TECHelium

Lets Face it, now

Project Oriented Python

Python Data Types

Python Data Types

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#	Type	Description	Example
1	Numbers	• Store Numeric values .	simple_var = 10 Big_number = 98634521
2	String	• Stores continues set of characters in between quotation marks. • Single or double quotes can be used	Name = “Hck” Address = ‘near BTM’
3	list	• A list contain item separate by commas and enclosed within square brackets ([]) • Access with a numeric index which starts with zero (0).	batches = [6, 10, 20]; names = ["John Paul", "Lisa", "Kumar”]; ##batches[0] is 6 #names [1:] is [”Lisa”, ”kumar”]

Python Data Types

#	Type	Description	Example
4	Tuple	• A tuple is another sequence data type that is similar to the list. • Tuples are enclosed within parentheses. • Unlike List , tuple size and element cannot be changed • Tuples can be thought of as read-only lists	tuple = ('abcd', 786 , 2.23, 'john', 70.2) ##print tuple[1:3]
5	Dictionary	• Dictionary are unordered sets of key/value pairs • Access using the keys as subscripts. • They are enclosed by {}	data = {'John Paul': 45, 'Lisa' : 30, 'Kumar' : 40}; ##data['John Paul'] is 45 ##data['kumar'] is 40 ##data.keys() ##data.values()

Data Type Summary

- Integers: 2323, 3234L
- Floating Point: 32.3, 3.1E2
- Complex: 3 + 2j, 1j
- Lists: l = [1,2,3]
- Tuples: t = (1,2,3)
- Dictionaries: d = {'hello' : 'there', 2 : 15}

Basic operations

- Assignment:
  - `size = 40`
  - `a = b  = c = 3`
- Numbers
  - integer, float
  - complex numbers: `1j+3, abs(z)`
- Strings
  - `'hello world', 'it\'s hot'`
  - `"bye world"`
  - continuation via \ or use """ long text """

Doing simple arithmetic

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- Here are the arithmetic operators:
  - `+` performs addition
  - `-` performs subtraction
  - `*` performs multiplication
  - `/` performs division
    - When dividing two integers, the result is an integer: `14 / 5` is `2`
  - `%` performs modulus (remainder of division): `14 % 5` is `4`
  - `**` performs exponentiation
- The result of doing arithmetic is often *assigned to a variable:*

```
sum = 10 + 22 + 13 + 44 + 72
```

- Variables can be used in arithmetic:

```
average = sum / 5
```

String operations

- concatenate with + or neighbors
  - `word = 'Help' + x`
  - `word = 'Help' 'a‘`

- subscripting of strings
  - `'Hello'[2]` → 'l'
  - slice: `'Hello'[1:2]` → 'el'
  - `word[-1]` → last character
  - `len(word)` → 5

Lists

- lists can be heterogeneous
  - `a = ['spam', 'eggs', 100, 1234, 2*2]`
- Lists can be indexed and sliced:
  - `a[0]` → spam
  - `a[:2]` → ['spam', 'eggs']
- Lists can be manipulated
  - `a[2] = a[2] + 23`
  - `a[0:2] = [1,12]`
  - `a[0:0] = []`
  - `len(a)` → 5

Decisions and tests

- The result of a test is a **boolean** value, `True` or `False`
- Here are tests on numbers:
  - `<` means "is less than"
  - `<=` means "is less than or equal to"
  - `==` means "is equal to"
  - `!=` means "is not equal to"
  - `>=` means "is greater than or equal to"
  - `<` means "is greater than"
- These same tests work on strings
  - All capital letters are "less than" all lowercase letters

Compound tests

- Boolean values can be combined with these operators:
  - `and` – gives `True` if both sides are `True`
  - `or` – gives `True` if at least one side is `True`
  - `not` – given `True`, this returns `False`, and vice versa
- Examples
  - `score > 0 and score <= 100`
  - `name == "Joe" and not score > 100`

Exercise 1

1.1 Write a program that define two numeric variable and print their sum, product and difference.

1.2 Write a program to collect & Print the information of 10 student with their name and grade.

Hint: student_name list and student_grade list

Note: Add good amount of comments and purpose of the program like

```
#!/usr/bin/python
############################################################
#   Program:    1.1                                        #
#   Purpose :    To  show sum, product and difference of two numbers #
#   Date of completion: 10-April-2015                      #
#   Author :   Harish                                      #
############################################################
```

1.1 Output

Given numbers are 100 and 20

Sum	Product	Difference
120	2000	80

1.2& 1.3 Output

Students and their Grades are

Serial	Student	Grade
1	Arnav	A1
2	Bharav	A2
3	Radha	B1
4	Hari	A2
5	Amitab	C1
....		
....		
10	Navin	A1

Thanks