COMP1531

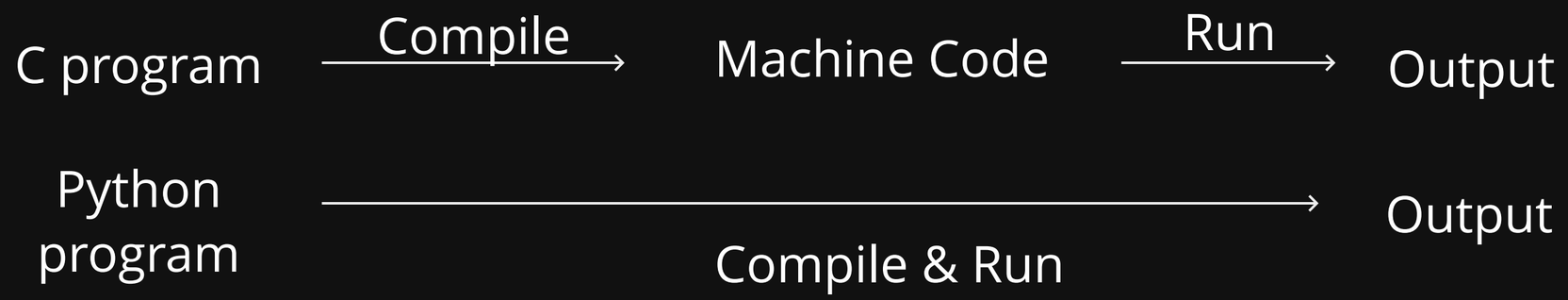
1.3 - Python - Intro

In this lecture

- Basics of python

Python

Interpreted V compiled



Python

Resources shown in this course will be from around the internet. Python has some of the best online-help of any language.

Python

CLI (Command line interface)

- Can be run inline
- Can be run as cli entry
- Can be run via a file

```
hsmith@vx1:~$ python3
Python 3.7.3 (default, Apr  3 2019, 05:39:12)
[GCC 8.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello")
Hello
>>>
hsmith@vx1:~$ python3 -c 'print("Hello")'
Hello
hsmith@vx1:~$
```

Python - Basics

Basic code (basics1.py)

```
1  name = "Giraffe"
2  age = 18
3  height = 2048.11 # mm
4
5  num1 = 3 ** 3
6  num2 = 27 // 3
7
8  print(name + ", " + str(age) + ', ' + str(height))
9  print(name, age, height, sep = ', ')
10 print(f"{name}, {age}, {height}")
11 print(type(name))
12 print(type(age))
13 print(type(height))
14 print(f"3 ** 3 == {num1}")
15 print(f"27 // 3 == {num2}")
```

- Garbage collection
- More info on data types

Python - Basics

Strings (basics2.py)

```
1    sentence = "My"
2    sentence = sentence + " name is"
3    sentence += " Pikachu"
4
5    print(sentence)
6
7    print("Hi!!" * 10)
```

Python strings are **immutable**

Python - Basics

Control structures, argc/argv (basics3.py)

```
 1 import sys
 2
 3 argc = len(sys.argv)
 4
 5 empty = True
 6 if argc > 0:
 7     empty = False
 8
 9 if not empty:
10     if argc == 2:
11         print("Nearly there")
12     elif argc == 3:
13         if sys.argv[1] == "H" and sys.argv[2] == "I":
14             print("HI to you too")
15         else:           .
16              pass
17 else:
18   print("Please enter two letters as command line")
```

Python - Basics

Lists, loops (basics4.py)

```
1  names = [ "Hayden", "Rob", "Isaac" ]
2  names.append("Vivian")
3
4  for name in names:
5      print(name)
6
7  print("===")
8
9  names += [ "Eve", "Mia" ]
10 for i in range(0, len(names)):
11     print(names[i])
```

Python lists are very complicated arrays under the hood. You can read a lot here, here, and here.

Python - Basics

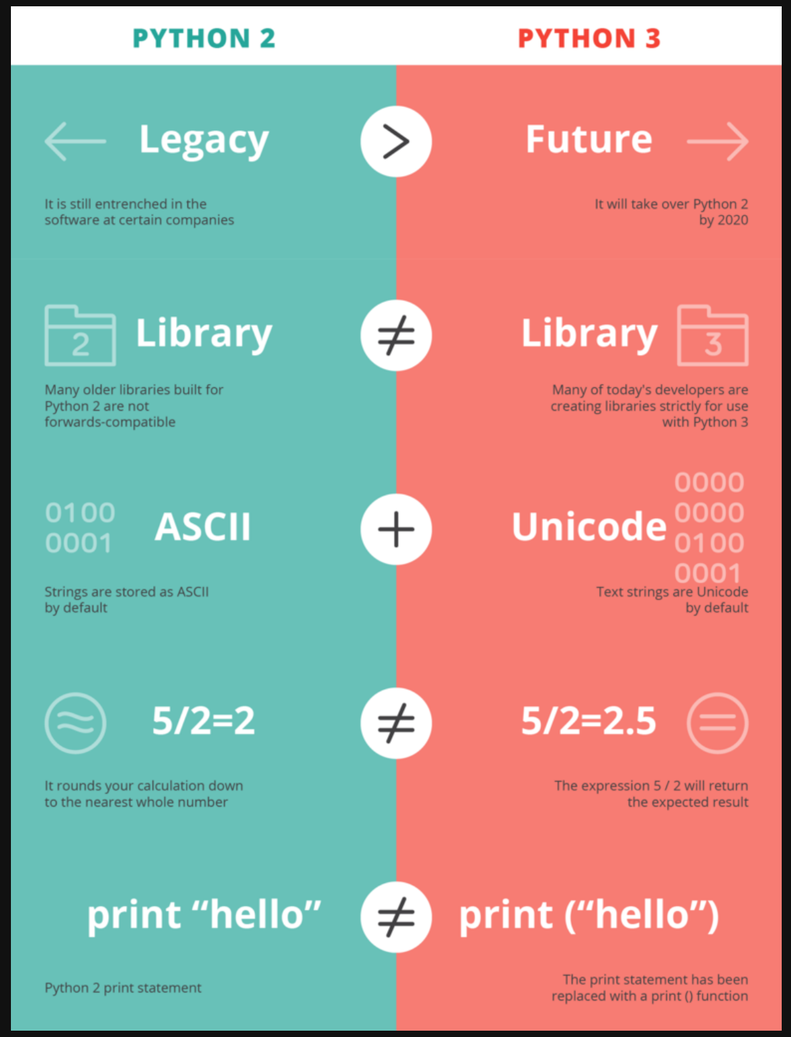
Tuples (basics5.py)

```
1  x = 5
2  y = 6
3  point = (x, y)
4  print(point)
5
6  a, b = point # destructuring
7  print(f"{a}, {b}")
8
9  names = [ "Giraffe", "Llama", "Penguin" ]
10 for id, name in enumerate(names):
11   print(f"{id} {name}")
```

- lists are mutable, tuples are immutable

Python

python2



python3

Why Python?

- Rapidly build applications due to high level nature
- Very straightforward toolchain to setup and use
- It's very structured compared to other scripting languages
- Useful in data science and analytics applications