Introduction to Python

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Previous Programming Knowledge

Python vs Java or C++

Algorithms are not as scary as they seem

★ Algorithm is a big buzzword in computer programming.

★ Algorithm: A Set of Steps to complete a problem.

Algorithm Examples

1. Directions to get somewhere:

"Walk down the hall, make a left"

2. Recommending a video to a Netflix user

"Find another user around the same age"

"Request their most recently watched video to the new user"
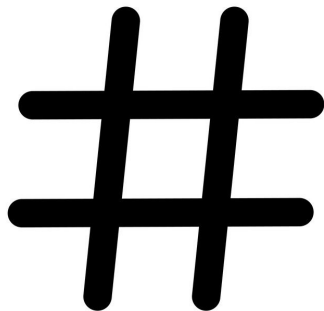
Code Editor: Repl.it

Print Statements

Print statements are a way to print something out when your program runs

```
print("Hi my name is AJ")

print("Today is November 22nd")
```

Print Statements in Repl.it

Comments

If you type a pound sign (#), then whatever comes after the pound sign does not get run by the Python program.

Comments in Repl.it

Variables

A variable is something that gets assigned a value for future use.

`cats = 3`

Variables come in different types

Variable Type	Examples
Integer	1, 2, -50, 234123, 0
Float	3.14, -5.5, 1203.122344
String	'Hi', "This is a string", "apple", 'another string'
List	[1, 2, 3, 4, 5], [1.2, 1.5, 1.6, 1.8], ["potatoes", "cranberries", "pumpkin"]

Variables on Repl.it

Variables can be named... almost anything

1. Variable names cannot start with a number
2. Variable names cannot contain spaces
3. Variable names cannot contain special characters ($, &, @, !, [, })
4. Variables cannot be a python reserved word like "with" or "not"

Naming variables in lower case is usually preferred, with underscores to separate words in a variable name

Example: grocery_list

Example: my_name

Using Variables to Print

This will print "I like to eat pizza"

```
food = "pizza"

print("I like to eat " + food)
```

Using Variables to Print in Repl.it

Arithmetic Operators

Operator	Examples
Addition (+)	2 + 2 = 4
Subtraction (-)	5 - 1 = 4
Multiplication (*)	3 * 2 = 6
Division (/)	10 / 2 = 5

Arithmetic in Repl.it

BREAK (10 MINUTES)

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Boolean	True, False

Comparison Operators

```
> means greater than

>= means greater than or equal to

< means less than

=< means less than or equal to

== means equal to

!= means not equal to
```
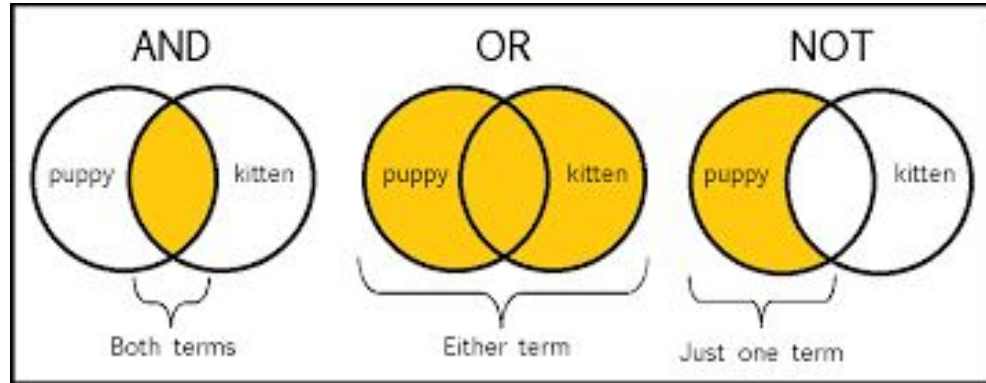
Examples: 5 > 2 (True), 2 == 7 (False), 1 != 3 (True)

Comparison Operators in Repl.it

Boolean Logic

Me as an example: I have a puppy. I do not have a kitten.

Puppy and kitten ->False   Puppy or Kitten -> True   not kitten = True

Boolean Logic in Repl.it

Lists

What if we want to store multiple things together? We can do that with a <mark>list</mark>.

my_list = ["bananas", "strawberries", "peaches"]

my_other_list = [5, 10, 15, 20]

Extracting Items from a List

z = [3, 7, 4, 2]

print(z[0])   # will print 3

print(z[1])   # will print 7

print(z[3])   # will print 2

z =	[3,	7,	4,	2]
index	0	1	2	3

Adding to a list

days = ["Monday", "Tuesday", "Wednesday"]

days.append("Thursday")

days.append("Friday")

Removing from a List

days =["Monday", "Tuesday", "Wednesday", "Thursday", "Friday"]

days.remove("Friday")

days.remove("Thursday")

Lists in Repl.it

Summary

1. Print Statements
2. Variables
   a. Integers
   b. Floats
   c. Strings
   d. Booleans
   e. Lists
3. Arithmetic in Python
4. Boolean Logic
5. Lists

Practice Exercises

Practice Exercise 1

1. Create 2 integer variables

2. Add the two variables together and store the result in a third variable

3. Take that third variable and divide it by 5 and store the result in a fourth variable.

4. Print out the fourth variable

Practice Exercise 2

1. Create a list z = [15, 75, 25, 45, 90]

2. Print the number that is 5 less than z[1]

3. Print the number that is 300 times greater than z[4]

4. Print the number that is half of z[0]

Practice Exercise 3: True or False

1. 1 == 1
2. 4 != 10
3. 2 > 5
4. not (1 < 2)
5. (5 == 5) and (5 != 5)
6. (5 > 6) or (10 < 15)
7. 1 == 1 and 2 == 2 and 3 == 3 and 4 != 4

Questions

Input and Output

What if we want to collect some input from the person running our program?

Right now we can print something in our program, but the user can't give us any information in return.

Storing input in a variable

```
my_variable = input("Prompt the user to give you some information here")
```

Input and Output in Repl.it

Practice Exercises

Practice Exercise 4

1. Ask the user for a food

2. Ask the user for a city

3. Ask the user for a person

4. Print "I want to eat (food) in (city) with (person)"

Questions

What if we only want something to happen if a certain condition is true?

Ex: If you have a puppy, then you should buy dog food

If you do not have a puppy then there's no reason to buy dog food!!