

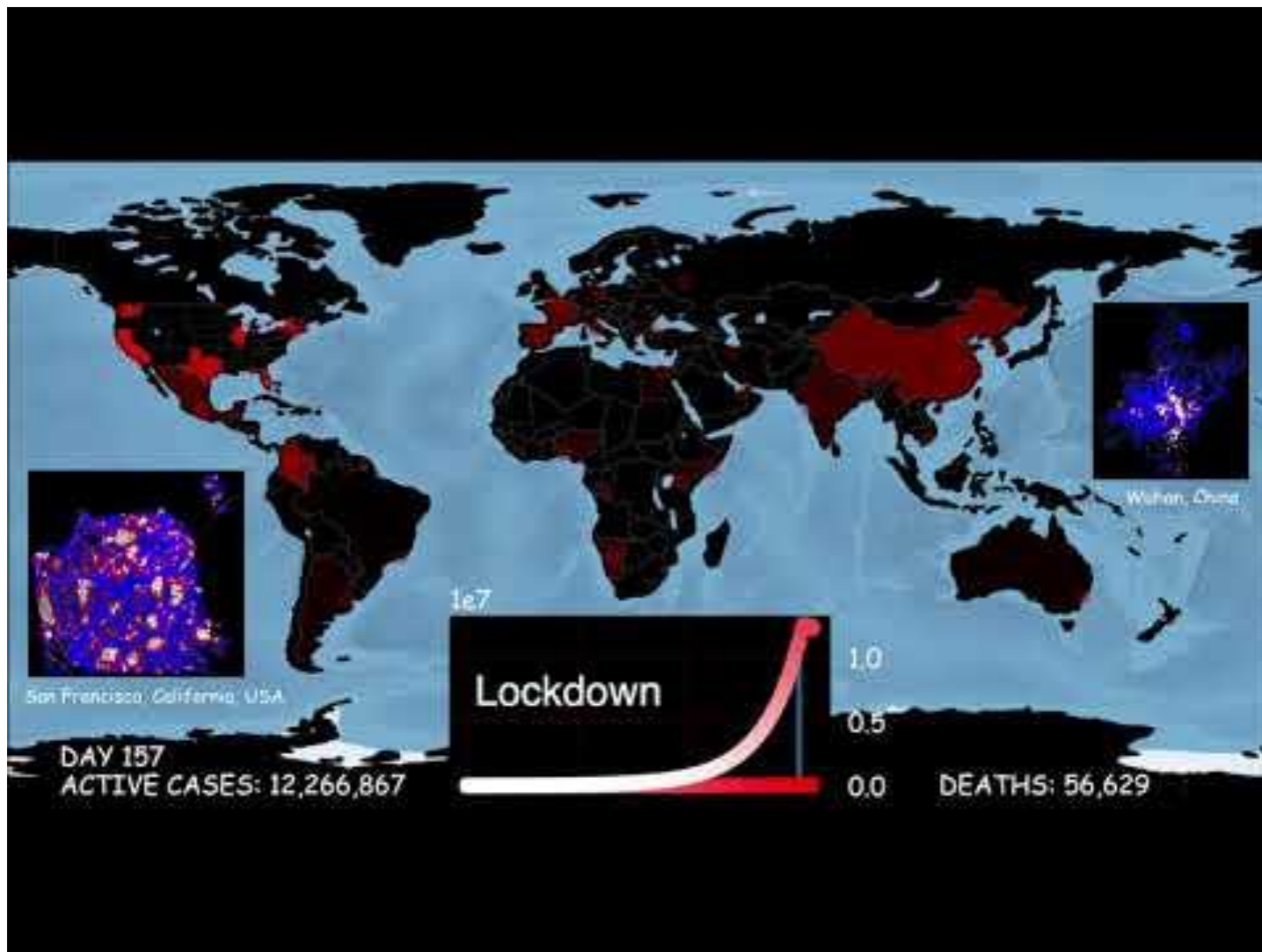


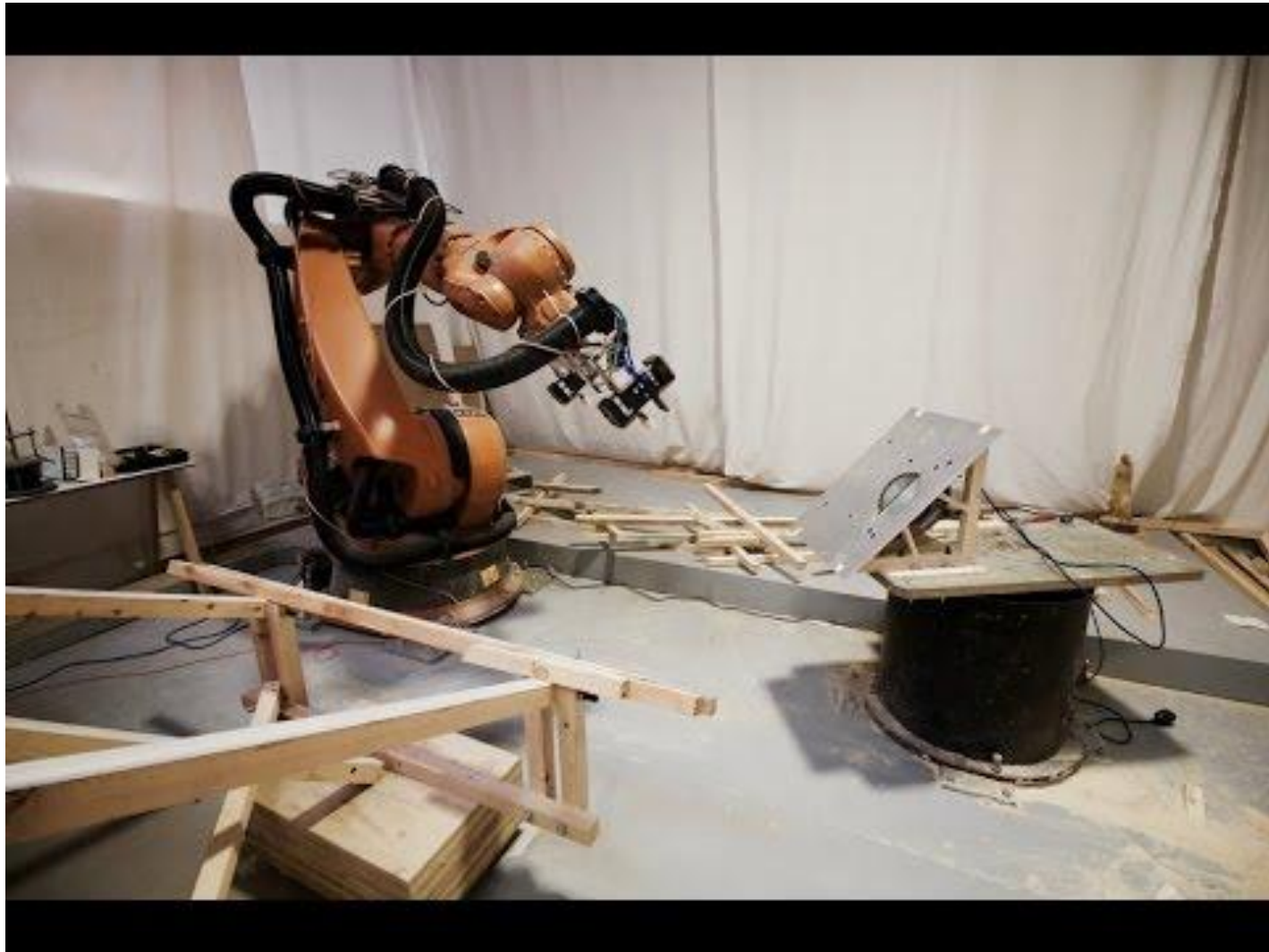
COMPUTER PROGRAMMING WITH PYTHON
MASTER PRE-COURSE SERIES
2021/2022

FACULTY DIEGO PAJARITO

Programming

It's role in Advanced architecture







CITIES, REIMAGINED

Location Intelligence Platform for Smart Cities

UrbanFootprint streamlines urban planning, mobility, and emergency response with actionable data for all U.S. locations. Map and analyze scenario impacts with ease.

Source: <https://urbanfootprint.com/>

Some examples:

OSM

Wikipedia

Smart citizen kit

Natural Earth

Big Data UN Working group

City level open data repos

Programming

Course fundamentals

Methodology:

A combination of theoretical inputs contrasted against the direct implementation of code snippets to give students hands-on experience.

A series of guided tasks from preparing the development environment to write python scripts to multiple programming sessions.

Sessions will introduce students to everyday actions for programming, data analysis and physical computing.

Computers are dumb and need humans to tell what and how to do relevant stuff

We are unable to understand computer files

It is cool not to build our own software (e.g., spreadsheets) to plot data

We want to build robots and conquer the world

Having such a skill in a CV is appealing for companies

What is the average age of students attending this course?

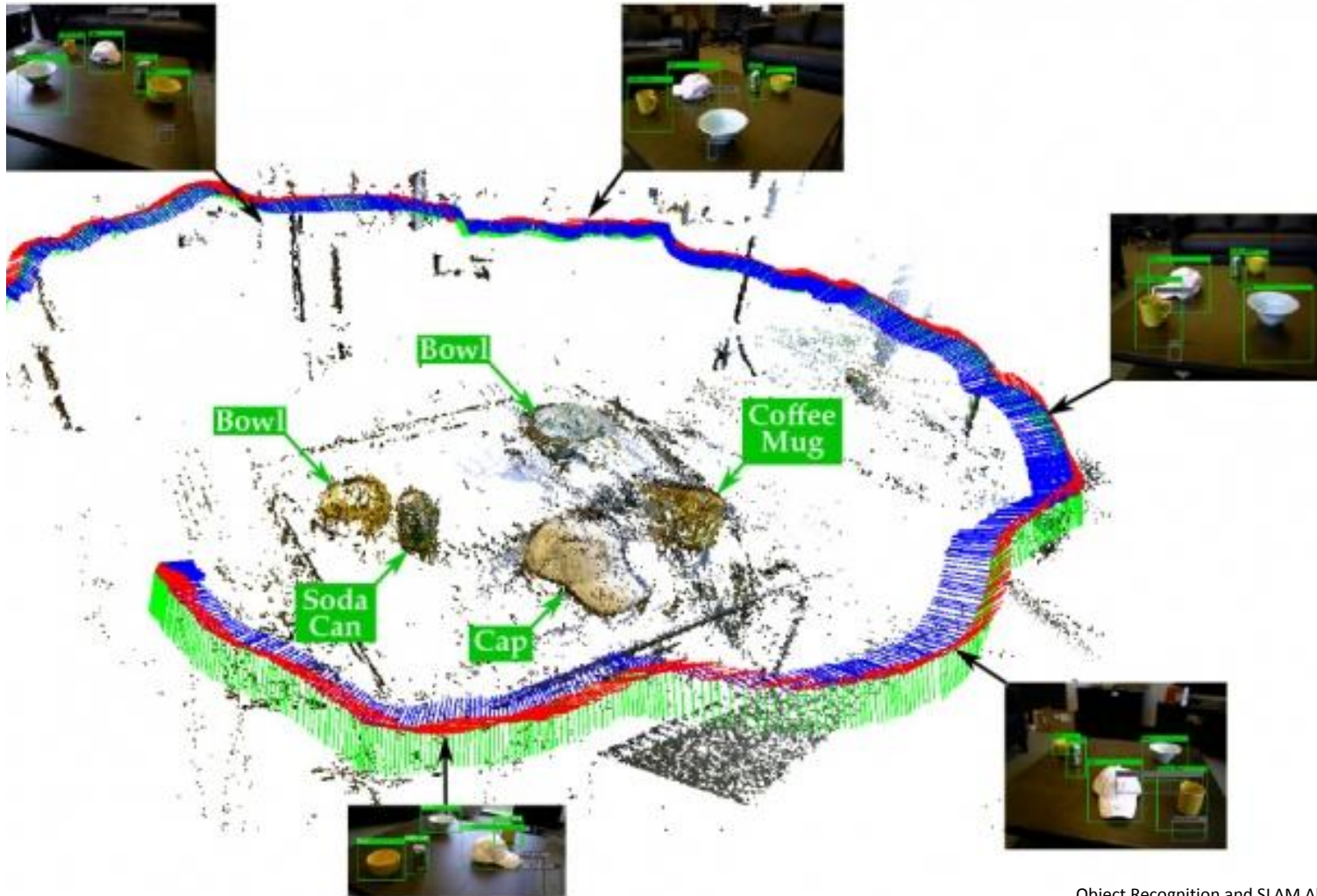
What is the average age of master students in Spain?

From where are students mostly attending this course?

How many cars and bikes crossed during the green light?

Where are COVID-19 deaths happening?

Which cities offer the best living conditions?



Object Recognition and SLAM Algorithm, from [MIT](#)



Frictions inhibiting urban cyclists, from [Diego Pajarito](#)

Natural language:

Karl has 5 apples and Anne has 7 bananas.
Show how many fruits they have.

Java

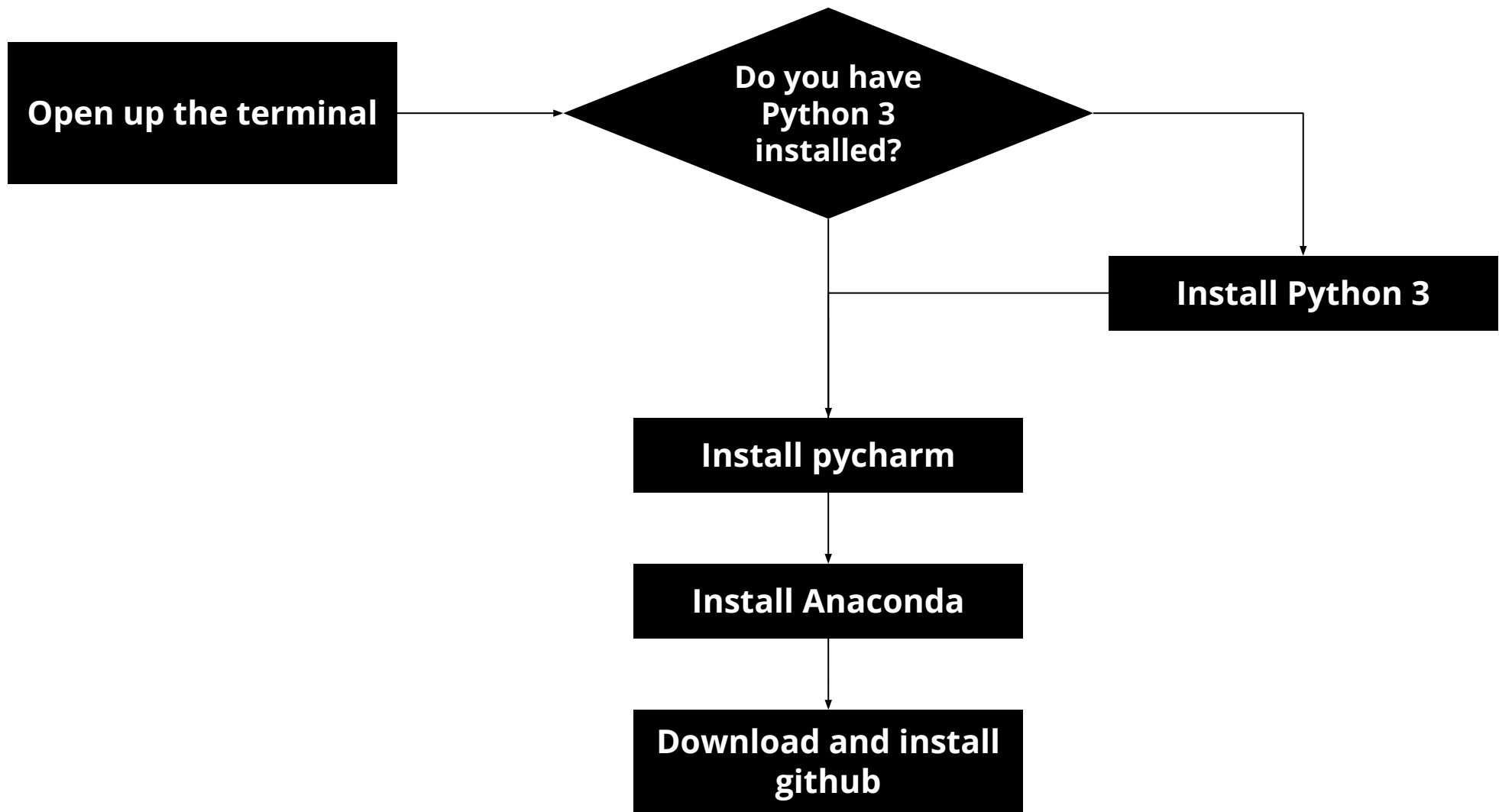
```
int karl_apple = 5;  
int anne_bananas = 7;  
int fruits = karl_apple + anne_bananas;  
System.out.println(fruits);
```

Python

```
karl_apple = 5  
anne_bananas = 7  
fruits = karl_apple + anne_bananas  
print (fruits)
```

Set up

All the stuff we need to code



Open up the terminal console

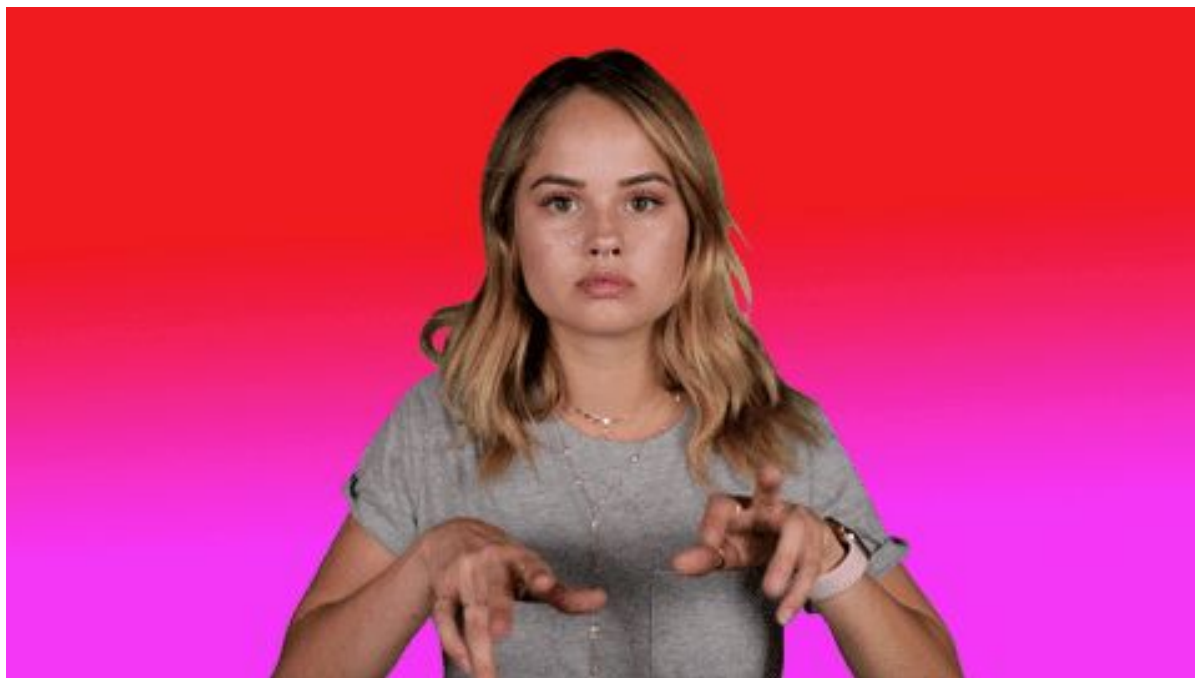
This is the basic tool to interact with the OS.

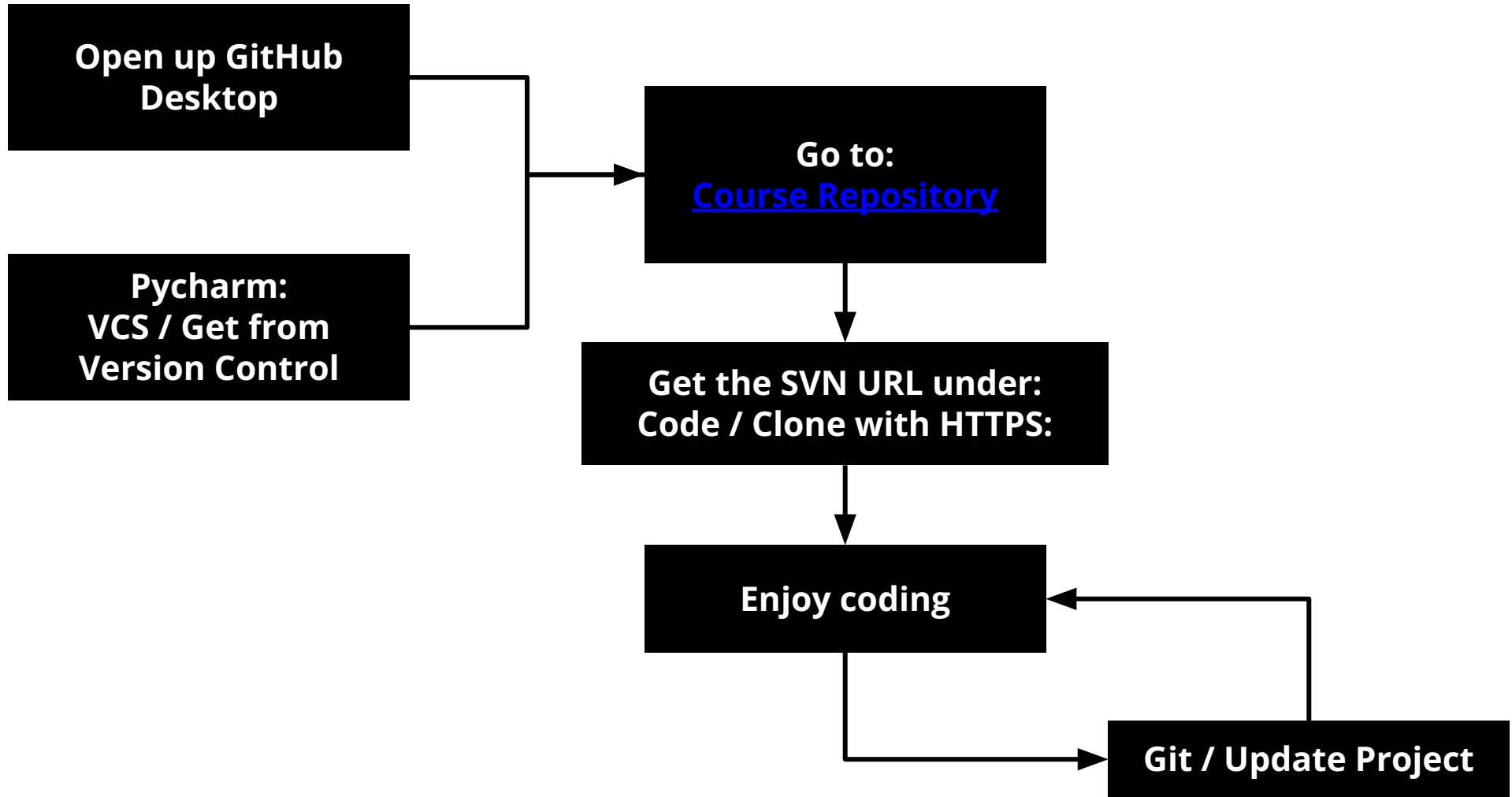
Linux / Mac	Windows
<pre>cd folder cd .. ls python exit() python script_file.py</pre>	<pre>cd folder cd .. ls python exit() python script_file.py</pre>

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of Catalonia

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