Big Data in Biology Summer School, 2015
Center for Computational Biology and Bioinformatics
University of Texas at Austin

Introduction to Python
Day One Cheatsheet: Operations and Data Types

Mathematical Operators

Symbol	What it does	Example
+	Addition	`5 + 2`
-	Subtraction	`5 - 2`
*	Multiplication	`5 * 2`
/	Division	`5 / 2`
%	Modulus (remainder)	`5 % 2` (results in 3)
**	Exponent	`5 ** 2` (results in 25)

Variable Types

Type	Abbreviation	Example(s)
Integer	int	`5 ; -6; 0`
Float	float	`45.55 ; -9.21 ; 1.0`
List	list	`[1,2,3] ; ["hi", "bye", 6]`
String	str	`"word" ; "several words" ; "55"`
Dictionary	dict	`{"a": 1, "b": 2, "c": 6}`

Common List Methods

Each example below uses this list: `my_list = [2, 3, 4, 5]`

Method	Description	Example(s)
.append()	Add item to end of list	`my_list.append(7)` `[2, 3, 4, 5, 7]`
.index()	Return first index of a value	`my_list.index(3)` `1`
.pop()	Remove a given index from a list	`my_list.pop(2)` `[2, 3, 5]`

Common String Methods

Each example below uses this string: `my_str = "I love Python"`

Method	Description	Example(s)
.upper()	Convert a string to all uppercase	`my_str.upper()` `I LOVE PYTHON`
.lower()	Convert a string to all lowercase	`my_str.lower()` `i love python`
.count()	Count occurrences of a character (case-sensitive!)	`my_str.count("o")` `2`
.split()	Convert a string to a list, splitting on the given character	`my_str.split(" ")` `["I", "love", "Python"]`

COMMON DICTIONARY METHODS

Each example below uses this dictionary:

```
my_dict = {"alpha": "a", "beta": "b", "delta": "d"}
```

Method	Description	Example(s)
.keys()	Return the dictionary keys as a list	my_str.keys() ["alpha", "delta", "beta"]
.values()	Return the dictionary values as a list	my_str.values() ["a", "d", "b"]

INDEXING

General paradigm [x:y:z]

- x: inclusive first index (default: 0)
- y: exclusive final index (default: last index)
- z: step/increment (default: 1)

```
    a = [90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100]
Indices:  0   1   2   3   4   5   6   7   8   9   10

          a[0]     = 90
          a[5]     = 95
          a[:3]    = [90, 91, 92]
          a[6:]    = [96, 97, 98, 99]
          a[3:6]   = [92, 93, 94, 95]
          a[1:8:2] = [91, 93, 95, 97]
          a[-1]    = 100
```