

Improving Your Productivity Programming in Python with an IDE



Xavier Morera

HELPING DEVELOPERS UNDERSTAND SEARCH & BIG DATA

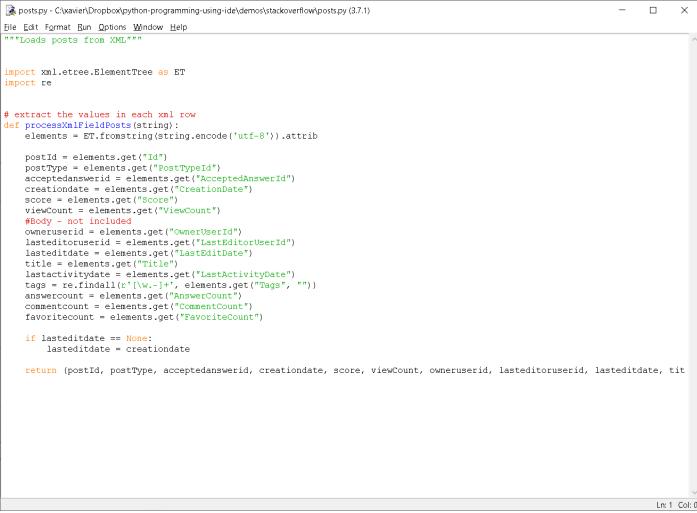
@xmorera www.xavermorera.com



Describing the General Selection of Popular IDEs for Python



Python IDEs for Learning



A screenshot of the Python IDLE (Integrated Development Environment) interface. The title bar says "posts.py - C:\xavien\Dropbox\python-programming-using-idle\demo\stackoverflow\posts.py (3.7.1)". The menu bar includes File, Edit, Format, Run, Options, Window, Help. The status bar at the bottom shows "Ln: 1 Col: 0". The code area contains Python code for parsing XML posts:

```
#!/usr/bin/python
# posts.py - C:\xavien\Dropbox\python-programming-using-idle\demo\stackoverflow\posts.py (3.7.1)
# Loads posts from XML
import xml.etree.ElementTree as ET
import re

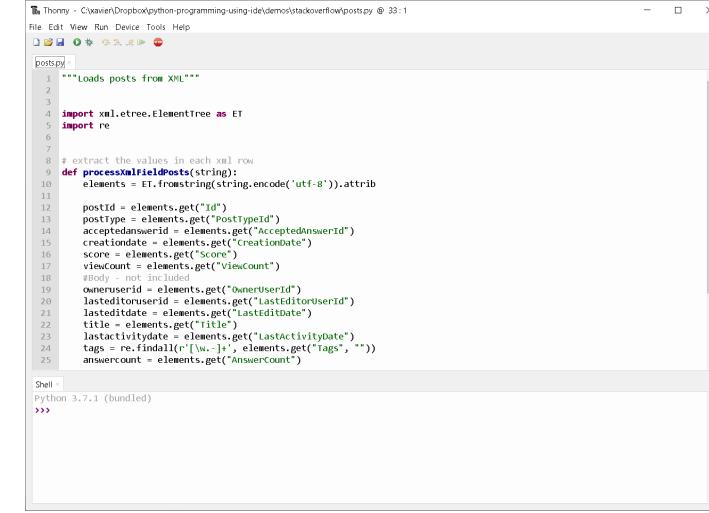
# extract the values in each xml row
def processXmlFieldPosts(string):
    elements = ET.fromstring(string.encode('utf-8')).attrib
    postId = elements.get('id')
    postType = elements.get("PostTypeId")
    acceptedanswerid = elements.get("AcceptedAnswerId")
    creationdate = elements.get("CreationDate")
    score = elements.get("Score")
    viewCount = elements.get("ViewCount")
    #Body - not included
    owneruserId = elements.get("OwnerUserId")
    lasteditoruserId = elements.get("LastEditorUserId")
    lasteditdate = elements.get("LastEditDate")
    title = elements.get("Title")
    lastactivitydate = elements.get("LastActivityDate")
    tags = re.findall(r'[\w-]+', elements.get("Tags", ""))
    answercount = elements.get("AnswerCount")
    commentcount = elements.get("CommentCount")
    favoritecount = elements.get("FavoriteCount")

    if lasteditdate == None:
        lasteditdate = creationdate

    return (postId, postType, acceptedanswerid, creationdate, score, viewCount, owneruserId, lasteditoruserId, lasteditdate, title)
```

IDLE

Integrated Development
& Learning Environment



A screenshot of the Thonny Python IDE interface. The title bar says "Thonny - C:\xavien\Dropbox\python-programming-using-idle\demo\stackoverflow\posts.py @ 33:1". The menu bar includes File, Edit, View, Run, Device, Tools, Help. The status bar at the bottom shows "Shell" and "Python 3.7.1 (bundled)". The code area contains Python code for parsing XML posts, identical to the one in IDLE:

```
#!/usr/bin/python
# posts.py - C:\xavien\Dropbox\python-programming-using-idle\demo\stackoverflow\posts.py @ 33:1
# Loads posts from XML
import xml.etree.ElementTree as ET
import re

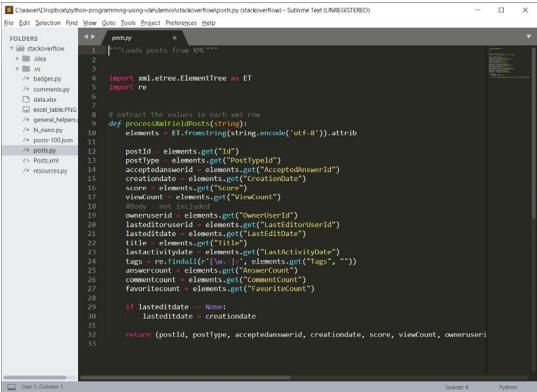
# extract the values in each xml row
def processXmlFieldPosts(string):
    elements = ET.fromstring(string.encode('utf-8')).attrib
    postId = elements.get('id')
    postType = elements.get("PostTypeId")
    acceptedanswerid = elements.get("AcceptedAnswerId")
    creationdate = elements.get("CreationDate")
    score = elements.get("Score")
    viewCount = elements.get("ViewCount")
    #Body - not included
    owneruserId = elements.get("OwnerUserId")
    lasteditoruserId = elements.get("LastEditorUserId")
    lasteditdate = elements.get("LastEditDate")
    title = elements.get("Title")
    lastactivitydate = elements.get("LastActivityDate")
    tags = re.findall(r'[\w-]+', elements.get("Tags", ""))
    answercount = elements.get("AnswerCount")
```

Thonny

Python IDE for beginners

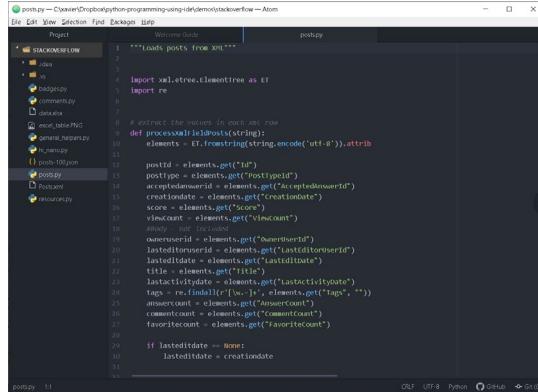


Code Editors as IDEs



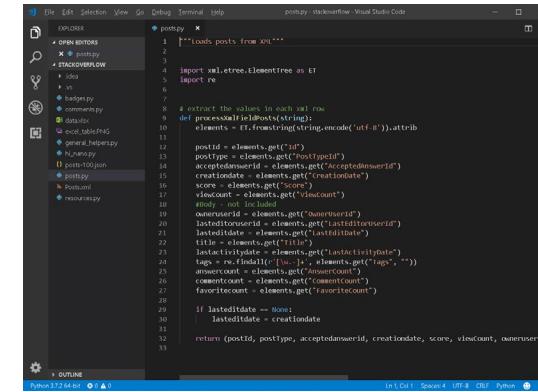
A screenshot of the Sublime Text code editor. The window title is "C:\Users\Hans\Dropbox\python\programming-only\stackOverflow\stackoverflow - Sublime Text (UNREGISTERED)". The file open is "post.py". The code reads:

```
#!/usr/bin/python
# stackoverflow
#   - reads posts from XML
#   - posts
#     - posttype
#       - acceptedanswerid
#       - creationdate
#       - score
#       - viewcount
#       - owneruserid
#       - lastedituserid
#       - lasteditdate
#       - title
#       - lastactivitydate
#       - tags
#       - answercount
#       - commentcount
#       - favoritecount
#       - if lasteditdate == None:
#           lasteditdate = creationdate
#       return (postid, posttype, acceptedanswerid, creationdate, score, viewcount, owneruserid)
```



A screenshot of the Atom code editor. The window title is "C:\Users\Hans\Dropbox\python\programming-only\stackOverflow\stackoverflow - Atom". The file open is "post.py". The code is identical to the Sublime Text version.

```
#!/usr/bin/python
# stackoverflow
#   - reads posts from XML
#   - posts
#     - posttype
#       - acceptedanswerid
#       - creationdate
#       - score
#       - viewcount
#       - owneruserid
#       - lastedituserid
#       - lasteditdate
#       - title
#       - lastactivitydate
#       - tags
#       - answercount
#       - commentcount
#       - favoritecount
#       - if lasteditdate == None:
#           lasteditdate = creationdate
#       return (postid, posttype, acceptedanswerid, creationdate, score, viewcount, owneruserid)
```



A screenshot of the Visual Studio Code code editor. The window title is "C:\Users\Hans\Dropbox\python\programming-only\stackOverflow\stackoverflow - Visual Studio Code". The file open is "post.py". The code is identical to the Sublime Text and Atom versions.

```
#!/usr/bin/python
# stackoverflow
#   - reads posts from XML
#   - posts
#     - posttype
#       - acceptedanswerid
#       - creationdate
#       - score
#       - viewcount
#       - owneruserid
#       - lastedituserid
#       - lasteditdate
#       - title
#       - lastactivitydate
#       - tags
#       - answercount
#       - commentcount
#       - favoritecount
#       - if lasteditdate == None:
#           lasteditdate = creationdate
#       return (postid, posttype, acceptedanswerid, creationdate, score, viewcount, owneruserid)
```

Sublime Text

A sophisticated text editor for code, markup and prose

Atom

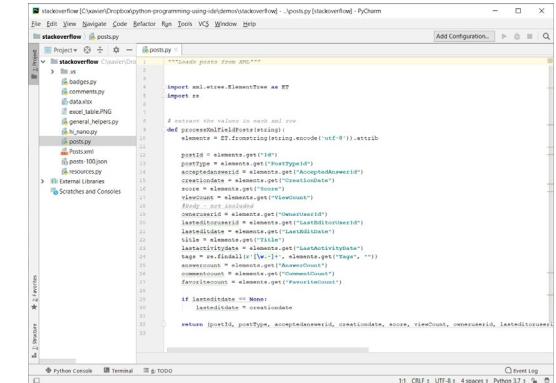
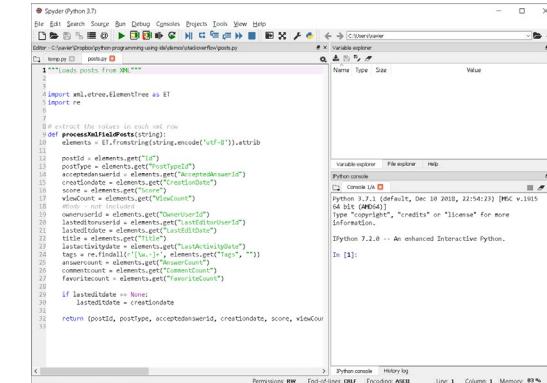
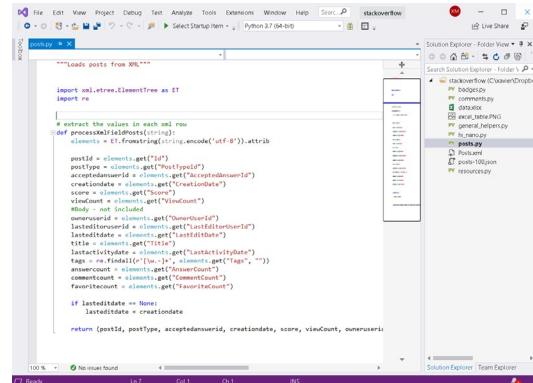
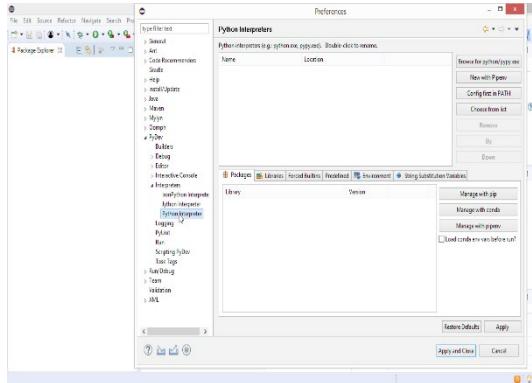
A hackable text editor for the 21st Century

VS Code

Code editing. Redefined.



Integrated Development Environments



Eclipse

Used widely in
the Java world

Visual Studio

For those that
come from .NET

Spyder

Powerful scientific
environment

PyCharm

The Python IDE
for Professional
Developers



File Edit Source Refactor Navigate Search Project

Package Explorer

Preferences

Python Interpreters

Python interpreters (e.g.: python.exe, pypy.exe). Double-click to rename.

Name Location

Packages Libraries Forced Builtins Predefined Environment String Substitution Variables

Library Version

Manage with pip
Manage with conda
Manage with pipenv
 Load conda env vars before run?

Restore Defaults Apply

Apply and Close Cancel

?

type filter text

- General
- Ant
- Code Recommenders
- Gradle
- Help
- Install/Update
- Java
- Maven
- Mylyn
- Oomph
- PyDev
 - Builders
 - Debug
 - Editor
 - Interactive Console
 - Interpreters
 - IronPython Interpreter
 - Jython Interpreter
 - Python Interpreter
 - Logging
 - PyUnit
 - Run
 - Scripting PyDev
 - Task Tags
- Run/Debug
- Team
- Validation
- XML

< >

Browse for python/pypy exe
New with Pipenv
Config first in PATH
Choose from list
Remove
Up
Down

Visual Studio Installer

Modifying — Visual Studio Community 2019 — 16.0.2

Workloads

Individual components

Language packs

Installation locations

Web & Cloud (4)



ASP.NET and web development

Build web applications using ASP.NET, ASP.NET Core, HTML/JavaScript, and Containers including Docker support.



Azure development

Azure SDKs, tools, and projects for developing cloud apps, creating resources, and building Containers including...



Python development

Editing, debugging, interactive development and source control for Python.



Node.js development

Build scalable network applications using Node.js, an asynchronous event-driven JavaScript runtime.



Windows (3)



.NET desktop development

Build WPF, Windows Forms, and console applications using C#, Visual Basic, and F#.



Desktop development with C++

Build Windows desktop applications using the Microsoft C++ toolset, ATL, or MFC.



Universal Windows Platform development

Create applications for the Universal Windows Platform with C#, VB, or optionally C++.



Mobile & Gaming (4)



Mobile development with .NET

Build cross-platform applications for iOS, Android or Windows using Xamarin.



Game development with Unity

Create 2D and 3D games with Unity, a powerful cross-platform development environment.



Location

C:\Program Files (x86)\Microsoft Visual Studio\2019\Community

Total space required

0 KB

By continuing, you agree to the [license](#) for the Visual Studio edition you selected. We also offer the ability to download other software with Visual Studio. This software is licensed separately, as set out in the [3rd Party Notices](#) or in its accompanying license. By continuing, you also agree to those licenses.

Install while downloading

Close

Installer Version 2.0.3297.403

Installation details

Visual Studio core editor

ASP.NET and web development

Azure development

.NET desktop development

Data storage and processing

.NET Core cross-platform development

Python development

Included

Python language support

Optional

Python miniconda

Python web support

Python 3 64-bit (3.7.2)

Live Share

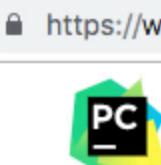
Python native development tools

Azure Cloud Services core tools

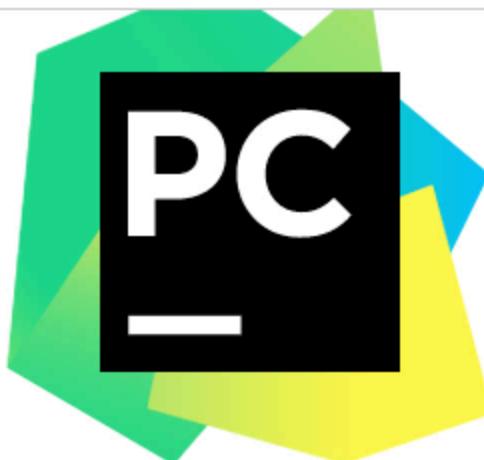
Python 2 64-bit (2.7.15)

Python 3 32-bit (3.7.2)

Python 2 32-bit (2.7.15)



PyCharm

[What's New](#) [Features](#) [Docs & Demos](#) [Buy](#)[Download](#)

Download PyCharm

[Windows](#)
[macOS](#)[Linux](#)

Professional

Version: 2019.1.2

Build: 191.7141.48

Released: May 7, 2019

[System requirements](#)[Installation Instructions](#)[Previous versions](#)[DOWNLOAD](#)[Free trial](#)

Community

For pure
Python development

[DOWNLOAD](#)

Free, open-source

Customizing IDEs

Dictionary



 **cus·tom·ize**
/'kəstə,mīz/
verb
modify (something) to suit a particular individual or task.
"the suit can be customized for every skydiving need"

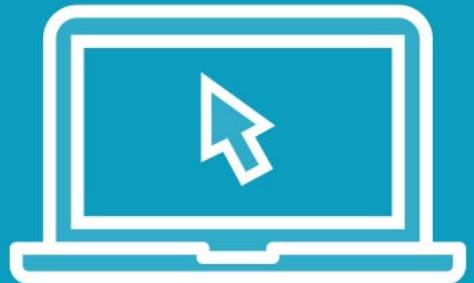
 Translations, word origin, and more definitions

Feedback





Demo



Customizing IDEs



Add Configuration...



1: Project

Project ▾ + - ⚙ — posts.py

- stackoverflow ~/Dropbox/
- .vs
- badges.py
- comments.py
- data.xlsx
- excel_table.PNG
- general_helpers.py
- hi_nano.py
- posts.py
- Posts.xml
- posts-100.json
- resources.py

External Libraries

Scratches and Consoles

No Python interpreter configured for the project

Configure Python interpreter ⚙

```
1 """Loads posts from XML"""
2
3
4 import xml.etree.ElementTree as ET
```

Tip of the Day

You can easily rename your local variables with automatic correction of all places where they are used.

To try it, place the caret at the variable you want to rename, and press **Alt+F6 (Refactor | Rename)**. Type the new name in the popup window that appears, or select one of the suggested names, and press **Enter**.

```
RegexpSample.py x
16 __author__ = 'jetbrains'
17
18 import re
19 def regexp(self):
20     p1 = re.compile('[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]{3,4}')
21     print (p1)
22
23
24
25
26
27 favoritecount = elements.get('favoriteCount')
28
29 if lasteditdate == None:
30     lasteditdate = creationdate
31
32 return (postId, postType, acceptedanswerid, creationdate, score, viewCount, owneruserid, lasteditoruserid, lasteditdate, title, lastactiv
```

 Show tips on startup

Close

Previous Tip

Next Tip

posts.py ×

```
1     """Loads posts from XML"""
2
3
4     import xml.etree.ElementTree as ET
5     import re
6
7
8     # extract the values in each xml row
9     def processXmlFieldPosts(string):
10         elements = ET.fromstring(string.encode('utf-8')).attrib
11
12         postId = elements.get("Id")
13         postType = elements.get("PostTypeId")
14         acceptedanswerid = elements.get("AcceptedAnswerId")
15         creationdate = elements.get("CreationDate")
16         score = elements.get("Score")
17         viewCount = elements.get("ViewCount")
18         #Body - not included
19         owneruserid = elements.get("OwnerUserId")
```



```
1     """Loads posts from XML"""
2
3
4     import xml.etree.ElementTree as ET
5     import re
6
7
8     # extract the values in each xml row
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10         elements = ET.fromstring(string.encode('utf-8')).attrib
11
12         postId = elements.get("Id")
13         postType = elements.get("PostTypeId")
14         acceptedanswerid = elements.get("AcceptedAnswerId")
15         creationdate = elements.get("CreationDate")
16         score = elements.get("Score")
17         viewCount = elements.get("ViewCount")
18         #Body - not included
19         owneruserid = elements.get("OwnerUserId")
20         lasteditoruserid = elements.get("LastEditorUserId")
21         lasteditdate = elements.get("LastEditDate")
22         title = elements.get("Title")
23         lastactivitydate = elements.get("LastActivityDate")
24         tags = re.findall(r'[\w.-]+', elements.get("Tags", ""))
25         answercount = elements.get("AnswerCount")
26         commentcount = elements.get("CommentCount")
27         favoritecount = elements.get("FavoriteCount")
28
29         if lasteditdate == None:
30             lasteditdate = creationdate
31
32         return (postId, postType, acceptedanswerid, creationdate, score, viewCount, owneruserid, lasteditoruserid, lasteditdate, title, lastactivitydate, tags, answercount, commentcount)
```

```
1     """Loads posts from XML"""
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19         owneruserid = elements.get("OwnerUserId")
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22         title = elements.get("Title")
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24         tags = re.findall(r'[\w.-]+', elements.get("Tags", ""))
25         answercount = elements.get("AnswerCount")
26         commentcount = elements.get("CommentCount")
27         favoritecount = elements.get("FavoriteCount")
28
29         if lasteditdate == None:
30             lasteditdate = creationdate
31
32         return (postId, postType, acceptedanswerid, creationdate, score, viewCount, owneruserid, lasteditoruserid, lasteditdate, title, lastactivitydate, tags, answercount, commentcount)
```

Demo



Features that Improve Productivity Coding with an IDE



Visual Studio Code

Keyboard shortcuts for Linux

General

| | |
|------------------|---------------------------|
| Ctrl+Shift+P, F1 | Show Command Palette |
| Ctrl+P | Quick Open, Go to File... |
| Ctrl+Shift+N | New window-instance |
| Ctrl+W | Close window-instance |
| Ctrl+, | User Settings |
| Ctrl+K Ctrl+S | Keyboard Shortcuts |

Basic editing

| | |
|--------------------|-----------------------------|
| Ctrl+X | Cut line (empty selection) |
| Ctrl+C | Copy line (empty selection) |
| Alt+↓ / ↑ | Move line down/up |
| Ctrl+Shift+K | Delete line |
| Ctrl+Enter / | Insert line below/ above |
| Ctrl+Shift+Enter | |
| Ctrl+Shift+\ | Jump to matching bracket |
| Ctrl+] / Ctrl+[| Indent/Outdent line |
| Home / End | Go to beginning/end of line |
| Ctrl+ Home / End | Go to beginning/end of file |
| Ctrl+↑ / ↓ | Scroll line up/down |
| Alt+ PgUp / PgDn | Scroll page up/down |
| Ctrl+Shift+ [/] | Fold/unfold region |
| Ctrl+K Ctrl+ [/] | Fold/unfold all subregions |
| Ctrl+K Ctrl+0 / | Fold/Unfold all regions |
| Ctrl+K Ctrl+J | |
| Ctrl+K Ctrl+C | Add line comment |
| Ctrl+K Ctrl+U | Remove line comment |
| Ctrl+/ | Toggle line comment |
| Ctrl+Shift+A | Toggle block comment |
| Alt+Z | Toggle word wrap |

Multi-cursor and selection

| | |
|-----------------------|---------------------------------------------|
| Alt+Click | Insert cursor* |
| Shift+Alt+↑ / ↓ | Insert cursor above/below |
| Ctrl+U | Undo last cursor operation |
| Shift+Alt+I | Insert cursor at end of each line selected |
| Ctrl+L | Select current line |
| Ctrl+Shift+L | Select all occurrences of current selection |
| Ctrl+F2 | Select all occurrences of current word |
| Shift+Alt+→ | Expand selection |
| Shift+Alt+← | Shrink selection |
| Shift+Alt+ drag mouse | Column (box) selection |

Display

| | |
|---------------|--------------------------------------------|
| F11 | Toggle full screen |
| Shift+Alt+0 | Toggle editor layout (horizontal/vertical) |
| Ctrl+ = / - | Zoom in/out |
| Ctrl+B | Toggle Sidebar visibility |
| Ctrl+Shift+E | Show Explorer / Toggle focus |
| Ctrl+Shift+F | Show Search |
| Ctrl+Shift+G | Show Source Control |
| Ctrl+Shift+D | Show Debug |
| Ctrl+Shift+X | Show Extensions |
| Ctrl+Shift+H | Replace in files |
| Ctrl+Shift+J | Toggle Search details |
| Ctrl+Shift+C | Open new command prompt/terminal |
| Ctrl+K Ctrl+H | Show Output panel |
| Ctrl+Shift+V | Open Markdown preview |
| Ctrl+K V | Open Markdown preview to the side |
| Ctrl+K Z | Zen Mode (Esc Esc to exit) |

Search and replace

| | |
|---------------|--------------------------------------|
| Ctrl+F | Find |
| Ctrl+H | Replace |
| F3 / Shift+F3 | Find next/previous |
| Alt+Enter | Select all occurrences of Find match |

Editor management

| | |
|-----------------|-----------------------------------------------------------------------------|
| Ctrl+W | Close editor |
| Ctrl+K F | Close folder |
| Ctrl+\ | Split editor |
| Ctrl+ 1 / 2 / 3 | Focus into 1 st , 2 nd , 3 rd editor group |
| Ctrl+K Ctrl+← | Focus into previous editor group |
| Ctrl+K Ctrl+→ | Focus into next editor group |
| Ctrl+Shift+PgUp | Move editor left |
| Ctrl+Shift+PgDn | Move editor right |
| Ctrl+K ← | Move active editor group left/up |
| Ctrl+K → | Move active editor group right/down |

File management

| | |
|----------------|-----------------------------------------|
| Ctrl+N | New File |
| Ctrl+O | Open File... |
| Ctrl+S | Save |
| Ctrl+Shift+S | Save As... |
| Ctrl+W | Close |
| Ctrl+K Ctrl+W | Close All |
| Ctrl+Shift+T | Reopen closed editor |
| Ctrl+K Enter | Keep preview mode editor open |
| Ctrl+Tab | Open next |
| Ctrl+Shift+Tab | Open previous |
| Ctrl+K P | Copy path of active file |
| Ctrl+K R | Reveal active file in Explorer |
| Ctrl+K O | Show active file in new window-instance |

Debug

| | |
|-----------------|-------------------|
| F9 | Toggle breakpoint |
| F5 | Start / Continue |
| F11 / Shift+F11 | Step into/out |
| F10 | Step over |
| Shift+F5 | Stop |
| Ctrl+K Ctrl+I | Show hover |



fibonacci.py

```
1 # Python
2 # 0 , 1
3
4
5 def fibo():
6     if :
7         |
8     else:
9
10
11
12 # Calculate Fibonacci
13 result = fibo(10)
14 print('fibo(10) = ' + str(result))
15
```

>

- Change Language Mode
- Add Cursor Above
- Add Cursor Below
- Add Cursors To Bottom
- Add Cursors to Line Ends
- Add Cursors To Top
- Add Line Comment
- Add Selection To Next Find Match

⌘ K M recently used

↶ ⌘ ⌘ ⌘ ↑ other commands

↶ ⌘ ⌘ ↓

↑ ⌘ ⌘ I

⌘ K ⌘ C

⌘ D



```
$ ipython
```

```
Python 3.7.0 (default, Oct 2 2018, 09:20:07)
```

```
Type 'copyright', 'credits' or 'license' for more information
```

```
IPython 7.0.1 -- An enhanced Interactive Python. Type '?' for help.
```

```
[In [1]: import sys
```

```
[In [2]: sys.
```

```
sys.abiflags
sys.api_version
sys.argv
sys.base_exec_prefix
sys.base_prefix
sys.breakpointhook
sys.builtin_module_names
sys.byteorder
sys.call_tracing
sys.callstats
sys.copyright
sys.displayhook
sys.dont_write_bytecode
sys.exc_info
sys.excepthook
sys.exec_prefix
sys.executable
sys.exit
sys.flags
sys.float_info
sys.float_repr_style
sys.get_asyncgen_hooks
sys.get_coroutine_origin_tracking_depth
sys.get_coroutine_wrapper
```

hello-ide > version.py > Add Configuration... > ⚙️ | 🔍

Project ~Dropbox/python- hello-ide

- ↳ .vscode
- ↳ a_module.py
- ↳ hello.py
- ↳ version.py

External Libraries

Scratches and Consoles

version.py

```
1 # Check for the version
2
3 import sys
4
5 print(sys.)
6
7
8
```

version_info sys

- version sys
- api_version sys
- argv sys
- builtin_module_names sys
- byteorder sys
- call_tracing(func, args) sys
- callstats() sys
- copyright sys
- displayhook(p_object) sys
- dont_write_bytecode sys

Press ^ to choose the selected (or first) suggestion and insert a dot afterwards >>

5:11 LF UTF-8



version.py

{} demos.code-snippets ×

...

```
9      // "Print to console": {
10     // "scope": "javascript,typescript",
11     // "prefix": "log",
12     // "body": [
13       //   "console.log('$1');",
14       //   "$2"
15     ],
16     // "description": "Log output to console"
17   }
18   "Single line if": {
19     "scope": "python",
20     "prefix": "py",
21     "body": [
22       "$1 if $2 else $3"
23     ],
24     "description": "Create a single line if"
25   }
26 }
```



Demo



**Organizing, Navigating, Refactoring,
and Styling Code**



Quick Access

Package Explorer X

Task List X

Find All Activate... ?

Connect Mylyn Connect to your task and ALM tools or

Outline X

ET
re
os
sys
processXmlFieldPosts
string
elements
postid
postType
acceptedanswerid
creationdate
score
viewCount
owneruserid

posts.py X

```
1 """Loads posts from XML"""
2
3 import xml.etree.ElementTree as ET
4 import re
5 import os
6 import sys
7
8
9 # extract the values in each xml row
10 def processXmlFieldPosts(string):
11     elements = ET.fromstring(string.encode('utf-8')).attrib
12
13     postId = elements.get("Id")
14     postType = elements.get("PostTypeId")
15     acceptedanswerid = elements.get("AcceptedAnswerId")
16     creationdate = elements.get("CreationDate")
17     score = elements.get("Score")
18     viewCount = elements.get("ViewCount")
19     # Body - not included
20     owneruserid = elements.get("OwnerUserId")
21     lasteditoruserid = elements.get("LastEditorUserId")
22     lasteditdate = elements.get("LastEditDate")
23     title = elements.get("Title")
24     lastactivitydate = elements.get("LastActivityDate")
25     tags = re.findall(r'[\w.-]+', elements.get("Tags", ""))
26     answercount = elements.get("AnswerCount")
27     commentcount = elements.get("CommentCount")
28     favoritecount = elements.get("FavoriteCount")
29
30     if lasteditdate == None:
31         lasteditdate = creationdate
```

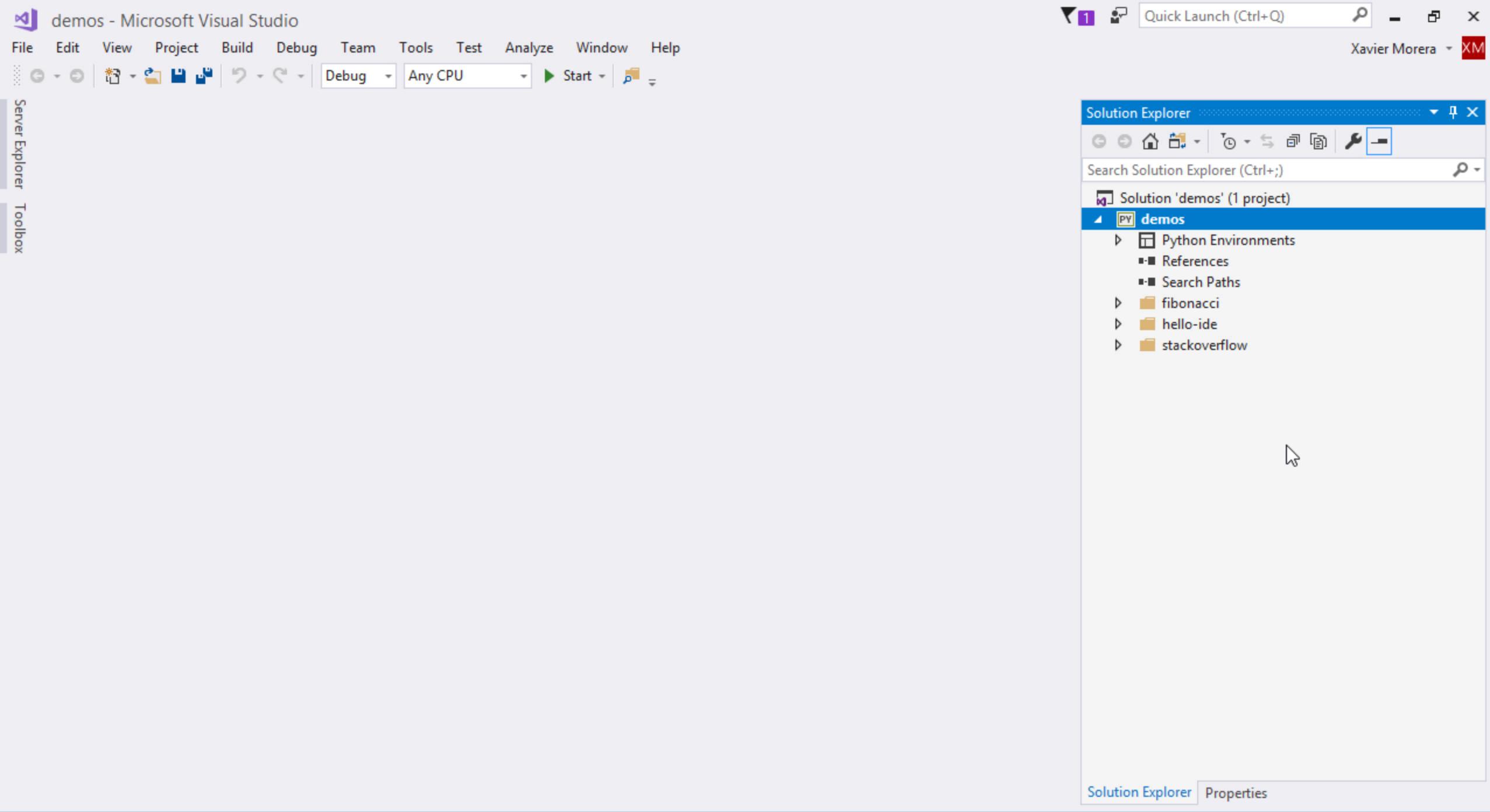
Problems X @ Javadoc Declaration

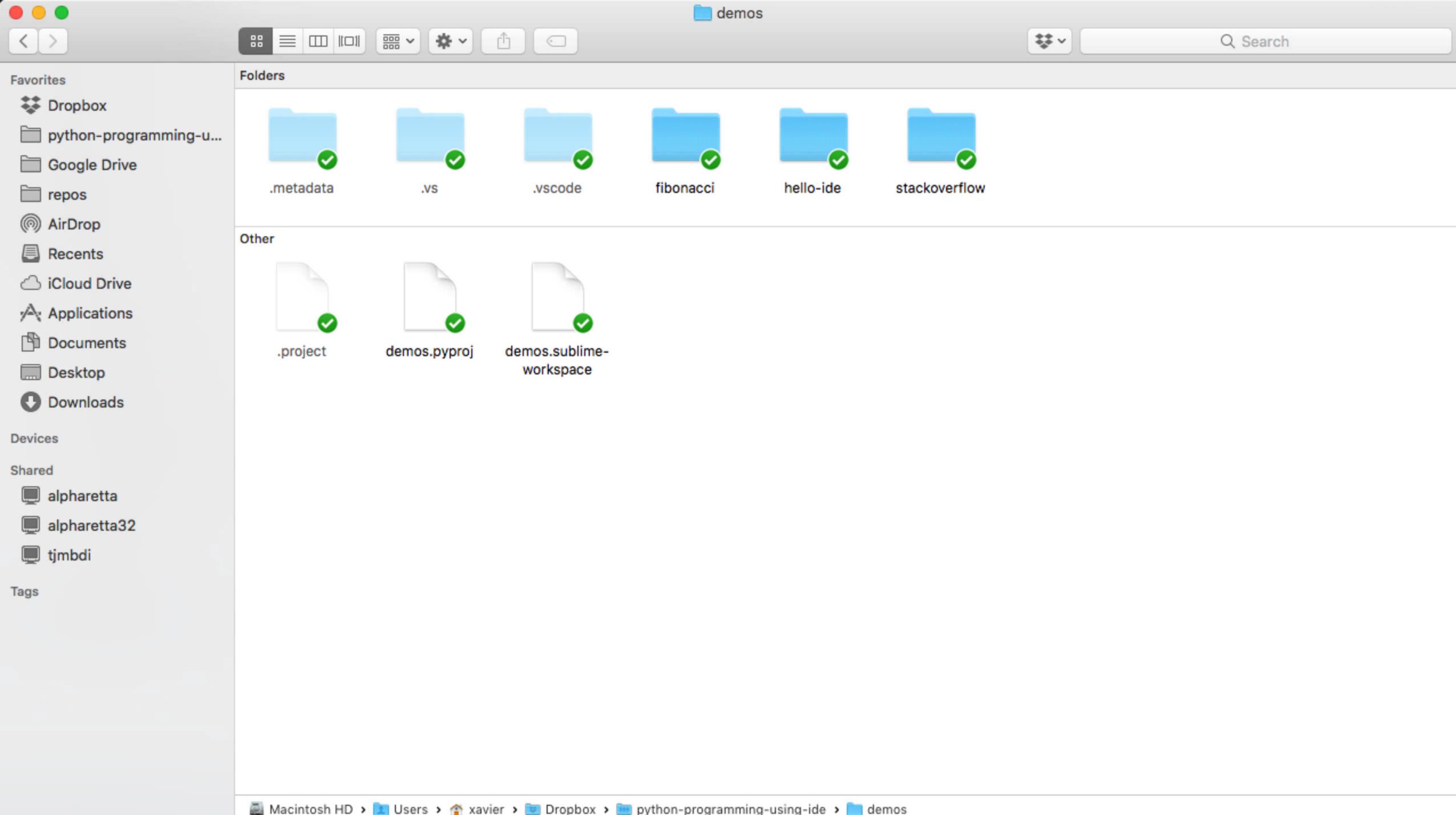
0 errors, 1 warning, 0 others

| Description | Resource | Path | Location | Type |
|-----------------------|----------|------|----------|------|
| ► ⚠ Warnings (1 item) | | | | |

Writable Insert 1 : 1

CodeMix





Project

pandas ~/python-ide/pandas/pandas

- _config
- _libs
- api
- arrays
- compat
- core
- errors
- io
- plotting
- tests
- tseries
- util
 - __init__.py
 - _typing.py
 - _version.py
 - conftest.py
 - testing.py

External Libraries

Scratches and Consoles

pandas [~/python-ide/pandas/pandas]

Enter class name:

 Include non-project items %O dataframex

c DataFrame(NDFrame)

- | | |
|-------------------------------------------------|------------------------------------|
| c DataFrameFormatter(TableFormatter) | (io.formats.format) |
| c DataFrameGroupBy(NDFrameGroupBy) | (core.groupby.generic) |
| c CustomDataFrame(DataFrame) | (tests.frame.test_subclass) |
| c SparseDataFrame(DataFrame) | (core.sparse.frame) |
| c SubclassedDataFrame(DataFrame) | (util.testing) |
| c SubclassedSparseDataFrame(pd.SparseDataFrame) | (util.testing) |
| c TestDataFrame(Generic) | (tests.generic.test_frame) |
| c TestDataframeNoneCoercion | (tests.indexing.test_indexing) |
| c TestnanopsDataFrame | (tests.test_nanops) |
| c TestSparseDataFrame(SharedWithSparse) | (tests.sparse.frame.test_frame) |
| c TestDataFrameAggregate | (tests.frame.test_apply) |
| c TestDataFrameAlterAxes | (tests.frame.test_alter_axes) |
| c TestDataFrameAnalytics | (tests.frame.test_analytics) |
| c TestDataFrameApply | (tests.frame.test_apply) |
| c TestDataFrameBlockInternals | (tests.frame.test_block_internals) |
| c TestDataFrameCombiningFirst | (tests.frame.test_combine_concat) |

Press ⌘↑ or ⌘↓ to navigate through the search history

FOLDERS

- **pandas**
- .github
- asv_bench
- ci
- conda.recipe
- doc
- LICENSES
- **pandas**
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- _libs
- api
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- compat
- **core**
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- computation
- dtypes
- groupby
- indexes
- internals
- reshape
- sparse
- tools
- util
- /* __init__.py
- /* accessor.py
- /* algorithms.py
- /* api.py

```
frame.py  x  frame.py — pandas
684     >>> print(df.to_string())
685         col1  col2
686         0      1      4
687         1      2      5
688         2      3      6
689         .....
690
691     formatter = fmt.DataFrameFormatter(self, buf=buf, columns=columns,
692                                         col_space=col_space, na_rep=na_rep,
693                                         formatters=formatters,
694                                         float_format=float_format,
695                                         sparsify=sparsify, justify=justify,
696                                         index_names=index_names,
697                                         header=header, index=index,
698                                         max_rows=max_rows,
699                                         max_cols=max_cols,
700                                         show_dimensions=show_dimensions,
701                                         decimal=decimal,
702                                         line_width=line_width)
703
704     formatter.to_string()
705
706     if buf is None:
707         result = formatter.buf.getvalue()
708         return result
709
710     # -----
711
712     @property
713     def style(self):
714         .....
```

Add Configuration...

fibonacci

fibonacci.py

Project

fibonacci ~/Dropbox/python

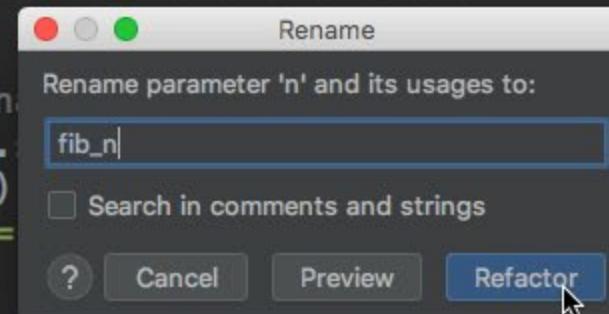
.vscode

fibonacci.py

External Libraries

Scratches and Consoles

```
1 # Python program to calculate the Fibonacci sequence
2 # 0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 , 21 , 34 , 55
3
4
5 def fibo(n):
6     if n <= 1:
7         return n
8     else:
9         return (fibo(n-1) + fibo(n-2))
10
11
12 # Calculate Fibonacci sequence
13 import pdb; pdb.
14 result = fibo(10)
15 print('fibo(10) =')
16
```



fibonacci



Press F11 to exit full screen

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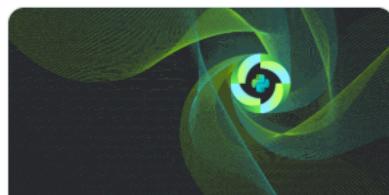
Events

Tweets by @ThePSF



@ThePSF

Contribute to the PSF and get a great IDE at the same time. Purchase an individual annual subscription to PyCharm Professional with a 30% discount before June 1. All proceeds benefit the PSF. [jetbrains.com/pycharm/promo/...](http://jetbrains.com/pycharm/promo/) #idonatedtothepsf



Get PyCharm at 30% OFF: All Proc...

Until June 1, get PyCharm at 30% OF...
jetbrains.com



8h



@ThePSF

Nominations are currently open for the 2019/2020 @ThePSF board elections. The

Embed

View on Twitter

[Python](#) »» [Python Developer's Guide](#) »» [PEP Index](#) »» [PEP 8 -- Style Guide for Python Code](#)

PEP 8 -- Style Guide for Python Code

| | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PEP: | 8 |
| Title: | Style Guide for Python Code |
| Author: | Guido van Rossum < guido@python.org >, Barry Warsaw < barry@python.org >, Nick Coghlan < ncoghlan@gmail.com > |
| Status: | Active |
| Type: | Process |
| Created: | 05-Jul-2001 |
| Post-History: | 05-Jul-2001, 01-Aug-2013 |

Contents

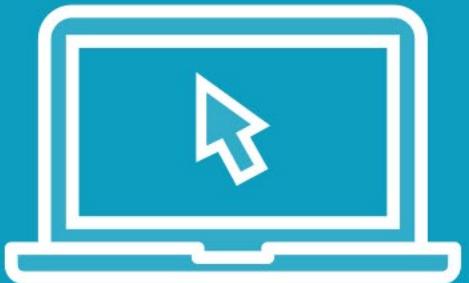
- [Introduction](#)
- [A Foolish Consistency is the Hobgoblin of Little Minds](#)
- [Code Lay-out](#)

posts.py

fibonacci.py

```
1 """Loads posts from XML"""
2
3 import xml.etree.ElementTree as ET
4 import re
5 import os
6 import sys
7     'sys' imported but unused
8 F401 - 'sys' imported but unused
9 # extract the values in each XML row
10 def processXmlFieldPosts(string):
11     elements = ET.fromstring(string.encode('utf-8')).attrib
12
13     postId = elements.get("Id")
14     postType = elements.get("PostTypeId")
15     acceptedanswerid = elements.get("AcceptedAnswerId")
16     creationdate = elements.get("CreationDate")
17     score = elements.get("Score")
18     viewCount = elements.get("ViewCount")
19     # Body - not included
20     owneruserid = elements.get("OwnerUserId")
21     lasteditoruserid = elements.get("LastEditorUserId")
22     lasteditdate = elements.get("LastEditDate")
```

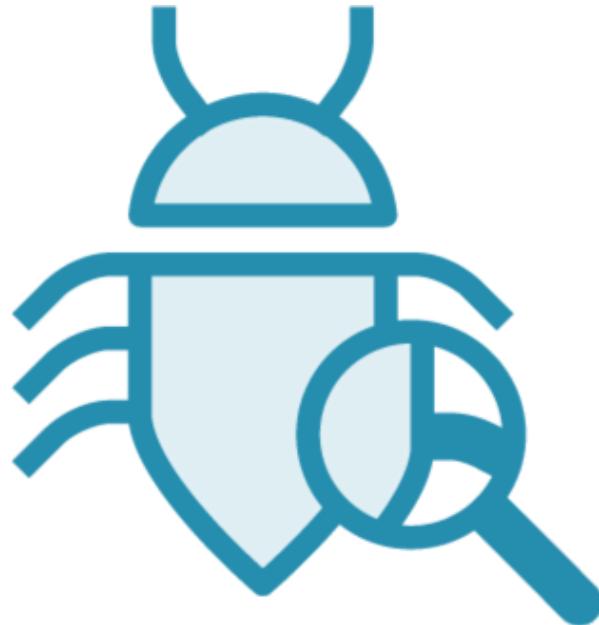
Demo



**Running and Debugging Python Code
with an IDE**



Debug



Review the traceback

Add print statements

- Please don't...

Use a debugger

- But which one?



```
$ python3 fibonacci.py
> /Users/xavier/Dropbox/python-programming-using-ide/demos/fibonacci/fibonacci.py(14)<module>()
-> result = fibo(10)
(Pdb) ?
```

Documented commands (type help <topic>):

=====

| | | | | | | | |
|-------|-----------|---------|----------|----------|---------|---------|-----------|
| EOF | c | d | h | list | q | rv | undisplay |
| a | cl | debug | help | ll | quit | s | unt |
| alias | clear | disable | ignore | longlist | r | source | until |
| args | commands | display | interact | n | restart | step | up |
| b | condition | down | j | next | return | tbreak | w |
| break | cont | enable | jump | p | retval | u | whatis |
| bt | continue | exit | l | pp | run | unalias | where |

Miscellaneous help topics:

=====

exec pdb

(Pdb) █



EXPLORER

OPEN EDITORS

x version.py

HELLO-IDE

a_module.py

hello.py

version.py



OUTLINE

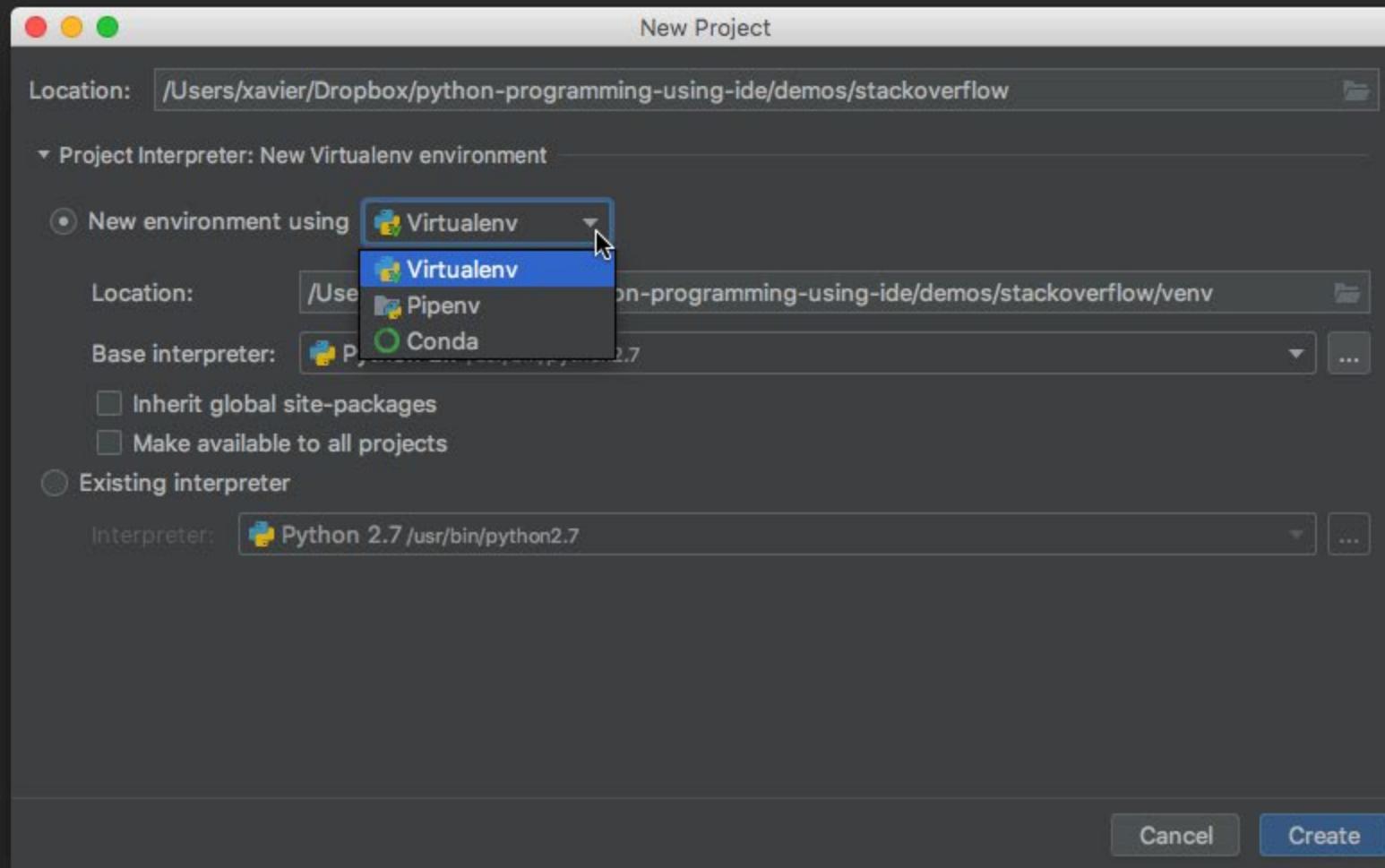
{ } sys



version.py x

```
1 # Check for the version
2
3 import sys
4
5 print(sys.version_info)
```

- Go to Definition F12
- Peek Definition ⌘F12
- Find All References ⌘⇧F12
- Peek References ⇧⌘F12
- Rename Symbol F2
- Change All Occurrences ⌘F2
- Format Document ⌘⇧F
- Format Document With...
- Source Action...
- Cut ⌘X
- Copy ⌘C
- Paste ⌘V
- Run Current Test File
- Run Python File in Terminal
- Run Selection/Line in Python Terminal ⇧⌘F
- Run Current File in Python Interactive Window
- Sort Imports
- Command Palette... ⇧⌘P



Start Page - Microsoft Visual Studio

File Edit View Project Debug Team Tools Test Analyze Window Help

Quick Launch (Ctrl+Q)

Xavier Morera XM

Server Explorer Toolbox

Importing project...

Get Build your file Maximize your view Take advantage of reliable web services Develop modern web experiences

Recent projects

The projects you've recently worked on appear here.

The remote control provider devices you've connected to appear here.

Create New Project from Existing Python Code

Welcome to the Create New Project from Existing Python Code Wizard

Select the Python interpreter and version to use.
This setting can be changed later in Project Properties.

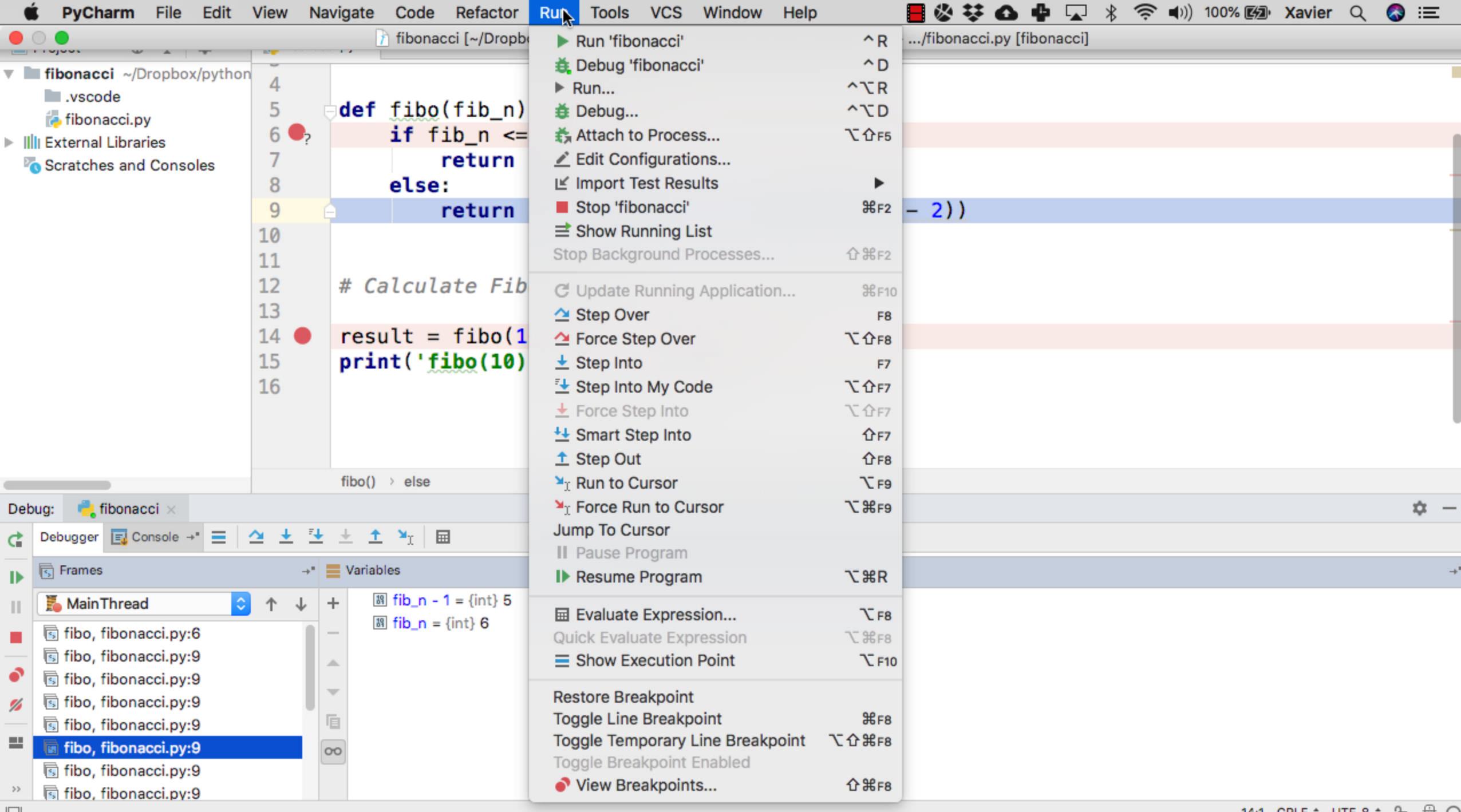
(Global default or an auto-detected virtual environment)

(Global default or an auto-detected virtual environment)

- Anaconda 4.5.11
- Anaconda 5.2.0
- Python 2.7 (64-bit)
- Python 3.6 (64-bit)
- Python 3.7 (32-bit)
- Python 3.7 (32-bit)

Back Next Finish Cancel

Developer News



demos (Debugging) - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Quick Launch (Ctrl+Q)

Xavier Morera XM

Process: [N/A] python.exe Lifecycle Events Thread: [1] MainThread

Step Into (F11)

Python program to calculate the Fibonacci sequence
0 , 1 , 1 , 2 , 3 , 5 , 8 , 13 , 21 , 34 , 55

```
def fibo(n):
    if n <= 1:
        return n
    else:
        return (fibo(n-1) + fibo(n-2))

# Calculate Fibonacci
result = fibo(10)
print('fib(10) = ' + str(result))
```

100 %

Autos Call Stack

| Name | Type |
|------|------|
| | |

| Name | Lang |
|-------------|-------|
| _main_ : 13 | Py... |

Call Stack Breakpoints Exception Settings Command Window Immediate Window Output

Ready

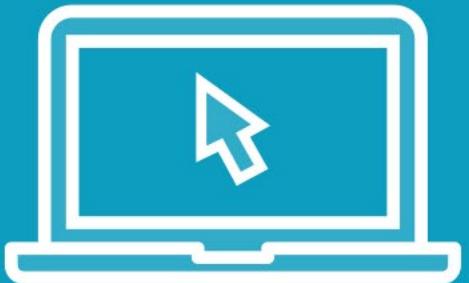
Add to Source Control

Solution Explorer Team Explorer

fibonacci.py

Ln 13 Col 1 Ch 1 INS

Demo



Integrating with Version Control Using an IDE



Create a New Repository

GitHub, Inc. [US] | https://github.com/new

Owner: xmorera / Repository name *: demos-python-ide

Great repository names are short and memorable. Need inspiration? How about [expert-octo-lamp](#)?

Description (optional):

Public: Anyone can see this repository. You choose who can commit.

Private: You choose who can see and commit to this repository.

Initialize this repository with a README: This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: None | Add a license: None | ⓘ

Create repository

© 2019 GitHub, Inc. Terms Privacy Security Status Help

Contact GitHub Pricing API Training Blog About

```
$ git clone https://github.com/xmorera/demos-python-ide.git
Cloning into 'demos-python-ide'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
$ █
```

DEMONS-PYTHON-IDE

- > .git
- > hello-ide
- README.md

Updates README.md

 Xavier Morera committed a few seconds ago

9817fbe

No changes

▼ README.md

@@ -1,1 +1,3 @@

```
1 # demos-python-ide
  No newline at end of file
1 # demos-python-ide
2
3 Contains the code samples for the Programming Python using
  • an IDE course, at Pluralsight
```

☰ Unstaged Changes

Stage All

✓☰ Staged Changes

Unstage All

No changes

See All Staged Changes

Commit message



Commit to master

72

 Updates README.md

Undo Now

 Adds hello-ide project

2m

 Initial commit

42m



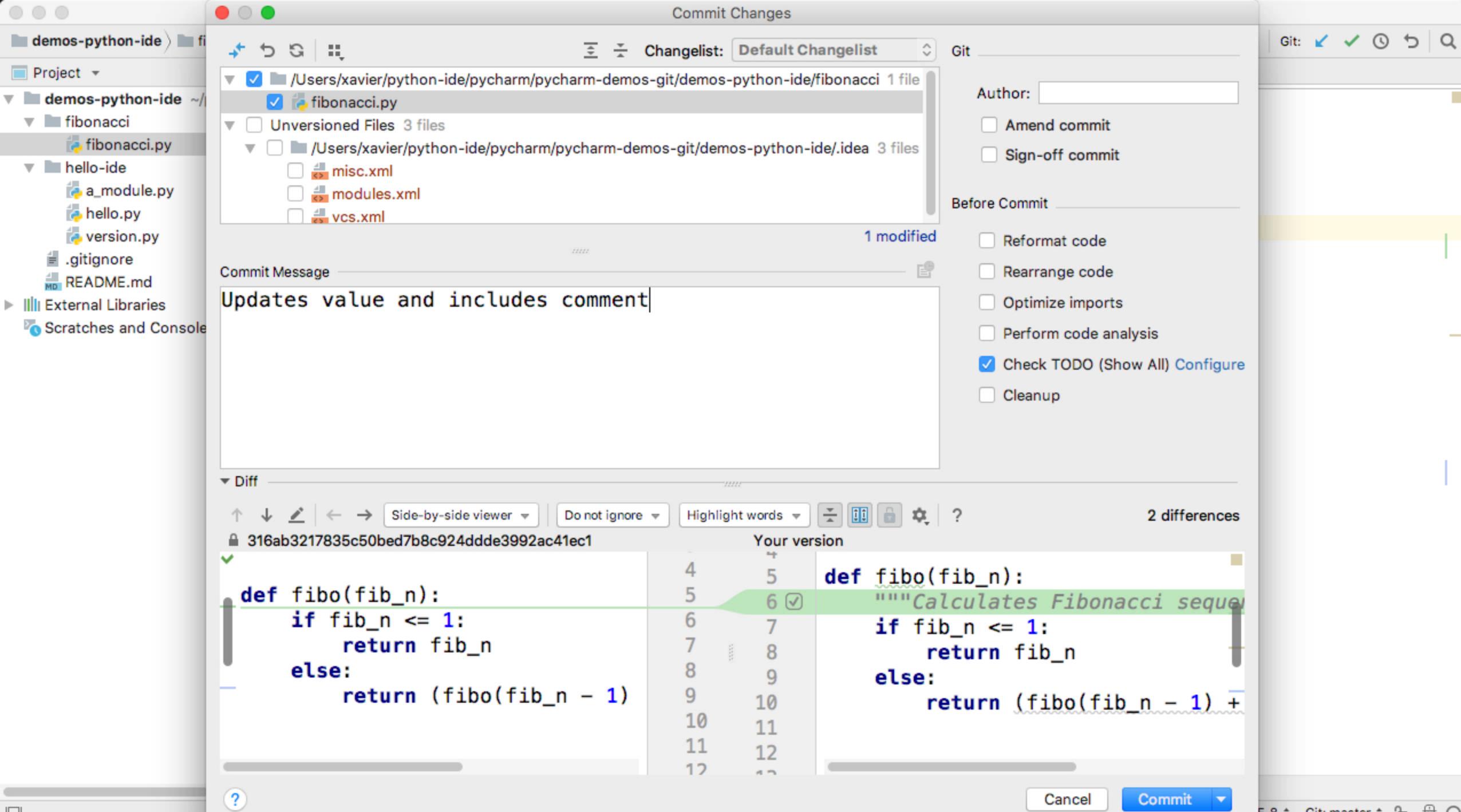
⚠ 1 deprecation

master

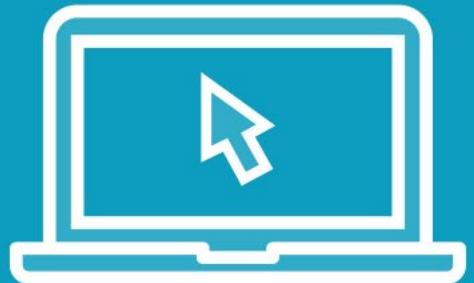
Fetch

GitHub

Git (0)



Demo



Working with Databases in Python Using an IDE



Local instance MySQL80 ×

File Edit View Query Database Server Tools Scripting Help

Navigator

MANAGEMENT

- Server Status
- Client Connections
- Users and Privileges
- Status and System Variables
- Data Export
- Data Import/Restore

INSTANCE

- Startup / Shutdown
- Server Logs
- Options File

PERFORMANCE

- Dashboard
- Performance Reports
- Performance Schema Setup

Administration Schemas

Information

No object selected

Query 1 × SQL File 3

1 • `SELECT * from posts LIMIT 20;`

Execute the selected portion of the script or everything, if there is no selection

Result Grid | Filter Rows: Export: Wrap Cell Content: Fetch rows:

| | index | AcceptedAnswerId | AnswerCount | Body | ClosedDate | CommentCount | CommunityOwnedDate | CreationDate |
|---|-------|------------------|-------------|------------------------------------------------------|-------------------------|--------------|--------------------|------------------------|
| ▶ | 0 | NULL | 1 | <p>I've always been interested in machine lea... | 2014-05-14T14:40:25.950 | 1 | NULL | 2014-05-13T23:58:30... |
| | 1 | 10 | 3 | <p>As a researcher and instructor, I'm looking ... | 2014-05-14T08:40:54.950 | 4 | NULL | 2014-05-14T00:11:06... |
| | 2 | NULL | NULL | <p>Not sure if this fits the scope of this SE, bu... | NULL | 0 | NULL | 2014-05-14T00:36:31... |
| | 3 | NULL | NULL | <p>One book that's freely available is "The Ele... | NULL | 1 | NULL | 2014-05-14T00:53:43... |
| | 4 | 29 | 4 | <p>I am sure data science as will be discussed i... | NULL | 1 | NULL | 2014-05-14T01:25:59... |
| | 5 | NULL | 0 | <p>In which situations would one system be pr... | 2014-05-14T07:41:49.437 | 1 | NULL | 2014-05-14T01:41:23... |
| | 6 | 46 | 2 | <p>I use <a href="http://www.csie.ntu.edu.t... | NULL | 0 | NULL | 2014-05-14T01:57:56... |
| | 7 | NULL | NULL | <p><a href="http://www.csie.ntu.edu.tw/~cjli..." | NULL | 0 | NULL | 2014-05-14T02:49:14... |
| | 8 | NULL | NULL | | NULL | 0 | NULL | 2014-05-14T02:49:14... |
| | 9 | 37 | 12 | <p>Lots of people use the term big data... | NULL | 5 | NULL | 2014-05-14T03:56:20... |
| | 10 | 26 | 5 | <p>we created this social network application f... | NULL | 1 | NULL | 2014-05-14T05:37:46... |
| | 11 | NULL | NULL | <p>As you rightly note, these days "big data" i... | NULL | 0 | NULL | 2014-05-14T05:44:29... |
| | 12 | 24 | 9 | <p>My data set contains a number of numeric ... | NULL | 3 | NULL | 2014-05-14T05:58:21... |
| | 13 | NULL | NULL | <p>Data Science specialization from Johns Hop... | NULL | 0 | NULL | 2014-05-14T06:06:13... |
| | 14 | NULL | NULL | <p>The standard k-means algorithm isn't direct... | NULL | 9 | NULL | 2014-05-14T06:26:27... |

posts 3 ×

Output

Object Info Session

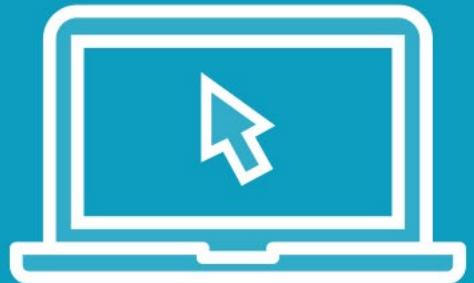
Result Grid Form Editor Field Types Query Stats

Read Only

The screenshot shows the MySQL Workbench Database browser. The tree view on the left lists databases, schemas, and tables under the root node '@localhost'. A context menu is open over the 'console (Default)' entry in the 'Consoles' section of the right-hand pane. The menu items are: 'Consoles', 'New console', 'console (Default)', '@localhost [console]', and 'Jump to Console Files'.

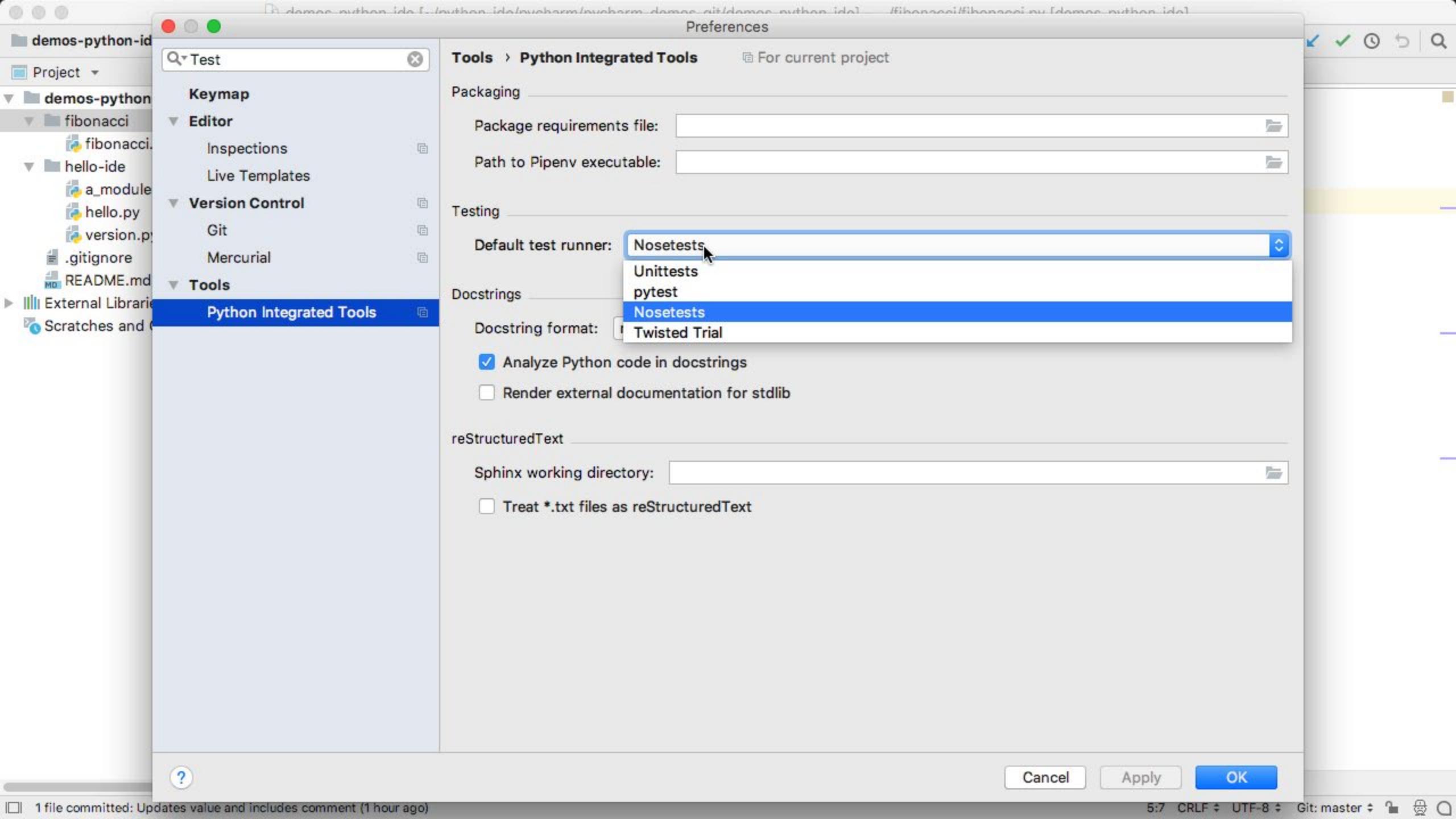
Database Console: posts [@localhost]

Demo



Unit Testing with an IDE





Takeaway



Improving productivity programming in Python is important

- Better with an IDE

For learning

- IDLE, Thonny...

Code editors as IDE

- Sublime Text, Atom, VS Code...

IDEs

- Eclipse, Visual Studio, PyCharm...



Takeaway



Customize your IDE to make it more familiar

- Theme, font size, line numbers, key mappings...

Leverage IDE features

- Typeahead, commands, code snippets...



Takeaway



An IDE helps you

- Organize, navigate, refactor, and style code

Group projects with a workspace

- Can also be called a solution



Takeaway



Run and debug code within an IDE

- Step through the code
- Set breakpoints
- Investigate variables

Integrated version control

Create and run unit tests

Connect, query and work with databases

