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CHAPTER 1

Intro to Python

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AGENDA

- Curriculum

- Intro to Python and Tools

- Trying Python

- Data Types

- Your First Python

  Python Program

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Curriculum

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Curriculum

Part 1

Python Basics (6 chapters)

Tools (Online code platforms, Editors)

Running Python Programs

Expressions

Data Types

Flow Control

Functions

Lists & Objects

Building Games: Number Guessing

Game and Tic-Tac-Toe

Part 2

Automation with Python (5 classes)

Handling Files and Documents

Email Automation

PDFs and Excels

Data Fetching from API

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What is Python?

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What is Python?

- Python is one of the **most popular** programming language and one of the **easiest to learn** language
- Python is popular for
  - **data analysis,** machine learning
  - **scripting and automation**
  - **server-side programming**
  - **beginners**

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Major Python Versions

- Python Versions: 2 and 3

- **We are using Python 3** in this course

- **Python 2 is being abandoned** by most of the major tech companies like Google

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How To Get Started?

Python Runtime

Most of the Windows 10 PC should have that included.

If not, you can download and install at
https://www.python.org/downloads/

IDE(Integrated Development Environment)/
Code Editor

The editor and debugging tool for most programming languages

Please download and install at:
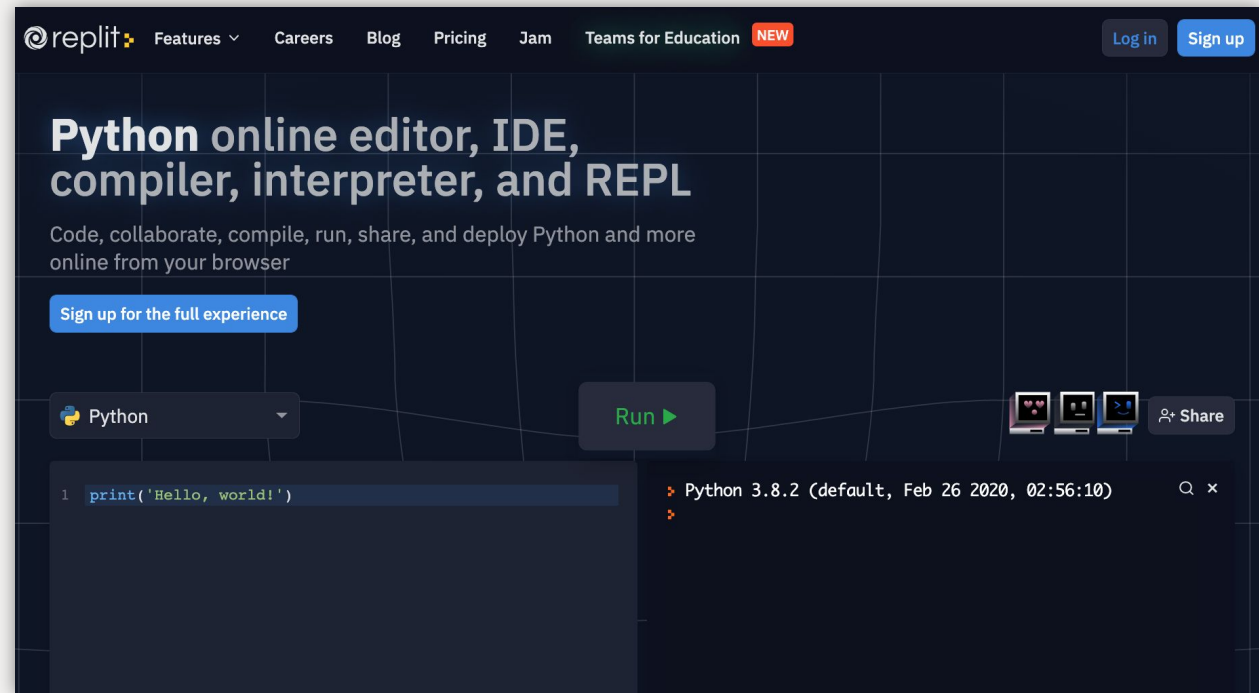https://code.visualstudio.com/

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Handy Way of Testing & Running Python

Online Python Runtime

There are a number of online python runtime. We suggest to try with

https://replit.com/languages/python3

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Trying Python

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Print Functions

- To print out something as result in the "console"

```
print([value that you want to print])
```

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Doing Calculation with Python

- Just like what you learn in Math

2 + 2

3 * 2 (in computer multiply is denoted by * instead of x)

2 + 3 * 4

(2 + 3) * 4

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Doing Calculation on Text (aka String)

- Create string using double quote or single quote
  - "Hello World"
  - 'Hello World'

- Adding Strings together?
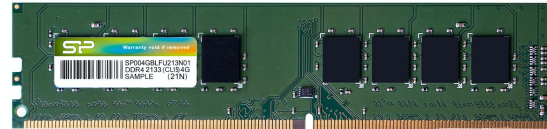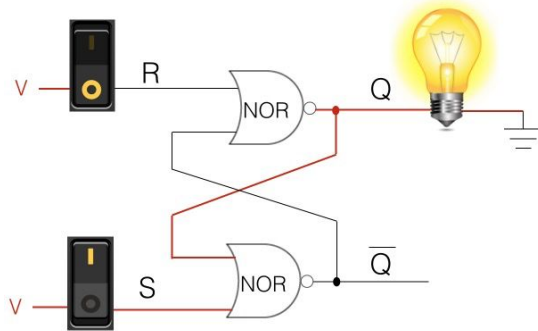 - "Hello " + "World"
  - "Hello " + "World" * 3

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What are Data Types?

Data Storage (Variable)

- Computers are all about **passing data** around and **storing data**

- Computer is essentially a **data processing device**

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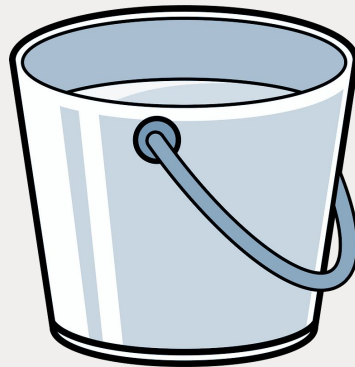
How Do We Represent Them in Code?

- Using variables

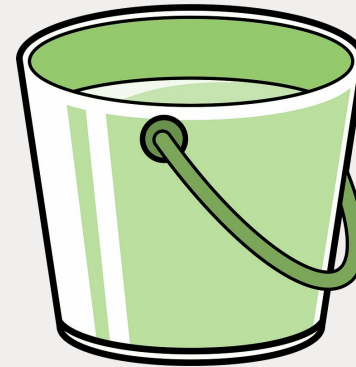- Variables are like water buckets

50

Apple

3.4

X

Y

Z

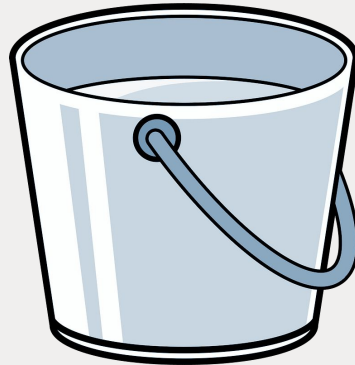</talentlabs>

How Do We Represent Them in Code?

- Using variables

- Variables are like water buckets

- x = **50**

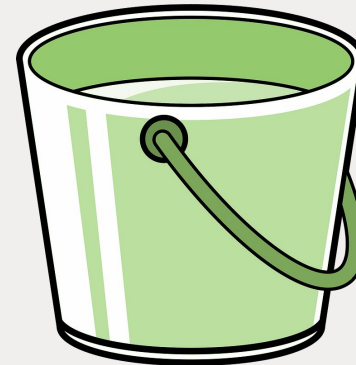- y = **"apple"**

- z = **3.4**

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How Do We Represent Them in Code?

- So we need to customize the buckets

- Small bucket for smaller data

Bucket Size
= 6 characters

50

Apple

3.4

X

Y

Z

2 characters
(Wasted 4 characters)

5 characters
(Wasted 1 characters)
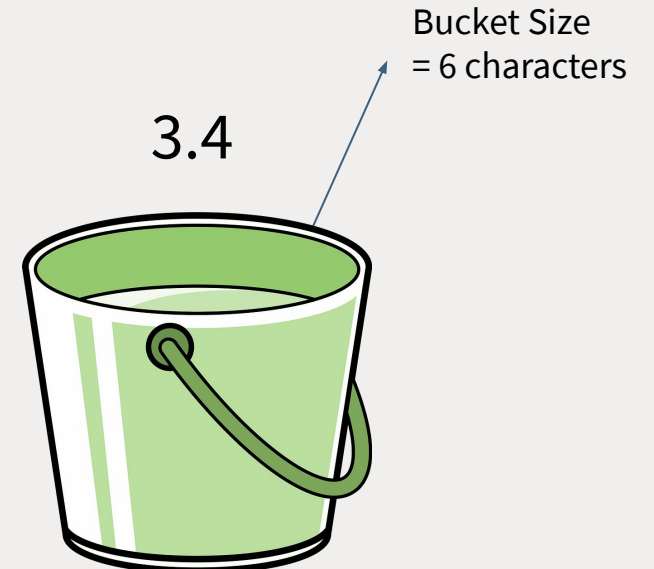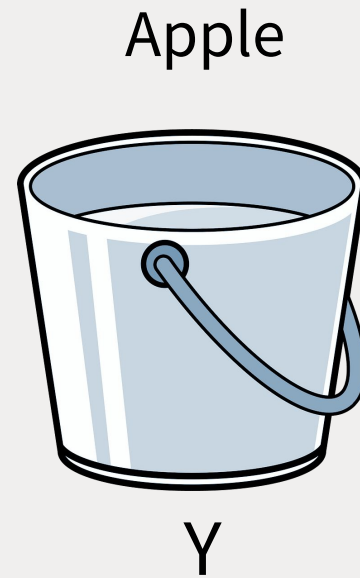
3 characters
(Wasted 3 characters)

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So we need data types to optimize storage
(one of the reasons only)

- So we need to customize the buckets

- Small bucket for smaller data

Apple

3.4

50

X

Y

Z

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List of Data Types

How Many Types of Bucket We Have in Python?

Text: **str**

Numeric: **int, float**

Sequence Types: **list**, tuple, **range**

Mapping Type: **dict**

Set Types: set, frozenset

Boolean Type: **bool**

Binary Types: bytes, bytearray, memoryview

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Your First Python Program

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input () function

- To collect/receive user input

- For building an interactive program

```
1  print("What is your name?")
2  username = input()
3  print("Hello " + username)
```

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Converting User Input

- User Input are **always a string,** even if they are inputting a number

- We need to **convert** it if we want a number

- You can use str(), float(), and int() to convert between text, decimals and integers

```python
1  print("What is your age?")
2  age = input()
3  age_next_year = age + 1
4  print("You will be " + age_next_year + " next year")
```

Wrong Handling

```python
1  print("What is your age?")
2  age = input()
3  age_next_year = int(age) + 1
4  print("You will be " + str(age_next_year) + " next year")
```

Correct Handling

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len()

- Get the length of a value

```
1  print(len('26'))    # print 2
2  print(len('Hello'))  # print 5
```

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