

# Pycat Guides

Welcome! Please click or scroll to the section you need.

- [Pycat Installation Guide](#)
- [Pycat Usage Guide](#)
- [Pycat Upgrade Guide](#)

## Pycat Installation Guide

Make sure you perform these steps in order!

You only have to perform these steps one time! Next time you want to code, scroll down to the [Pycat Usage Guide](#)

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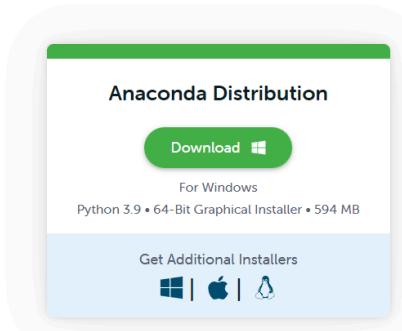
### 1. Install Anaconda

- Download: <https://www.anaconda.com/products/distribution>

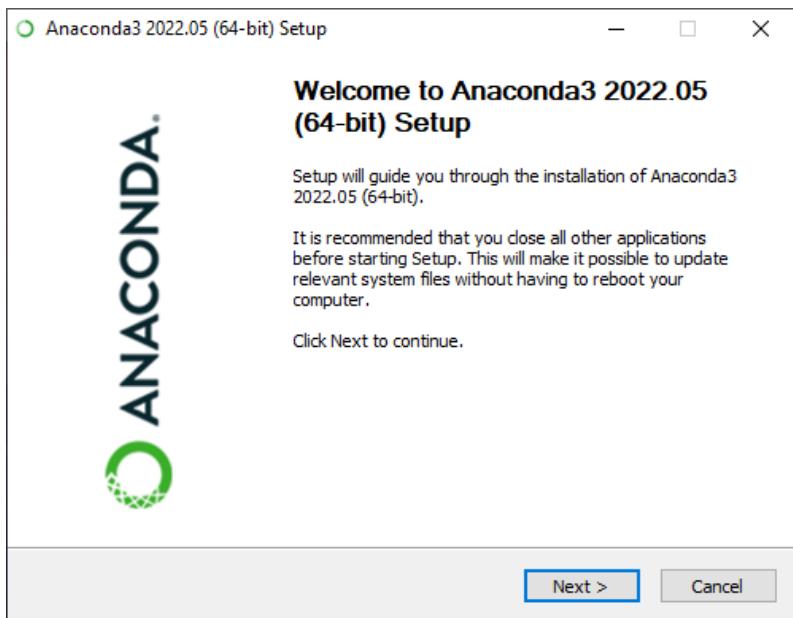
Individual Edition is now

### ANACONDA DISTRIBUTION

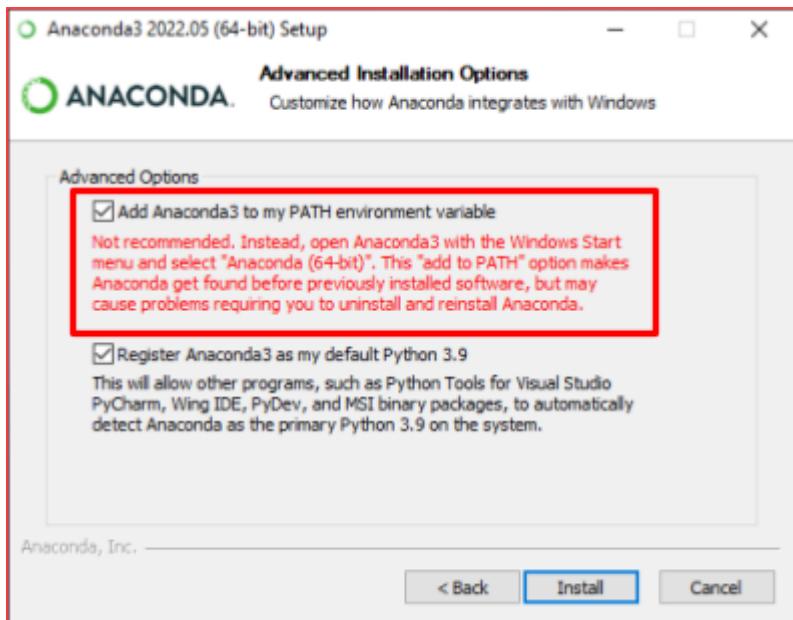
The world's most popular open-source Python distribution platform



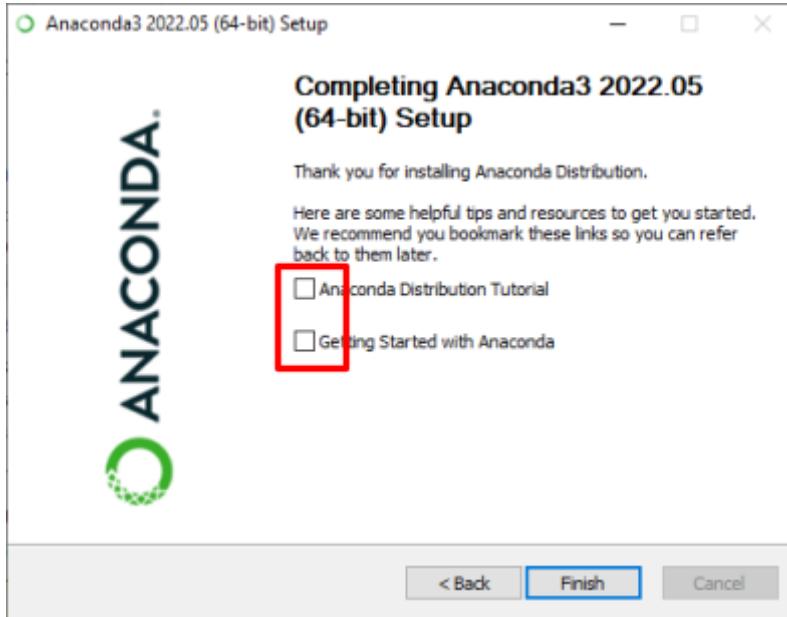
- Run the installer.



- Make sure you tick this box! You do not need to change any other options.

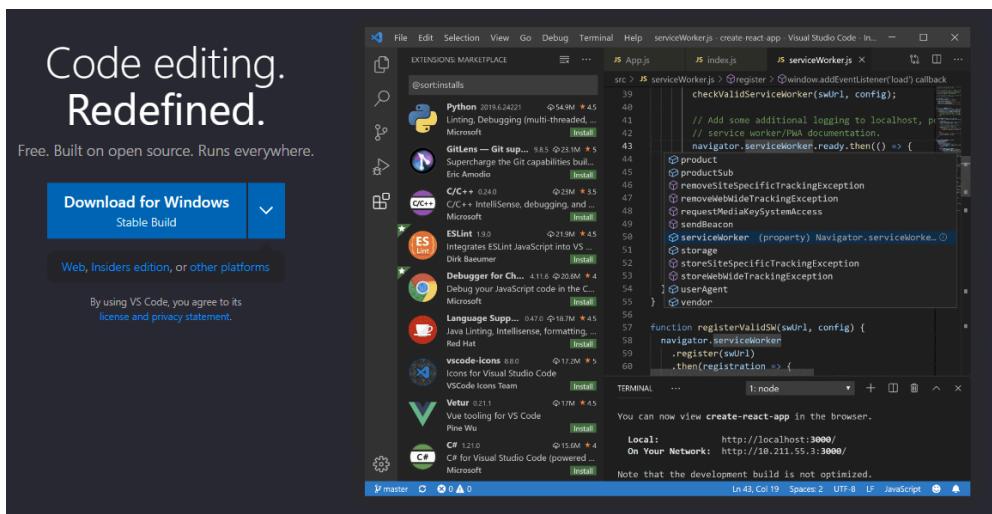


- Installation can take a long time, please wait!
- At the end, untick these boxes.

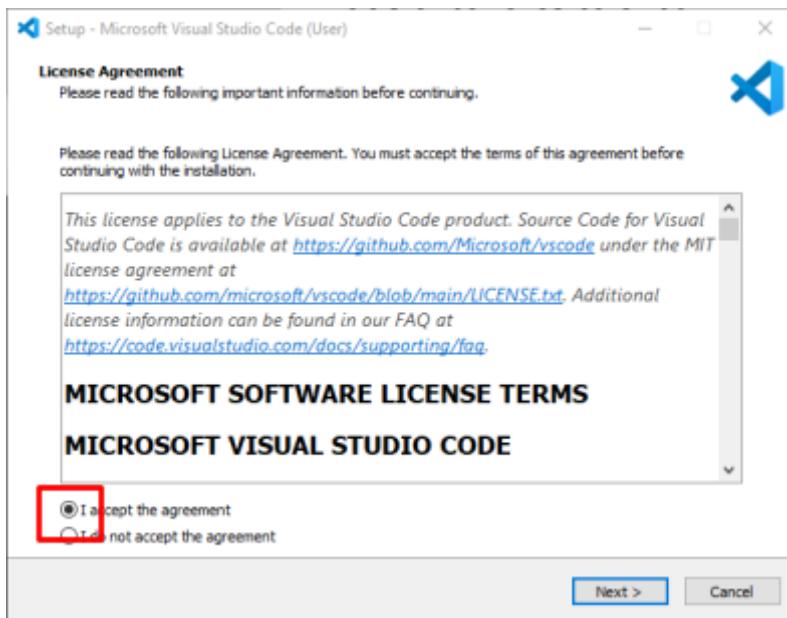


## 2. Install VS Code

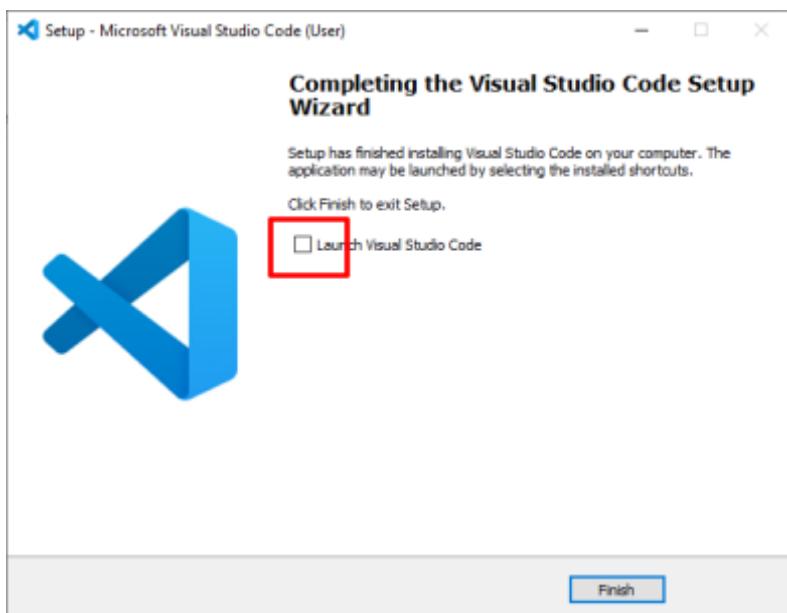
- Download: <https://code.visualstudio.com/download>



- Run the installer, you do not have to change any other options.



- At the end, untick this box



### 3. Install GIT

- Download: <https://git-scm.com/downloads>

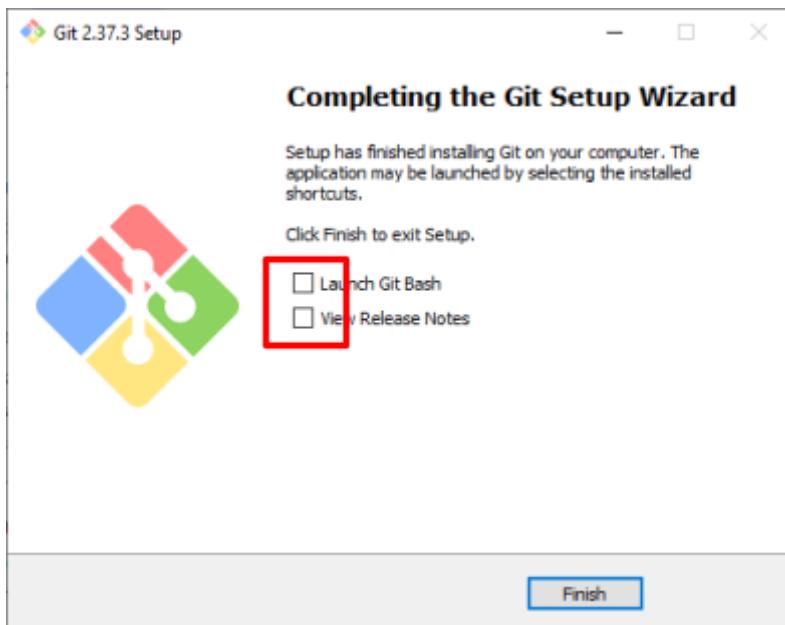
The entire [Pro Git book](#)  
written by Scott Chacon and

The entire [Pro Git book](#)  
written by Scott Chacon and

- Run the installer, you do not have to change any options.

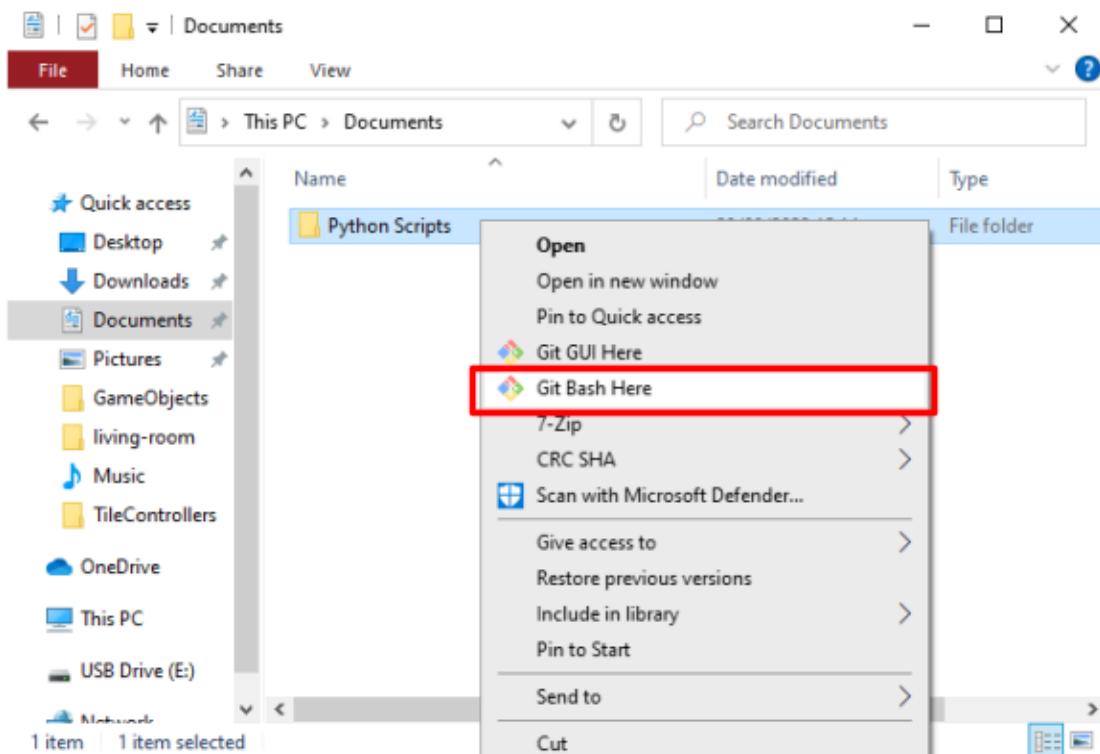


- At the end, untick these boxes.



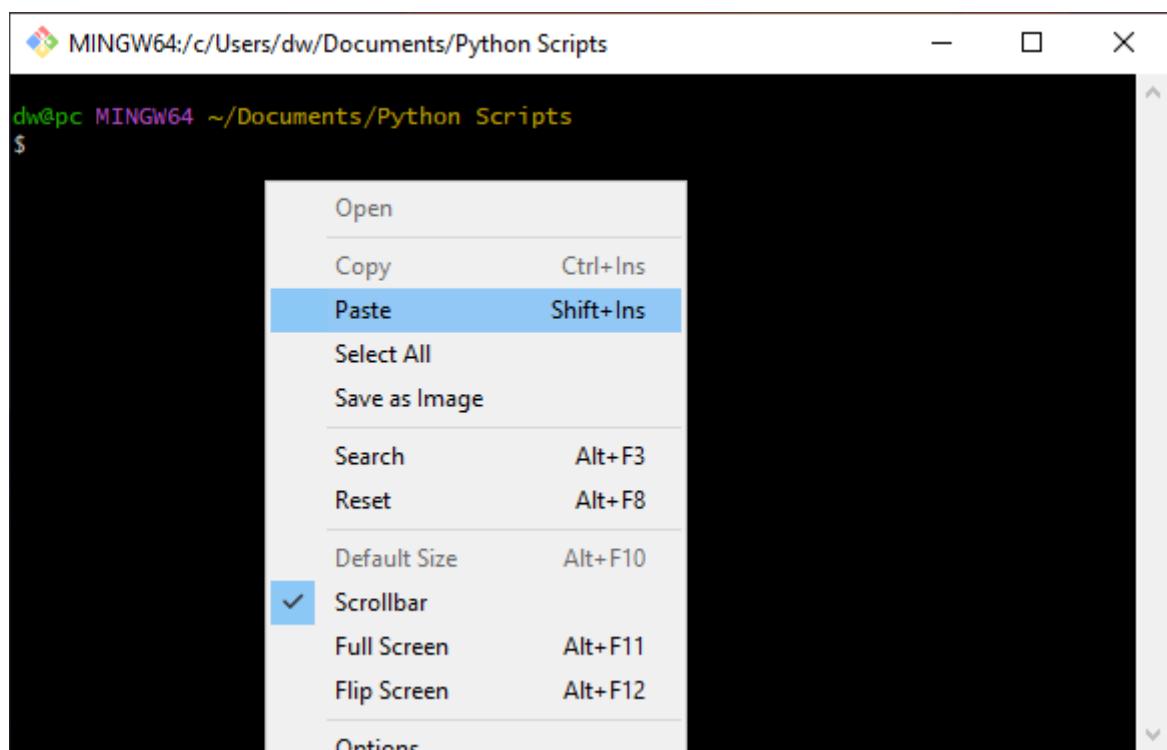
#### 4. Install pycat

- Open your Documents folder and right-click on “Python Scripts”. Select “Git Bash Here”.



- Copy the green text below. Right-click in the window and choose paste. Press enter on the keyboard.

```
pip install git+https://bitbucket.org/dwhite0/pycat.git -U
```



```
dw@pc MINGW64 ~/Documents/Python Scripts
$ pip install git+https://bitbucket.org/dwhite0/pycat.git -U
```

```
MINGW64:/c/Users/dw/Documents/Python Scripts
emp\pip-req-build-9is6wi_b
  Running command git clone -q https://bitbucket.org/dwhite0/pycat.git 'C:\Users\dw\AppData\Local\Temp\pip-req-build-9is6wi_b'
    Resolved https://bitbucket.org/dwhite0/pycat.git to commit d1162234ffd4356333adfa50df5965a1458aee22
Collecting pyglet>=1.5.15
  Downloading pyglet-1.5.27-py3-none-any.whl (1.1 MB)
Requirement already satisfied: numpy>=1.20.1 in c:\users\dw\anaconda3\lib\site-packages (from pycat==0.0.33) (1.21.5)
Requirement already satisfied: Pillow>=8.1.0 in c:\users\dw\anaconda3\lib\site-packages (from pycat==0.0.33) (9.0.1)
Building wheels for collected packages: pycat
  Building wheel for pycat (setup.py): started
  Building wheel for pycat (setup.py): finished with status 'done'
  Created wheel for pycat: filename=pycat-0.0.33-py3-none-any.whl size=71152 sha256=2bc6783baa44598ccfd411a7ff9e34f8f5a5aac4ea3602793112609d7201ba80
  Stored in directory: C:\Users\dw\AppData\Local\Temp\pip-ephem-wheel-cache-ijmbbw35\wheels\b2\bf\92\121e3cd9b5626cc588bdcae6512e12fb35bda49279ac2a7ad9
Successfully built pycat
Installing collected packages: pyglet, pycat
Successfully installed pycat-0.0.33 pyglet-1.5.27

dw@pc MINGW64 ~/Documents/Python Scripts
$
```

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## 5. Setup VS Code

- In the window from the last step, type the green text below:

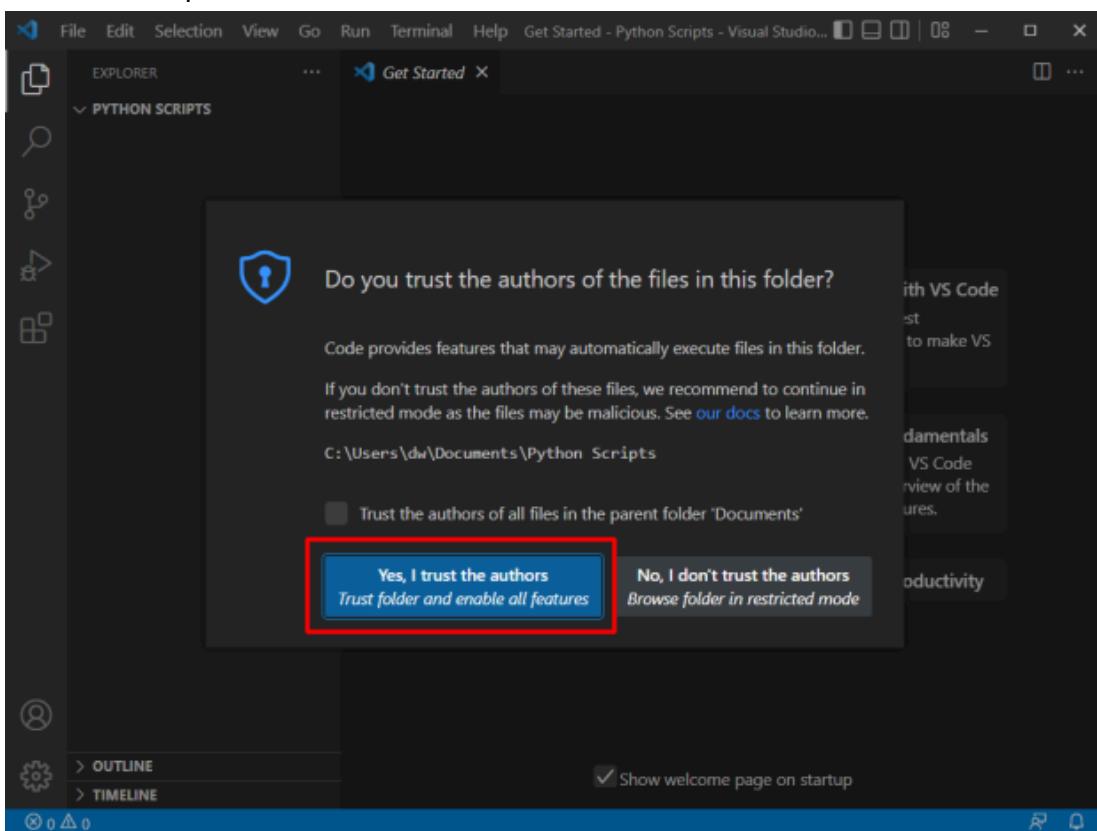
```
code .
```

and then press enter on the keyboard.

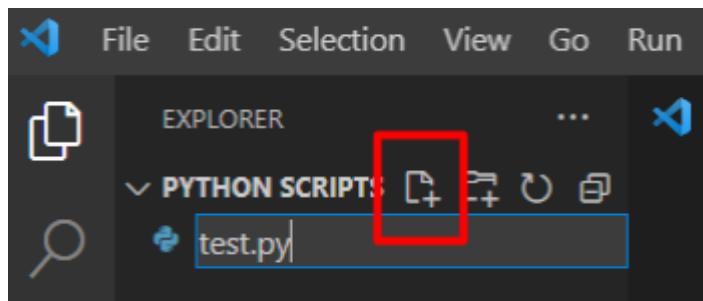
```
emp\pip-req-build-9is6wi_b
  Running command git clone -q https://bitbucket.org/dwhite0/pycat.git 'C:\Users\dw\AppData\Local\Temp\pip-req-build-9is6wi_b'
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dfa50df5965a1458aee22
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256=2bc6783baa44598ccfd411a7ff9e34f8f5a5aac4ea3602793112609d7201ba80
  Stored in directory: C:\Users\dw\AppData\Local\Temp\pip-ephem-wheel-cache-ijmb
bw35\wheels\b2\bf\92\121e3cd9b5626cc588bdcae6512e12fb35bda49279ac2a7ad9
Successfully built pycat
Installing collected packages: pyglet, pycat
Successfully installed pycat-0.0.33 pyglet-1.5.27
```

dw@pc MINGW64 ~/Documents/Python Scripts  
\$ code .

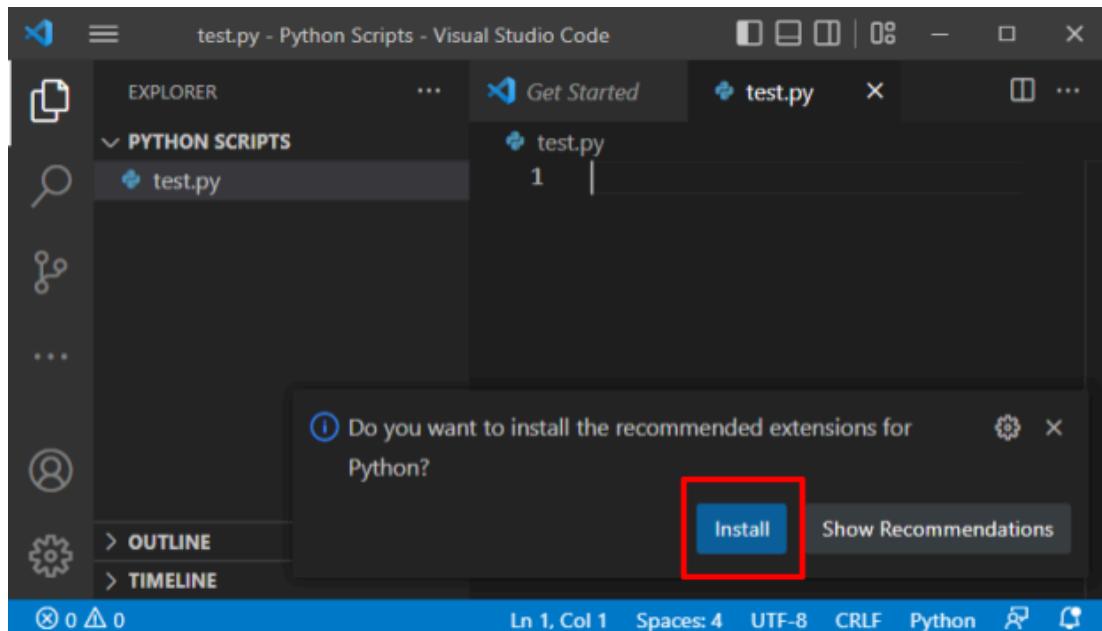
- VS code will open. Click “Yes, I trust the authors”.



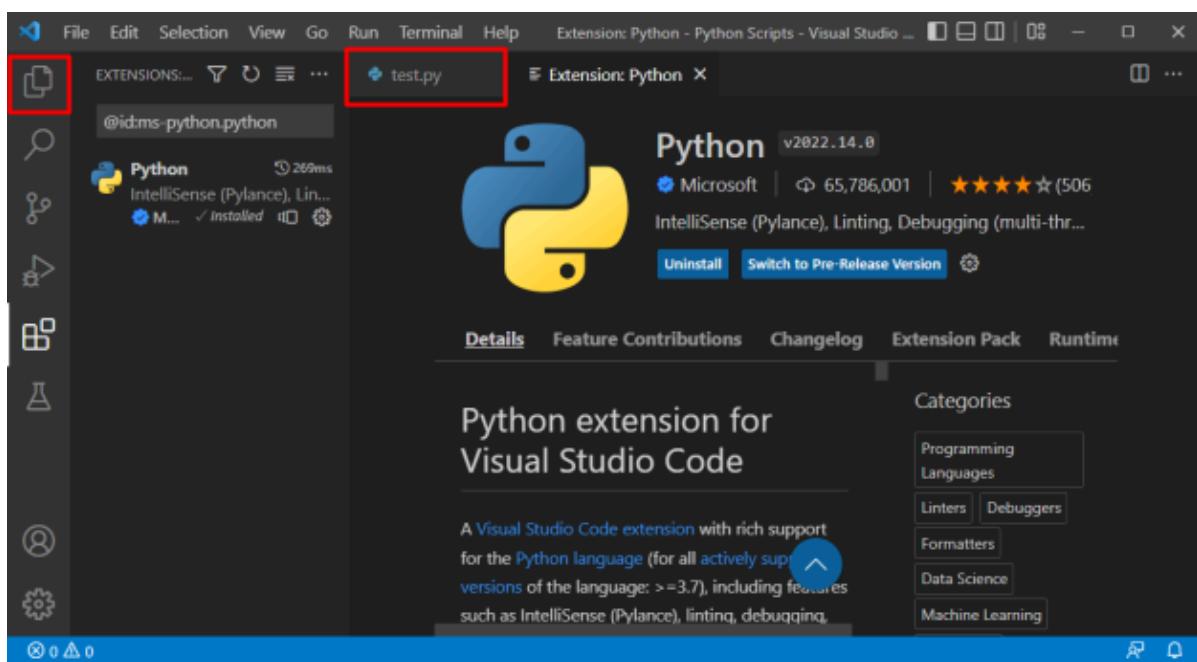
- Press the “New file button” and name the file `test.py`



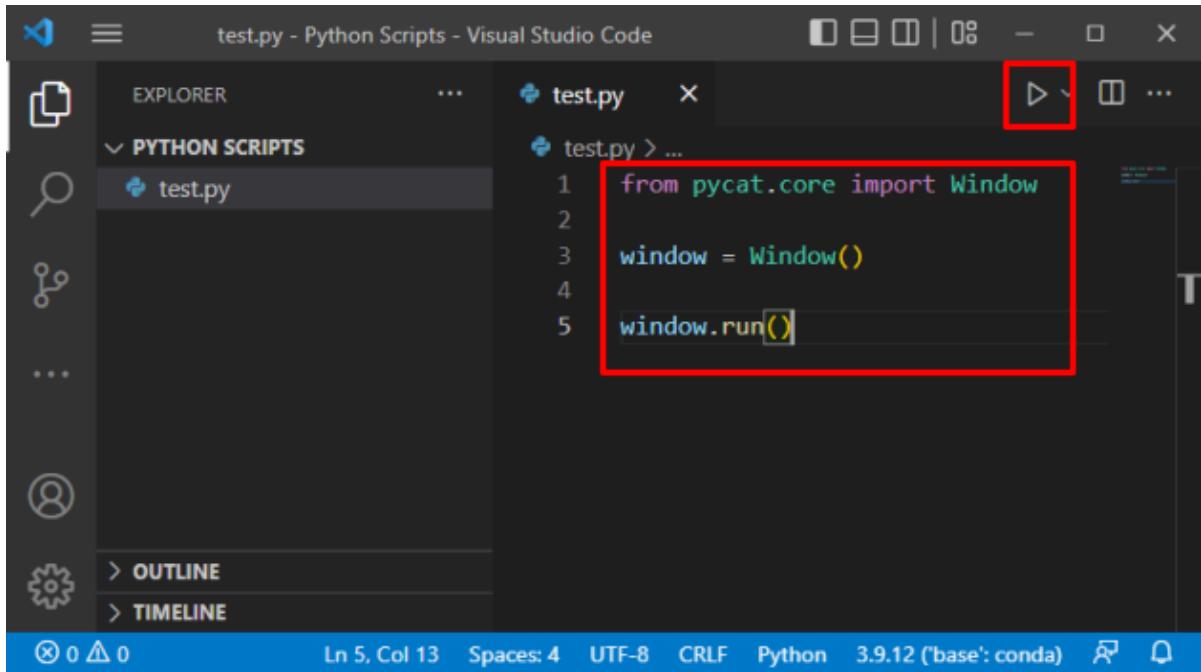
- After the new file opens, click "Install" on the Python extension popup.



- After it has finished installing, click the files button to get back to your code.



- Type in the test program, then save by pressing “Ctrl + S” together. Finally, run the program by clicking the “play” button.

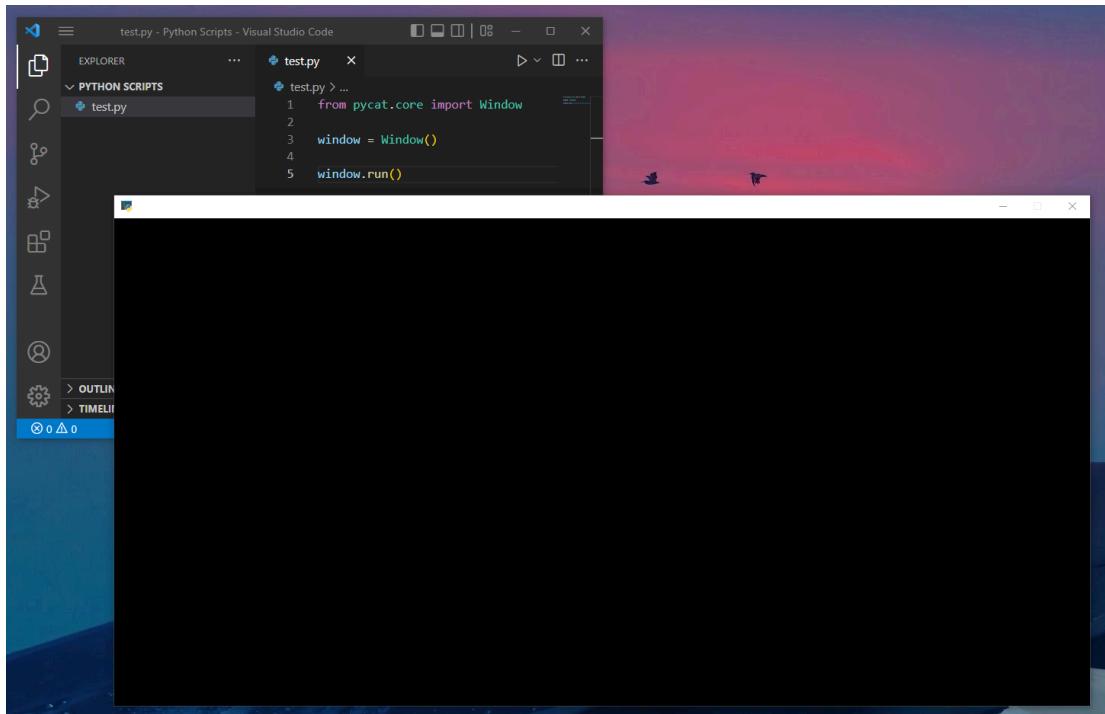


A screenshot of the Visual Studio Code interface. The title bar says "test.py - Python Scripts - Visual Studio Code". The left sidebar shows "EXPLORER" and "PYTHON SCRIPTS" with "test.py" selected. The main code editor window contains the following Python code:

```
1 from pycat.core import Window
2
3 window = Window()
4
5 window.run()
```

The status bar at the bottom shows "Ln 5, Col 13" and "Spaces: 4". The toolbar has a play button (represented by a triangle) which is highlighted with a red box. Another red box highlights the entire code block in the editor.

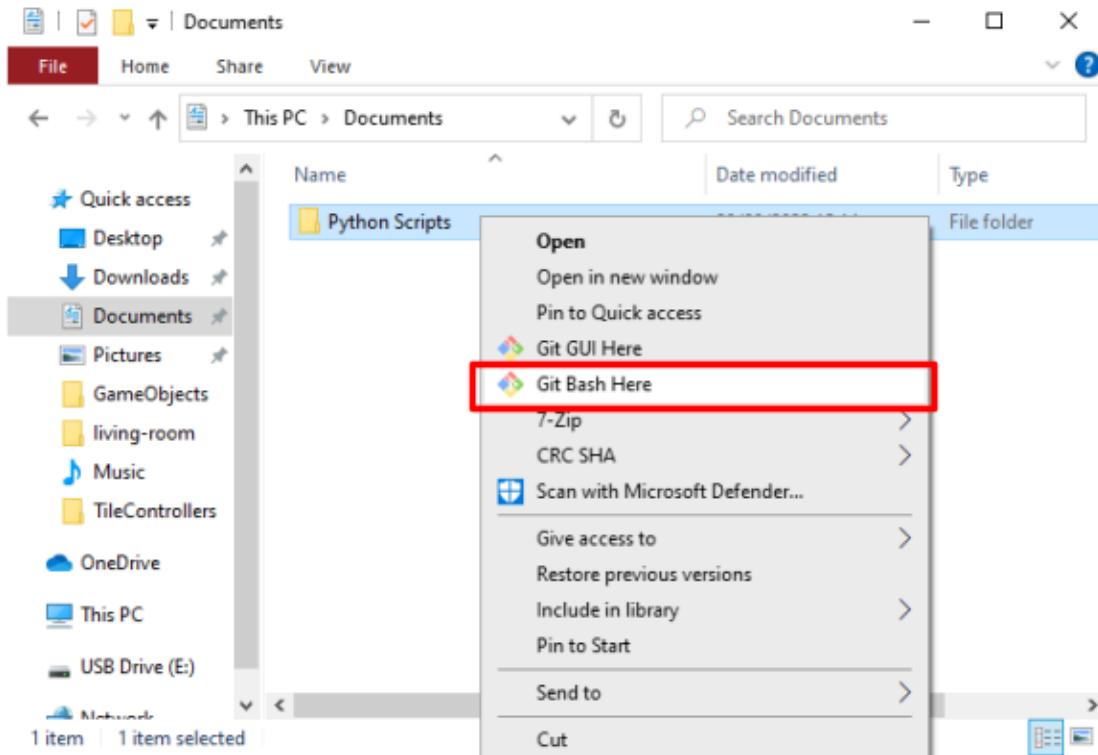
- You should see an empty black window appear. Congratulations! You have finished the installation.



# Pycat Usage Guide

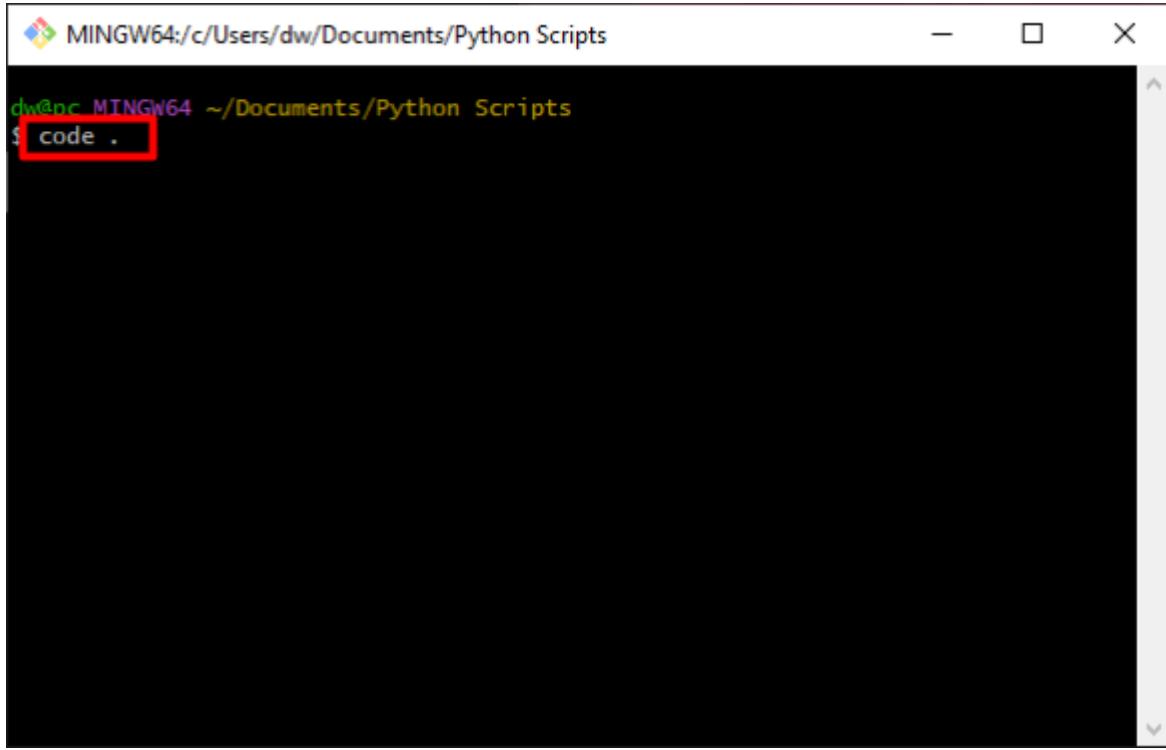
After you have completed the installation, you can start coding next time by following these steps.

- Open your Documents folder and right-click on “Python Scripts”. Select “Git Bash Here”.



- Type the green text below and then press enter on the keyboard.

```
code .
```



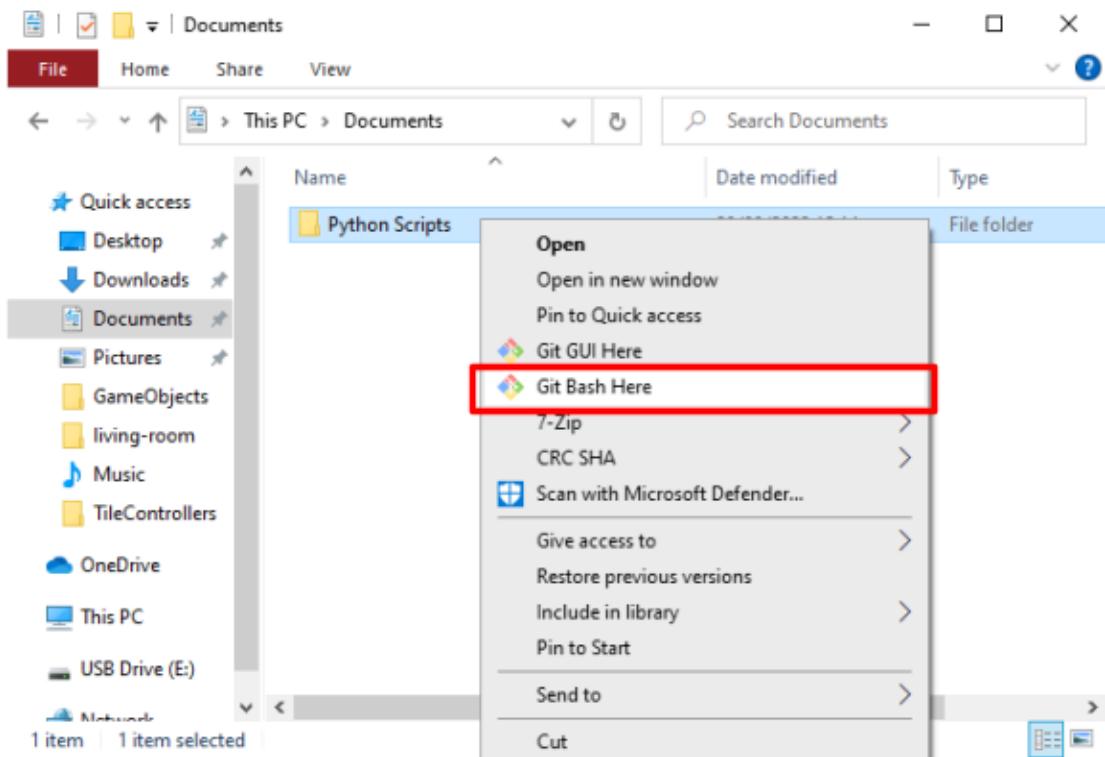
A screenshot of a terminal window titled "MINGW64:/c/Users/dw/Documents/Python Scripts". The window shows a command-line interface with the following text:  
dw@nuc MINGW64 ~/Documents/Python Scripts  
\$ code .

- VS Code will now open.

## Pycat Upgrade Guide

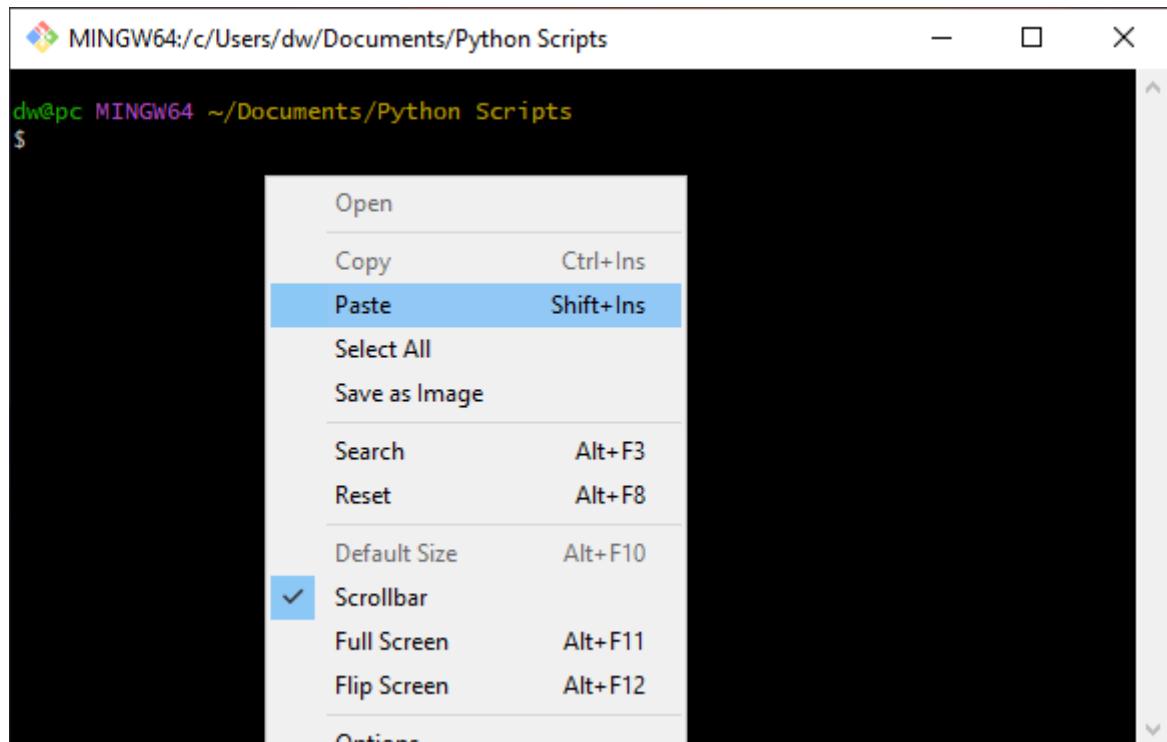
If you need to upgrade pycat to the latest version, please follow these steps.

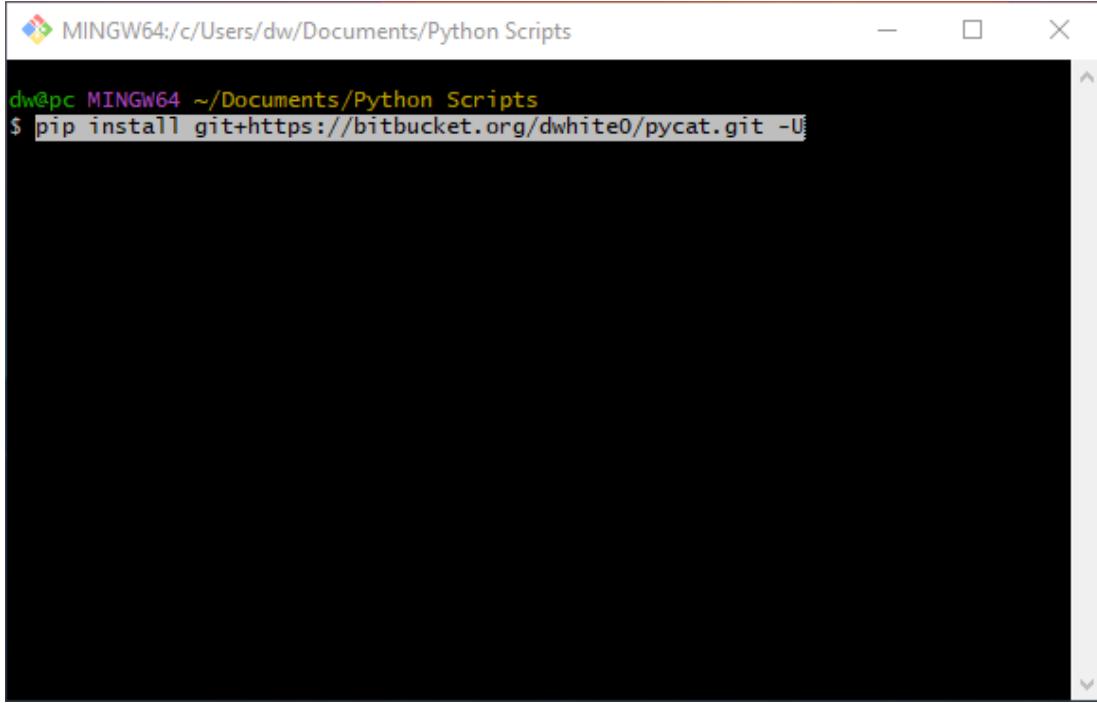
- Open your Documents folder and right-click on “Python Scripts”. Select “Git Bash Here”.



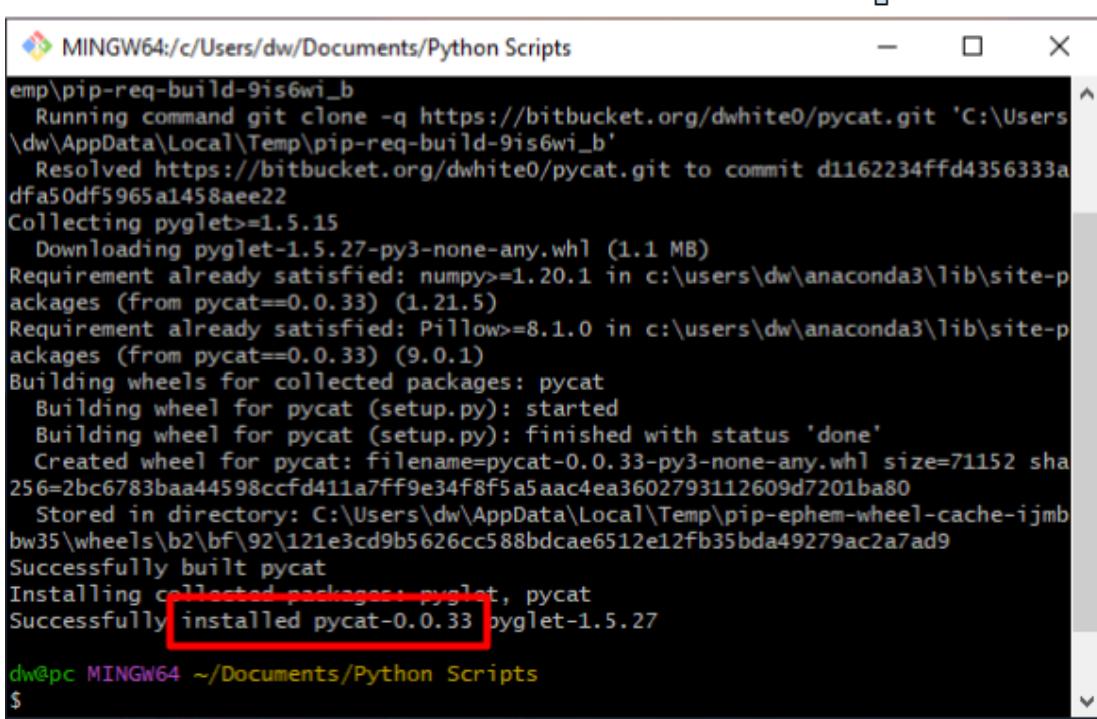
- Copy the green text below. Right-click in the window and choose paste. Press enter on the keyboard.

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pip install git+https://bitbucket.org/dwhite0/pycat.git -U
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  Stored in directory: C:\Users\dw\AppData\Local\Temp\pip-ephem-wheel-cache-ijmbbw35\wheels\b2\bf\92\121e3cd9b5626cc588bdcae6512e12fb35bda49279ac2a7ad9
Successfully built pycat
Installing collected packages: pyglet, pycat
Successfully installed pycat-0.0.33 pyglet-1.5.27

dw@pc MINGW64 ~/Documents/Python Scripts
$
```

- Your pycat is now up-to-date. You can check the version you have installed by looking at the red box above. In this case we have installed version 0.0.33.

## Homework 1

Basic program in pycat

```
from pycat.core import Window, Sprite, Scheduler, Color, RotationMode

window = Window()

class Elephant(Sprite):
    def on_create(self):
        self.scale = 100

    def on_update(self, dt):
        pass

window.create_sprite(Elephant)

window.run()
```

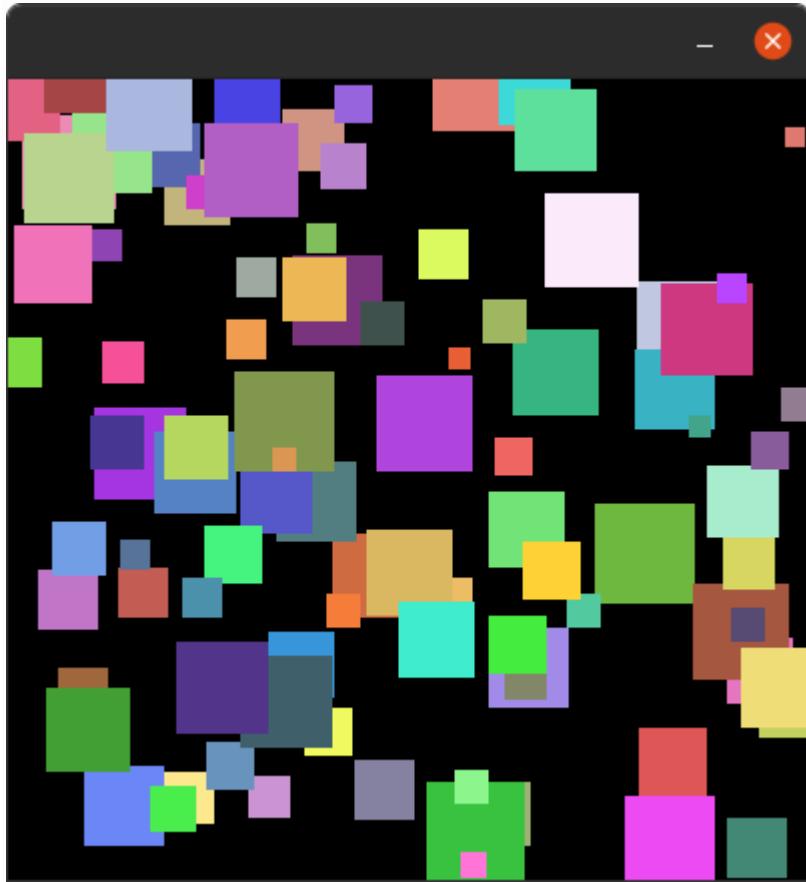
## Part 1

Email to: peanuts.homework@gmail.com

Write a python program using **pycat** to create an output like the picture below.

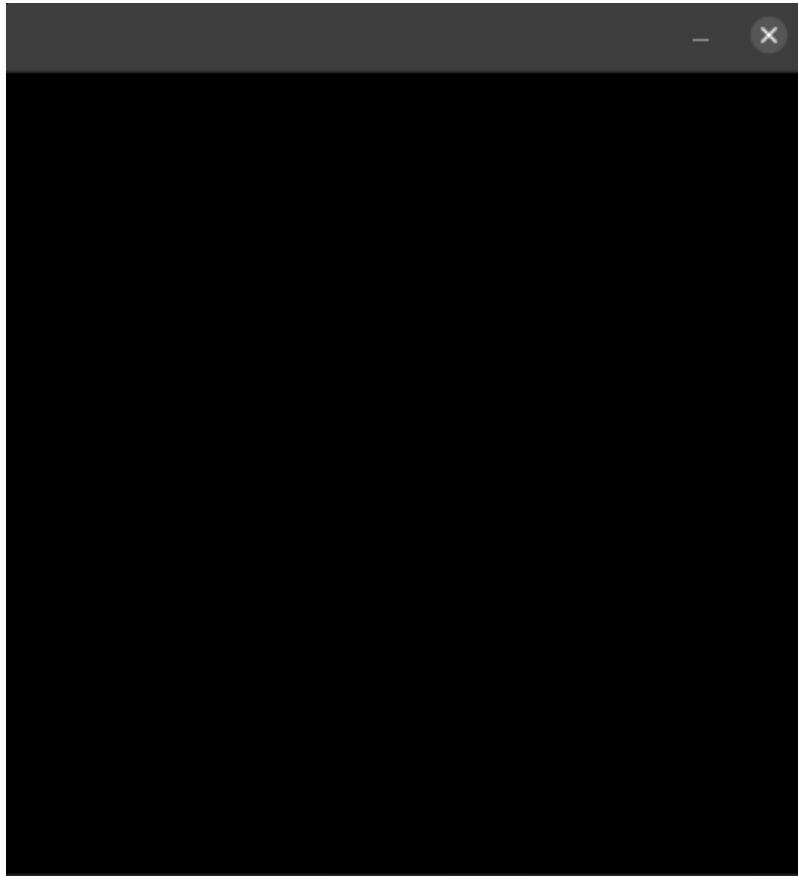
Hints:

- Use a `for` loop to create lots of sprites.
- Each sprite has a random position e.g. `self.go_to_random_position()`.
- Each sprite has a random scale, e.g. `self.scale = randint(a, b)`.  
Remember to add `from random import randint` to be able to use the `randint` function.
- Each sprite has a random color, e.g. `self.set_random_color()`.



## Part 2

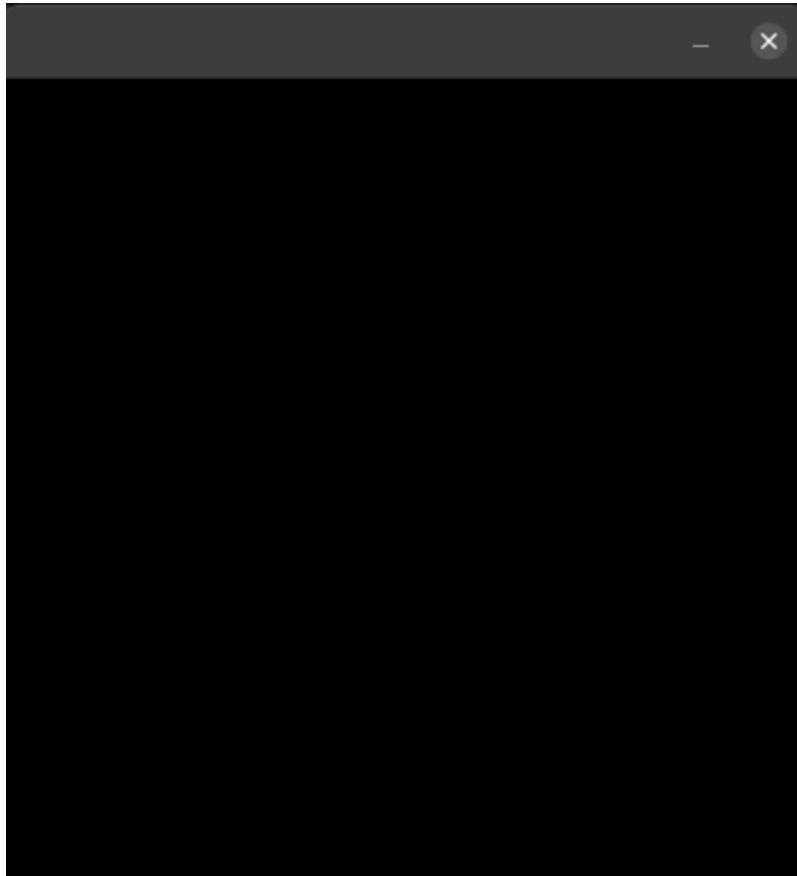
Extend your previous program so that the sprites slowly fall, as shown in the gif below.



## Part 3

Extend your previous program, as shown in the gif below, so that:

- some of the sprites fall
- some of the sprites move to the left



## Homework 2

Email to: peanuts.homework@gmail.com

Code snippet for Scheduler:

```
def create_particle():
    window.create_sprite(Particle)
Scheduler.update(create_particle, 1)
```

Code snippet to pick a random integer:

```
import random

class Particle(Sprite):
    def on_create(self):
        self.scale = random.randint(5,15)
```

Code snippet to make a random choice:

```
class Particle(Sprite):
    def on_create(self):
        dice = random.randint(1,2)
        if dice == 1:
            self.x = 200
        elif dice == 2:
            self.x = 400
```

## Sprites

Rocket: <https://www.kenney.nl/assets/space-shooter-extension>

Planets: <https://www.kenney.nl/assets/planets>

### Part 1

Write a pycat program to make an animation as in the video below. You should have a Rocket sprite and lots of Particle sprites for the rocket exhaust. You will need to use the scheduler.

[https://drive.google.com/file/d/1ZMN96GpGqnVhUcujGWAjMMEBBJEJ8hv-/view?usp=share\\_link](https://drive.google.com/file/d/1ZMN96GpGqnVhUcujGWAjMMEBBJEJ8hv-/view?usp=share_link)

### Part 2

Extend your pycat program with rocket exhaust as in the video below.

[https://drive.google.com/file/d/1hETZBCfNgND\\_5FM9sp\\_vt\\_gG-II3L1JO/view?usp=share\\_link](https://drive.google.com/file/d/1hETZBCfNgND_5FM9sp_vt_gG-II3L1JO/view?usp=share_link)

### Part 3

Extend your pycat program to add planets moving in the background. You will need to use the scheduler.

[https://drive.google.com/file/d/1PFNqfTbyezh08ZSHxJIpARn6XfQ5JH6/view?usp=share\\_link](https://drive.google.com/file/d/1PFNqfTbyezh08ZSHxJIpARn6XfQ5JH6/view?usp=share_link)