ITT 205 Problem Solving using Python

Contents

Session 1:

Python Interpreter

- An interpreter is a kind of program that executes other programs.

- When you write a Python program, the Python interpreter reads your program and carries out the instructions it contains.

- In effect, the interpreter is a layer of software logic between your code and the computer hardware on your machine.

- Depending on which flavor of Python you run, the interpreter itself may be implemented as a C program, a set of Java classes.

- Whatever form it takes, the Python code you write must always be run by this interpreter.

Python Byte Code

- Internally, and almost completely hidden from you, when you execute a program Python first compiles your *source code* (the statements in your file) into a format known as *byte code*.

- This byte code translation is performed to speed execution—byte code can be run much more quickly than the original source code statements in your text file.

- If the Python process has write access on your machine, it will store the byte code of your programs in files that end with a *.pyc* extension (".pyc" means compiled ".py" source).

The Python Virtual Machine (PVM)

- Once your program has been compiled to byte code (or the byte code has been loaded from existing .pyc files), it is shipped off for execution to something generally known as the Python Virtual Machine

- PVM is just a big loop that iterates through your byte code instructions, one by one, to carry out their operations

- The PVM is the runtime engine of Python; it's always present as part of the Python system, and it's the component that truly runs your scripts.

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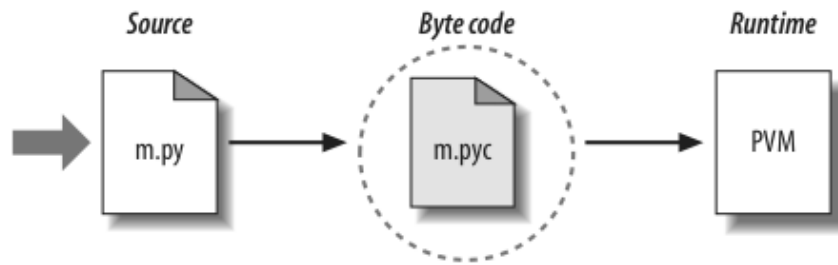
Python Implementation Alternatives

- CPython - Coded in portable ANSI C language code

- Jython - Java classes that compile Python source code to Java byte code

- IronPython - Microsoft's .NET Framework for Windows

Write a program which accepts the radius of a circle and compute the area.

```
r = float(input ("Input the radius of the circle : "))
print ("The area of the circle with radius " + str(r) + " is: " + str(3.14 * r**2))
```

Additional Reading

- Python is a programming language that lets you work quickly and integrate systems more effectively. https://www.python.org/

- What you can do with Python? Let's have a look: https://realpython.com/

- Go professional: https://www.jetbrains.com/pycharm/

- Repositories related to the Python Programming language https://github.com/python

- Where you will work? https://www.python.org/jobs/

- Coursera https://www.coursera.org/learn/python-data-analysis

- Interested in another Language? https://www.r-project.org/about.html

- Want to become a Data Scientist? http://courses.csail.mit.edu/18.337/2015/docs/50YearsDataScience.pdf

- Python do wonders. Want to See? https://numpy.org/learn/