This is CS50.
cs50.brianyu.me
Week 6

- Python
What questions do you have?
Questions
Today

Python

CSV Files

Lab
PART ONE

Python
Variables

\[
x = 28 \quad \text{int}
\]

\[
x = 1.5 \quad \text{float}
\]

\[
x = "Hello!" \quad \text{str}
\]

\[
x = True \quad \text{bool}
\]
Variables

\[ x = [1, 2, 3, 4] \quad \text{list} \]
\[ x = (10, 20) \quad \text{tuple} \]
\[ x = \{ \]
  \[ "HANNAH": "617-555-0100", \]
  \[ "BRIAN": "617-555-0101" \]
\[ \}
\]
\[ x = \{"a", "b", "c"\} \quad \text{set} \]
Dictionaries

• Mapping of keys to values
<table>
<thead>
<tr>
<th>word</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>apple</td>
<td>the round fruit of a tree of the rose family</td>
</tr>
<tr>
<td>balloon</td>
<td>a brightly colored rubber sac inflated with air and then sealed</td>
</tr>
<tr>
<td>car</td>
<td>a road vehicle, typically with four wheels, powered by a combustion engine</td>
</tr>
<tr>
<td>day</td>
<td>a period of twenty-four hours as a unit of time</td>
</tr>
</tbody>
</table>
# Dictionaries

<table>
<thead>
<tr>
<th>key</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Dictionaries

<table>
<thead>
<tr>
<th>name</th>
<th>number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RITHVIK</td>
<td>617-555-0100</td>
</tr>
<tr>
<td>MONTAGUE</td>
<td>617-555-0101</td>
</tr>
<tr>
<td>BRIAN</td>
<td>617-555-0102</td>
</tr>
<tr>
<td>DAVID</td>
<td>617-555-0103</td>
</tr>
</tbody>
</table>
## Dictionaries

<table>
<thead>
<tr>
<th>property</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>first</td>
<td>Emma</td>
</tr>
<tr>
<td>last</td>
<td>Humphrey</td>
</tr>
<tr>
<td>email</td>
<td><a href="mailto:emma@cs50.harvard.edu">emma@cs50.harvard.edu</a></td>
</tr>
<tr>
<td>house</td>
<td>Dunster</td>
</tr>
</tbody>
</table>
## Dictionaries

<table>
<thead>
<tr>
<th>dna</th>
<th>repetitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AATG</td>
<td>28</td>
</tr>
<tr>
<td>TATC</td>
<td>5</td>
</tr>
<tr>
<td>CAAT</td>
<td>14</td>
</tr>
<tr>
<td>TCTTA</td>
<td>50</td>
</tr>
</tbody>
</table>
Dictionaries

names = {
    "HANNAH": "617-555-0100",
    "BRIAN": "617-555-0101"
}

names["RODRIGO"] = "617-555-0102"

print(names["HANNAH"])
Loops

```python	names = ["Alice", "Bob", "Charlie"]
for name in names:
    print(name)
```
Loops

name = "EMMA"
for character in name:
    print(character)
Loops

for i in [0, 1, 2, 3, 4]:
    print(i)
Loops

for i in range(5):
    print(i)
def square(x):
    return x * x
File I/O

```python
file = open(filename, "r")
```
Exercise

Write a program reverse.py that reverses a string.

Sample Usage
$ python reverse.py
Text: Hello!
!olleH
PART TWO

CSV Files
first,last
Emma,Humphrey
Ashley,Wong
Diana,Feng
Montague,Mawere
import csv
Exercise

Write a program `phonebook.py` that reads from a CSV file (provided as a command-line argument) and prints out the data on each person in the phone book. The file contains columns `name` and `number`, representing each person’s name and phone number, respectively.

Sample Usage

```
$ python phonebook.py data.csv
Emma's phone number is 617-555-0100
Rodrigo's phone number is 617-555-0101
Brian's phone number is 617-555-0102
David's phone number is 617-555-0103
```
Part Three
Lab
Problem Set 6
Problem Set 6

- Sentimental
  - Hello
  - Mario (Less) or Mario (More)
  - Cash or Credit
  - Readability
- DNA
Short Tandem Repeat
<table>
<thead>
<tr>
<th>name</th>
<th>AGAT</th>
<th>AATG</th>
<th>TATC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>28</td>
<td>42</td>
<td>14</td>
</tr>
<tr>
<td>Bob</td>
<td>17</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>Charlie</td>
<td>36</td>
<td>18</td>
<td>25</td>
</tr>
</tbody>
</table>
name,AGAT,AATG,TATC
Alice,28,42,14
Bob,17,22,19
Charlie,36,18,25

data.csv
name,AGAT,AATG,TATC
Alice,28,42,14
Bob,17,22,19
Charlie,36,18,25

data.csv

TCAGAGGAT...

sequence.txt
This is CS50.