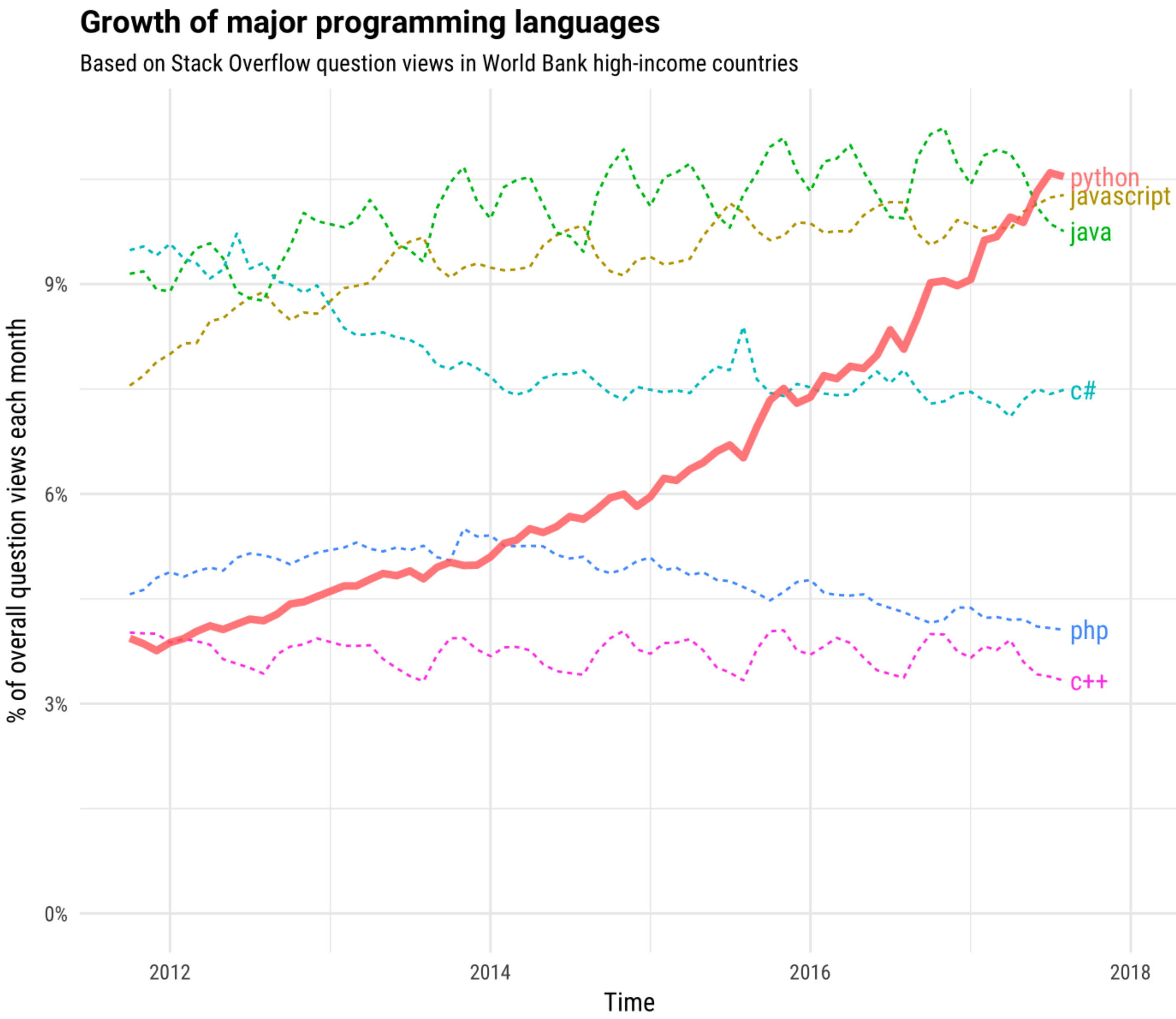
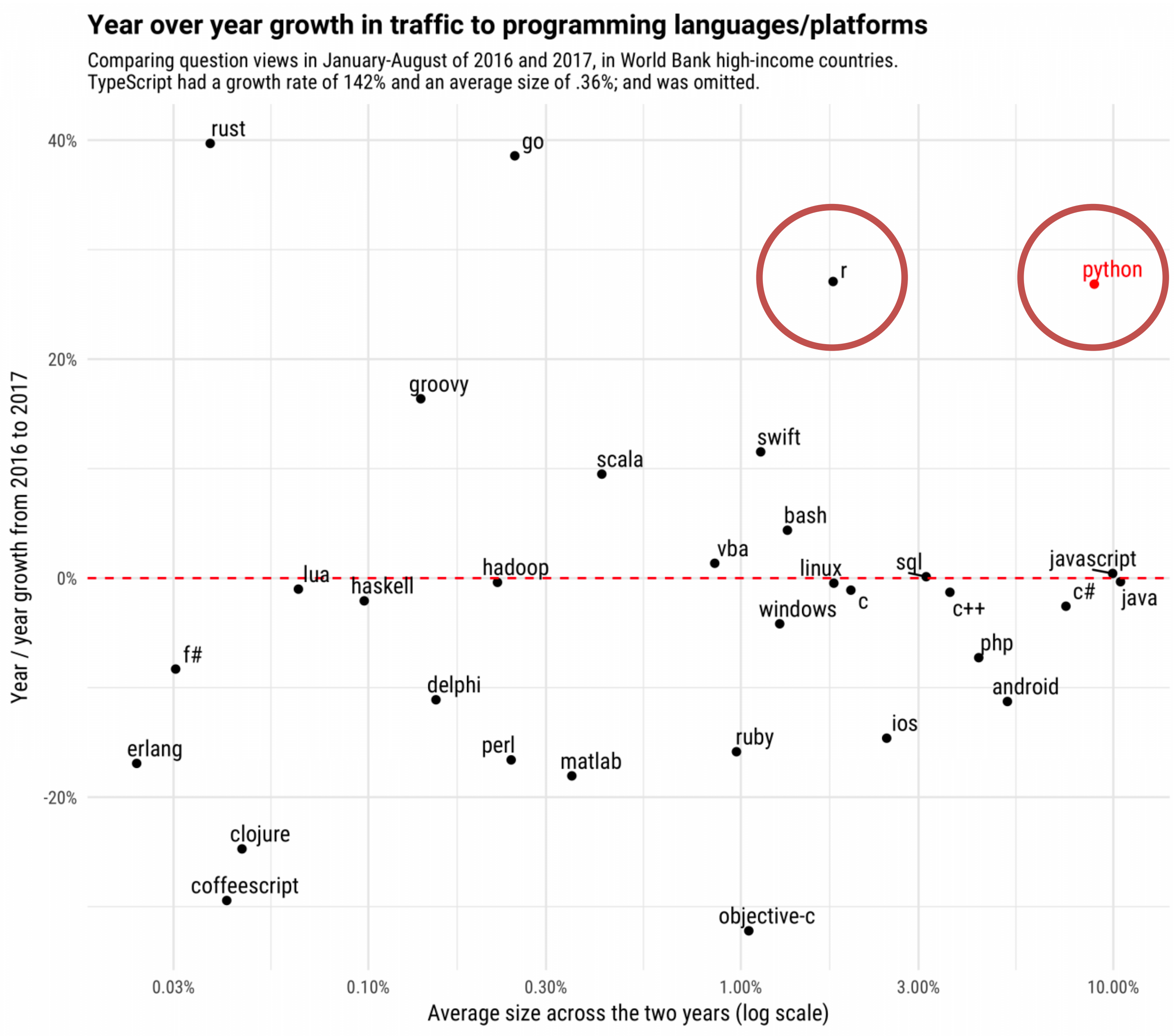
Part II: Python



Stackoverflow blog, September 2017



Year over year growth in traffic to programming languages/platforms

Comparing question views in January-August of 2016 and 2017, in World Bank high-income countries.
TypeScript had a growth rate of 142% and an average size of .36%; and was omitted.

Stackoverflow blog, September 2017

Python has many applications

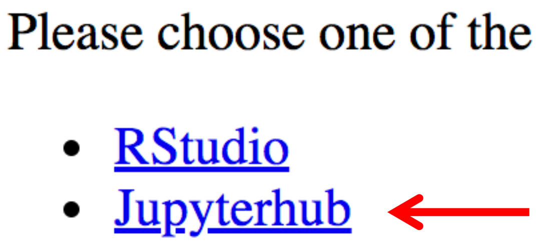
- Web development
- Application development
- Computer graphics
- Scientific computing
  - Bioinformatics
  - Machine learning
  - Simulations

https://www.python.org/about/quotes/

Three alternatives to get Python

- Jupyterhub on educcomp (in browser)
- Google Colaboratory (in browser) https://colab.research.google.com/
- Anaconda (local install, ~1.5GB of space required)

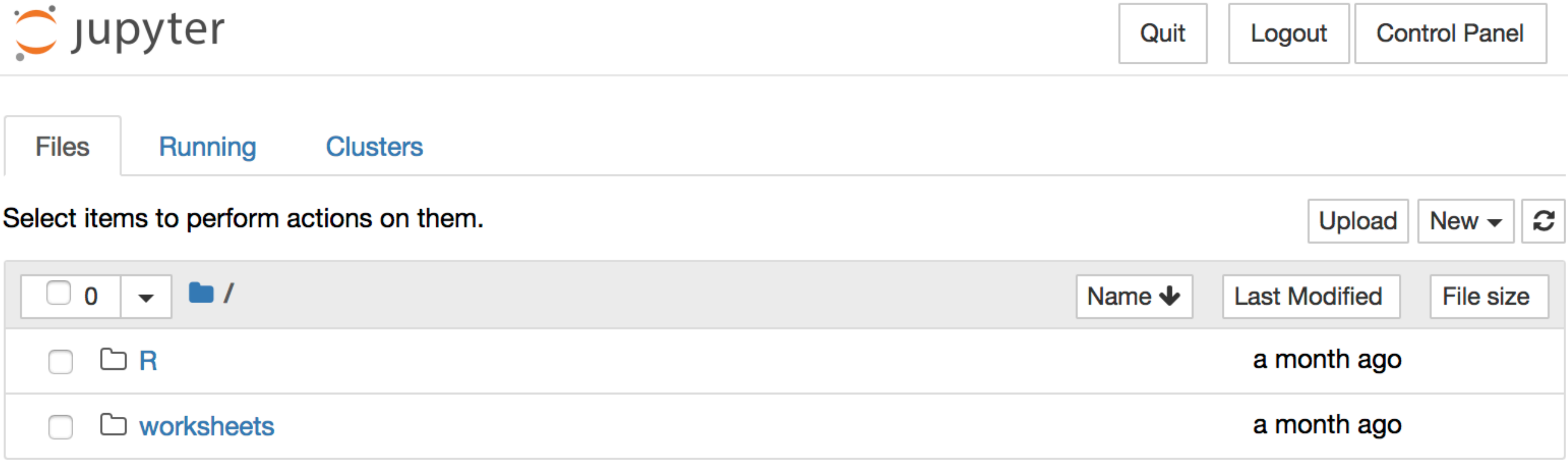
Jupyterhub



Please choose one of the following applications:

- RStudio
- Jupyterhub

Jupyterhub



Select items to perform actions on them.

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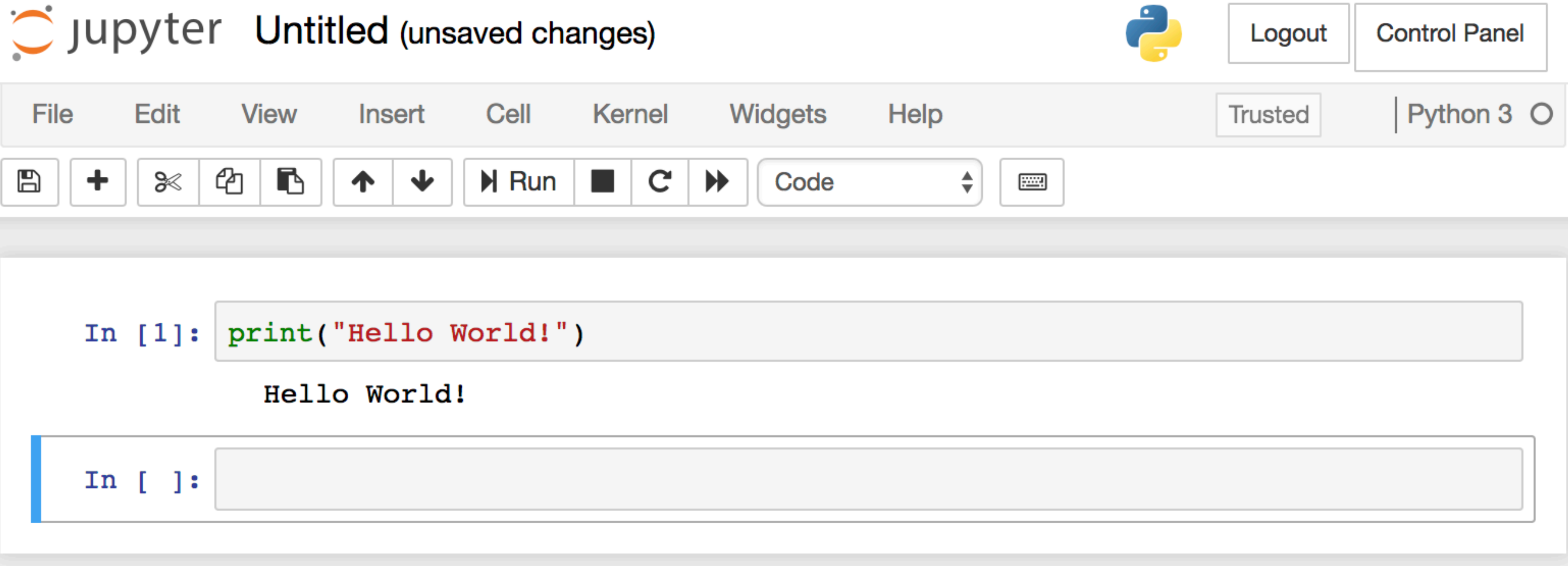
Jupyterhub



```
In [1]: print("Hello World!")

        Hello World!

In [ ]:
```

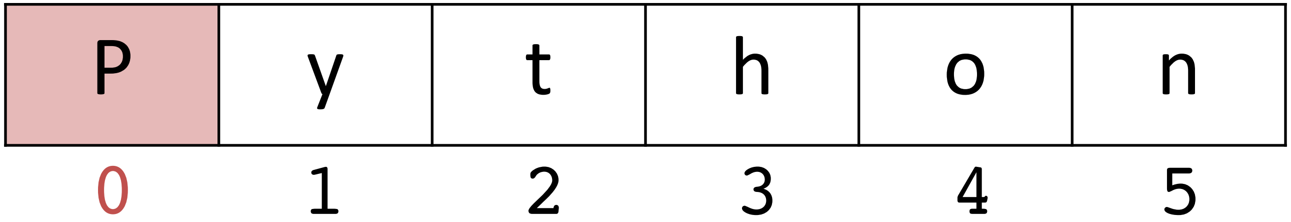
Counting like a computer scientist

```
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ...
```

Indexing in Python

P	y	t	h	o	n
0	1	2	3	4	5

Indexing in Python

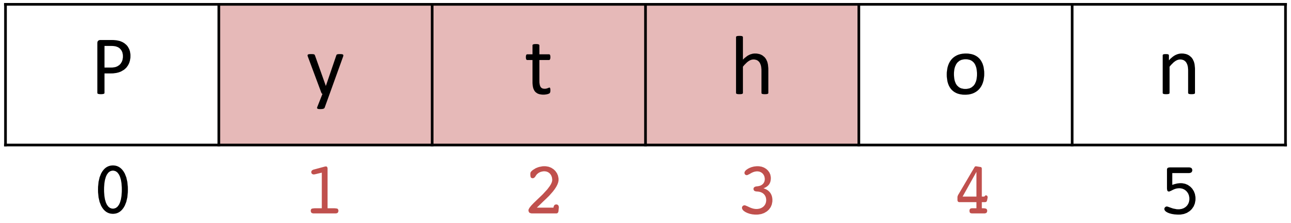


P	y	t	h	o	n
0	1	2	3	4	5

```
In [1]: x="Python"

In [2]: x[0]
Out[2]: 'P'
```

Indexing in Python



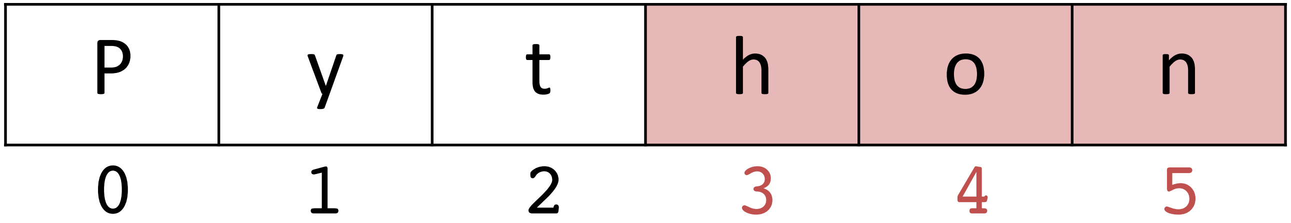
P	y	t	h	o	n
0	1	2	3	4	5

```
In [1]: x="Python"

In [2]: x[1:4]
Out[2]: 'yth'
```

We index from the first element to one past the last element

Indexing in Python



P	y	t	h	o	n
0	1	2	3	4	5

```
In [1]: x="Python"

In [2]: x[3:]
Out[2]: 'hon'
```

← Missing number means “to the end”

We can also index in reverse

P	y	t	h	o	n
-6	-5	-4	-3	-2	-1

We can also index in reverse

P	y	t	h	o	n
-6	-5	-4	-3	-2	-1

```
In [1]: x="Python"

In [2]: x[-6]
Out[2]: 'P'
```

We can also index in reverse

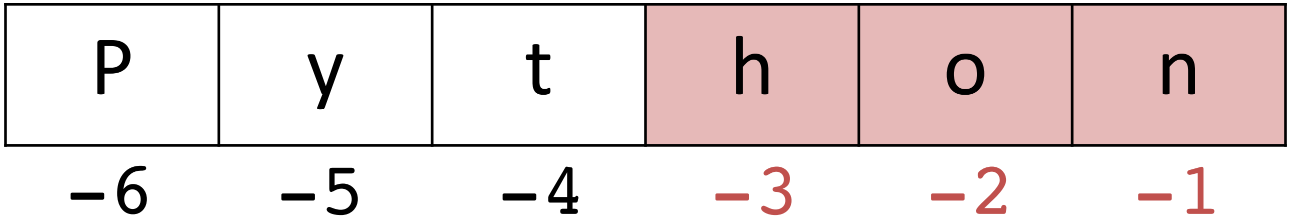
P	y	t	h	o	n
-6	-5	-4	-3	-2	-1

```
In [1]: x="Python"

In [2]: x[-5:-2]
Out[2]: 'yth'
```

← Again, we index one past the last element

We can also index in reverse



P	y	t	h	o	n
-6	-5	-4	-3	-2	-1

```
In [1]: x="Python"

In [2]: x[-3:]
Out[2]: 'hon'
```

This captures the last 3 characters