools. Download and install the version that suitable for your computer from here:

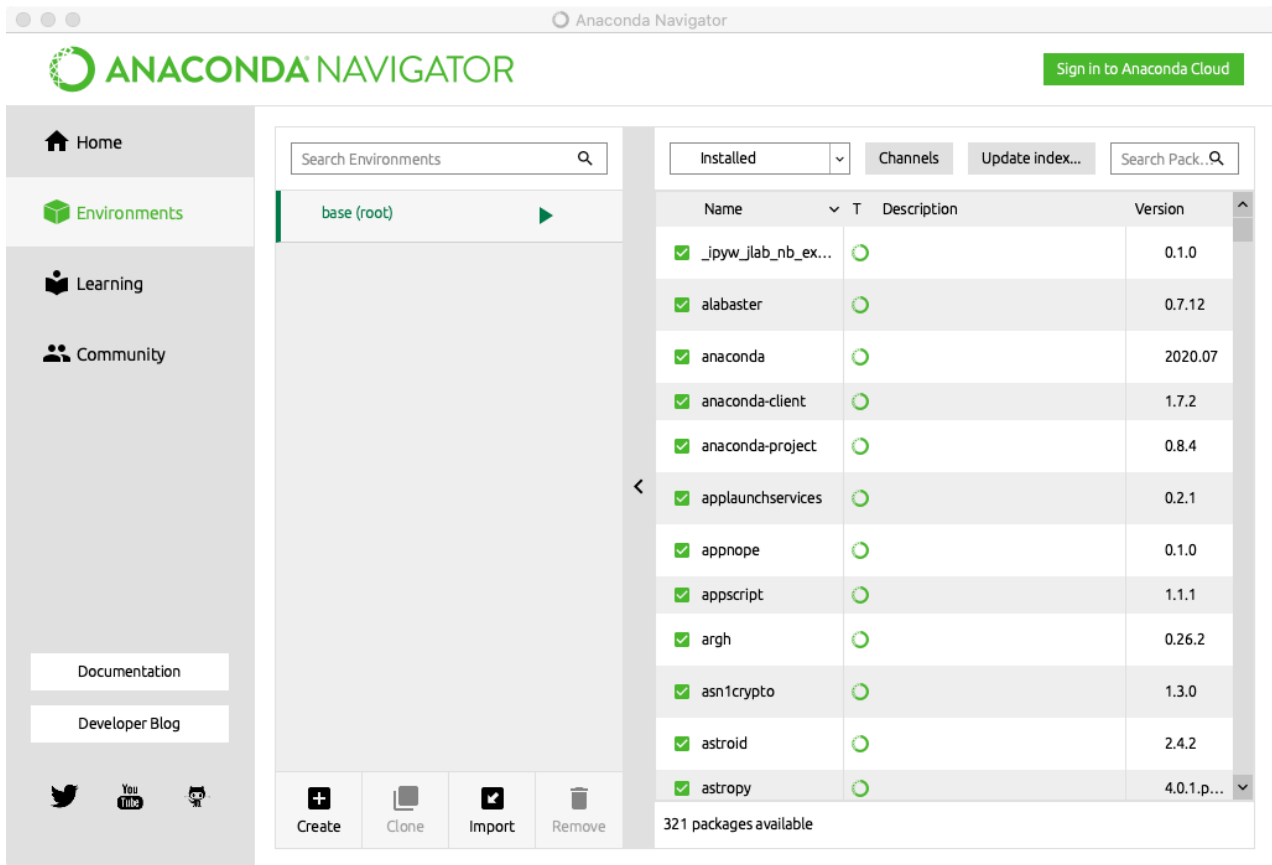
<https://docs.anaconda.com/anaconda/install/>

Once installed, please open the software and follow the instruction. The example is made on macOS, but Windows should be similar.

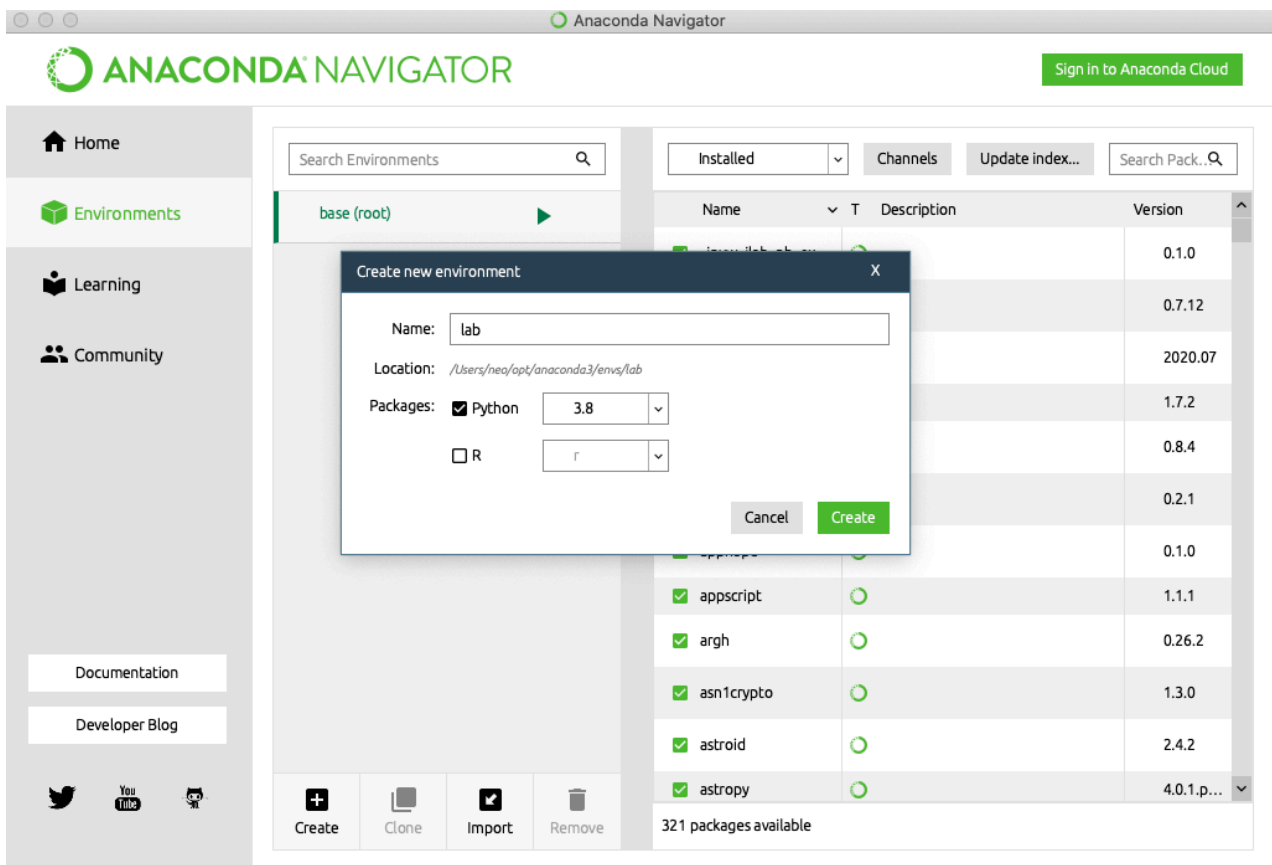
First page:



Click the **Environments** tab



To avoid mess up the default environment (base), let's create a new virtual environment. Click **Create**, and name your new environment



Wait for 1 minute, until the environment you created is visible in the list and there is a small triangle beside it. The list on the right-hand-side is showing you the installed python packages.

Anaconda Navigator

Sign in to Anaconda Cloud

Home

Environments

Learning

Community

Documentation

Developer Blog

Twitter YouTube GitHub

Create Clone Import Remove

Search Environments

base (root)

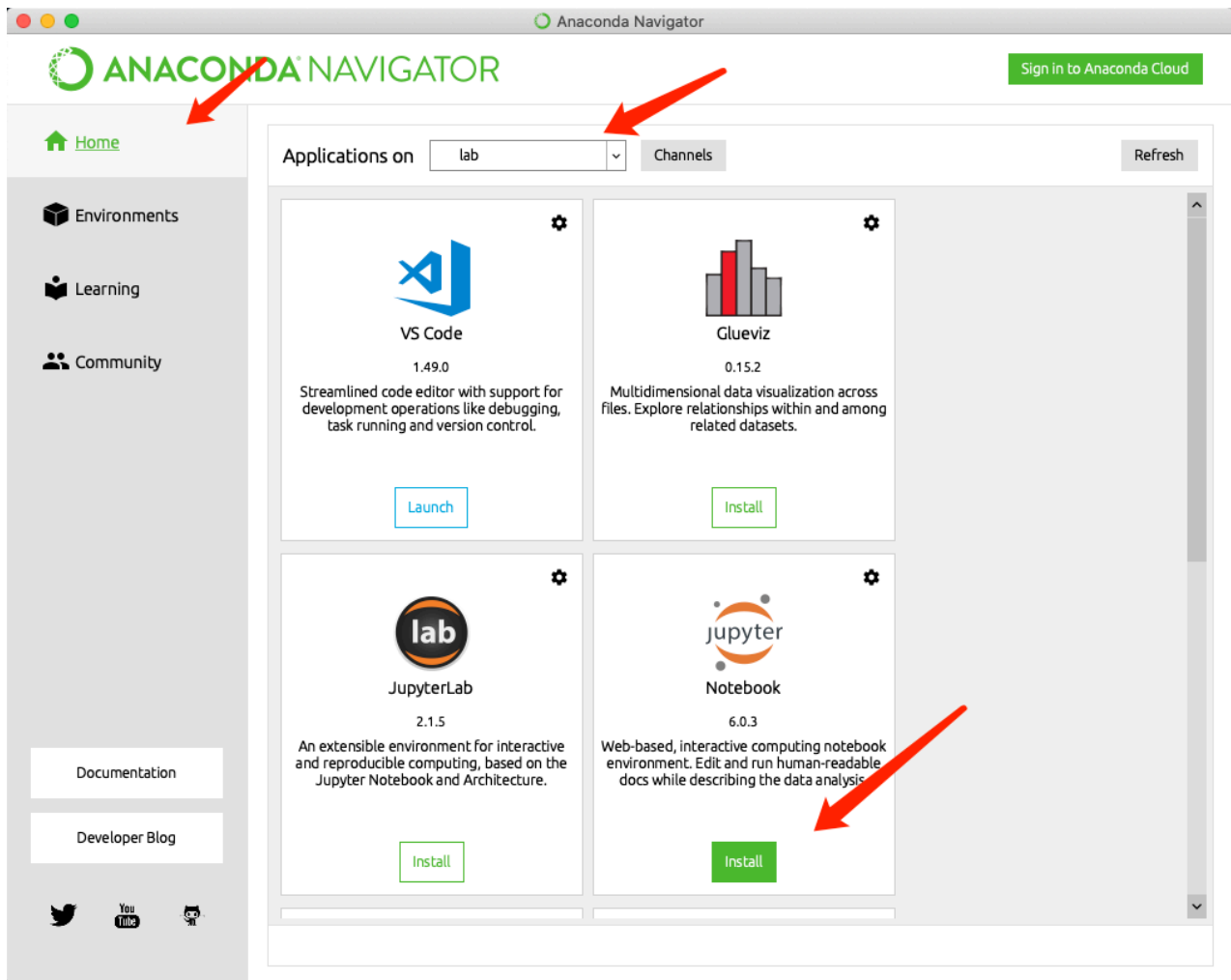
lab

Installed Channels Update index... Search Pac...

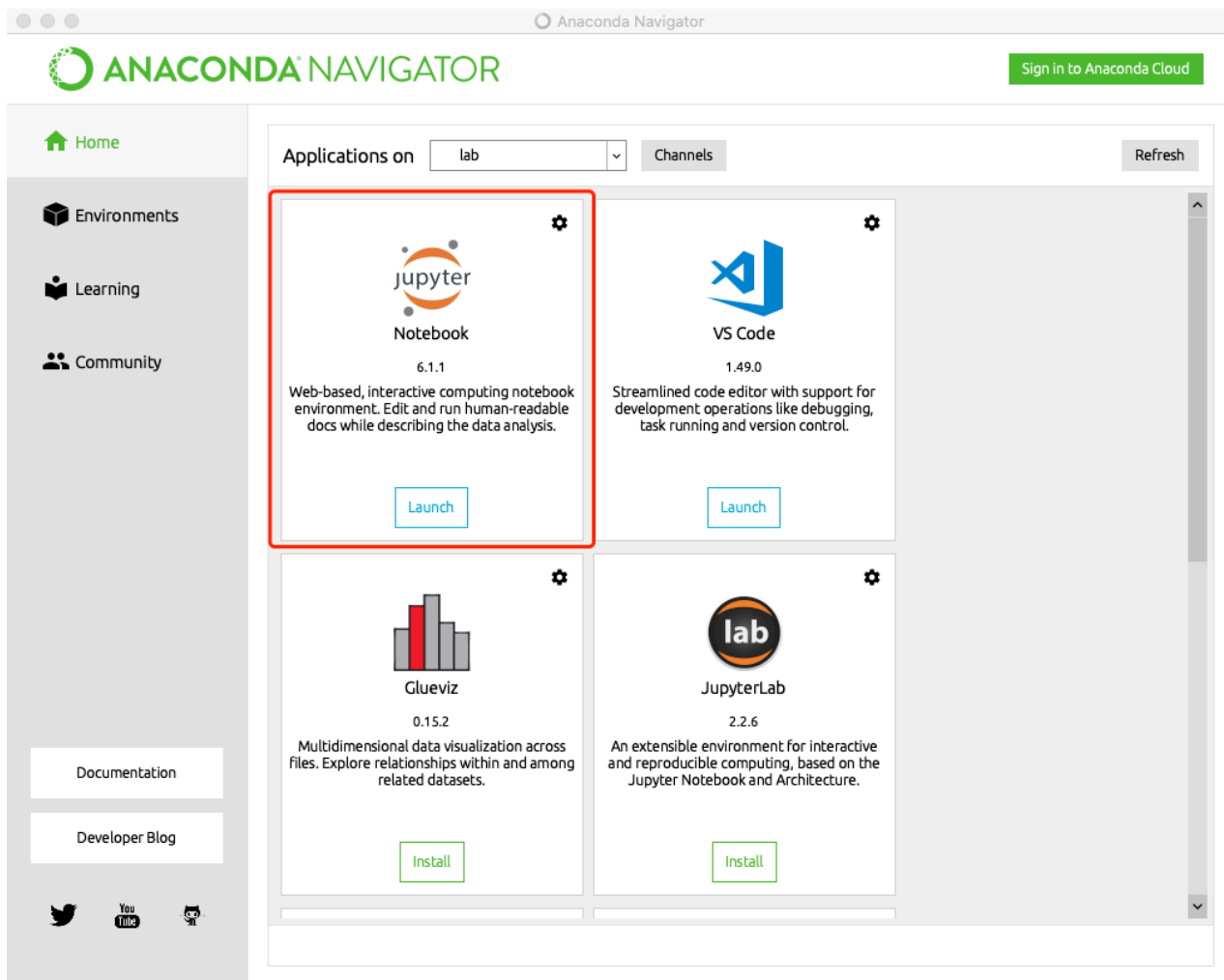
Name	T	Description	Version
ca-certificates			2020.7.22
certifi			2020.6.20
libcxx			10.0.0
libedit			3.1.201...
libffi			3.3
ncurses			6.2
openssl			1.1.1g
pip			20.2.2
python			3.8.5
readline			8.0
setuptools			49.6.0
sqlite			3.33.0
tk			8.6.10
wheel			0.35.1

16 packages available

Now, click the **Home** tab on the left and install **Notebook** (Not JupyterLab). Double-check the 'Applications on' list to make sure that you are using the environment that you just created.



Wait for another 1 minute. Then you should find that the button in the Notebook is a blue 'Launch' now.



Click **Launch**, a command line will pop-up and the default browser will be opened. Now you can navigate to the notebooks that you want to work with. To close the Jupyter notebook software, you only need to close the command line window.

The screenshot shows the JupyterLab interface with the 'Files' tab selected. The file browser displays a list of files and folders in the root directory. The table below represents the data shown in the file browser:

<input type="checkbox"/>	Name	Last Modified	File size
<input type="checkbox"/>	Applications	6 months ago	
<input type="checkbox"/>	Desktop	2 days ago	
<input type="checkbox"/>	Documents	seconds ago	
<input type="checkbox"/>	Downloads	38 minutes ago	
<input type="checkbox"/>	Dropbox	a month ago	
<input type="checkbox"/>	javasharedresources	2 months ago	
<input type="checkbox"/>	Local	a month ago	
<input type="checkbox"/>	Movies	4 months ago	
<input type="checkbox"/>	Music	a year ago	
<input type="checkbox"/>	nltk_data	2 years ago	
<input type="checkbox"/>	opt	an hour ago	
<input type="checkbox"/>	Pictures	2 months ago	
<input type="checkbox"/>	Public	2 years ago	
<input type="checkbox"/>	tools	2 months ago	
<input type="checkbox"/>	VirtualBox VMs	7 months ago	

Finally, to run the notebooks in this lab, you need to install several packages. (See chapter 2 for the full list.) To install the packages in your anaconda environment:

1. Make sure that you are using the correct environment.
2. Select 'All' from the drop down list.
3. Search for the package (pandas, for example).
4. Check the desired package (pandas, for example).
5. Click Apply. Anaconda will automatically find all dependence on the selected package. Click Apply to install them all.

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base (root)

lab

Create Clone Import Remove

All Channels Update index... pandas X

Name	Description	Version
<input type="checkbox"/> autovizwidget	An auto-visualization library for pandas dataframes	0.15.0
<input type="checkbox"/> blaze	Numpy and pandas interface to big data	0.11.3
<input type="checkbox"/> geopandas	Geographic pandas extensions.	0.8.1
<input checked="" type="checkbox"/> pandas	High-performance, easy-to-use d...	1.1.1
<input type="checkbox"/> pandas-datareader	Up to date remote data access for pandas, works for multiple versions of pandas	0.9.0
<input type="checkbox"/> pandas-profiling	Generate profile report for pandas dataframe	1.4.1
<input type="checkbox"/> pandasql	Sqlf for pandas	0.7.3
<input type="checkbox"/> qgrid	Pandas dataframe viewer for jupyter notebook	1.3.1
<input type="checkbox"/> streamz	Manage streaming data, optionally with dask and pandas	0.5.5

9 packages available matching "pandas" 1 package selected

Apply Clear

Install Packages

15 packages will be installed

	Name	Unlink	Link	Channel
1	matplotlib	-	3.3.1	pkgs/main
2	pandas	-	1.1.1	pkgs/main
3	*cycler	-	0.10.0	pkgs/main
4	*freetype	-	2.10.2	pkgs/main
5	*jpeg	-	9b	pkgs/main
6	*kiwisolver	-	1.2.0	pkgs/main

* indicates the package is a dependency of a selected packages

Cancel Apply