

FUTURE DECODED

6-7 OTT '16 / MILANO

IN PARTNERSHIP WITH:



CommunityDays.it

www.futuredecoded.it



#FutureDecoded

Python Tools for Visual Studio


Introducing Python to the .NET crowd

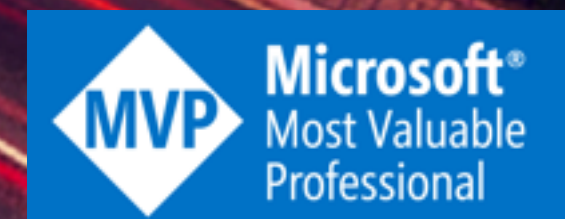
by Nicola Iarocci

@nicolaiarocci

nicolaiarocci.com

www.futuredecoded.it

 #FutureDecoded



OVERVIEW

- Python in 5 minutes
- Python from the C# perspective
- Python Tools for Visual Studio
- Demo
- Take aways

PYTHON IN A NUTSHELL

- High level, open source programming language
- Object oriented
- Interpreted (sometimes JIT compiled)
- Strongly typed with dynamic semantics
- Syntax emphasizes readability
- Supports modules and packages
- Cross platform since the beginning
- Very mature: 20+ years in the making
- Comes with batteries included
- Rich ecosystem
- Strong, welcoming and passionate community

```
def hello(name):  
    if name == "david bowman":  
        print("Hi old friend")  
    else:  
        print("Nice to meet you")  
        print("My name is HAL9000")  
  
def main():  
    guest = input("What is your name?")  
    hello(guest)
```

EMPHASIS ON READABILITY

also super easy to write!

```
def hello(name):
```

```
    if name == "Nicola":
```

```
        print("Hi old friend")
```

```
    else:
```

```
        print("Nice to meet you")
```

```
        print("My name is HAL9000")
```

```
def main():
```

```
    guest = input("What is your name?")
```

```
    hello(guest)
```

PYTHON SYNTAX

- codeblocks are defined with whitespace and colons
- code blocks start with ':'
- whitespace really matters
- there are no braces
- there are no parentheses
- there are no semicolons
- spaces over tabs by convention
- IDEs and editors follow conventions!

C# AND PYTHON

Code snippets courtesy of Michael Kennedy | @mkennedy | <http://talkpython.fm>

EVERYTHING IS AN OBJECT

C#

```
class Document : object
{
    public void Serialize()
    {
        // ...
    }

    public override string ToString()
    {
        return "I am a document";
    }
}
```

Python

```
class Document( object ):

    def serialize(self):
        # ...

    def __str__(self):
        return "I am a document."
```


IENUMERABLE + FOREACH LOOPS

C#

```
int[] numbers = new[] {1, 2, 3, 4, 5, 6};  
  
foreach (var n in numbers)  
{  
    Console.Write(n + ",");  
}
```

Python

```
numbers = [1, 2, 3, 4, 5, 6]  
  
for n in numbers:  
    print(n, end=', ')
```


IENUMERABLE + FOREACH LOOPS

C#

```
class ShoppingCart : IEnumerable<Tuple<string, float>>
{
    List<Tuple<string, float>> cartItems =
        new List<Tuple<string, float>>();

    public void Add(string name, float price)
    {
        cartItems.Add(new Tuple<string, float>(name, price));
    }

    public IEnumerator<Tuple<string, float>> GetEnumerator()
    {
        return cartItems.GetEnumerator();
    }

    IEnumerator IEnumerable.GetEnumerator()
    {
        return GetEnumerator();
    }
}
```

Python

```
class ShoppingCart:

    def __init__(self):
        self.items = []

    def add(self, name, price):
        self.items.append( (name, price) )

    def __iter__(self):
        return self.items.__iter__()
```


PROPERTIES

C#

```
class ShoppingCart
{
    public float TotalPrice
    {
        get
        {
            float total = 0;
            foreach (var item in cartItems)
            {
                total += item.Item2;
            }

            return total;
        }
    }
}

Console.WriteLine("Total price: {0}", cart.TotalPrice);
```

Python

```
class ShoppingCart:

    @property
    def total_price(self):
        total = 0.0
        for item in self.items:
            total += item[1]

        return total

print("Total is {0}".format(cart.total_price))
```


LAMBDA EXPRESSIONS

C#

```
private static IEnumerable<int>
    FindNumbers(Predicate<int> predicate)
{
    for (int i = 0; i < 100; i++)
    {
        if (predicate(i))
            yield return i;
    }
}

IEnumerable<int> nums =
    FindNumbers(n => n % 11 == 0)

// nums =[0, 11, 22, 33, 44, 55, 66, 77, 88, 99]
```

Python

```
def find_numbers(predicate):
    for i in range(100):
        if predicate(i):
            yield i

nums = find_numbers(lambda n : n % 11 == 0)

# nums = [0, 11, 22, 33, 44, 55, 66, 77, 88, 99]
```


ITERATOR METHODS & YIELD RETURN

C#

```
private static IEnumerable<int>
    FibonacciGenerator()
{
    int current = 1;
    int next = 1;

    yield return current;
    while (true)
    {
        int temp = current + next;
        current = next;
        next = temp;
        yield return current;
    }
}
```

Python

```
def fibonacci_generator():
    current, nxt = 1, 1
    yield current

    while True:
        current, nxt = nxt, current + nxt
        yield current
```


PACKAGE MANAGEMENT

C#

```
PM>Install-Package mongocsharpdriver
```

```
Installing 'mongocsharpdriver 1.9.1'.  
Successfully installed 'mongocsharpdriver 1.9.1'.  
Adding 'mongocsharpdriver 1.9.1' to YourApp.  
Successfully added 'mongocsharpdriver 1.9.1' to YourApp
```

around 57,000 packages on NuGet

Python

```
c:\>pip install pymongo
```

```
Downloading/unpacking pymongo  
  Running setup.py egg_info for package pymongo  
  
Installing collected packages: pymongo  
Running setup.py install for pymongo  
Fixing build\lib.win-amd64-3.4\bson\binary.py...  
Successfully installed pymongo  
Cleaning up...
```

around 82,000 packages on PyPI

MORE ON PYTHON

- Python: An amazing second language for .NET developers,
by Michael Kennedy
- Learn Python the Hard Way,
by Zed Shaw
- Python in 10 minuti (Italian),
by Nicola Iarocci
- The Python Tutorial,
python.org
- Google

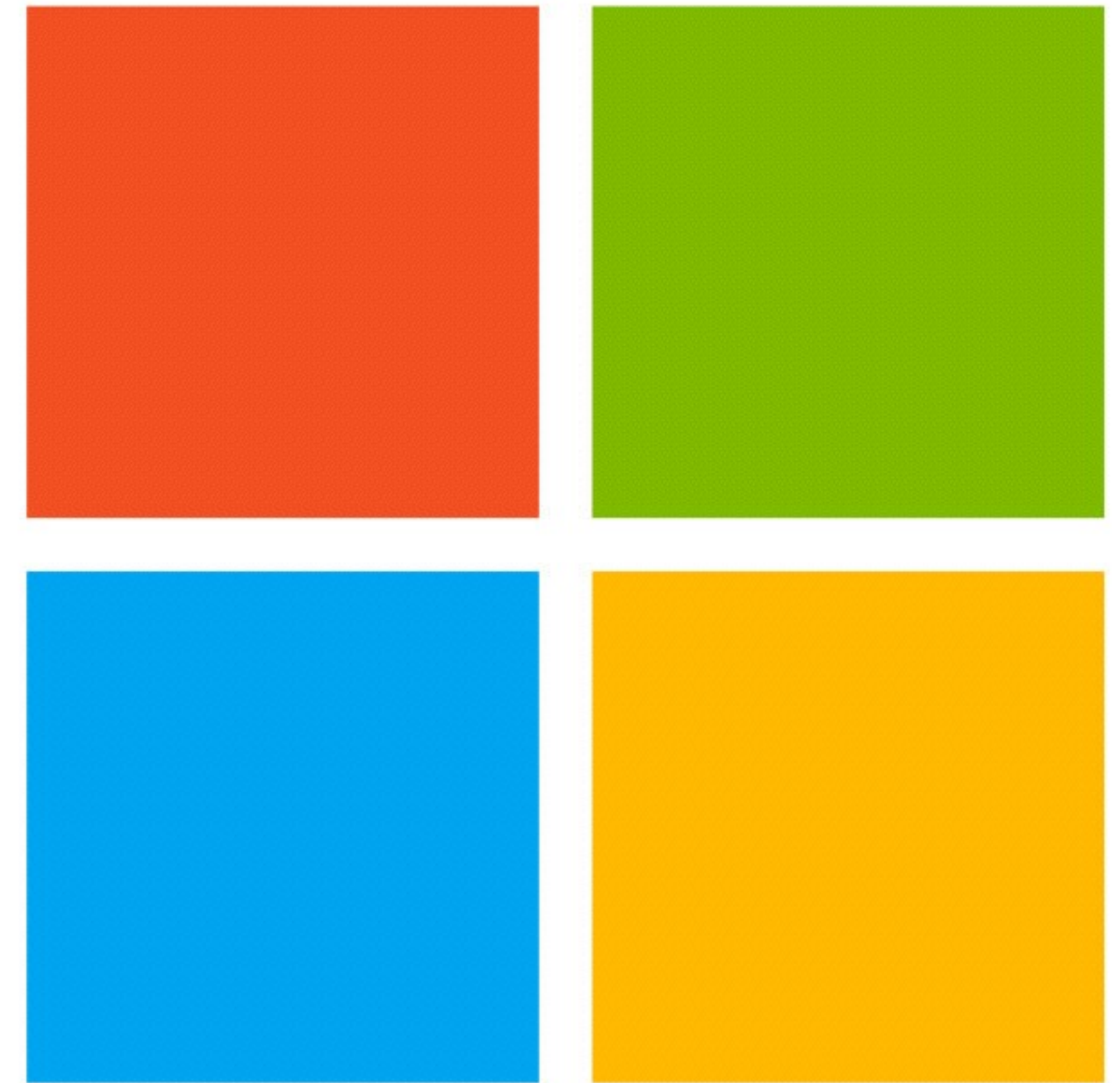
PYTHON AND VISUAL STUDIO

Did you know that you can do Python with your favourite IDE?

#1

**OFFICIAL
MICROSOFT
EXTENSION**

Created and maintained by Microsoft



Microsoft

#2 FREE AND OPEN SOURCE

Fork us on GitHub

GitHub repository page for **Microsoft / PTVS** (Python Tools for Visual Studio).

Navigation: [Code](#) | [Issues 421](#) | [Pull requests 1](#) | [Wiki](#) | [Pulse](#) | [Graphs](#)

Python Tools for Visual Studio <https://microsoft.github.io/PTVS>

2,693 commits | 7 branches | 21 releases

Branch: **master** | [New pull request](#) | [New file](#) | [Find file](#) | [SSH](#) | [git@github.com](#)

zooba Merge pull request #1079 from zooba/forward-port

File	Description
Build	Adds missing assembly resolution path.
Common	Added Common and VSCommon assemblies for shared code and
Python	Handles newline normalization
.gitattributes	Mark .sln as non-text file, since git doesn't properly handle UTF-16
.gitignore	Updates ignore files.
.hgeol	Updates ignore files.
.hgignore	Updates ignore files.
LICENSE	Restore deleted files.
PowershellEnvironment.ps1	Normalizes all line endings.
README.md	Update readme for 2.2.
build.root	Normalizes all line endings.
dirs.proj	Normalizes all line endings.

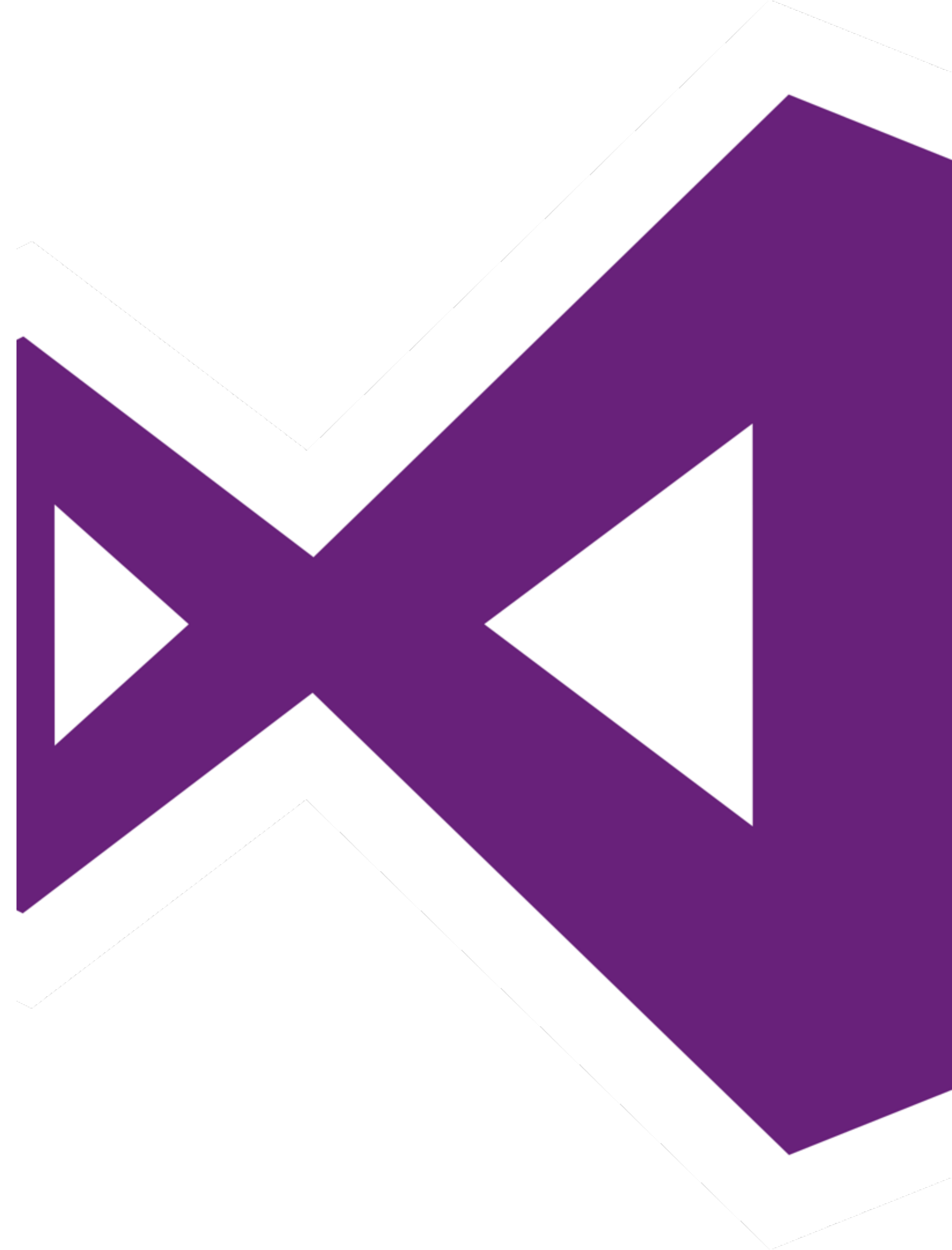
README.md

Python Tools for Visual Studio

#3

**WORKS WITH
VISUAL STUDIO
COMMUNITY
EDITION**

100% free Python experience



#4

CPYTHON

PYPY

IRONPYTHON

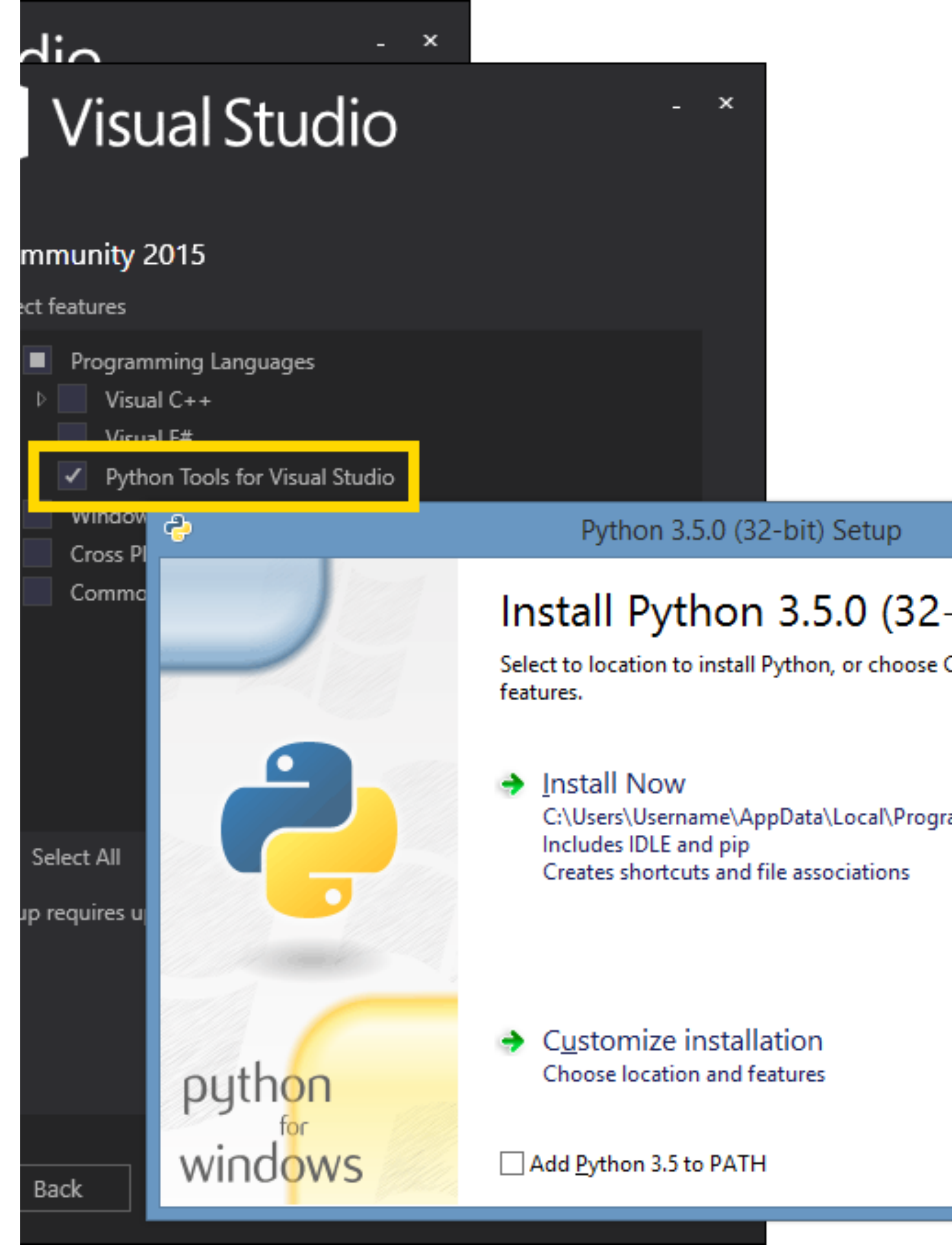
AND MORE

all kind of Pythons supported



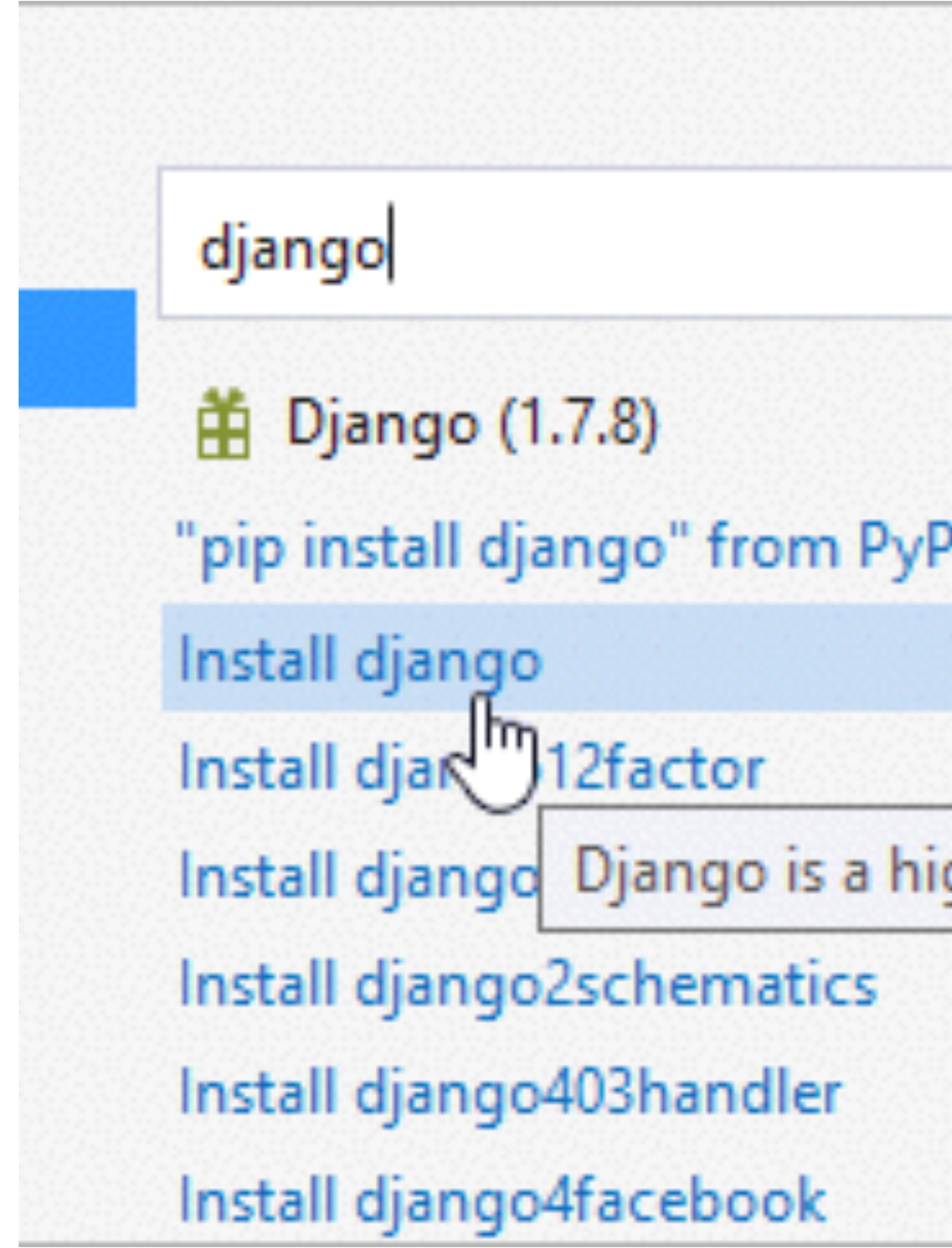
#5 SUPPORTED BY SETUP TOOL

select in custom install , or install later



#6 PACKAGE MANAGEMENT

find and install the packages you need

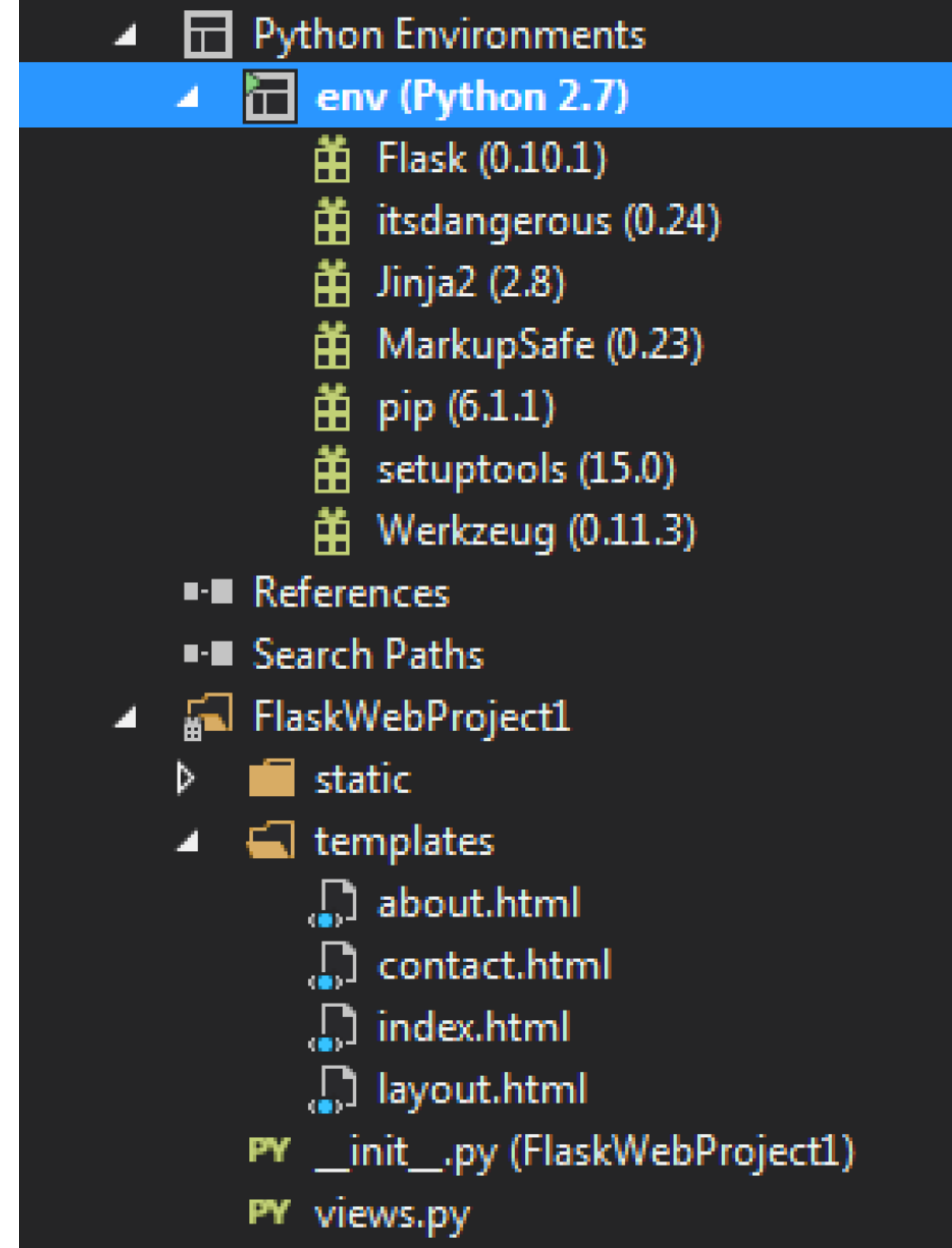


SHALL WE PLAY A GAME?

OR, BUILDING A GAME WITH PYTHON AND VISUAL STUDIO

#7 VIRTUAL ENVIRONMENTS

*add project -specific virtual
environments, or use global ones*



#8 INTELLISENSE

*like it's static: an editor that knows
your code*

```
class MyClass(object):  
    def do_stuff(self,  
        for i in values:  
            i.  
  
class Person(object):  
    def __init__(self, name, age, height, location):  
        self.name = name  
        self.age = age  
        self.height = height  
        self.location = location  
        self.meet = meet  
        self.walk = walk
```

- age
- height
- is_adult
- location
- meet
- name
- walk

#9 PYTHON REPL

at your fingertips

Python 2.7 Interactive



__main__

```
Python 2.7 interactive w
Type $help for a list of
>>> print 'TechHeroes'
TechHeroes
>>> |
```

100 %




Package Manager Console Error

#10

LIVE DEBUGGING

enjoy the debugger you are used to

```
def process_image(  
    w, h = img.size  
    img = img.crop(  
    return img
```

Autos		
Name		Value
	h	2736
	img	<PIL.J
	img.size	(3648,

A nighttime cityscape featuring several tall skyscrapers with illuminated windows. In the foreground, a multi-lane highway shows long-exposure light trails from cars, with red trails from taillights and white/yellow trails from headlights. A pedestrian bridge with a railing and some greenery is visible on the right side of the highway.

DEMO

Build a website with Python and Visual Studio (in 3 minutes)

www.futuredecoded.it



#FutureDecoded



TAKE AWAYS

- VS Community Edition + Python = free development environment on Windows
- Python folks finally have a great development environment on Windows
- .NET crowd can build stuff in Python using their favorite IDE and toolset
- Python is a great second language for C# developers
- Diversity is good. And it matters.

Domande?

Materiale su <http://www.communitydays.it/>

www.futuredecoded.it

 #FutureDecoded



Nicola Iarocci

@nicolaiarocci

nicolaiarocci.com