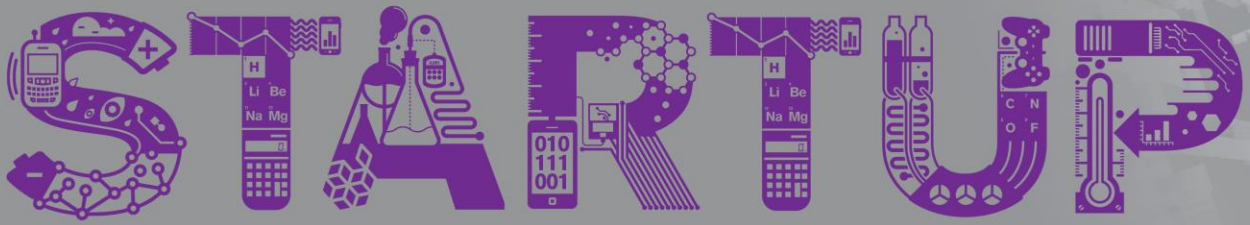
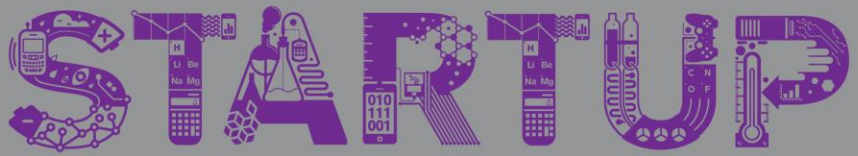
Bloomberg



STARTUP

Bloomberg



Python Lesson 1

Variables

Review: What do these print statements output?

```
print("Hello World!")
print(5)
print(1.2)
print(5 + 1.2)
print("5 + 1.2")
```

```
Hello World!
5
1.2
6.2
5 + 1.2
```

What does this code do?

```
message = “Hello World!”
print(message)
```

```
Hello World!
```

Variables: Introduction

- A **variable** is a name given to a piece of data that can be used to refer to it later.

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- Examples:

```
message = "Hello World!"
favoriteNumber = 23
height_in_inches = 71.5
```

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- Examples:

```
message = "Hello World!"
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```

- We say the value 23 is **stored** in the variable favoriteNumber.

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- Examples:

```
message = "Hello World!"
favoriteNumber = 23
height_in_inches = 71.5
```

- We say the value 23 is **stored** in the variable favoriteNumber.
- We also say the variable favoriteNumber is **set equal** to the value 23.

Variable Names: Rules

- Contains only upper case letters (A-Z), lower case letters (a-z), numbers (0-9), or _
- Cannot start with a number
- No spaces allowed
- Is case sensitive

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Which of the variable names to the right are allowed?

Variable Name	Allowed?
priceOfOreos	
my name	
x	
distance_traveled	
1stPlace	
#ilovecoding	
feet2inches	

Variable Names: Rules

- Contains only upper case letters (A-Z), lower case letters (a-z), numbers (0-9), or _
- Cannot start with a number
- No spaces allowed
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- Should describe the meaning of the data

Which of the variable names to the right are allowed?

Called camelCase

Variable Name	Allowed?
priceOfOreos	YES
my name	
x	
distance_traveled	
1stPlace	
#ilovecoding	
feet2inches	

Variable Names: Rules

- Contains only upper case letters (A-Z), lower case letters (a-z), numbers (0-9), or _
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Which of the variable names to the right are allowed?

Variable Name	Allowed?
priceOfOreos	YES
my name	NO
x	
distance_traveled	
1stPlace	
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feet2inches	

No spaces!

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priceOfOreos	YES
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But not descriptive

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Which of the variable names to the right are allowed?

Variable Name	Allowed?
priceOfOreos	YES
my name	NO
x	YES
distance_traveled	YES
1stPlace	
#ilovecoding	
feet2inches	

Called snake_case

Variable Names: Rules

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- Cannot start with a number
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- Should describe the meaning of the data

Which of the variable names to the right are allowed?

Variable Name	Allowed?
priceOfOreos	YES
my name	NO
x	YES
distance_traveled	YES
1stPlace	NO
#ilovecoding	
feet2inches	

Can't begin with numbers!

Variable Names: Rules

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Which of the variable names to the right are allowed?

Variable Name	Allowed?
priceOfOreos	YES
my name	NO
x	YES
distance_traveled	YES
1stPlace	NO
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feet2inches	

No hashtags!

Variable Names: Rules

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Which of the variable names to the right are allowed?

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priceOfOreos	YES
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distance_traveled	YES
1stPlace	NO
#ilovecoding	NO
feet2inches	YES

Variable Names: Rules

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Which of the variable names to the right are allowed?

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priceOfOreos	YES
my name	NO
x	YES
distance_traveled	YES
1stPlace	NO
#ilovecoding	NO
feet2inches	YES

Prefer snake_case

Variable Names: Rules

- Contains only upper case letters (A-Z), lower case letters (a-z), numbers (0-9), or _
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- No spaces allowed
- Is case sensitive
- Should describe the meaning of the data

Example: What does this code do?

```
Message = “Hello World!”
print(message)
```

ERROR!

```
Traceback (most recent call last):
  File "/home/ubuntu/workspace/variables.py", line 2, in <module>
    print(message)
NameError: name 'message' is not defined
```

Variables: Individual Practice

- Work on In-class Exercises 1

Variable Types: Introduction

- An **int** or integer is a whole number, either positive or negative

```
int_variable = 5
```

- A **float** is a number with a decimal point

```
float_variable = 1.2
```

- A **string** is a group of characters between quotation marks

```
string_variable = “This is a string variable”
```

Variables and Arithmetic: Group Practice

What does this code do?

```
x = 5
y = 3
print(x + y)
```

8

```
z = x + y
print(z)
```

8

Conclusion: Python can add ints!

Variables and Arithmetic: Group Practice

What does this code do?

```
x = "cat"
y = "fish"
print(x + y)          catfish

z = x + y
print(z)              catfish
```

Conclusion: It's okay to use '+' to concatenate strings!

Variables and Arithmetic: Group Practice

What does this code do?

```
x = 5
y = 1.2
print(x + y)
```

```
6.2
```

```
z = x + y
print(z)
```

```
6.2
```

Conclusion: It's okay to add ints and floats!

Variables and Arithmetic: Group Practice

```
x = “My favorite number is ”
y = 5
print(x + y)
```

```
Traceback (most recent call last):
  File "/home/ubuntu/workspace/variables.py", line 5, in <module>
    print(x + y)
TypeError: Can't convert 'int' object to str implicitly
```

Conclusion: It’s NOT okay to add ints and strings!

Variables and Types: Individual Practice

- Work on In-class Exercises 2
- Ask for In-Class Challenge if you finish early

Recap

- Variables can be used to store data
- Variable names have rules and conventions we follow
- Data can be of type integer, float, or string

Questions? Contact us at bpythoncode@bloomberg.net