PROGRAMMING WITH PYTHON

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Introduction To Python

- Python in simple words is a High-Level Dynamic Programming Language which is interpreted. Guido Van Rossum, the father of Python had simple goals in mind when he was developing it, easy looking code, readable and open source.

- Python is ranked as the 3rd most prominent language followed by JavaScript and Java in a survey held in 2018 by Stack Overflow which serves proof to it being the most growing language.

Features of Python

- **Simplicity**: Think less of the syntax of the language and more of the code.
- **Open Source**: A powerful language and it is free for everyone to use and alter as needed.
- **Portability**: Python code can be shared and it would work the same way it was intended to. Seamless and hassle-free.
- **Being Embeddable & Extensible**: Python can have snippets of other languages inside it to perform certain functions.
- **Being Interpreted**: The worries of large memory tasks and other heavy CPU tasks are taken care of by Python itself leaving you to worry only about coding.
- **Huge amount of libraries**: Data Science? Python has you covered. Web Development? Python still has you covered. Always.
- **Object Orientation**: Objects help breaking-down complex real-life problems into such that they can be coded and solved to obtain solutions.

Python Interpreter

- An interpreter is a computer program that directly executes, i.e. performs, instructions written in a programming or scripting language, without requiring them previously to have been compiled into a machine language program. So unlike Java, Python uses an interpreter.

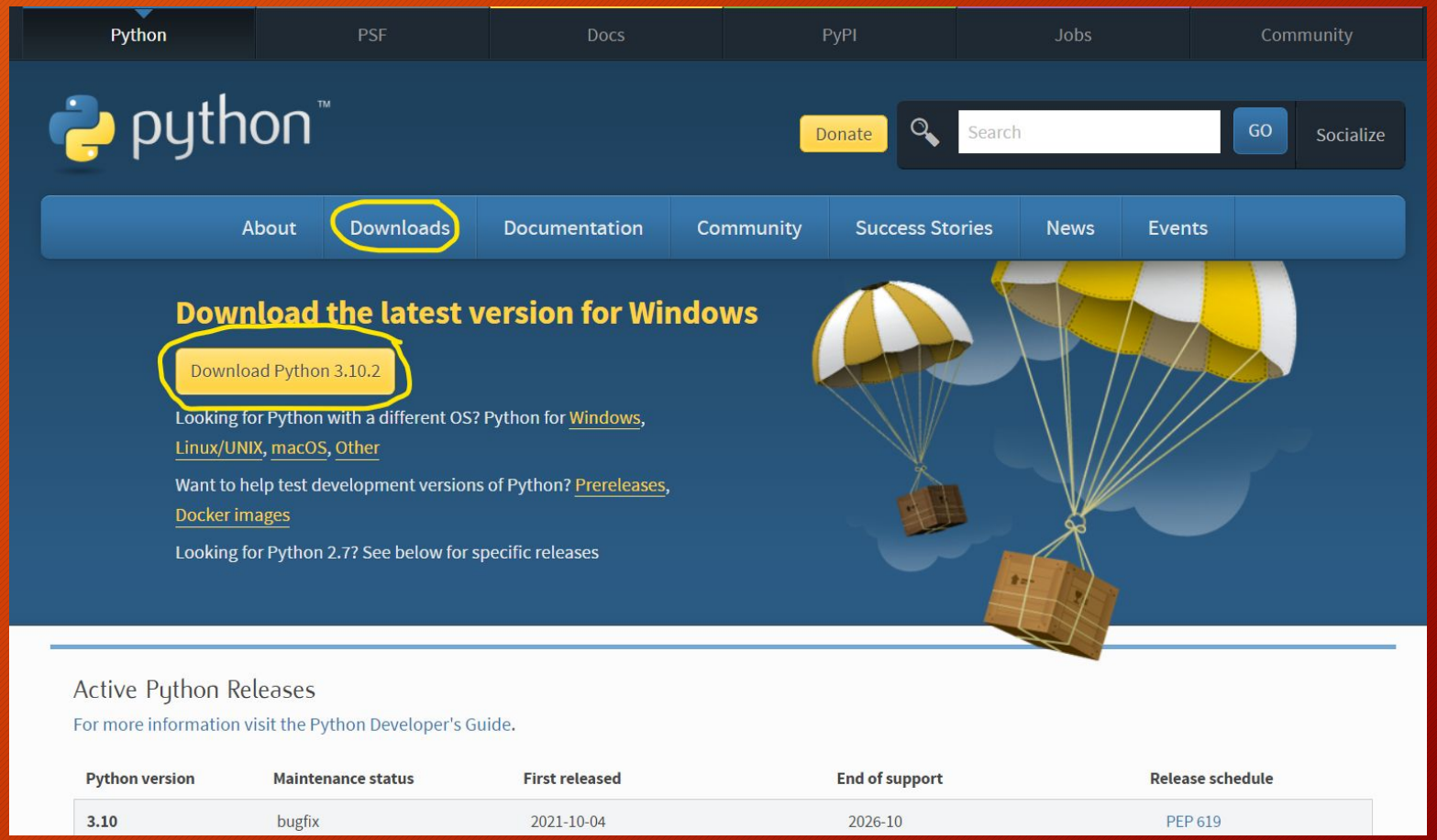
- The interpreter is a program that we need to run our python code or scripts. It basically provides an interface between the code and the computer hardware to get the results of the code.

- No matter in which programming language the code is written, it goes through an interpreter when it comes to python. For example pypy is used to execute the code written in python.

Python Installation

Following are the steps to install Python

Go to www.python.org/downloads/

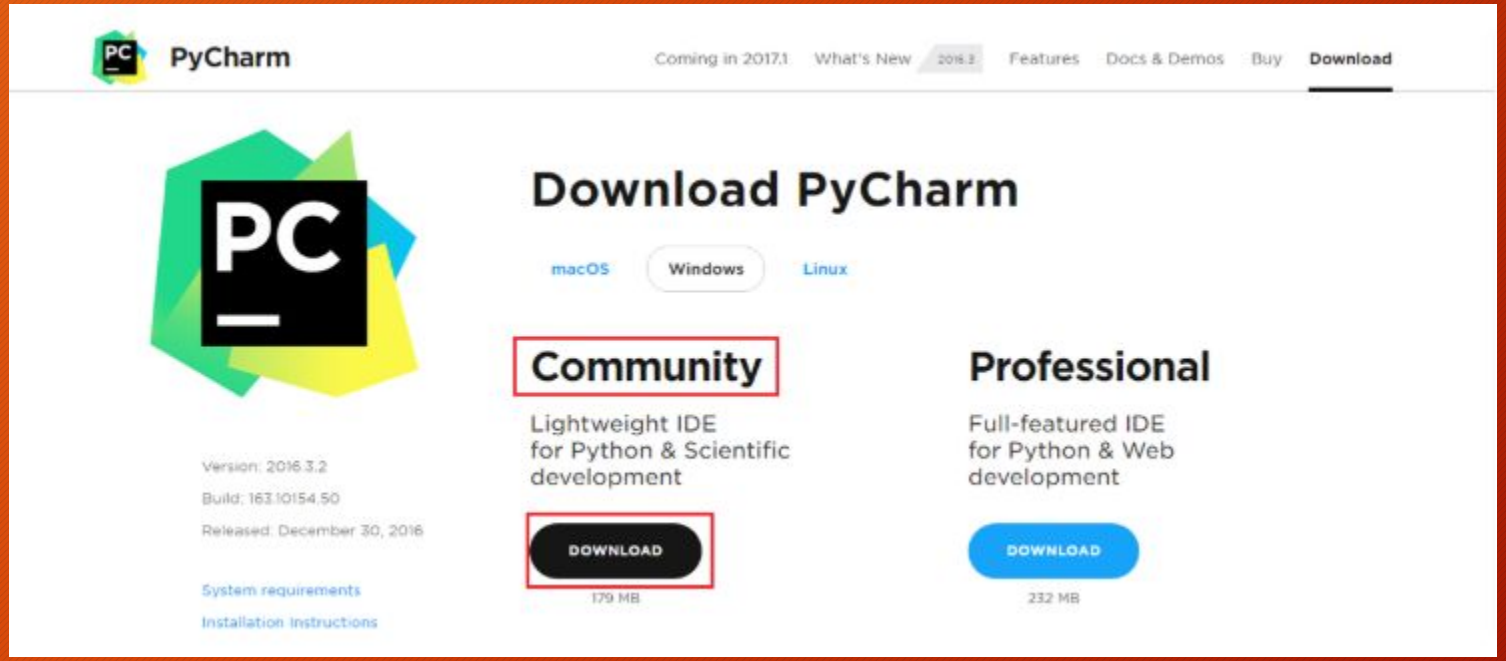


Python Installation For Windows

- Open a browser window and navigate to the Download page for Windows at python.org.
- Underneath the heading at the top that says Python Releases for Windows, click on the link for the Latest Python 3 Release – Python 3.x.x. (As of this writing, the latest version is Python 3.7.2.)
- Scroll to the bottom and select either Windows x86-64 executable installer for 64-bit or Windows x86 executable installer for 32-bit.
- But do we pick 32-bit or the 64-bit installer?
- For Windows, you can choose either the 32-bit or 64-bit installer. Here's what the difference between the two comes down to:
- If your system has a 32-bit processor, then you should choose the 32-bit installer.
- On a 64-bit system, either installer will actually work for most purposes. The 32-bit version will generally use less memory, but the 64-bit version performs better for applications with intensive computation.
- If you're unsure which version to pick, go with the 64-bit version.
- Open the installer and click on "Run".

PyCharm Download

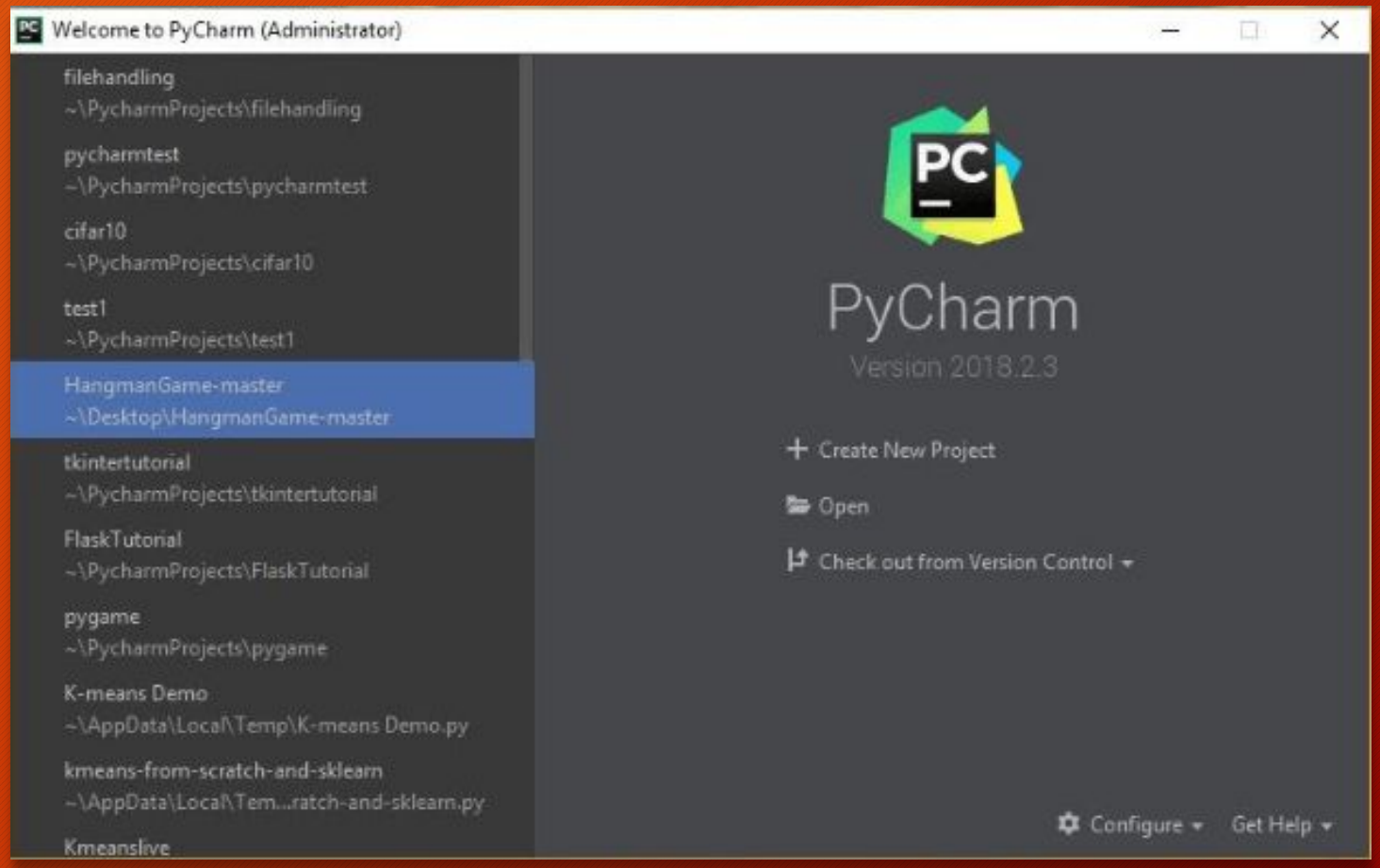
Go to www.jetbrains.com/pycharm/download/#section=windows



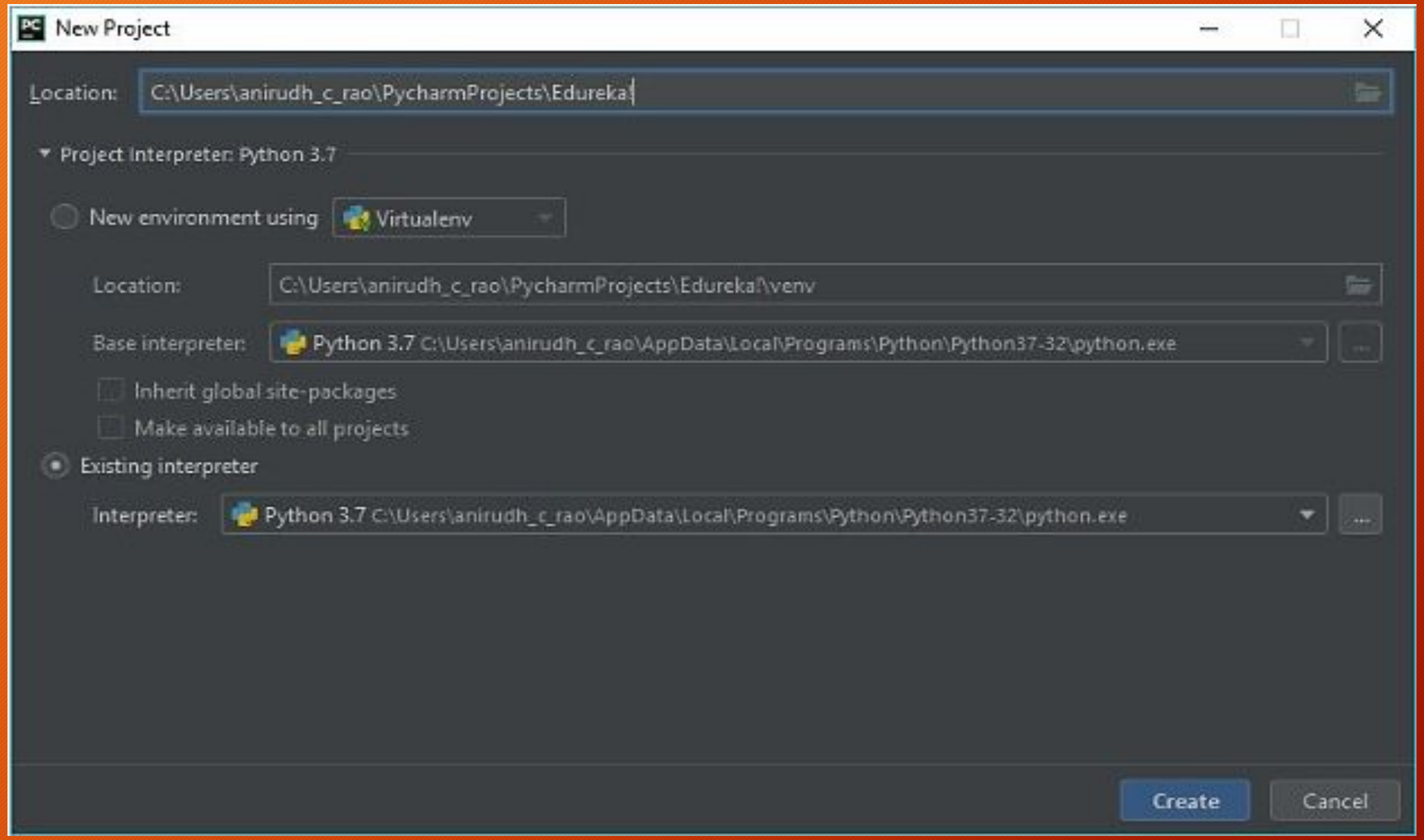
PyCharm Community Edition

•Let us begin by creating a new project. PyCharm greets you with the following image as soon as you open it:

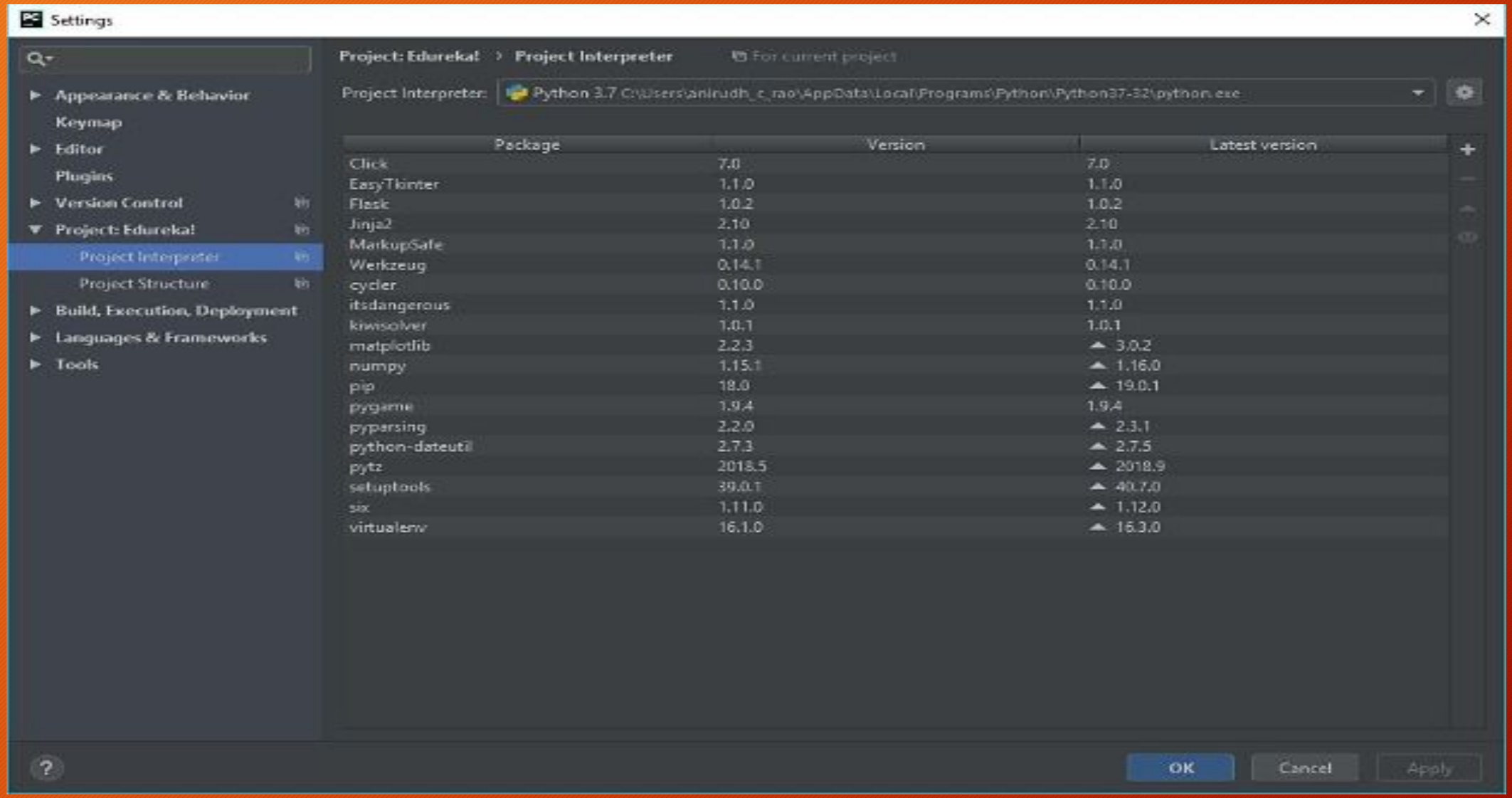
•Here, on the left, you can check out all of the recent projects that I have been working with. But if this is your first time using PyCharm, then the column on the left will not contain anything.



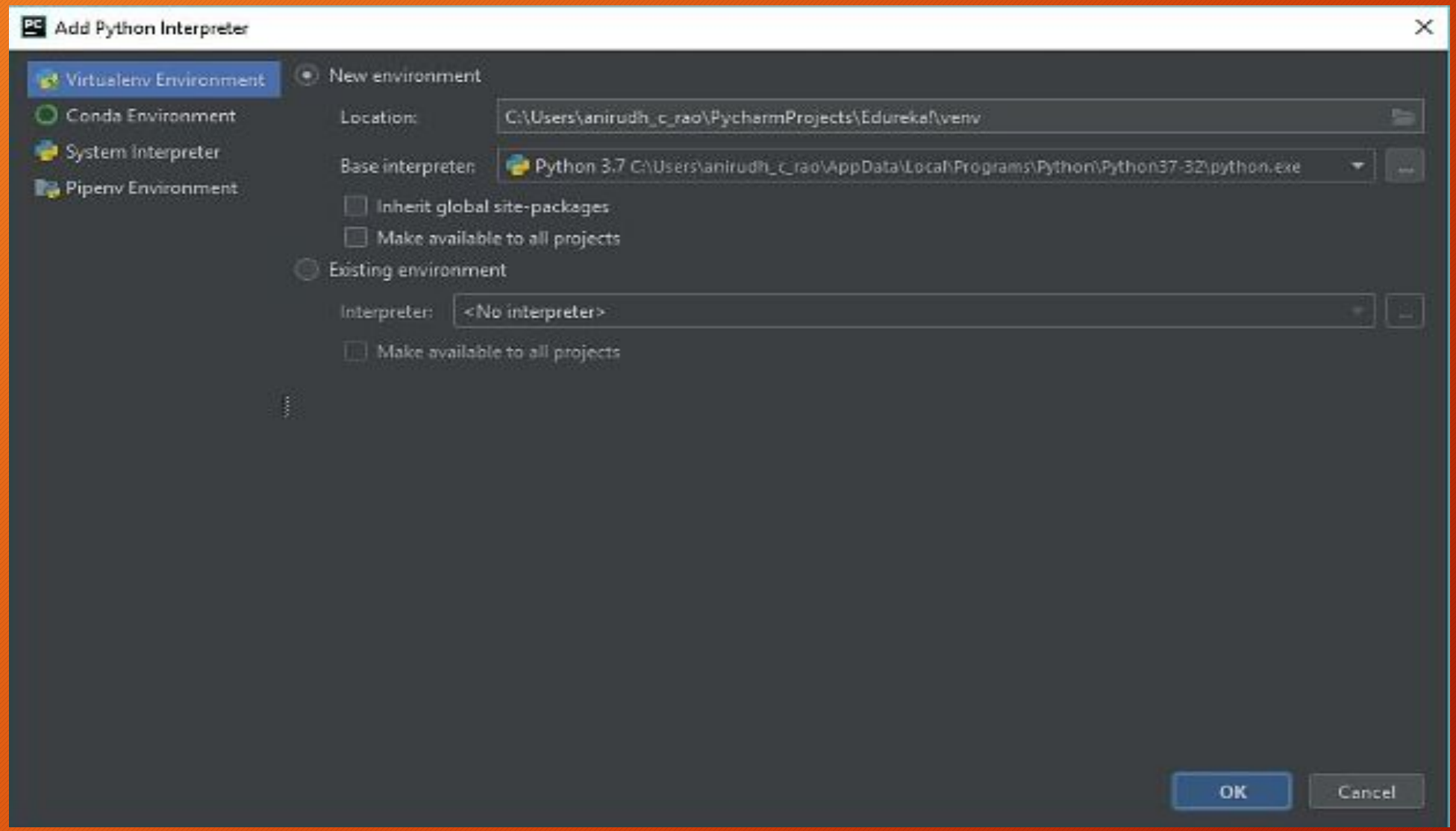
Creating a new project is as easy as clicking on the Create New Project tab and going from there.



This image basically helps us set up our Python Interpreter. However, this might be blank if you do not have Python installed on your system



Clicking on the little gear icon on the right will bring up the following page:



Here, you can make use of the System Interpreter if you have not installed Python separately. Do check the version of the Python installation that is present so it meets your requirements.

Why Learn Python?

Python's syntax is very easy to understand. The lines of code required for a task is less compared to other languages. Let me give you an example – If I have to print "Welcome To NIELIT KURUKSHETRA!" all I have to type:

print("Welcome To NIELIT KURUKSHETRA!")

Let's look at some cool features of Python:

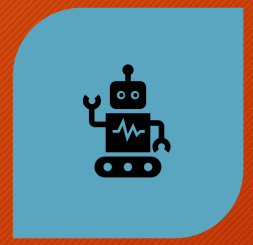
- Simple and easy to learn
- Free and Open Source
- Portable
- Supports different programming paradigm
- Extensible

If you are wondering where you can use Python (Python Application), let me tell you that is where Python stands out.

Python Applications

ARTIFICIAL INTELLIGENCE

DESKTOP APPLICATION



AUTOMATION

WEB DEVELOPMENT

DATA WRANGLING, EXPLORATION AND VISUALIZATION

Python Basics

The basic concepts in any programming language are the foundation of any programmer, We will start with the most basic concept in python.

Python Keywords

Keywords are nothing but special names that are already present in python. We can use these keywords for specific functionality while writing a python program.

Following is the list of all the keywords that we have in python:

```
Here is a list of the Python keywords

False      def        if         raise
None       del        import     return
True       elif       in         try
and        else       is         while
as         except     lambda     with
assert     finally    nonlocal   yield
break      for        not
class      from       or
continue   global     pass
```

Python Comments

Syntax

#this is a single line comment

"""this is a docstring / multiline comment
i hope it is clear
"""

'''This is multiline comment'''