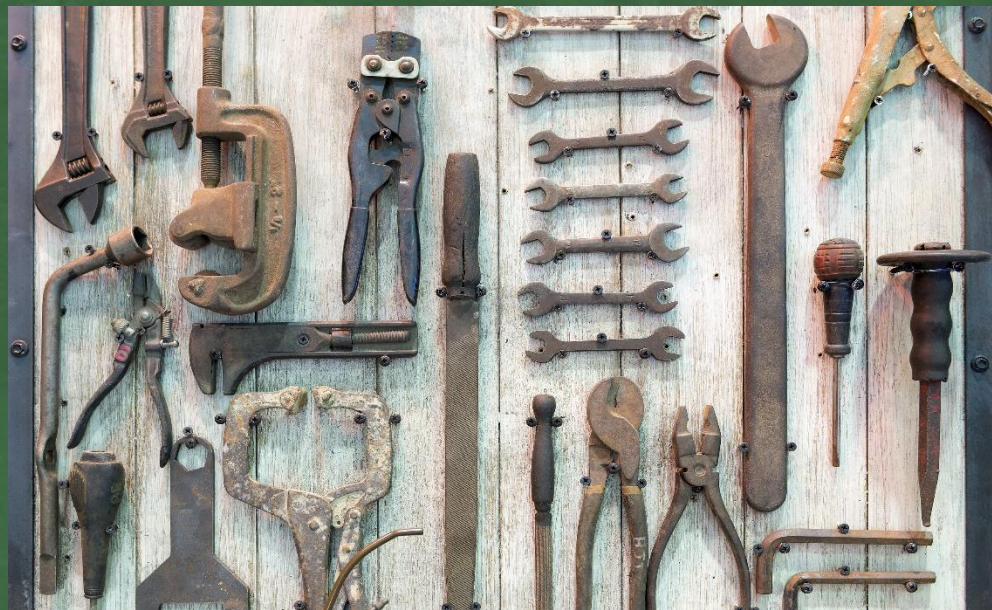


Tools and Review

- Installing Python
- REPL
- Python Review
- Zoo

Advanced Python Programming



See Also

<https://www.informatics.indiana.edu/rocha/academics/i-bic/lab1/Python%20review.pdf>

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

<https://www.jetbrains.com/pycharm/>



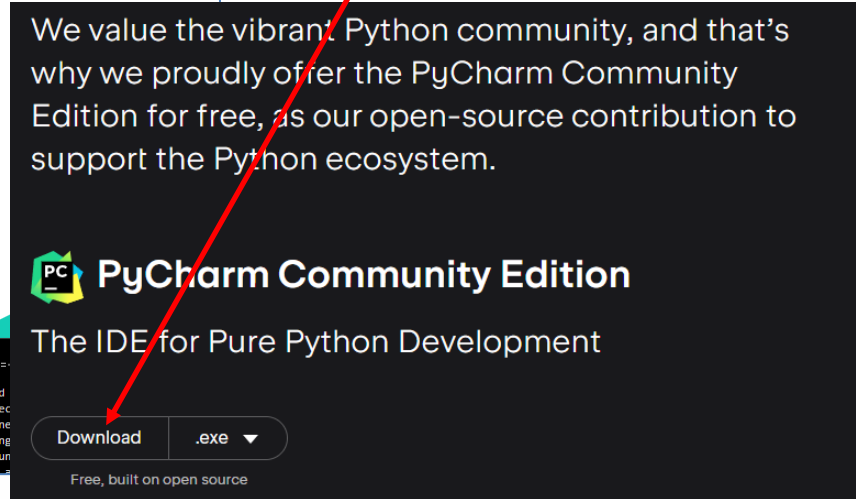
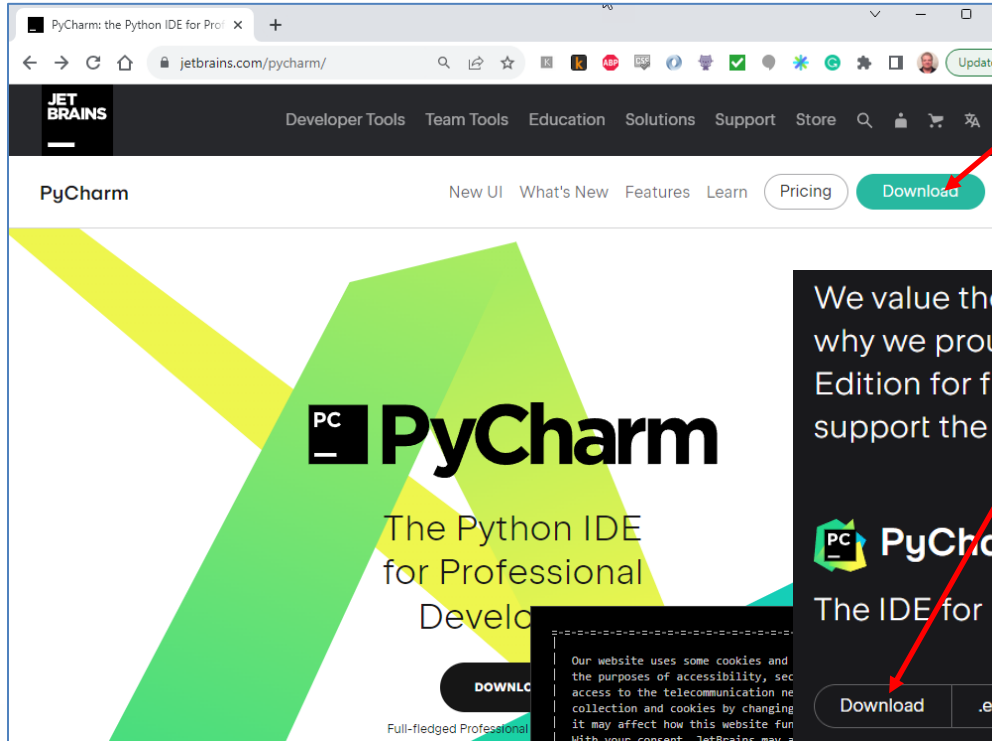
Installing Python

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

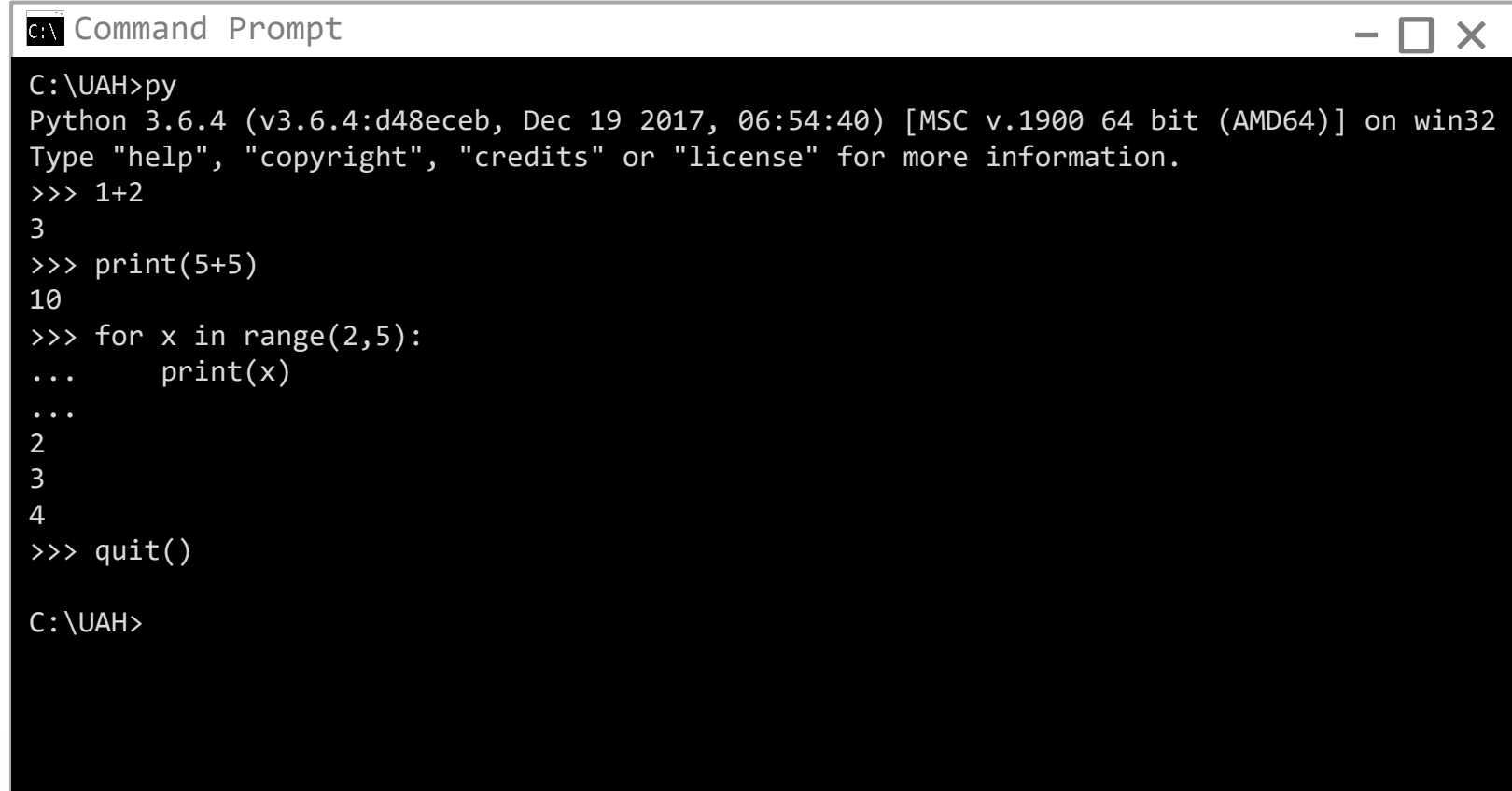


Installing PyCharm

- <https://www.jetbrains.com/pycharm/>



The Command Line



```
C:\> Command Prompt
C:\> py
Python 3.6.4 (v3.6.4:d48eceb, Dec 19 2017, 06:54:40) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> 1+2
3
>>> print(5+5)
10
>>> for x in range(2,5):
...     print(x)
...
2
3
4
>>> quit()

C:\>
```

Review: Functions

- Functions take arguments and return values
- You can return multiple things
- Variables declared in a function are transient locals

```
def getYesNo(prompt):  
    ret = input(prompt).capitalize()[0]  
    # This is a comment  
    return 1234, ret
```

```
i = getYesNo("First ")  
print(i)  
print(i[0])
```

```
i,j = getYesNo("Second ")  
  
print(i)  
print(j)
```

Review: Variables

```
a = 5.2  
b = a + 2  
c = False  
d = None
```

```
g = [1, 2, 3, "Hello", 4]  
print(g[2])  
print(g[3])
```

```
del g[2]  
g.append("World")
```

```
print g
```

```
3  
Hello  
[1, 2, 'Hello', 4, 'World']
```

Everything is a Pointer

- More in a later lecture

```
>>> a = [1,2,3]
```

```
>>> a.append(a)
```

```
>>> a[3][3][3][3][3][3][3][3][3][3][3][3][3][3][3][3][2]
```

```
3
```

```
>>>
```


Command Line Arguments

```
import sys
print(sys.argv)

print(sys.argv[1])
```

```
C:\UAH>python Tinker.py a b c
3
Hello
[1, 2, 'Hello', 4, 'World']
['Tinker.py', 'a', 'b', 'c']
```

```
a
```

Dictionaries

- TODO

Example: The Zoo

```
animals = {  
    "Question" : "Does it live on Land?",  
    "No" : "Fish",  
    "Yes" : {  
        "Question": "Does it fly?",  
        "Yes" : "Bird",  
        "No" : "Cow"  
    }  
}  
  
def getYesNo(prompt):  
    ret = input(prompt).capitalize()[0]  
    if ret=="Y":  
        return "Yes"  
    return "No"  
  
node = animals  
while True:  
    ans = getYesNo(node["Question"]+" ")  
  
    next_node = node[ans]  
  
    if type(next_node) is not str:  
        node = next_node  
        continue  
  
    got_it = getYesNo("Is it a "+next_node+"? ")
```

Example: The Zoo

```
if got_it == 'Yes':
    print("Let's play again.")
    node = animals
    continue

print "You stumped me."
new_animal = input("What were you thinking of? ")
new_ques = input("Give me a question to separate "+next_node+" from "+new_animal+": ")
yn = getYesNo("And what would the Y/N answer be for "+new_animal+"? ")

new_node = {"Question":new_ques}
if yn=='Yes':
    new_node['Yes'] = new_animal
    new_node['No'] = next_node
else:
    new_node['Yes'] = next_node
    new_node['No'] = new_animal

node[ans] = new_node

print("Let's play again.")
node = animals
```

Tinkering

- Create an empty python project in your IDE
- Type in the Zoo example
- How could you load the zoo at the beginning of the game and save it when a new animal is added?



Python 2.x or 3.x

- <https://www.dataquest.io/blog/python-2-or-3/>
- Python 3.x started in 2008 (a DECADE ago)
- The versions are incompatible
- Nearly all popular libraries support Python 3 now
- Python 2.x is scheduled end-of-life in 2020
- Django version 2.0 does not support Python version 2.x
- **Learn Python 3.x**

Python 2.x vs 3.x

- http://sebastianraschka.com/Articles/2014_python_2_3_key_diff.html

Python 2

```
print 'Python', python_version()  
print 'Hello, World!'  
print('Hello, World!')  
print "text", ; print 'print more text on the same line'
```

Python 3

```
print('Python', python version())  
print('Hello, World!')  
  
print("some text,", end="")  
print(' print more text on the same line')
```

Python 2.x vs 3.x

Python 2

```
print 'Python', python_version()
try:
    let_us_cause_a_NameError
except NameError, err:
    print err, '--> our error message'
```

Python 3

```
print('Python', python_version())
try:
    let_us_cause_a_NameError
except NameError as err:
    print(err, '--> our error message')
```

Pydev and Eclipse

- <http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Java SE Development Kit 8u161		
You must accept the Oracle Binary Code License Agreement for Java SE to download this software.		
<input type="radio"/> Accept License Agreement <input type="radio"/> Decline License Agreement		
Product / File Description	File Size	Download
Linux ARM 32 Hard Float ABI	77.92 MB	jdk-8u161-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	74.88 MB	jdk-8u161-linux-arm64-vfp-hflt.tar.gz
Linux x86	168.96 MB	jdk-8u161-linux-i586.rpm
Linux x86	183.76 MB	jdk-8u161-linux-i586.tar.gz
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Linux x64	180.97 MB	jdk-8u161-linux-x64.tar.gz
macOS	247.12 MB	jdk-8u161-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	139.99 MB	jdk-8u161-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.29 MB	jdk-8u161-solaris-sparcv9.tar.gz
Solaris x64	140.57 MB	jdk-8u161-solaris-x64.tar.Z
Solaris x64	97.02 MB	jdk-8u161-solaris-x64.tar.gz
Windows x86	198.54 MB	jdk-8u161-windows-i586.exe
Windows x64	206.51 MB	jdk-8u161-windows-x64.exe

- <https://www.eclipse.org/downloads/>



Get Eclipse **OXYGEN**

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Pydev and Eclipse

The screenshot shows the Eclipse IDE interface. On the left, the 'Help' menu is open, with 'Eclipse Marketplace...' selected. On the right, the 'Eclipse Marketplace' window is displayed. The search bar contains 'Pydev' and is highlighted with a red box. Below the search bar, the results for 'Pydev' are shown, including the 'PyDev - Python IDE for Eclipse 6.3.1' entry. This entry is also highlighted with a red box. The 'Installed' button for this entry is highlighted with a red box.

Help

- Welcome
- Help Contents
- Search
- Show Contextual Help
- Show Active Keybindings... Ctrl+Sh
- Tips and Tricks...
- Report Bug or Enhancement...
- Cheat Sheets...
- Perform Setup Tasks...
- Check for Updates
- Install New Software...
- Installation Details
- Eclipse Marketplace...**
- About Eclipse

Eclipse Marketplace

Select solutions to install. Press Install Now to proceed with installation. Press the "more info" link to learn more about a solution.

Search Recent Popular Favorites Installed Eclipse Newsletter: Boot Build E

Find: **Pydev** All Markets All Categories Go

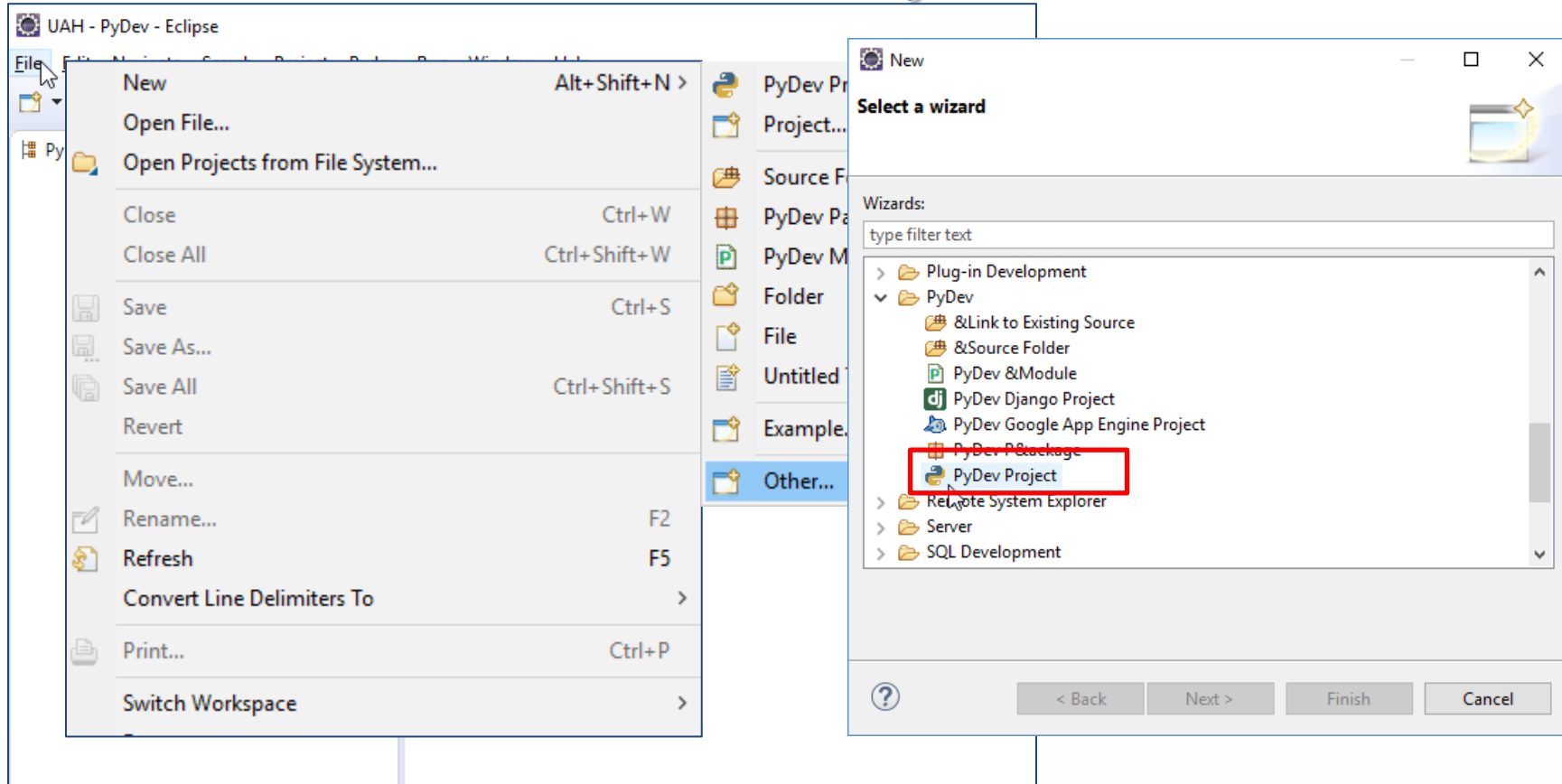
PyDev - Python IDE for Eclipse 6.3.1

PyDev is a plugin that enables Eclipse to be used as a Python IDE (supporting also Jython and IronPython). It uses advanced type inference techniques which allow... [more info](#)

by [Brainwy Software](#) EPL
[IDE Python Aptana Pydev Django ...](#)

★ 973 Installs: **916K** (16,394 last month) **Installed**

New Project



New Project

PyDev Project
Create a new PyDev Project.

Project name:

Project contents:
☒ Use default

Directory: C:\UAH\Tinker

Project type
Choose the project type
☒ Python ☐ Jython ☐ IronPython

Grammar Version
Same as interpreter

Interpreter
Default -- currently python

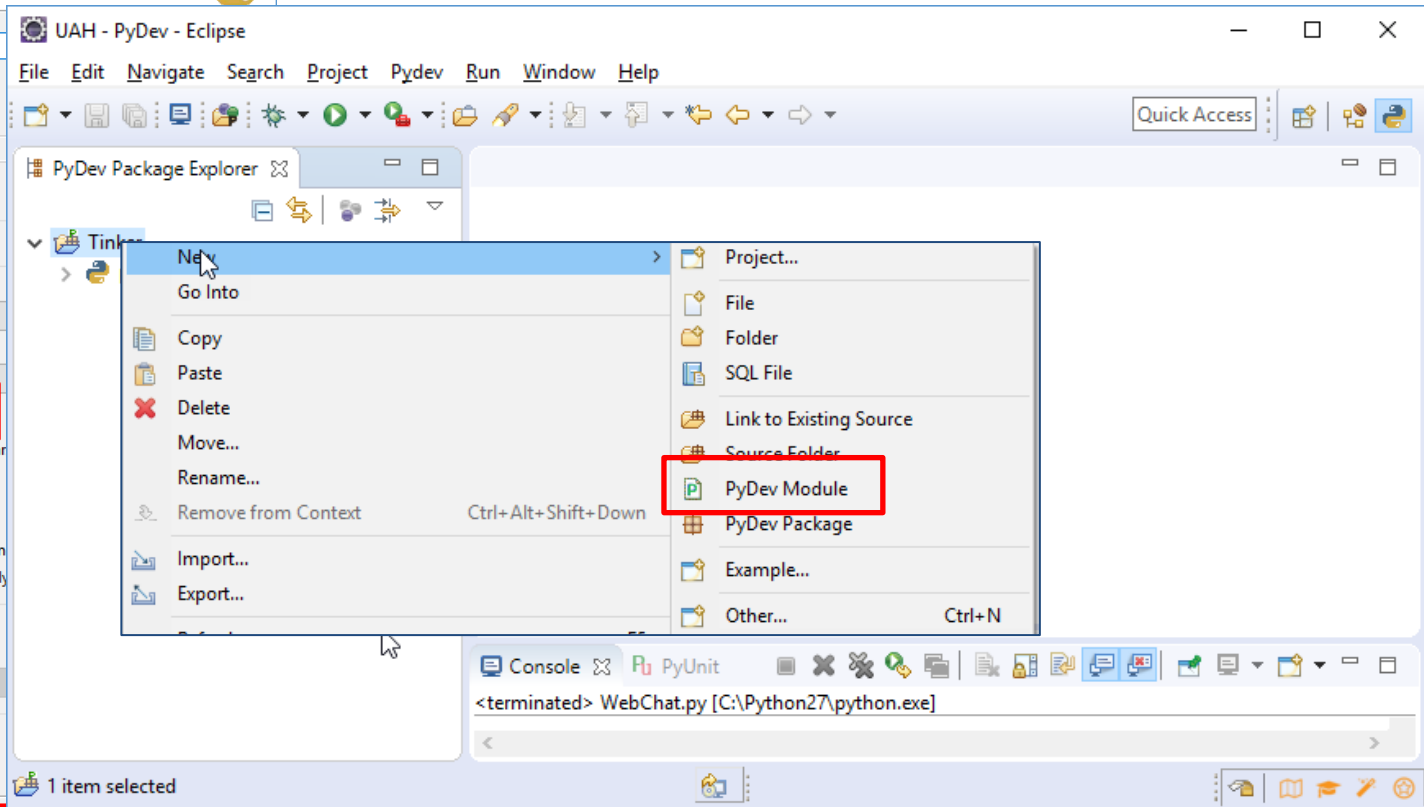
[Click here to configure an interpreter not listed.](#)

Additional syntax validation: <no additional grammar>

☒ Add project directory to the PYTHONPATH
☐ Create 'src' folder and add it to the PYTHONPATH
☐ Create links to existing sources (select them on the n
☐ Don't configure PYTHONPATH (to be done manually)

Working sets
☐ Add project to working sets

Working sets:



New Project

