https://www.halvorsen.blog

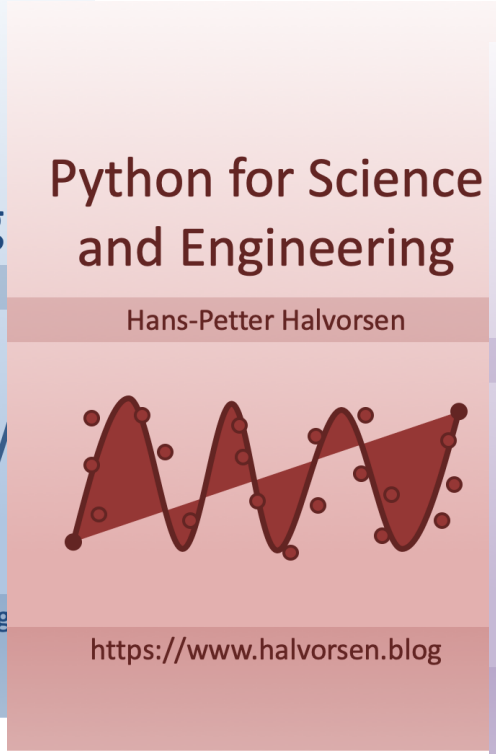
Introduction to Python

Hans-Petter Halvorsen

Free Textbook with lots of Practical Examples

https://www.halvorsen.blog/documents/programming/python/

Additional Python Resources



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The New Age of Programming

- The way we create software today has changed dramatically the last 30 years, from the childhood of personal computers in the early 80s to today's powerful devices such as Smartphones, Tablets and PCs.
- The Internet has also changed the way we use devices and software. We still have traditional desktop applications, but Web Sites, Web Applications and so-called Apps for Smartphones, etc. are dominating the software market today.
- We need to find and learn Programming Languages that are suitable for the New Age of Programming.

What is Python

- Python is a fairly old Programming Language (1991) compared to many other Programming Languages like C# (2000), Swift (2014), Java (1995), PHP (1995).
- Python has during the last 10 years become more and more popular.
- Today, Python has become one of the most popular Programming Languages.

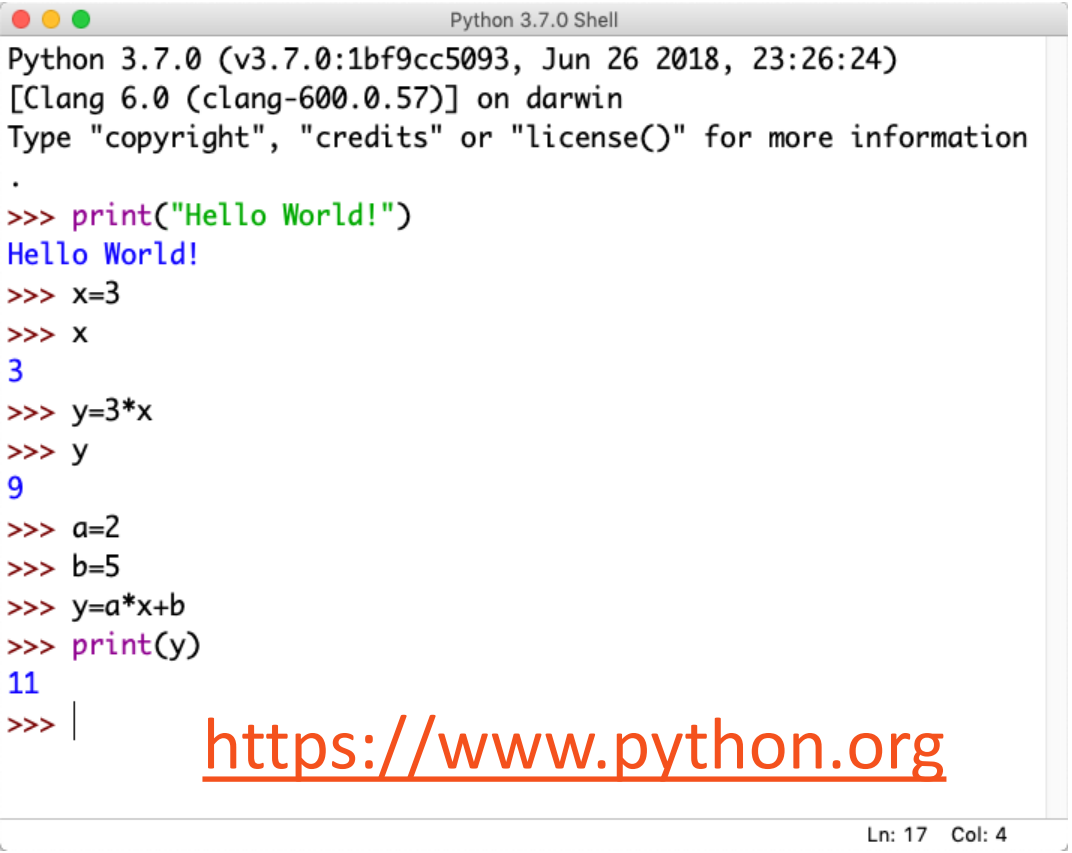
Why Python?

- Python is fun to learn and use and it is also named after the British comedy group called **Monty Python** (indicating its fun ☺)
- Python has a simple and flexible code structure, and the code is easy to read
- Python is highly **extendable** due to its high number of free available Python Packaged and Libraries
- **Cross Platform**: Python can be used on all platforms (Windows, macOS and Linux).
- Python **is multi-purpose** and can be used for to program Web Applications, Enterprise Applications and Embedded Applications, and within Data Science and Engineering Applications
- The **popularity** of Python is growing fast
- Python is **open source and free to use**
- The growing **Python community** makes it easy to find documentation, code examples and get help when needed

Python Editors

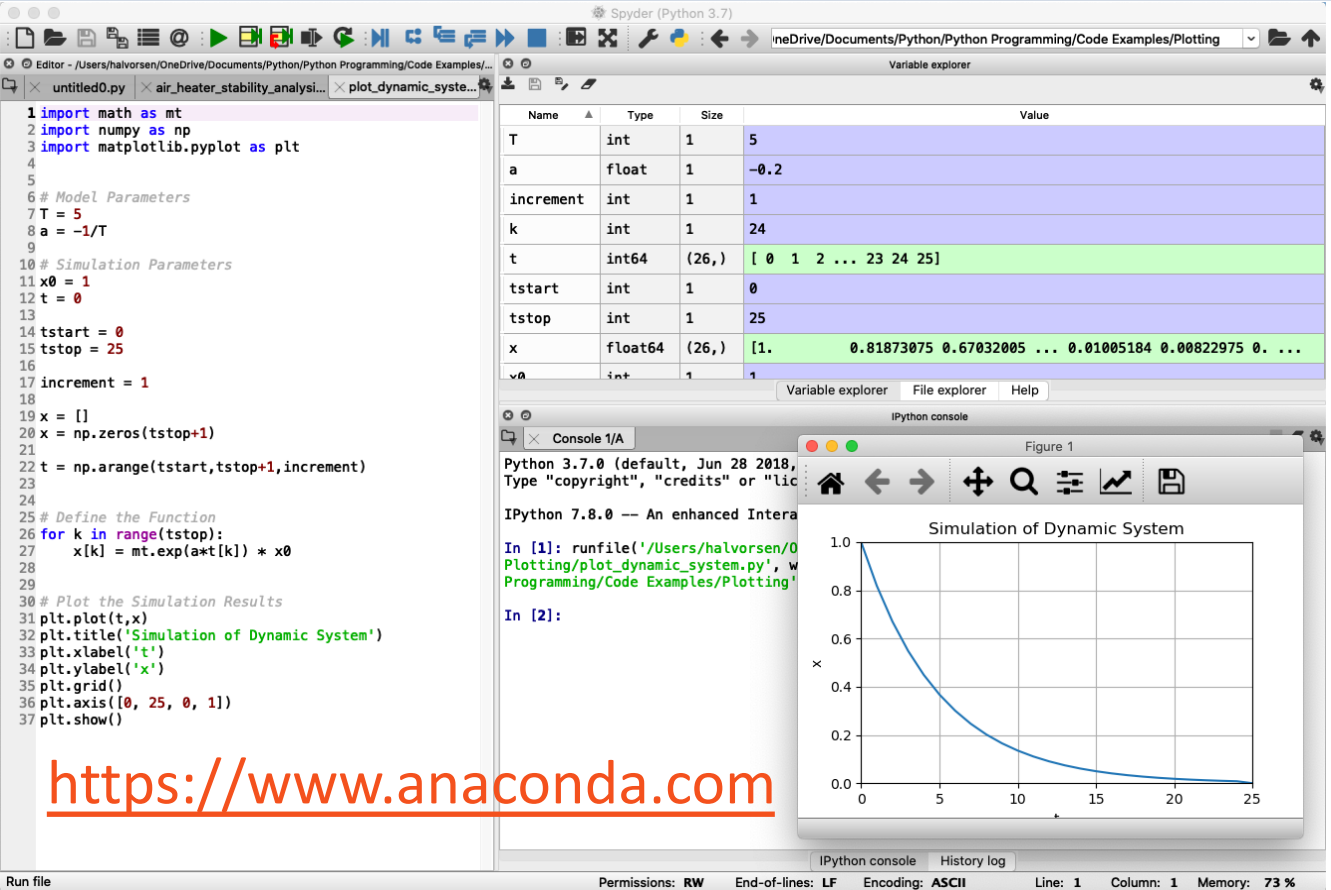
- Python IDLE
- **Spyder** (Anaconda distribution)
- PyCharm
- **Visual Studio Code**
- Visual Studio
- Jupyter Notebook
- …

Python IDLE



- The programming language is maintained and available from (Python Software Foundation): https://www.python.org
- Here you can download the basic Python features in one package, which includes the Python programming language interpreter
- A basic code editor, or an integrated development environment, called IDLE
- To basic to have any practical use

Spyder (Anaconda distribution)

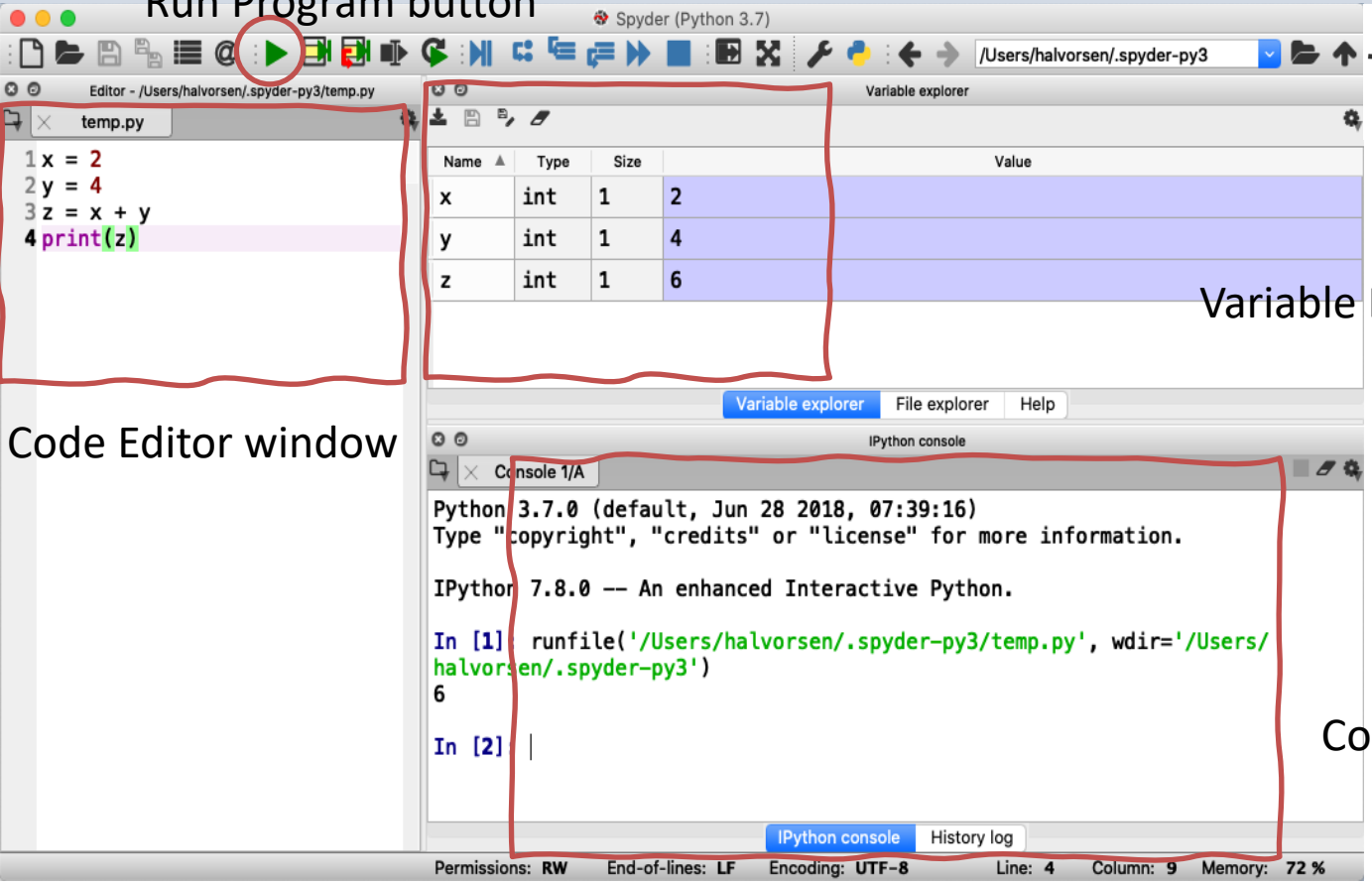


https://www.anaconda.com

- The Spyder editor is included with the Anaconda distribution
- All you need in one installation package
- Excellent for Science and Engineering
- Simulations and Mathematics calculations
- Similar features as the MATLAB Editor

Spyder (Anaconda distribution)

Run Program button



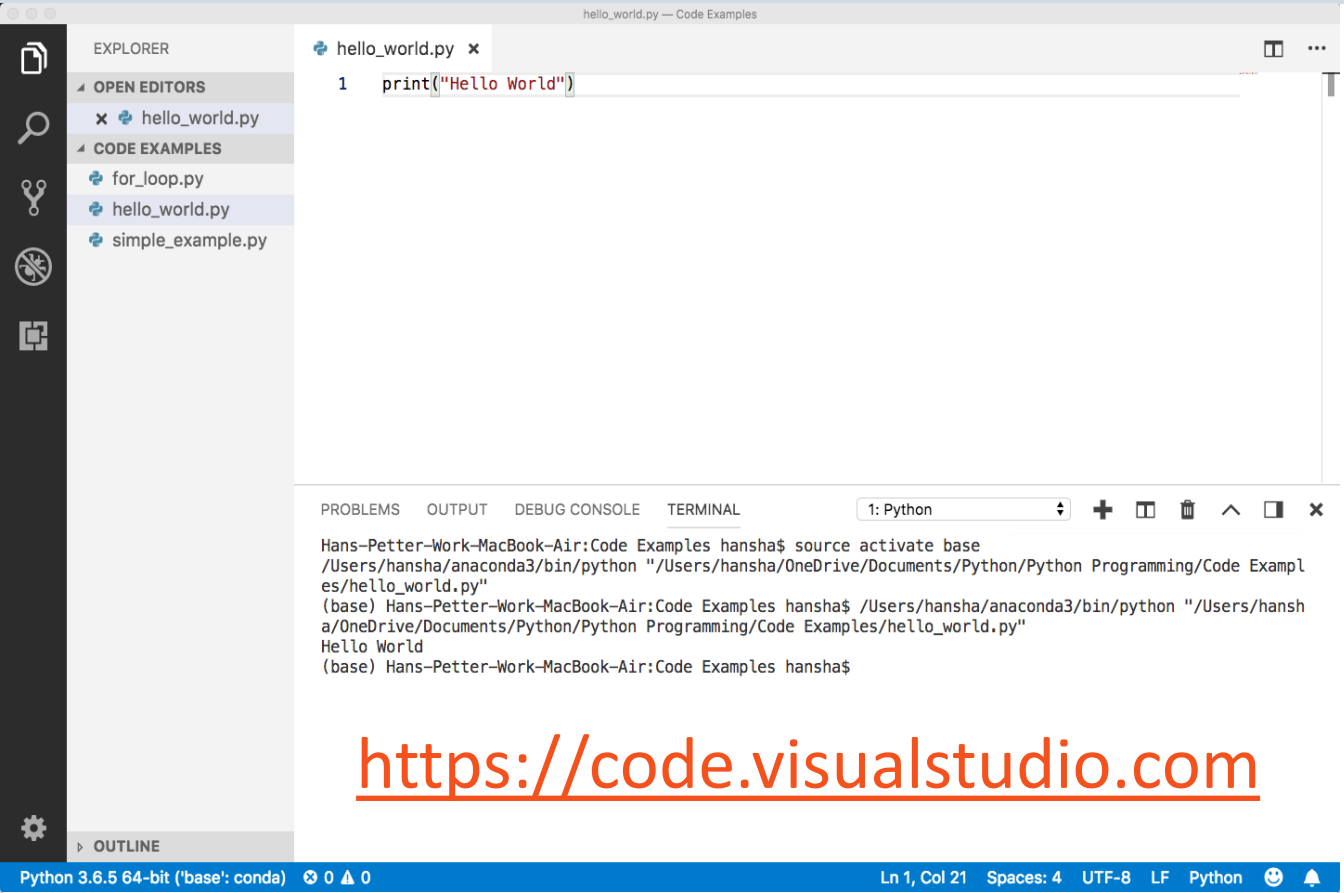
Code Editor window

Variable Explorer window

Console window

SPYDER
The Scientific Python Development Environment

Visual Studio Code



https://code.visualstudio.com

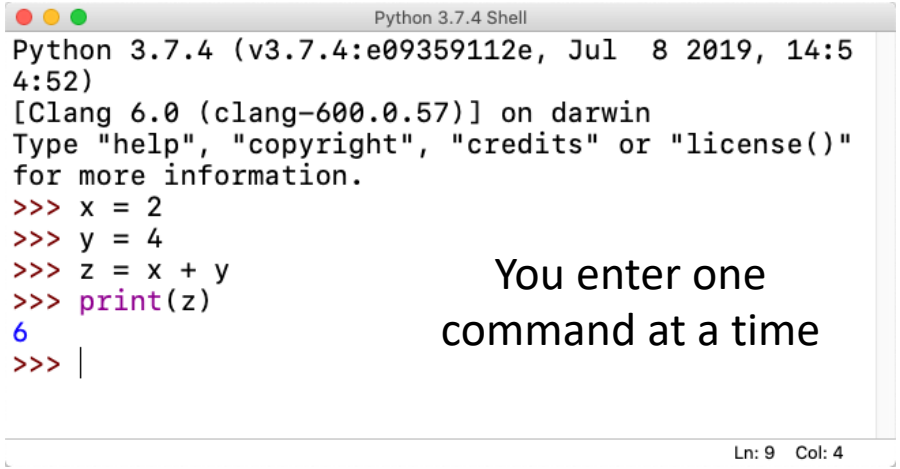
- Open Source Code Editor from Microsoft
- Easy to use
- You can download Extensions for Python programming and lots of other Programming languages
- Excellent if you use a mix of different programming languages
- For Programmers

Python Programming

- We use the basic IDLE editor or another Python Editor like Spyder (included with Anaconda distribution) or Visual Studio Code, etc.

```
print("Hello World!")
```

Python Programming

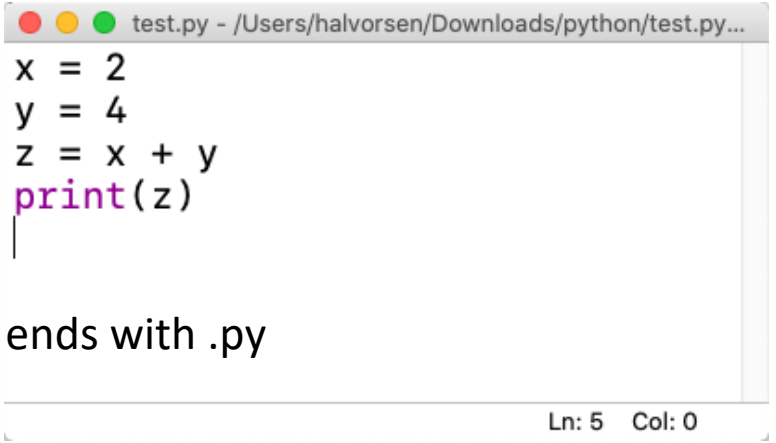


You enter one command at a time

Basic Python example using the Python Shell (IDLE)

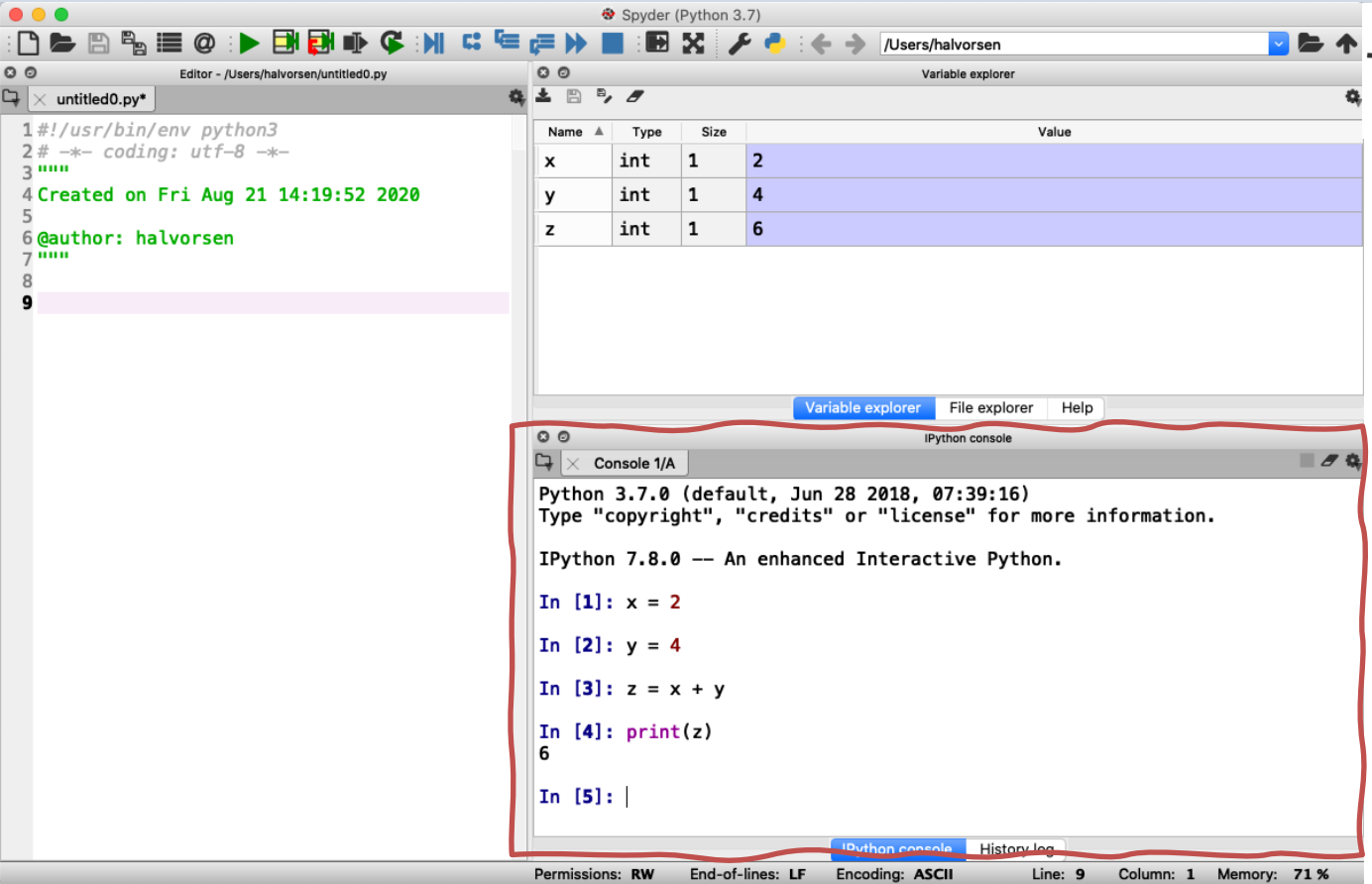
Or use the Editor (File->New File)

```
x = 2
y = 4
z = x + y
print(z)
```



Your Python files ends with .py

Python Programming



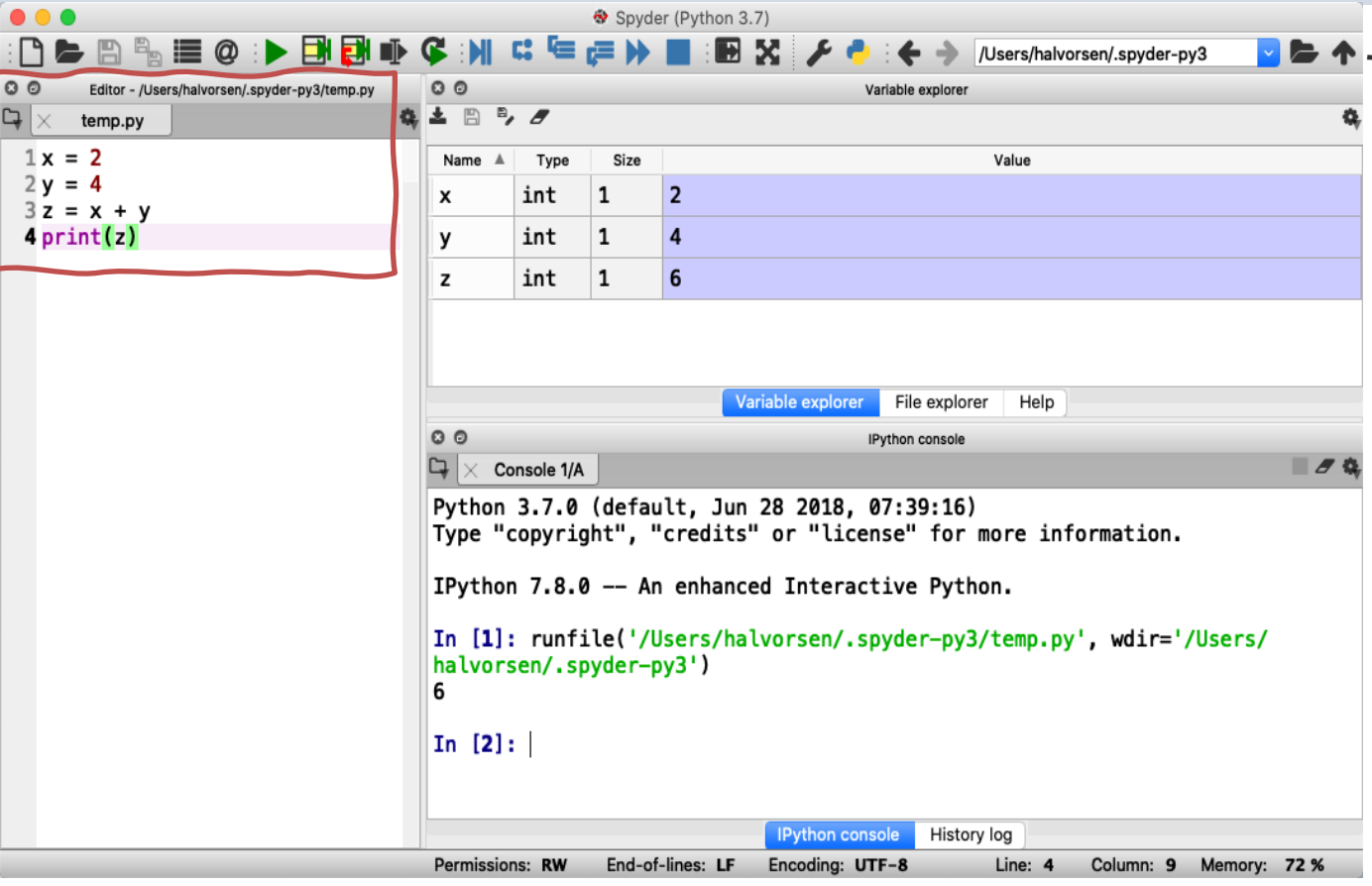
SPYDER
The Scientific Python Development Environment

Basic Python example using the **Console window** in Spyder

You enter one command at a time

```
x = 2
y = 4
z = x + y
print(z)
```

Python Programming



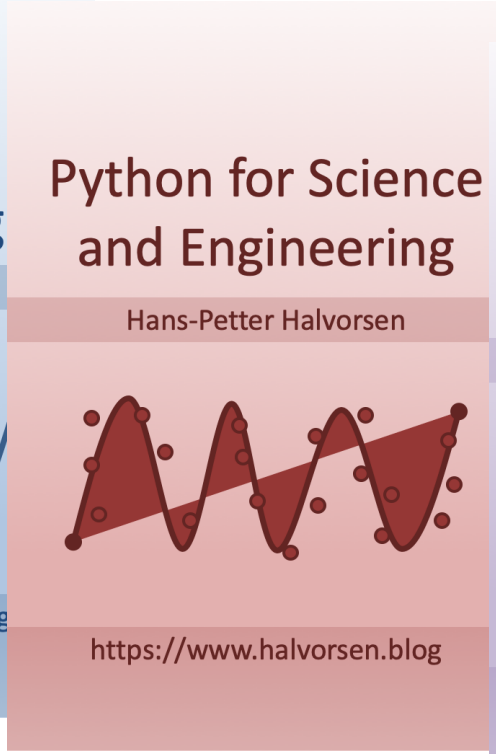
SPYDER
The Scientific Python Development Environment

Basic Python example using the **Code Editor window** in Spyder

You create a program and save it as a file with the .py file extension

```
x = 2
y = 4
z = x + y
print(z)
```

Additional Python Resources



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