

Python programming for beginners

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Instructor

Module 5

Exceptions, PIP

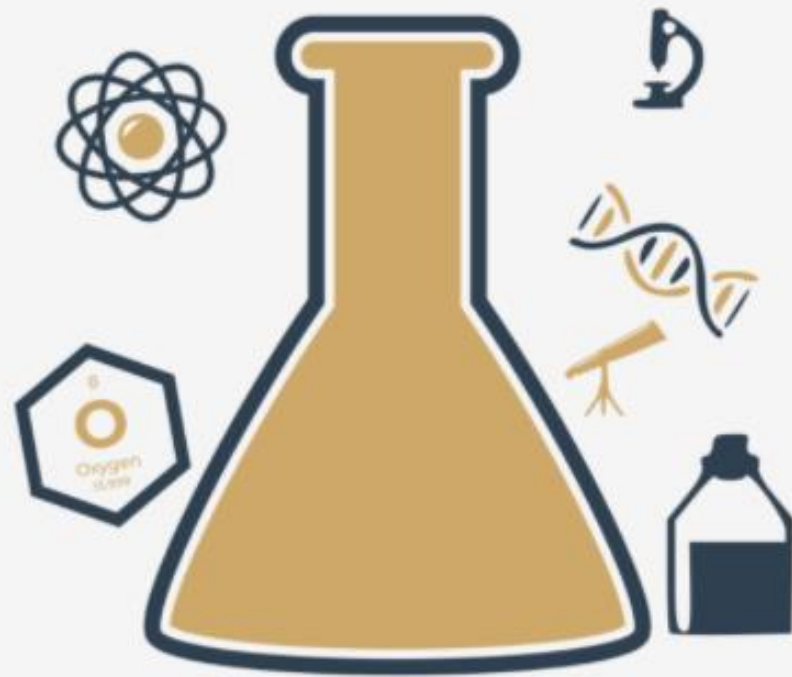


In this module, you will learn about:

- exceptions – the try statement and the except clause, Python built-in exceptions, code testing and debugging.
- PIP (Python Installation Package) and how to use it to install and uninstall ready-to-use packages from PyPI.



Python packaging ecosystem and how to use it





Python packaging ecosystem and how to use it: continued

The repository (or repo for short) we mentioned before is named PyPI (it's short for Python Package Index) and it's maintained by a workgroup named the Packaging Working Group, a part of the Python Software Foundation, whose main task is to support Python developers in efficient code dissemination.

You can find their website here:

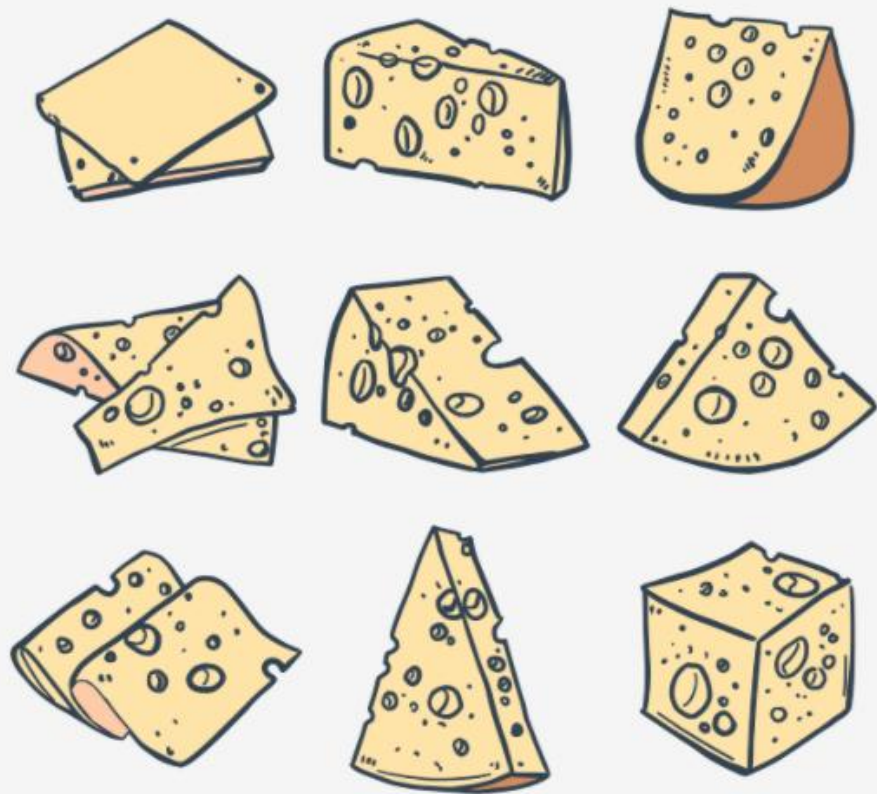
<https://wiki.python.org/psf/PackagingWG>

The PyPI website (administered by PWG) is located at the address:

<https://pypi.org/>



The PyPI repo: the Cheese Shop



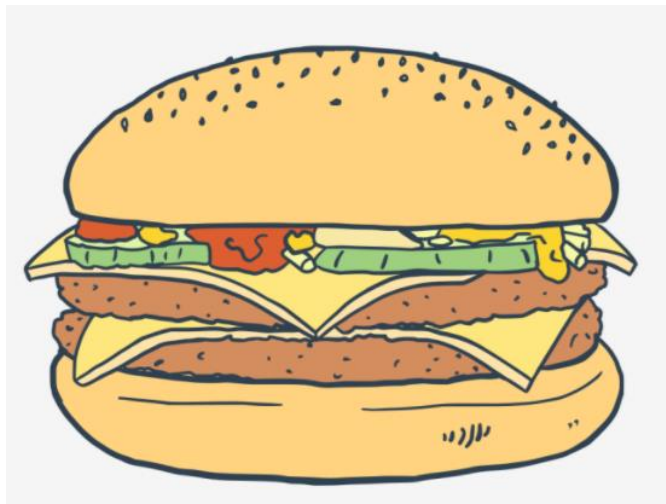


The PyPI repo: the Cheese Shop (continued)

PyPI is a very specific shop, not just because it offers all its products for free. It also requires a special tool to make use of it.

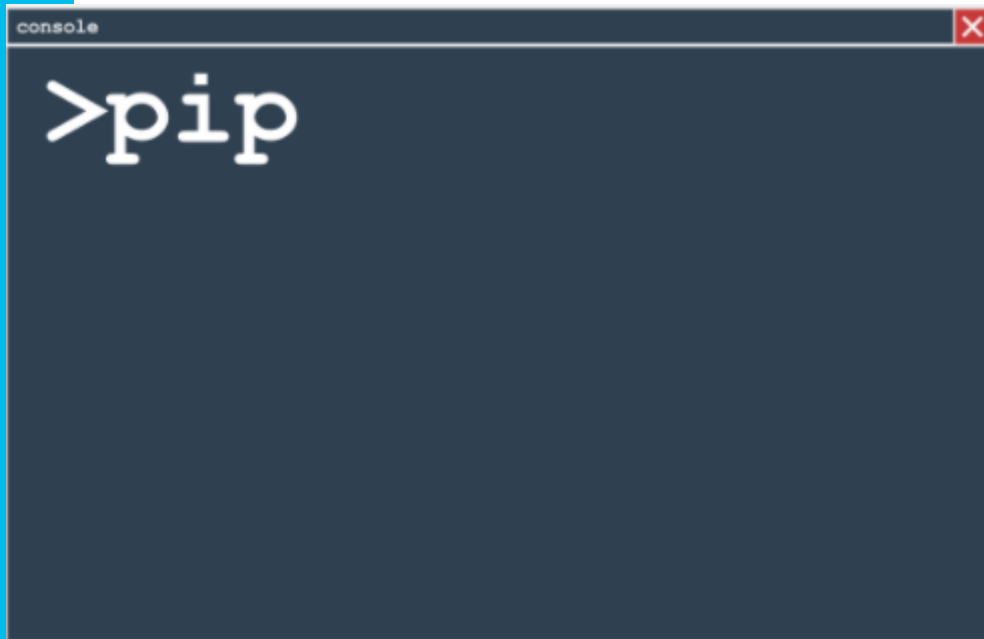
pip means “pip installs packages”

very famous recursive acronyms. One of them is Linux, which can be interpreted as “Linux is Not Unix”.





How to install pip





pip on MS Windows

To verify that we haven't misled you, try to do this:

- open the Windows console (CMD or PowerShell, whatever you prefer)
- execute the following command:

pip --version

```
Command Prompt

C:\Users\user>pip --version
pip 19.2.3 from c:\program files\python3\lib\site-packages\pip (python 3.8)

C:\Users\user>
```



pip on Linux

Open the terminal window and issue the following command:

pip --version

```
user@host ~ $ pip --version
pip 20.0.2 from /usr/lib64/python2.7/site-packages/pip (python 2.7)
user@host ~ $
```

pip3 --version

```
user@host ~ $ pip3 --version
pip 20.0.2 from /usr/lib64/python3.6/site-packages/pip (python 3.6)
user@host ~ $
```

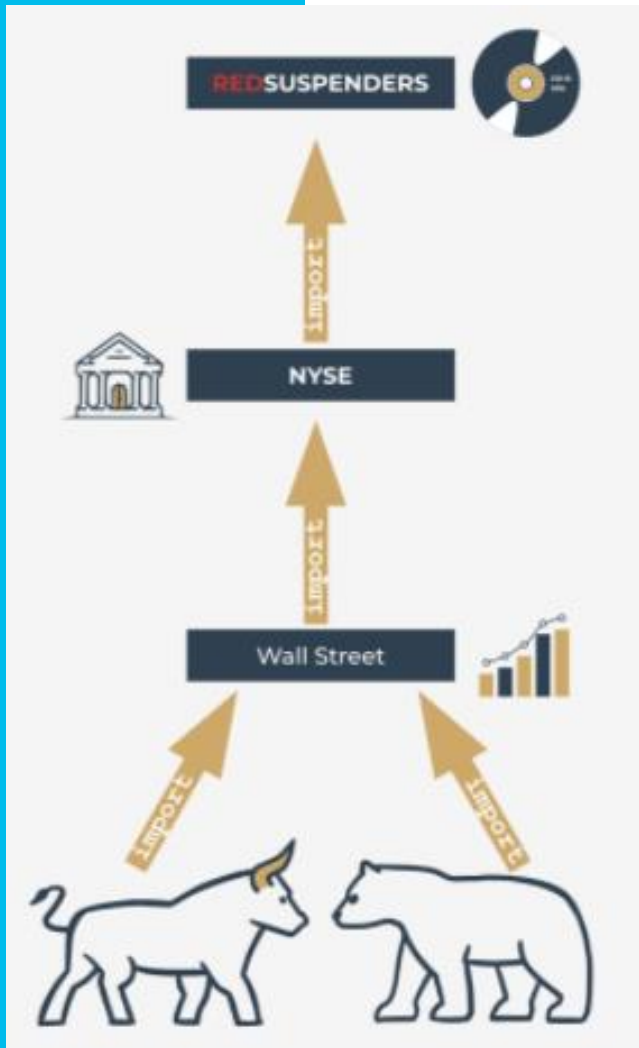
If not found -

sudo apt-get update

sudo apt-get install python3-pip



Dependencies



We can say that dependency is a phenomenon that appears every time you're going to use a piece of software that relies on other software. Note that dependency may include (and generally does include) more than one level of software development.



```
C:\Users\user>pip help

Usage:
  pip <command> [options]

Commands:
  install      Install packages.
  download     Download packages.
  uninstall    Uninstall packages.
  freeze       Output installed packages in requirements format.
  list         List installed packages.
  show         Show information about installed packages.
  check        Verify installed packages have compatible dependencies.
  config       Manage local and global configuration.
  search       Search PyPI for packages.
  cache        Inspect and manage pip's wheel cache.
  index        Inspect information available from package indexes.
  wheel        Build wheels from your requirements.
  hash         Compute hashes of package archives.
  completion   A helper command used for command completion.
  debug        Show information useful for debugging.
  help         Show help for commands.

General Options:
  -h, --help            Show help.
  --isolated            Run pip in an isolated mode, ignoring environment variables.
  -v, --verbose         Give more output. Option is additive, and can be used up to 3 times.
  -V, --version         Show version and exit.
  -q, --quiet           Give less output. Option is additive, and can be used up to 3 times.
  --log <path>         Path to a verbose appending log.
  --no-input            Disable prompting for input.
```

Now we're ready to ask pip what it can do for us. Let's do it – issue the following command:

pip help

pip help *command*

pip list

How to use pip

```
Command Prompt

C:\Users\user>pip help

Usage:
  pip <command> [options]

Commands:
  install      Install packages.
  download     Download packages.
  uninstall    Uninstall packages.
  freeze       Output installed packages in requirements format.
  list         List installed packages.
  show         Show information about installed packages.
  check        Verify installed packages have compatible dependencies.
  config       Manage local and global configuration.
  search       Search PyPI for packages.
  wheel        Build wheels from your requirements.
  hash         Compute hashes of package archives.
  completion   A helper command used for command completion.
  debug        Show information useful for debugging.
  help         Show help for commands.
```



`pip show package_name`

`pip show pip`

`pip list`

How to use pip: continued

```
C:\Users\...>pip show pip
Name: pip
Version: 21.2.2
Summary: The PyPA recommended tool for installing Python packages.
Home-page: https://pip.pypa.io/
Author: The pip developers
Author-email: distutils-sig@python.org
License: MIT
Location: c:\users\...\appdata\local\programs\python\python39\lib\site-packages
Requires:
Required-by:
```



The power of pip

```
pip search pip  
pip search pandas
```

```
^^^^^^^^^^^^^^^^^^^^  
***it doesn't works***
```

If you want to search through PyPI in order to find a desired package. This kind of search is initiated by the following URL in your browser:

<https://pypi.org/search/>



```
Command Prompt
C:\Users\user>pip install --user pygame
Collecting pygame
  Downloading pygame-1.9.6-cp38-cp38-win32.whl (4.4 MB)
    | 4.4 MB 88 kB/s
Installing collected packages: pygame
Successfully installed pygame-1.9.6
C:\Users\user>
```

How to use pip: continued

- 1) **pip** install **pygame**
or **pip** install --user
pygame
- 2) **pip** show pygame
- 3) **pip** list

Two possible scenarios may be put into action now:

- you want to install a new package for you only – it won't be available for any other user (account) existing on your computer; this procedure is the only one available if you can't elevate your permissions and act as a system administrator;
- you've decided to install a new package system-wide – you have administrative rights and you're not afraid to use them.

<https://www.pygame.org>



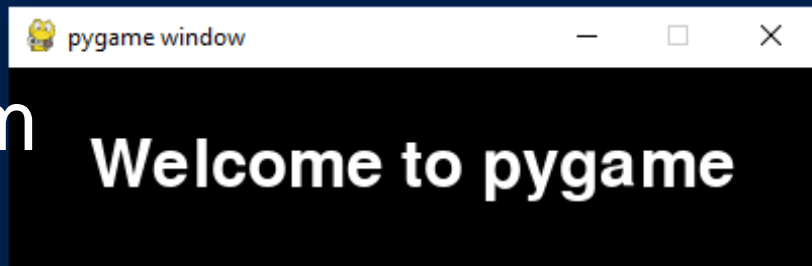
```
import pygame

run = True
width = 400
height = 100
pygame.init()
screen = pygame.display.set_mode((width, height))
font = pygame.font.SysFont(None, 48)
text = font.render("Welcome to pygame", True, (255, 255, 255))
screen.blit(text, ((width - text.get_width()) // 2, (height - text.get_height())
pygame.display.flip()
while run:
    for event in pygame.event.get():
        if event.type == pygame.QUIT\
        or event.type == pygame.MOUSEBUTTONUP\
        or event.type == pygame.KEYUP:
            run = False
```




```
pygame 2.0.1 (SDL 2.0.14, Python 3.9.6)  
Hello from the pygame community. https://www.pygame.org/contribute.html
```

How to use pip: a simple test program





The pip install

The pip install has two important additional abilities:

it is able to update a locally installed package – e.g., if you want to make sure that you're using the latest version of a particular package, you can run the following command:

pip install -U package_name - where -U means update.

Note: this form of the command makes use of the **--user** option for the same purpose as presented previously;



The pip install

The pip install has two important additional abilities:

it is able to install a user-selected version of a package (pip installs the newest available version by default); to achieve this goal you should use the following syntax:

```
pip install pygame==1.9.2
```



How to use pip: continued

```
Command Prompt

C:\Users\user>pip uninstall pygame
Found existing installation: pygame 1.9.6
Uninstalling pygame-1.9.6:
  Would remove:
    c:\users\user\appdata\roaming\python\python38\include\pygame\_camera.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\_pygame.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\_surface.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\bitmask.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\camera.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\fastevents.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\font.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\freetype.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\mask.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\mixer.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\palette.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\pgarrinter.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\pgbufferproxy.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\pgcompat.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\pgopengl.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\pygame.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\scrap.h
    c:\users\user\appdata\roaming\python\python38\include\pygame\surface.h
    c:\users\user\appdata\roaming\python\python38\site-packages\pygame-1.9.6.dist-info\*
    c:\users\user\appdata\roaming\python\python38\site-packages\pygame\*
Proceed (y/n)? y
  Successfully uninstalled pygame-1.9.6

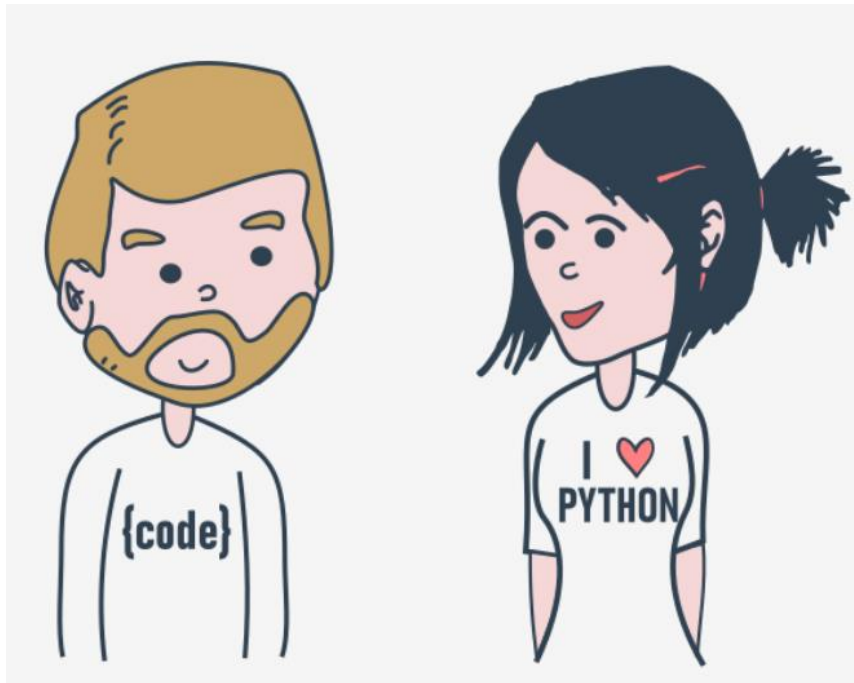
C:\Users\user>
```

pip uninstall *package_name*

pip uninstall pygame



Use pip! numpy



Find, install and publish Python packages with the Python Package Index:

<https://pypi.org>



Key takeaways

1. A repository (or repo for short) designed to collect and share free Python code exists and works under the name Python Package Index (PyPI) although it's also likely that you come across a very niche name The Cheese Shop. The Shop's website is available at <https://pypi.org/>.

2. To make use of **The Cheese Shop** the specialized tool has been created and its name is pip (pip installs packages while pip stands for... ok, don't mind). As pip may not be deployed as a part of standard Python installation, it is possible that you will need to install it manually. Pip is a console tool.

3. To check pip's version one the following commands should be issued:

pip --version

or

pip3 --version



Key takeaways

4. List of main pip activities looks as follows:

pip help operation - shows brief pip's description;

pip list - shows list of currently installed packages;

pip show package_name - shows package_name info including package's dependencies;

pip install name - installs name system-wide (expect problems when you don't have administrative rights);

pip install --user name - install name for you only; no other your platform's user will be able to use it;

pip install -U name - updates previously installed package;

pip uninstall name - uninstalls previously installed package;



ЗАДАНИЯ

- 1) Прорешать всю классную работу
- 2) Выполнить все домашние задания

Почитать:

1) Byte of Python - повторяем

**) Structuring Your Project:

Крайний срок сдачи 10/10 в 21:00 (можно раньше, но не позже)

<https://docs.python-guide.org/writing/structure/>



ЗАДАНИЯ

Название файлов, которые вы отправляете мне в telegram:

+ скриншот работоспособности кода мне в ЛС

Формат сообщения которое вы присылаете мне

(после полного выполнения домашнего задания, только один раз) в Telegram:

Добрый день/вечер. Я Вася Пупкин, и это мои домашние задания к лекции 7 часть
1 про pip.

И отправляете файл

Крайний срок сдачи DD/MM в 21:00 (можно раньше, но не позже)

<https://docs.github.com/articles/using-pull-requests>



Tap to links
if you want to know
more

Work with files:

https://www.youtube.com/watch?v=oRr_bEXJbV0

https://www.w3schools.com/python/python_ref_file.asp

Books for great peoples:

[992 pages of "real" python](#)

[993 pages of "real" python](#)

Watch this channel, useful things:

<https://www.youtube.com/c/egoroffchannel/playlists>

<https://www.w3schools.com/python/default.asp>

https://www.youtube.com/channel/UCr-KbmZWfDyTbqT_clZmhfw/videos

Q&A

Create your
possibilities.
Bye bye.

