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Week 1 - Summary

Where Do You Start?

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The ideal way to start coding is through web applications. Every application has a front-end and back-end.

Web applications are applications that are accessible over the internet

Front-End of Applications

Front-end applications, which are visible on a web page are created via three languages:

- HTML
- CSS
- JavaScript

For example,

The boy kicks the red ball.

Boy	Noun

HTML: Functions as the noun of the web

Red	Adjective

CSS: Controls the appearance of the webpage

Kicks	Verb

Javascript: Controls behavior/actions on a website

Back-End of Applications

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Web pages
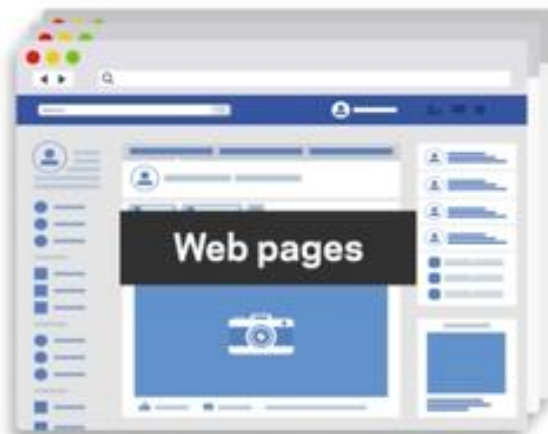
Rules

Identify, organize, and display information from the database

Accept various languages like PHP, Python, Ruby, Java, and C

Database

Where all the information gets stored

It accepts only SQL language

Differences in Programming Languages

PHP	Python	Ruby
echo "Hello World";	print("Hello World")	puts "Hello World"
↓	↓	↓
Hello World	Hello World	Hello World

Different programming languages use different code, but to generate the same output

Evolution of Programming Languages (1/4)

Example in Binary

Print "Winter is coming."

Evolution of Programming Languages (2/4)

Example in Assembly

Print "Winter is coming."

```
section  .text
    global    _start

_start:

    mov  edx, len
    mov  ecx, msg
    mov  ebx, 1
    mov  eax, 4
     int   0x80

    mov  eax, 1
     int   0x80

section  .data

msg db    'Winter is coming.'   ,0xa
len  equ  $ − msg
```

Evolution of Programming Languages (3/4)

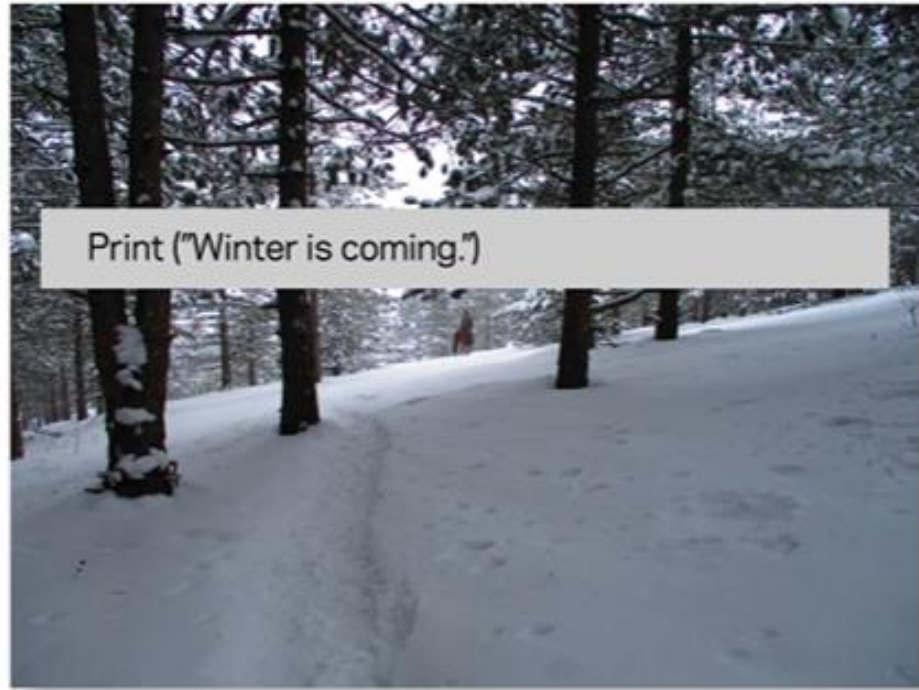## Example in Java

Print "Winter is coming."

```
Public class HelloWorld {
    public static void main (string[ ] args) {
        System.out.println("Winter is coming.");
    }
}
```

Evolution of Programming Languages (4/54

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Python: Some Facts (1/2)

- Python is a high-level programming language
- Guido Van Rossum created a white paper using Python codes in 1991
- Google hired the person who invented Python and, as a result, anyone who wanted to learn Python joined Google

Random fact:

Python is named after Monty Python, the comedy troupe, not the snake

Python: Some Facts (2/2)

Almost all the companies use Python

Python is useful for people in business-oriented roles, not just for developers

Characteristics of Python
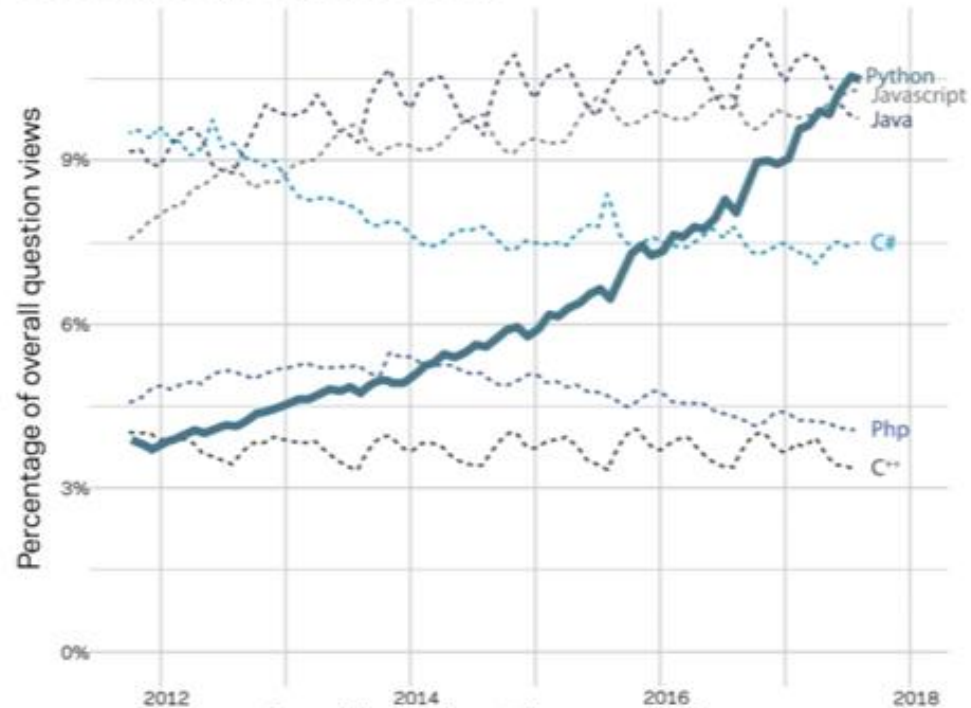
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Reasons for Python's adoption:

- Simple to use
- Suitable for beginners
- Powerful as compared to other languages

Popularity of Python Over the Years

Growth of major programming languages
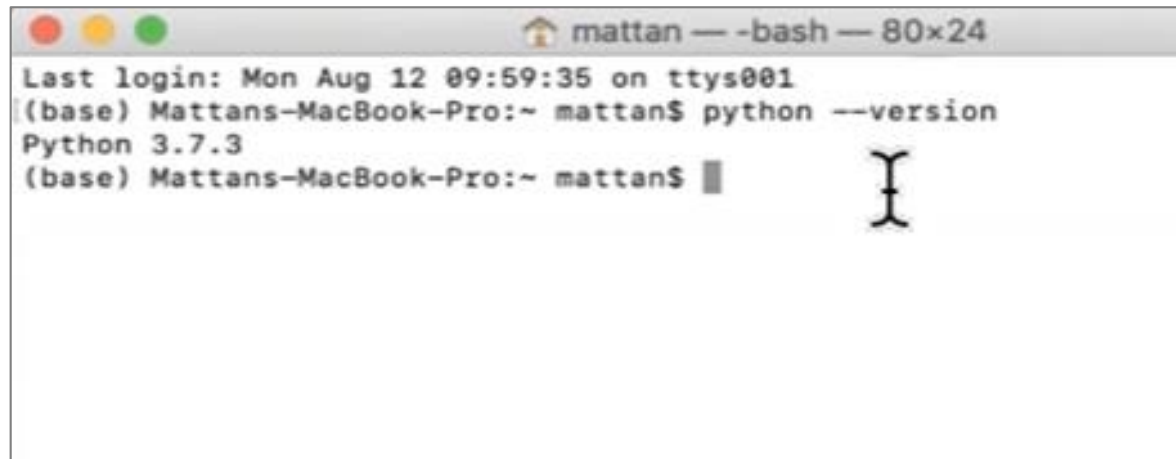
Based on Stack Overflow question views

Things You Need to Get Started

1. Text editor called Atom
2. Python, download using Anaconda's Downloader
3. The command line is referred to as the terminal on a Mac, and on Windows, the Powershell command line

The Command Line

- If you have an older version of Python, make sure to have all the functionalities of 3.7.3 to be able to perform all the coding in this course.
- Some codes can be case-sensitive.

```
mattan — -bash — 80×24
Last login: Mon Aug 12 09:59:35 on ttys001
(base) Mattans-MacBook-Pro:~ mattan$ python --version
Python 3.7.3
(base) Mattans-MacBook-Pro:~ mattan$
```

It is important to understand the command line to run Python codes.

The Command Line: Helpful Codes

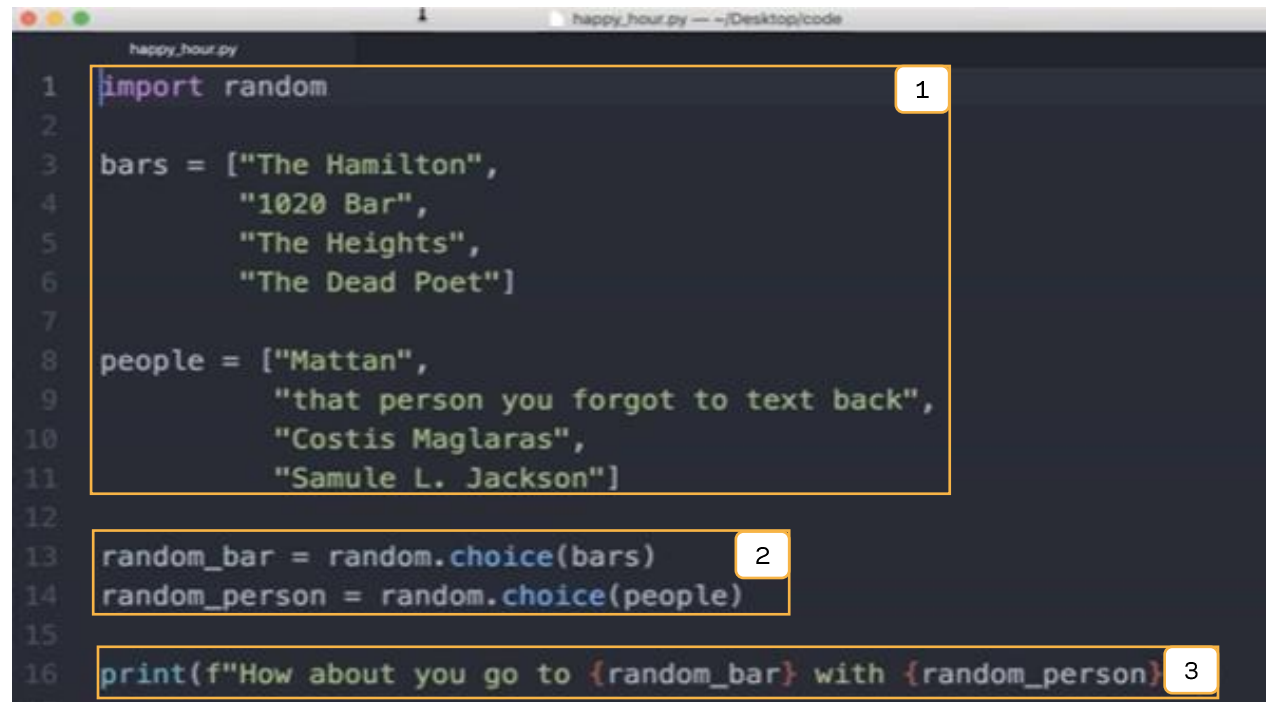|	
pwd	returns current location on the computer
open . *(on Mac)* *start .* *(on Windows)*	opens current folder
ls	lists the content of the current folder
cd <location>	allows to navigate within the computer (folder name is case sensitive)
cd ..	moves one level outside the current folder

Python Interactive Mode

To exit, type exit in parentheses followed by Enter; or Control D on a Mac; or Control Z and Enter on a Windows.

Reading Code

Open the *.py* file with Atom

1. Top line

2. Middle line

3. Bottom line

```
happy_hour.py
1  import random                                                    1
2
3  bars = ["The Hamilton",
4          "1020 Bar",
5          "The Heights",
6          "The Dead Poet"]
7
8  people = ["Mattan",
9            "that person you forgot to text back",
10           "Costis Maglaras",
11           "Samule L. Jackson"]
12
13 random_bar = random.choice(bars)                                 2
14 random_person = random.choice(people)
15
16 print(f"How about you go to {random_bar} with {random_person}")  3
```

Saving Your Code

Select 'File' and then 'Save' OR

Command+S (on Mac)

Ctrl+S (on Windows)

Save the code every time you make a change. The blue dot next to the filename prompts you to save and disappears once you have saved the code.

Clearing The Screen

Windows

Type *clear* and hit Enter

Mac

Press Command+K

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Two Ways to Run Python Code

First

1. Open Command Line
2. Type python <filename>
3. Select Enter

Second

1. Open Python Interactive Mode*
2. Type python and select Enter
3. Enter the python code next to the ">>>"
4. Select Enter

Command line commands won't work in this mode.

Printing

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Python 2

print "Winter is coming"

Python 3
(uses parentheses)

print("Winter is coming")

Reading Errors

- Break down the error message line by line
- Search for the error message on the internet
- Stackoverflow.com can be very helpful

Reference links:

- How do I ask a good question
- How to create a Minimal, Reproducible Example

Commenting (1/3)

Add a '#' before or after any line of code in Python, this will comment the code and it won't get run by Python.

Select the lines you want to comment and hit Command+? Or / on a Mac and Ctrl+/ on Windows

Commenting (2/3)

Example of result after commenting the lines:


```
(base) Mattans-MacBook-Pro:code mattan$ python print.py
since feeling is first
who pays any attention
to the syntax of things
will never wholly kiss you;
wholly to be a fool
while Spring is in the world

we are for each other: then
laugh, leaning back in my arms
for life's not a paragraph

and death i think is no parenthesis
(base) Mattans-MacBook-Pro:code mattan$ 
```
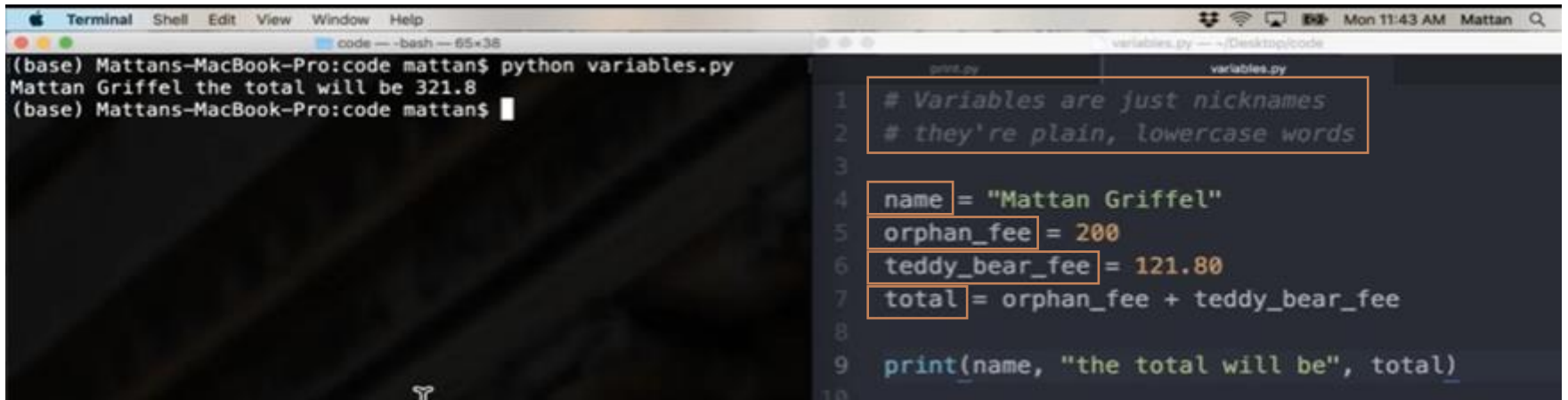
```
print.py
1   # "Since feeling is first" by E. E. Cummi
2   print("since feeling is first")
3   print("who pays any attention")
4   print("to the syntax of things")
5   print("will never wholly kiss you;")
6   print("wholly to be a fool")
7   print("while Spring is in the world")
8   print()
9   # print("my blood approves")
10  # print("and kisses are a better fate")
11  # print("than wisdom")
12  # print("lady i swear by all flowers. Don
13  # print("-the best gesture of my brain is
14  # print("your eyelids' flutter which says
15  print()
16  print("we are for each other: then")
17  print("laugh, leaning back in my arms")
18  print("for life's not a paragraph")
```

Commenting (2/2)

Example of result after uncommenting lines:

Variables and Printing Undefined Variables

Math Symbols


```
math.py — ~/Desktop/code

print.py                    variables.py                    math.py

1   # In Python you can do math using the following symbols:
2   # + addition
3   # - subtraction
4   # * multiplication
5   # / division
6   # ** exponent (not ^)
7   # > greater than
8   # >= greater than or equal to
9   # < less than
10  # <= less than or equal to
11  # and more!
12
```

Integers and Floats

- Integers are whole numbers and floats are basically decimals
- In Python 3, when you divide any two numbers the result is always a float
- In Python 2, you'd always get back an integer

Strings and Text

Strings are text surrounded by quotes, both single (") and double ("") can be used

Two ways of dealing with quotes in strings:

1. Switch to single quotes if the string uses double quotes
2. Use \ to escape quotes inside strings

You can run string functions directly on a string or on a variable with a string inside of it by putting a period after the string and then writing the function name with parentheses after it. For example, kanye_quote.upper()