

CSIT110 / CSIT810

Python

Lecture 1

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Programming languages

1951: Assembly Language

1957: FORTRAN

1958: LISP

1959: COBOL

1964: BASIC

1970: Pascal

1972: C

1972: Prolog

1978: SQL

1980: C++

1984: MATLAB

1987: Perl

1988: Mathematica

1991: Python

1991: Visual Basic

1995: Java

1995: JavaScript

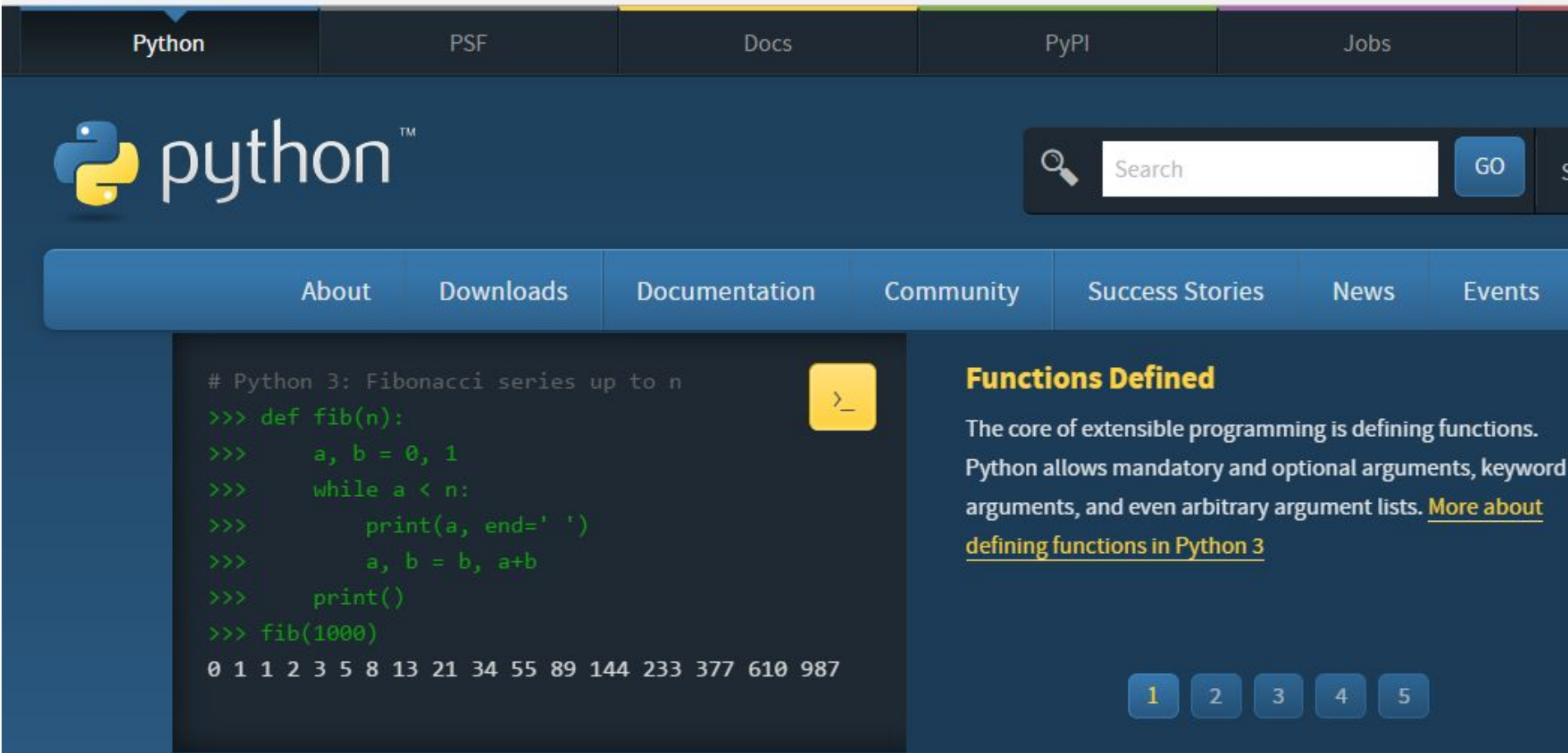
1995: PHP

2001: C#

Python

Python software foundation website: <http://www.python.org>

<https://www.python.org>



The screenshot shows the Python.org homepage. At the top is a navigation bar with links: Python, PSF, Docs, PyPI, Jobs. Below this is a large blue header with the Python logo and a search bar. A secondary navigation bar contains links: About, Downloads, Documentation, Community, Success Stories, News, Events. The main content area is split into two columns. The left column features a code editor with a Python script for calculating the Fibonacci series up to n, with a yellow button labeled '>_'. The right column has a section titled 'Functions Defined' with a paragraph explaining that the core of extensible programming is defining functions, and a link to 'More about defining functions in Python 3'. At the bottom right, there are five numbered buttons: 1, 2, 3, 4, 5.

Python

PSF

Docs

PyPI

Jobs

python™

Search

GO

About Downloads Documentation Community Success Stories News Events

```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

Functions Defined

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

1 2 3 4 5

Python

Python software foundation website: <http://www.python.org>

Useful resources available on this website:

- Getting started
- Tutorial
- Documentation
- Installation guide
- ...

Python - documentation

<https://www.python.org/doc/>

The screenshot shows the Python.org website's documentation section. At the top, a dark navigation bar contains links for Python, PSF, Docs, PyPI, and Jobs. Below this is a blue header with the Python logo and a search bar. A secondary navigation bar features links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The 'Documentation' link is highlighted with a red arrow. A dropdown menu is open under 'Documentation', listing various resources: Docs, Audio/Visual Talks, Beginner's Guide, Developer's Guide, FAQ, Non-English Docs, PEP Index, and Python Books. To the left of the dropdown, a large yellow text block encourages browsing docs online. Below it are two yellow buttons for 'Python 3.x Docs' and 'Python 2.x Docs'. A red arrow points to the 'Python 3.x Docs' button. To the right of the dropdown, a white box contains the heading 'Python's standard documentation: download, browse or watch a tutorial.' followed by instructions to get started or visit the documentation page to browse by version. It includes the same two buttons for Python 3.x and 2.x docs, with a red arrow pointing to the 'Python 3.x Docs' button. Below these buttons is a link 'See also Should I use Python 2 or 3?'.

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Browse the docs online, copy of your own. Python documentation, tutorials, constantly evolving.

Get started here, or scroll down for documentation

Python 3.x Docs Python 2.x Docs

See also [Documentation Releases by Version](#)

Docs

Audio/Visual Talks

Beginner's Guide

Developer's Guide

FAQ

Non-English Docs

PEP Index

Python Books

Python's standard documentation: download, browse or watch a tutorial.

Get started below, or visit the Documentation page to browse by version.

Python 3.x Docs Python 2.x Docs

See also [Should I use Python 2 or 3?](#)

Python - download

We are going to use Python Version 3 in this course.

<https://www.python.org/downloads/>

About Downloads Documentation Community Success Stories News

Download the latest version for Windows

[Download Python 3.5.2](#) [Download Python 2.7.12](#)

Wondering which version to use? [Here's more about the difference between Python 2 and 3.](#)

Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [Mac OS X](#), [Other](#)

Want to help test development versions of Python? [Pre-releases](#)

Looking for a specific release?

Python releases by version number:

Release version	Release date		Click for more
Python 3.4.5	2016-06-27	Download	Release Notes
Python 3.5.2	2016-06-27	Download	Release Notes

Python installation for Windows

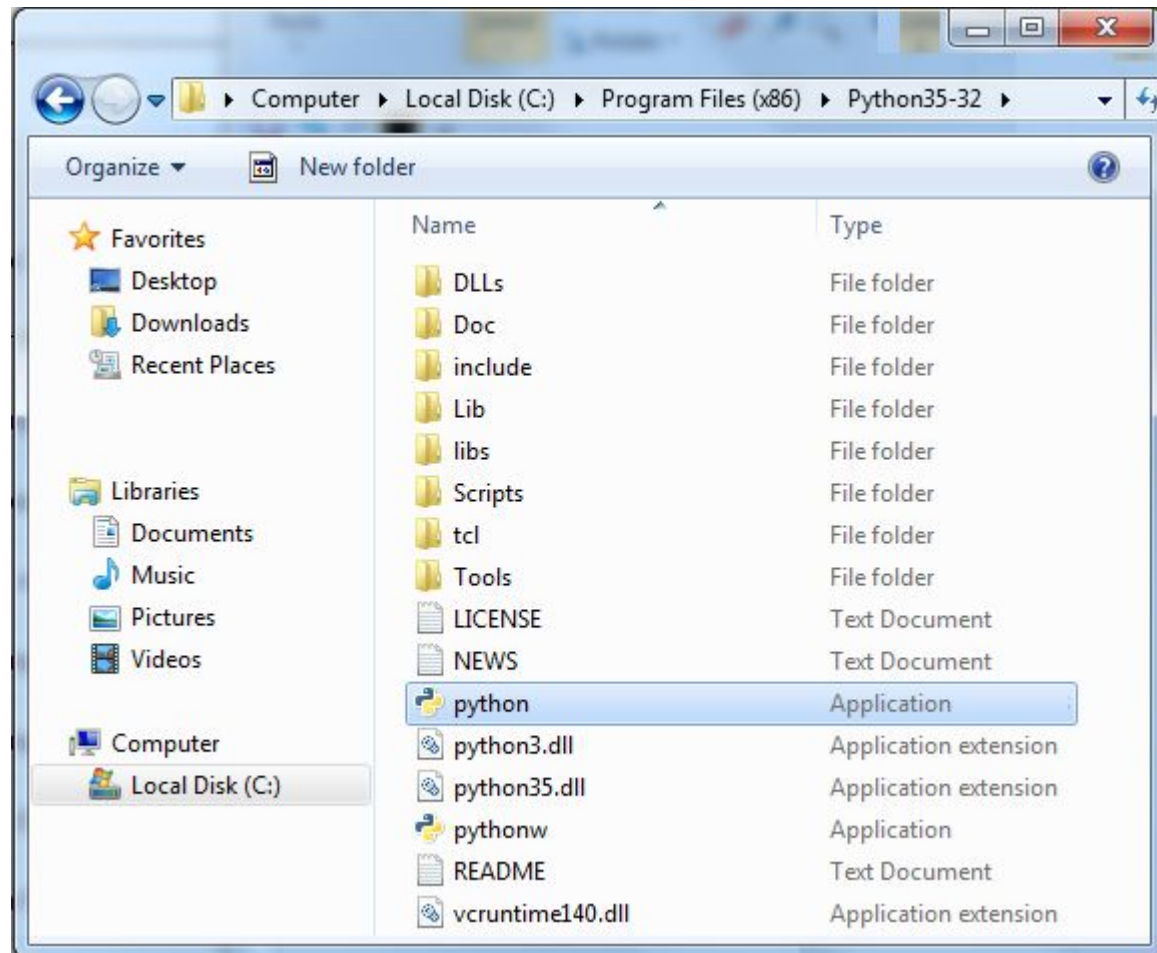
Python - installation - Windows

Here are some screenshots when I installed Python 3.5 on my **Windows computer**.

*First, I downloaded **Windows x86 executable installer** from Python webpage*

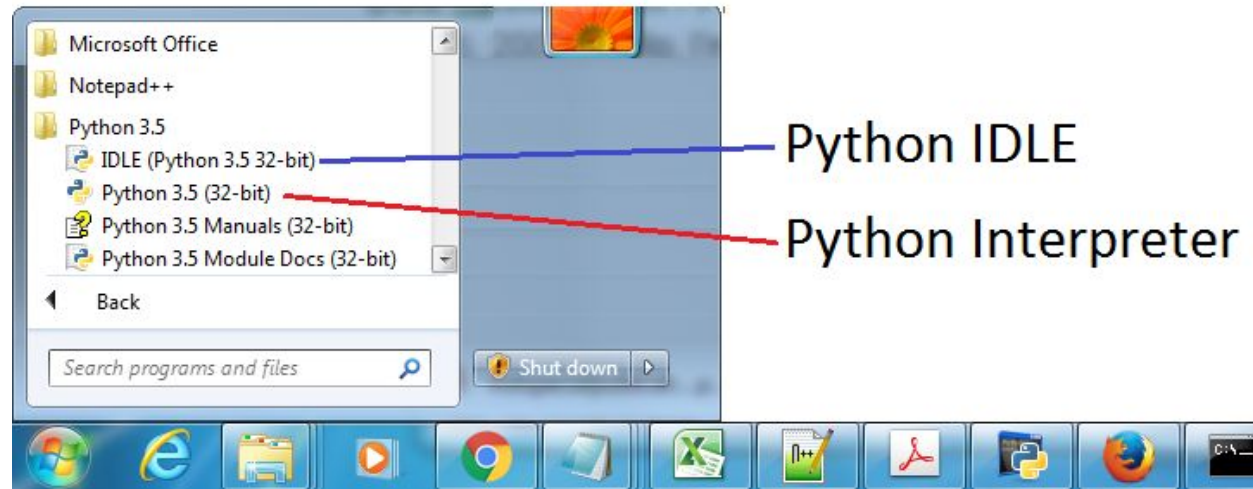
Python - installation - Windows

After install Python, I can see the Python directory on my computer



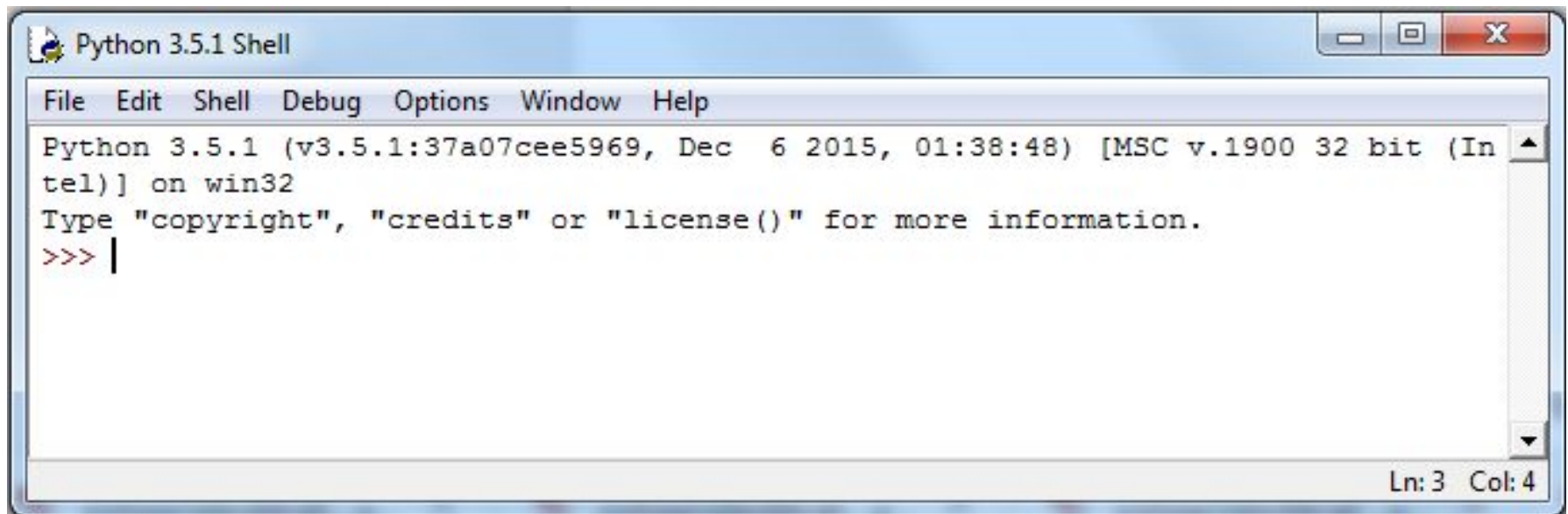
Python - installation - Windows

*On Start Menu, I can see there are two icons for **Python Interpreter** and **Python IDLE**.*



Python - installation - Windows

*In Start Menu, click on the **Python IDLE** menu,
a new window will appear*

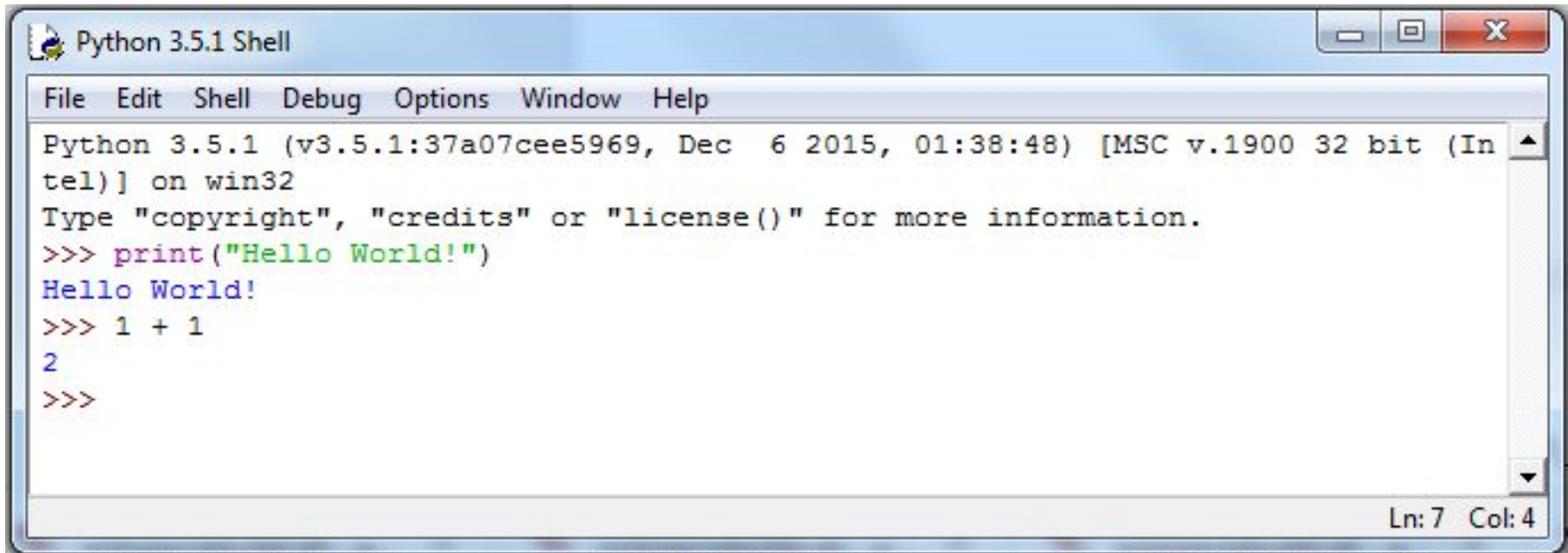
A screenshot of the Python 3.5.1 Shell window. The window has a title bar that says "Python 3.5.1 Shell" and standard Windows window controls (minimize, maximize, close). Below the title bar is a menu bar with the following options: File, Edit, Shell, Debug, Options, Window, and Help. The main area of the window is a text editor showing the following text:

```
Python 3.5.1 (v3.5.1:37a07cee5969, Dec 6 2015, 01:38:48) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> |
```

The text is in a monospaced font. At the bottom right of the window, there is a status bar that says "Ln: 3 Col: 4".

Python - installation - Windows

*Type the following Python code into the **IDLE** and see that it works*

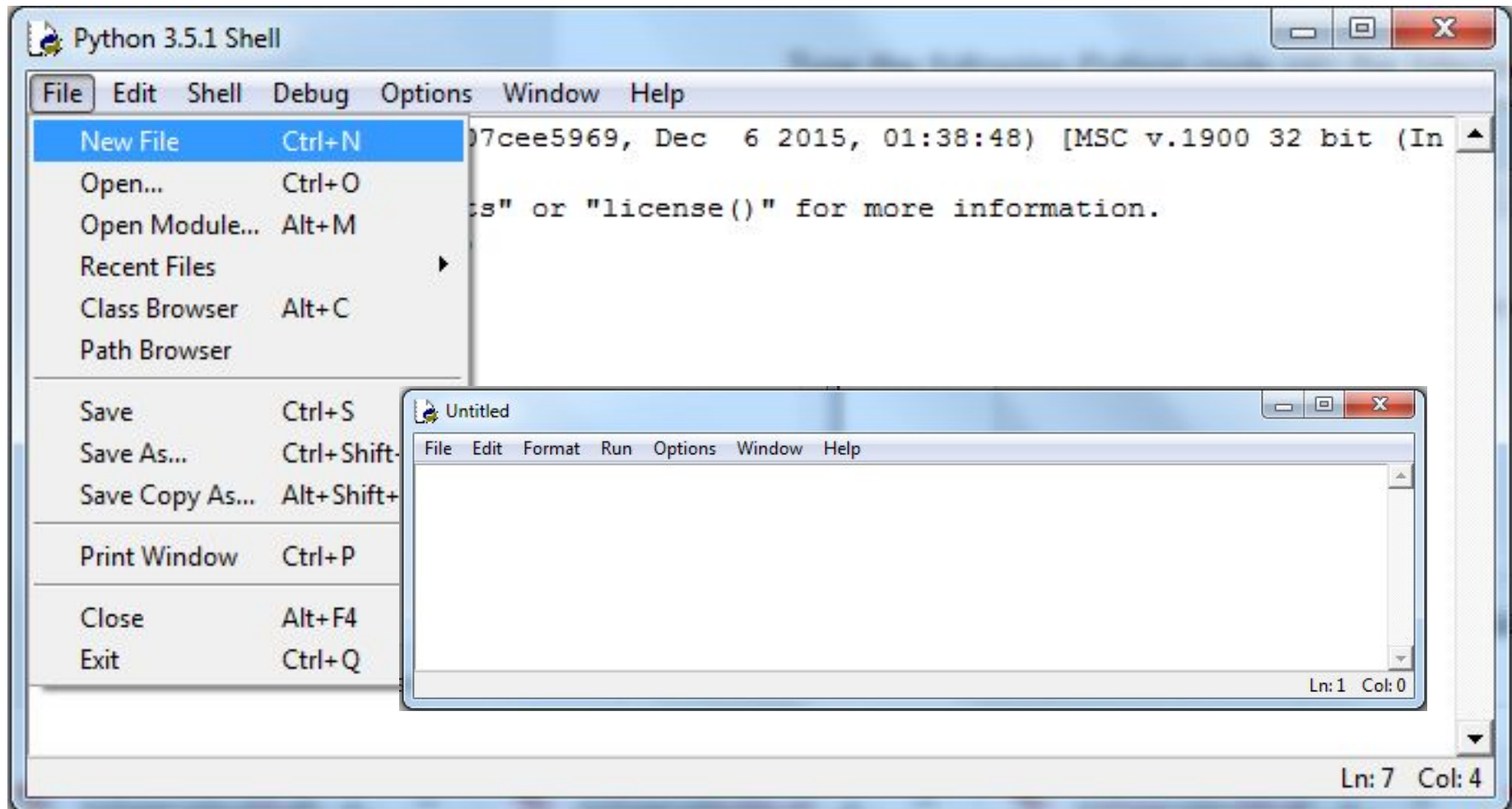


```
Python 3.5.1 Shell
File Edit Shell Debug Options Window Help
Python 3.5.1 (v3.5.1:37a07cee5969, Dec 6 2015, 01:38:48) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> print("Hello World!")
Hello World!
>>> 1 + 1
2
>>>
```

Ln: 7 Col: 4

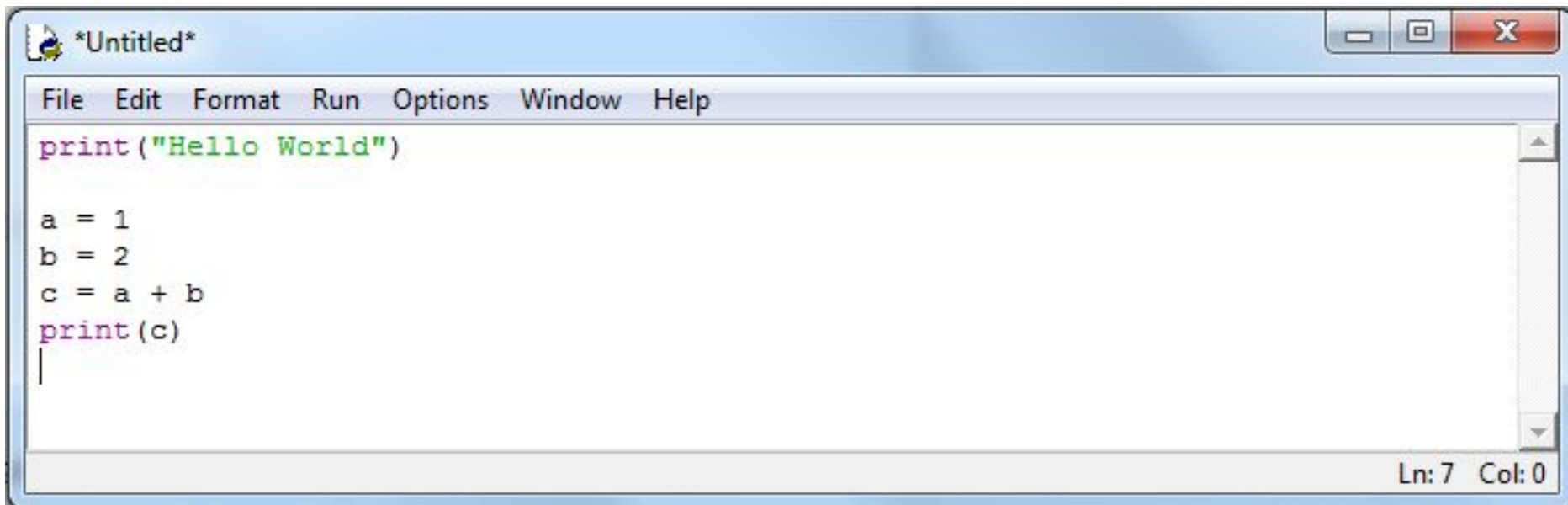
Python - installation - Windows

Select the menu: *File* > *New File*, a new window will appear



Python - installation - Windows

Type the following Python code into the new window

A screenshot of a Python IDE window titled '*Untitled*'. The window has a menu bar with 'File', 'Edit', 'Format', 'Run', 'Options', 'Window', and 'Help'. The code editor contains the following Python code:

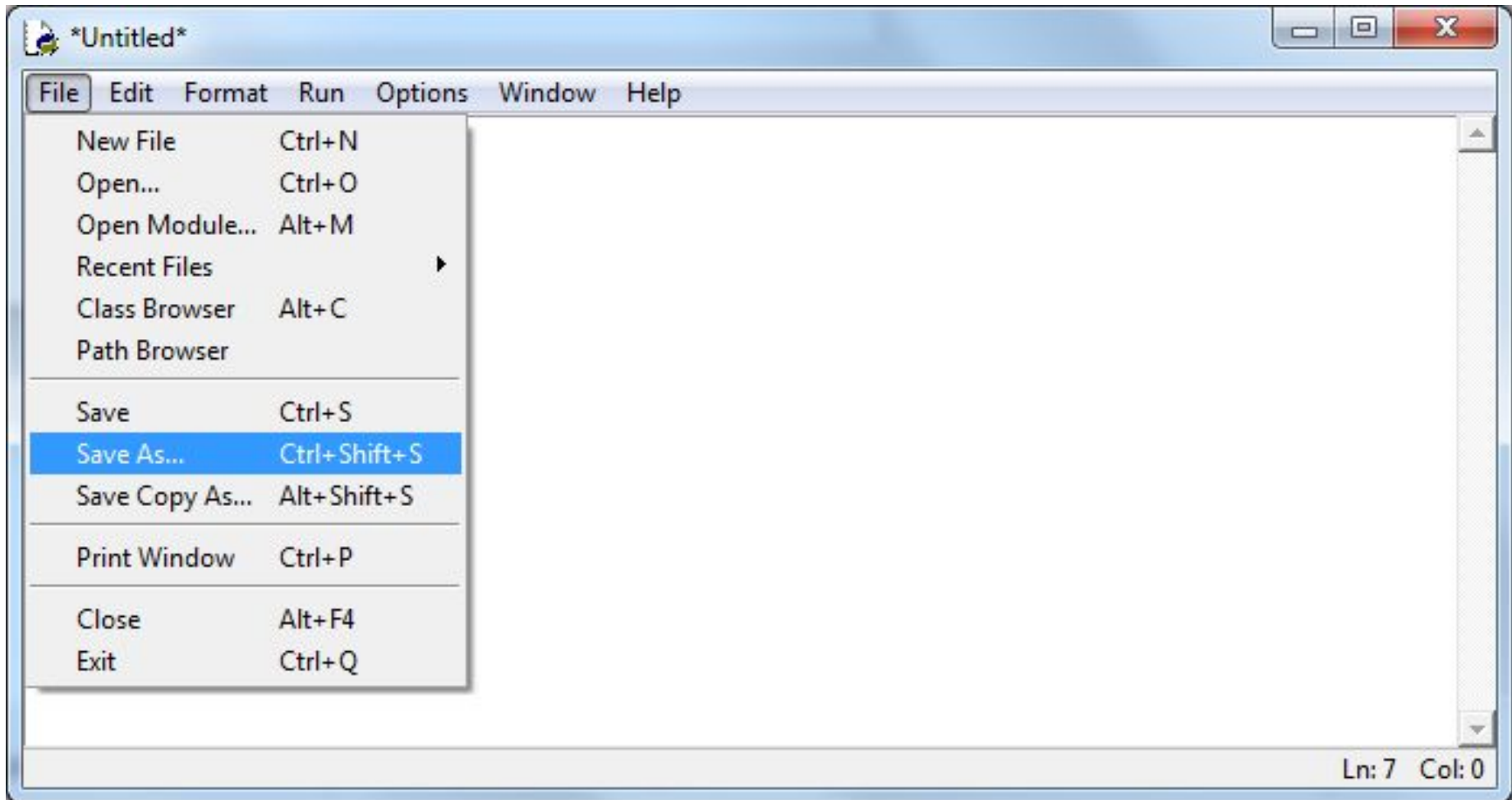
```
print("Hello World")

a = 1
b = 2
c = a + b
print(c)
|
```

The code is color-coded: 'print' is purple, 'Hello World' is green, and the rest is black. A vertical cursor is at the end of the last line. The status bar at the bottom right shows 'Ln: 7 Col: 0'.

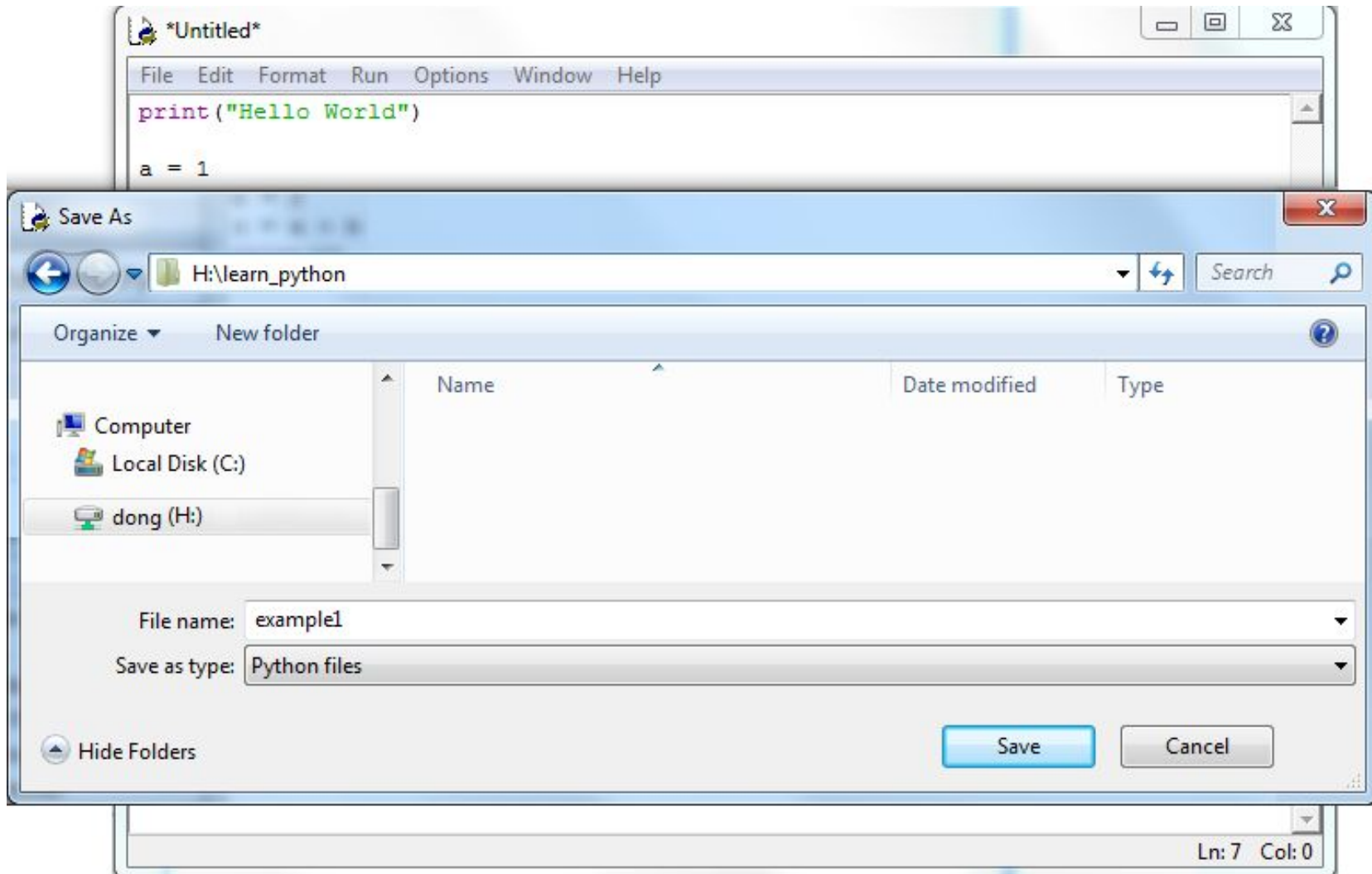
Python - installation - Windows

Select the menu: *File* > *Save As...*



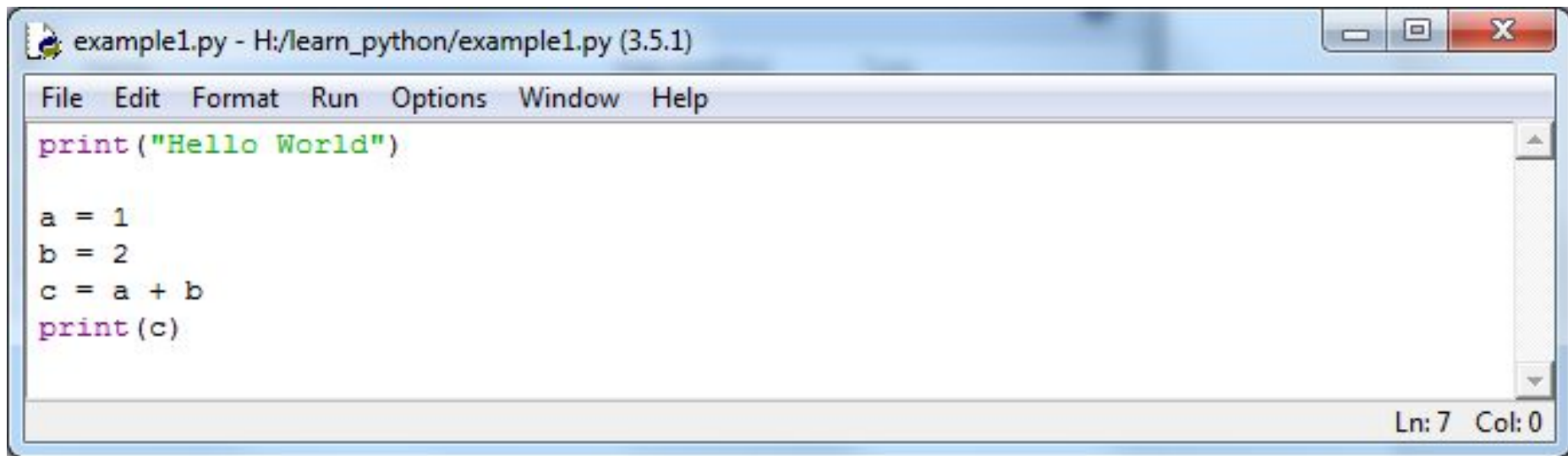
Python - installation - Windows

*I saved the code into a new file called **example1.py** on a directory called **learn_python** on my **H:** drive*



Python - installation - Windows

*I can see now that my code has been saved to the file **example1.py***

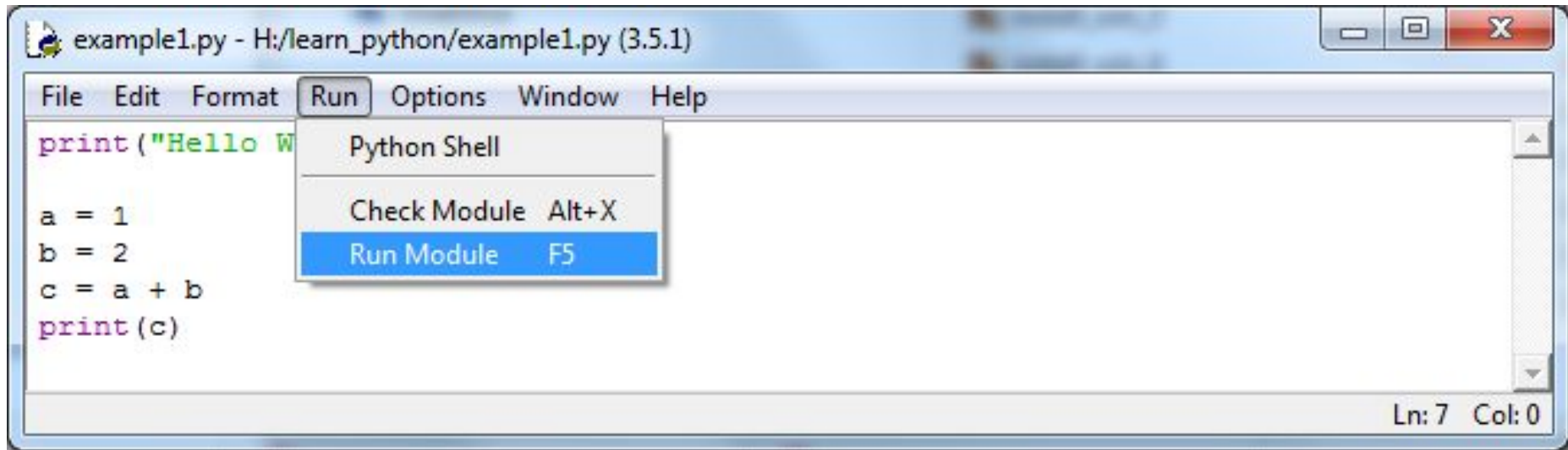
A screenshot of a Python IDE window titled "example1.py - H:/learn_python/example1.py (3.5.1)". The window has a menu bar with "File", "Edit", "Format", "Run", "Options", "Window", and "Help". The main text area contains the following Python code:

```
print("Hello World")  
  
a = 1  
b = 2  
c = a + b  
print(c)
```

The status bar at the bottom right shows "Ln: 7 Col: 0".

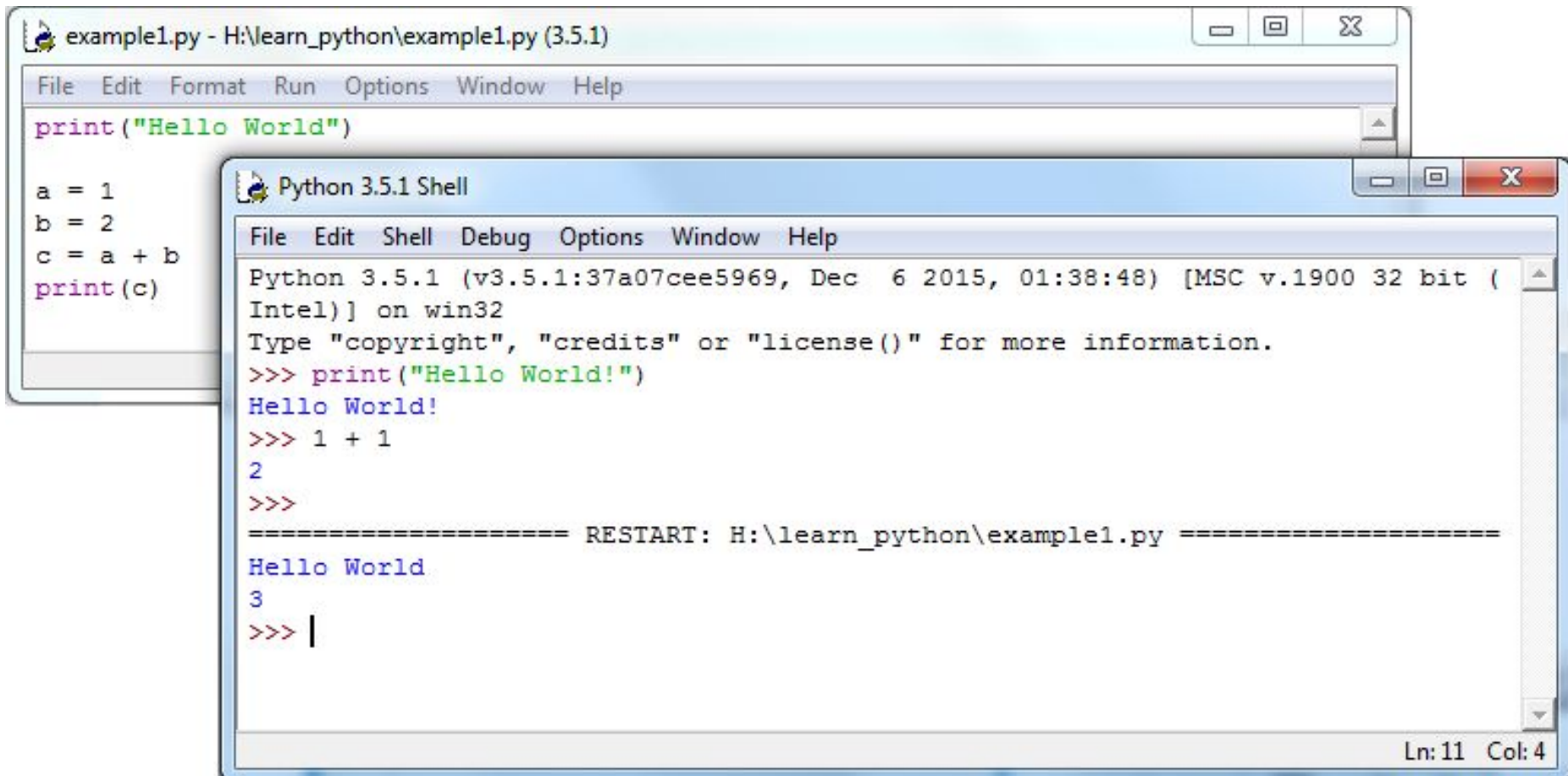
Python - installation - Windows

Select the menu: *Run* > *Run Module*



Python - installation - Windows

*I can see that my code in the file **example1.py** works*



The image shows a screenshot of a Python IDE. The top window, titled 'example1.py - H:\learn_python\example1.py (3.5.1)', contains the following code:

```
print("Hello World")

a = 1
b = 2
c = a + b
print(c)
```

The bottom window, titled 'Python 3.5.1 Shell', shows the output of running the script. It displays the Python version and environment information, followed by the execution of the code in the script file:

```
Python 3.5.1 (v3.5.1:37a07cee5969, Dec 6 2015, 01:38:48) [MSC v.1900 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> print("Hello World!")
Hello World!
>>> 1 + 1
2
>>>
===== RESTART: H:\learn_python\example1.py =====
Hello World
3
>>> |
```

The status bar at the bottom right of the shell window indicates 'Ln: 11 Col: 4'.

Python installation for Mac

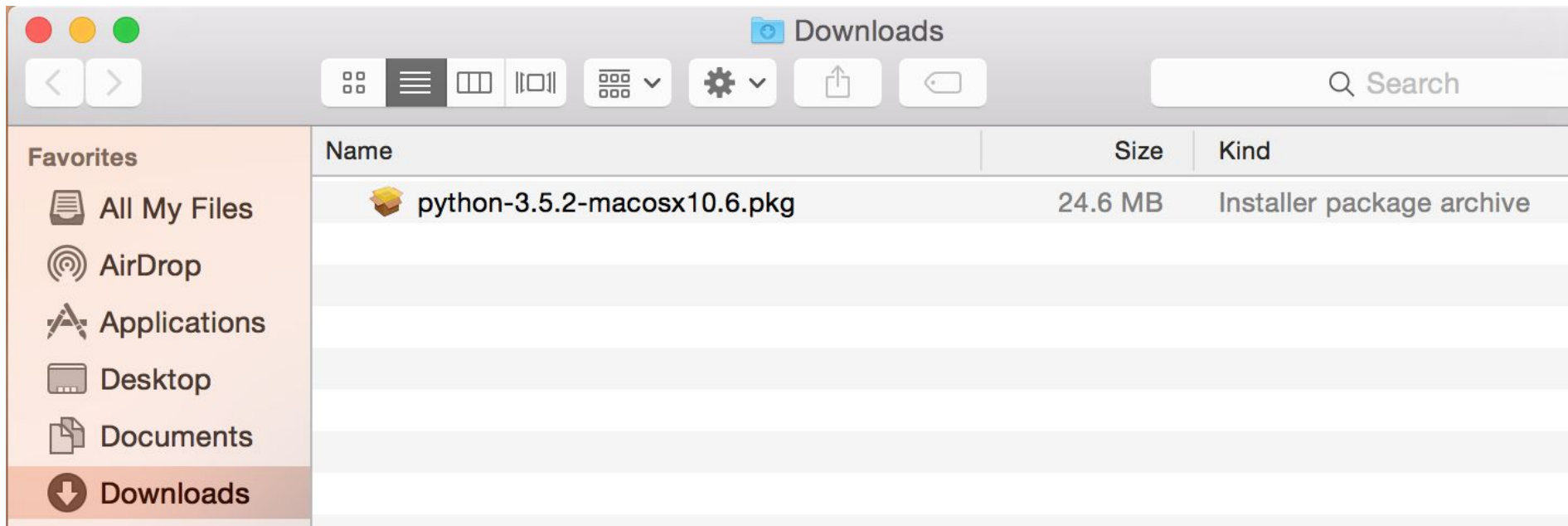
Python - installation - Mac

Here are some screenshots when I installed Python 3.5 on my **Mac**



Python - installation - Mac

I can see that the python package is downloaded

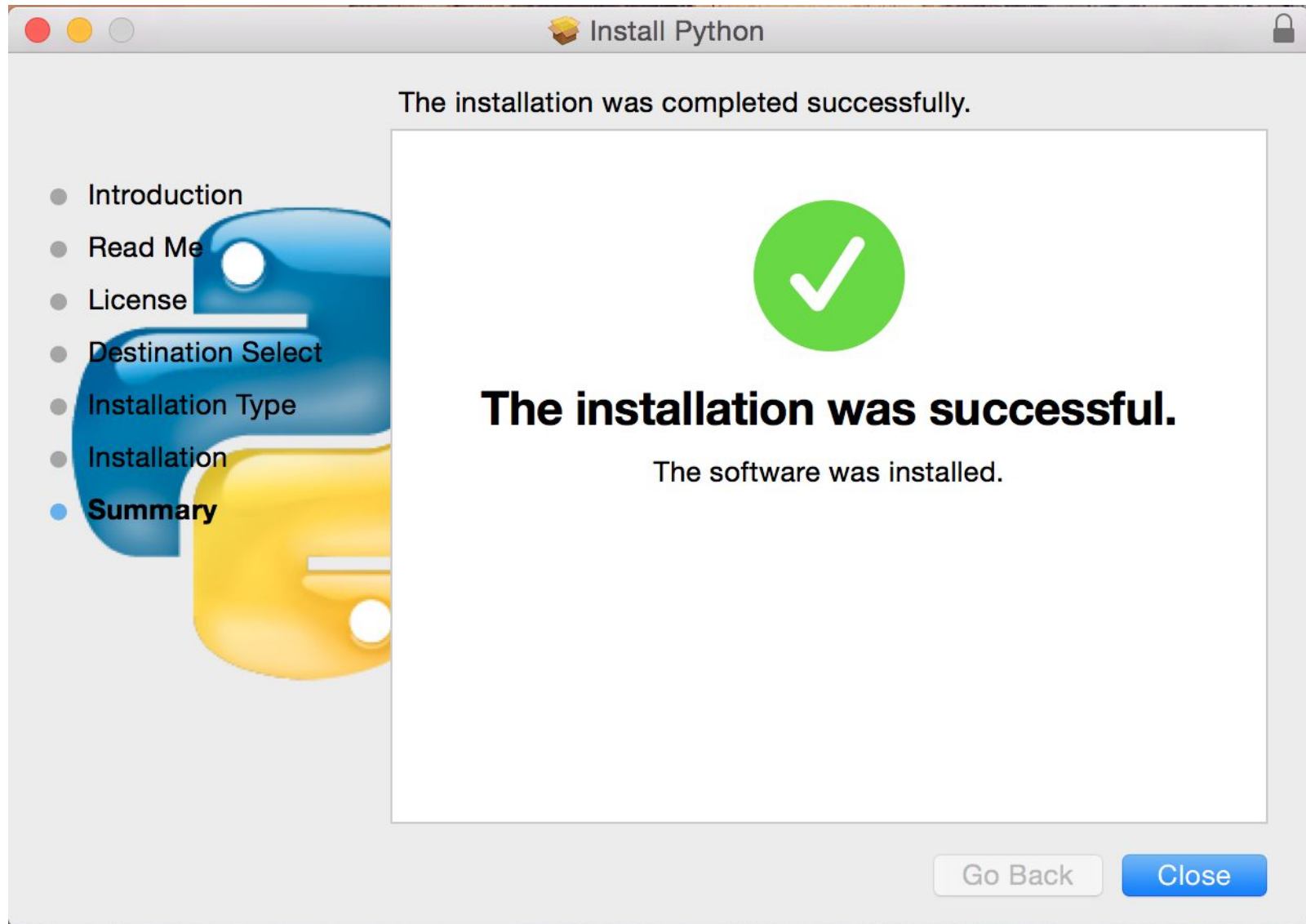


Python - installation - Mac

Double click on python package to run and follow the instructions

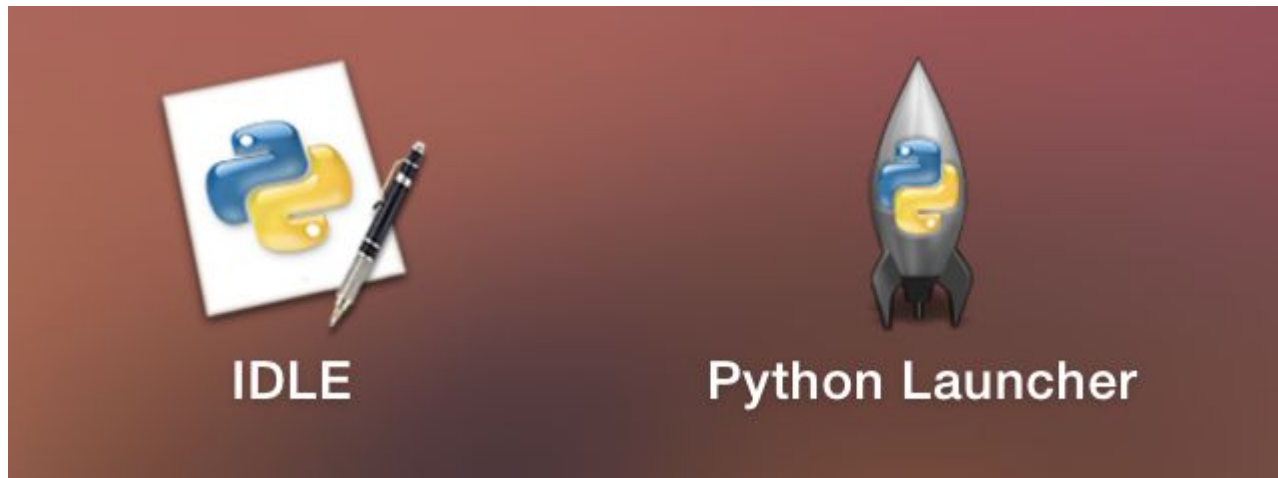


Python - installation - Mac



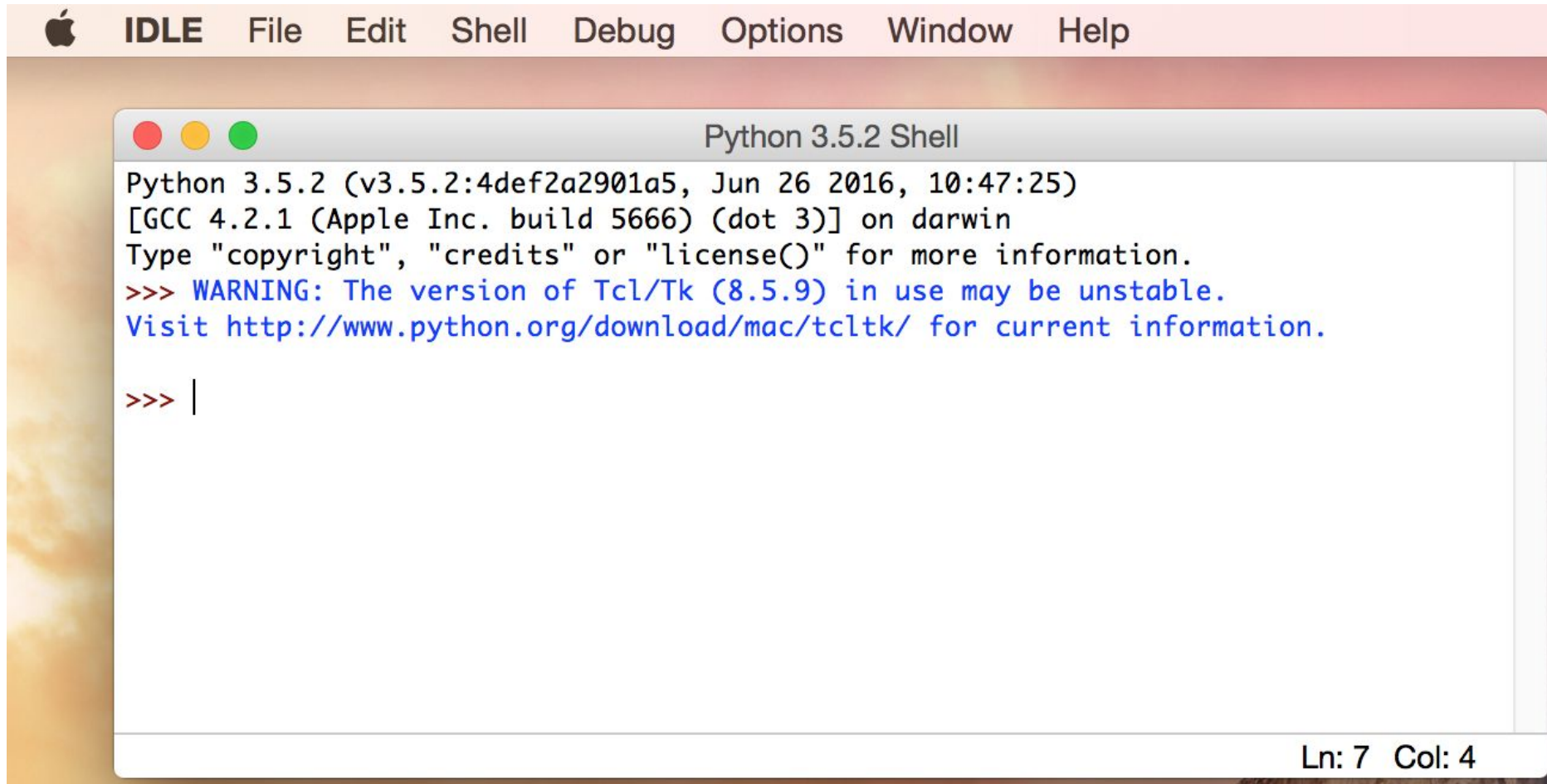
Python - installation - Mac

On the Launchpad, I can see the **IDLE**



Python - installation - Mac

Run the **IDLE**



```
Python 3.5.2 Shell

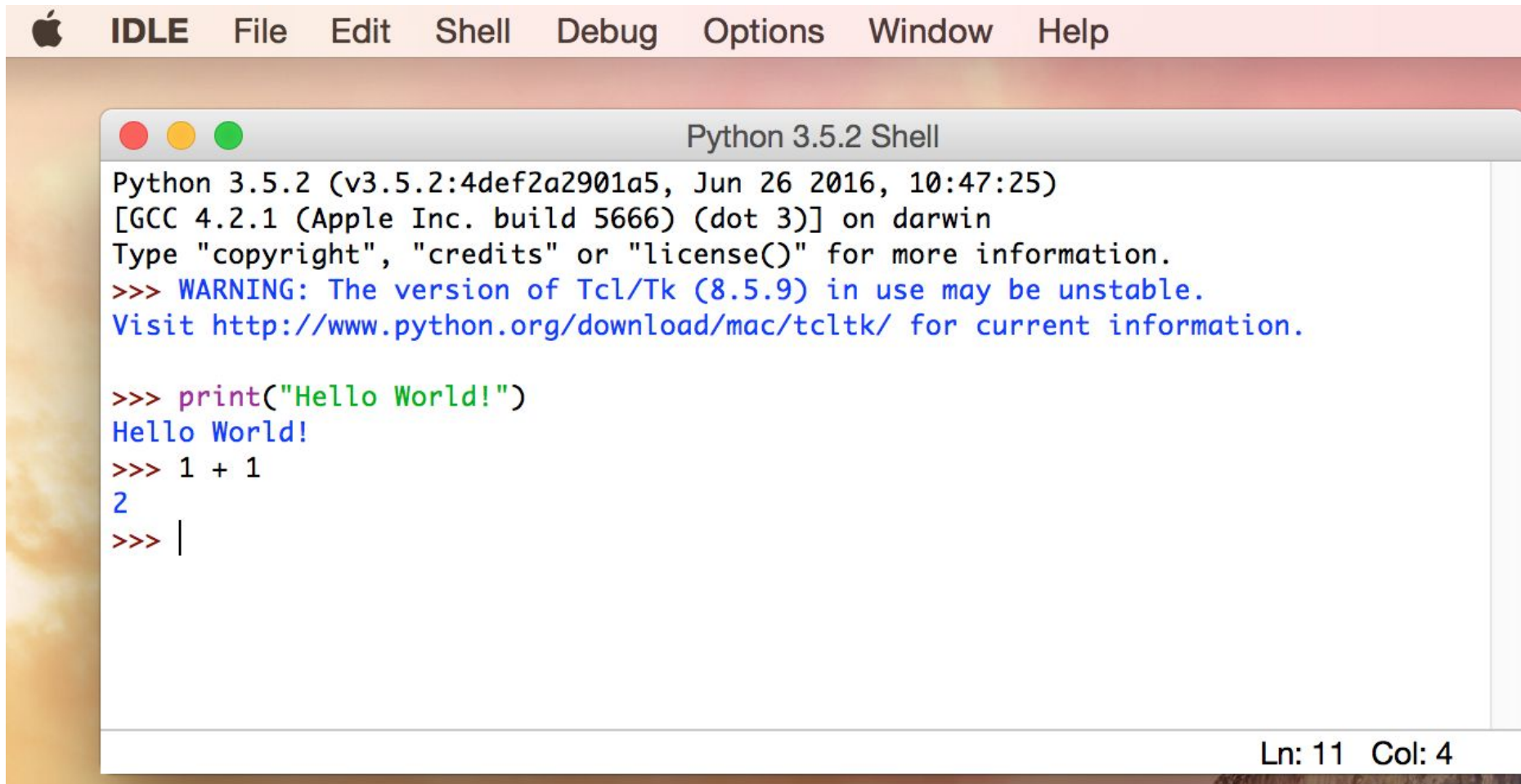
Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 26 2016, 10:47:25)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
Type "copyright", "credits" or "license()" for more information.
>>> WARNING: The version of Tcl/Tk (8.5.9) in use may be unstable.
Visit http://www.python.org/download/mac/tcltk/ for current information.

>>> |
```

Ln: 7 Col: 4

Python - installation - Mac

Run the **IDLE**, type in some python code



```
Python 3.5.2 Shell


Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 26 2016, 10:47:25)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
Type "copyright", "credits" or "license()" for more information.
>>> WARNING: The version of Tcl/Tk (8.5.9) in use may be unstable.
Visit http://www.python.org/download/mac/tcltk/ for current information.

>>> print("Hello World!")
Hello World!
>>> 1 + 1
2
>>> |
```

Ln: 11 Col: 4

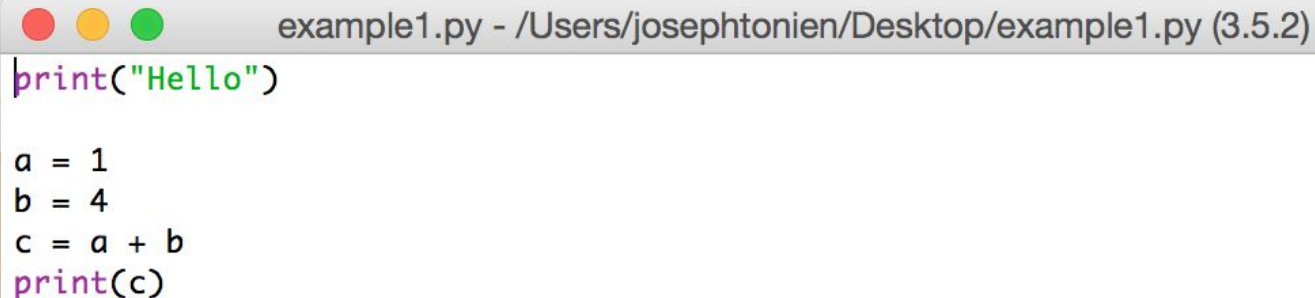
Python - installation - Mac

From here, we can use the **IDLE** to create a new file, to save the file, as exactly as before, as shown in Windows example



```
Python 3.5.2 (v3.5.2:4def2a2901a5, Jun 26 2016, 10:47:25)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
Type "copyright", "credits" or "license()" for more information.
>>> WARNING: The version of Tcl/Tk (8.5.9) in use may be unstable.
Visit http://www.python.org/download/mac/tcltk/ for current information.

>>> print("Hello World!")
Hello World!
>>> 1 + 1
2
>>>
===== RESTART: /Users/josephthonien/Desktop/example1.py =====
Hello
5
>>>
```



```
example1.py - /Users/josephthonien/Desktop/example1.py (3.5.2)
print("Hello")

a = 1
b = 4
c = a + b
print(c)
```

Online resource

There are many online tutorials on Python

Try Google search or Youtube search on “python tutorial”

Here are some useful links:

<http://www.python.org/about/gettingstarted>

<http://docs.python.org/3/>

<http://wiki.python.org/moin/BeginnersGuide/Programmers>

<http://www.tutorialspoint.com/python3>

Online IDE

What if I don't have computer/laptop at home?

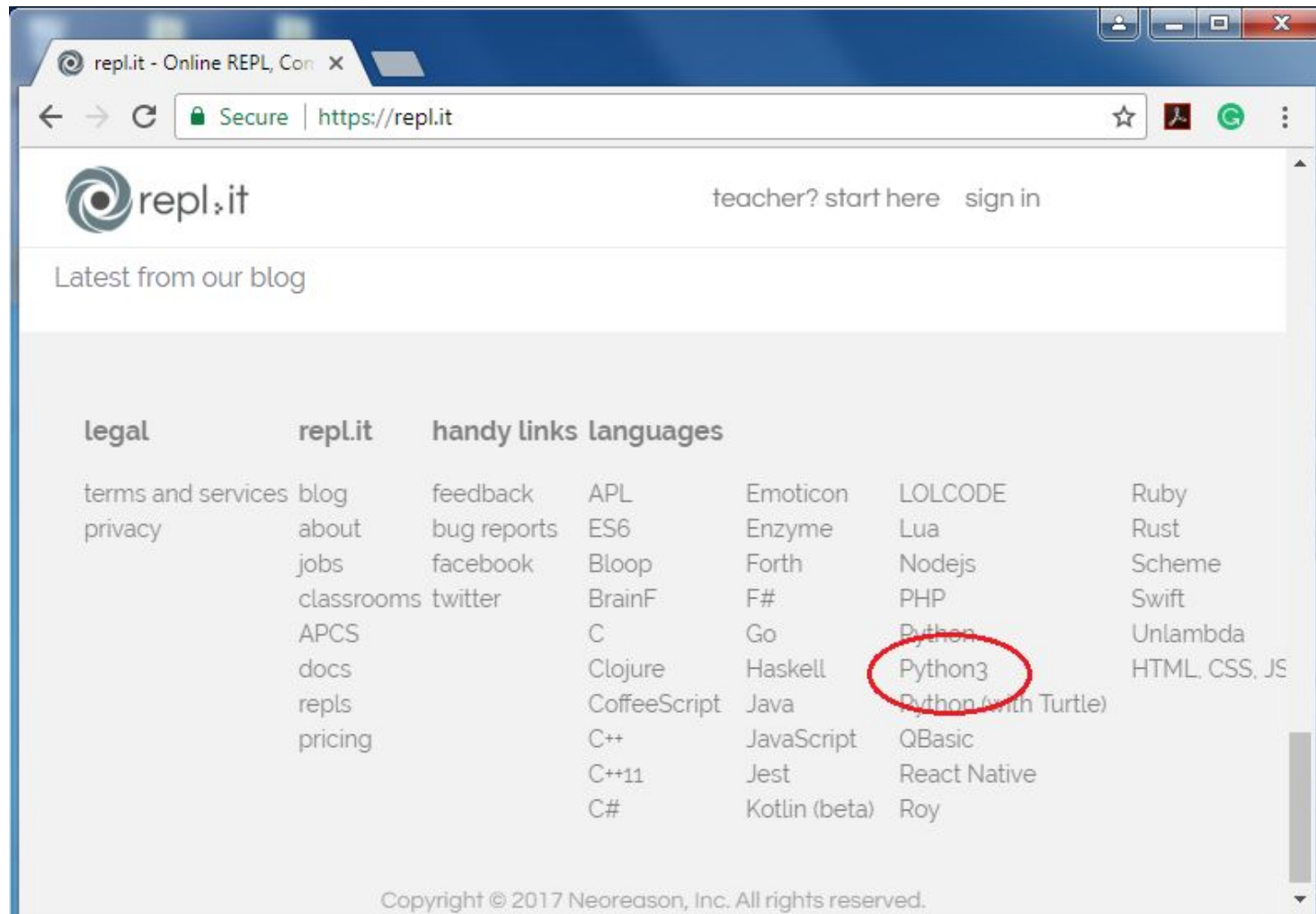
What if my computer/laptop cannot install Python?

Use online Python IDEs

- **<http://repl.it>**
- <http://pythontutor.com>
- <http://techmums.co/python.html>
- <http://www.tutorialspoint.com>

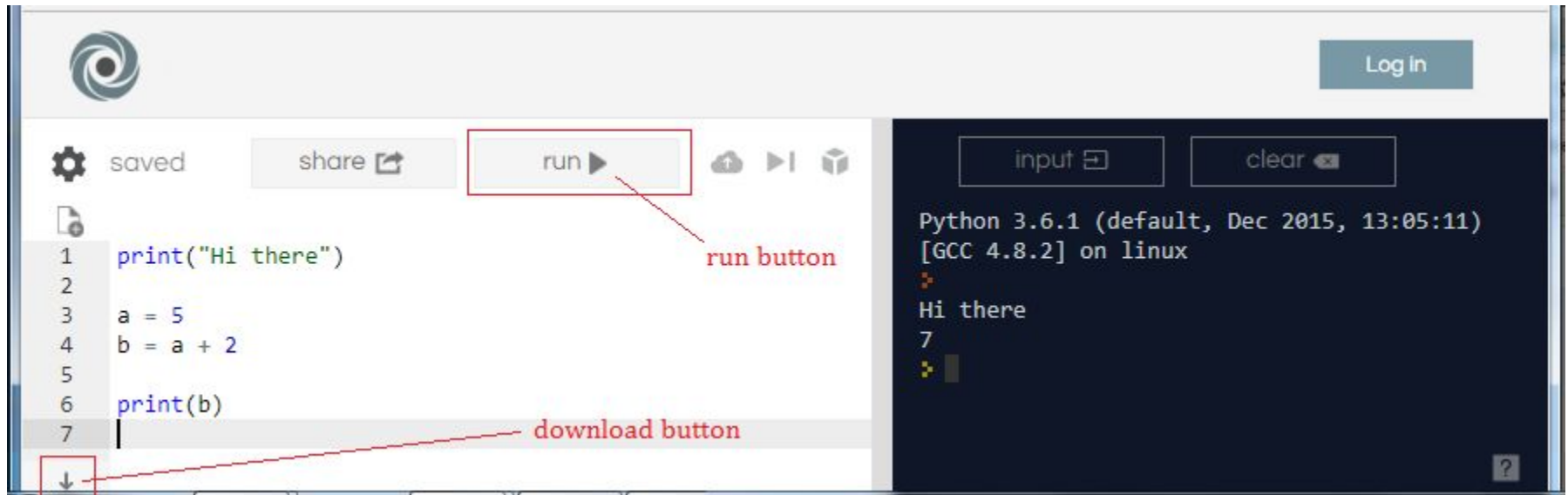
Online IDE

Run Python online on <http://repl.it>
there is a link at the end of the webpage



Online IDE

Run Python online on <http://repl.it>



Finally,

- good programming skill - needs a lot of practice!
- so install **Python** and start coding as soon as possible