Intro to Python & Programming

C-START Python PD Workshop

Don't just buy a new video game, make one.

Don't just download the latest app, help design it.

Don't just play on your phone, program it.

No one is born a computer scientist, but with a little hard work and some math and science, just about anyone can become one.

— Barack Obama

Before We Start: A Note on Copy-Paste

When small code examples are shown on the slides, it's probably better for you to type in the code examples yourself than try to copy-paste them. You'll learn more by doing so!

Larger code examples are provided on the website rather than in the slides.

Not to mention, some PDF viewers throw crazy characters at you when you try and copy-paste; Python won't like this!

Review: Variables

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```
x = 10
y = x + 2
x = 11
print(x, y)
```

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```
11 12
```

Review: Accepting User Input

The `input` function takes a prompt string, and returns the string the user types.

```
name = input("What is your name? ")
print("Nice to meet you", name)
```

Review: Operators

Python provides a simple notation to write mathematical statements.

`+`	Addition
`-`	Subtraction
`*`	Multiplicaton
`**`	Exponentation
`/`	Division
`//`	Integer Division
`%`	Modulus (division remainder)

Operators Example in Python REPL

```
>>> (4 + 3) * 6
42
>>> 4 ** 3
64
>>> 33 / 2
16.5
>>> 33 // 2
16
>>> 74 % 8
2
```

Notice the Notation

The >>> symbol is used to indicate lines typed at the interactive interpreter ("Python Shell" in IDLE). No need to type >>> yourself.

Comments

Comments are a way for programmers to leave notes for others (and sometimes even themselves) in their code. In Python, you can write comments using the # symbol. Anything from # to the end of line will be ignored in Python.

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x = 10
x = x + 1    # add one to x
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```

When should I leave comments in my code?

Python ignores comments, so you never *have* to leave comments in your source. However, if you feel that a piece of code needs explanation for other Python programmers to understand it, usually it's a good idea to leave a comment.

The `len` Function

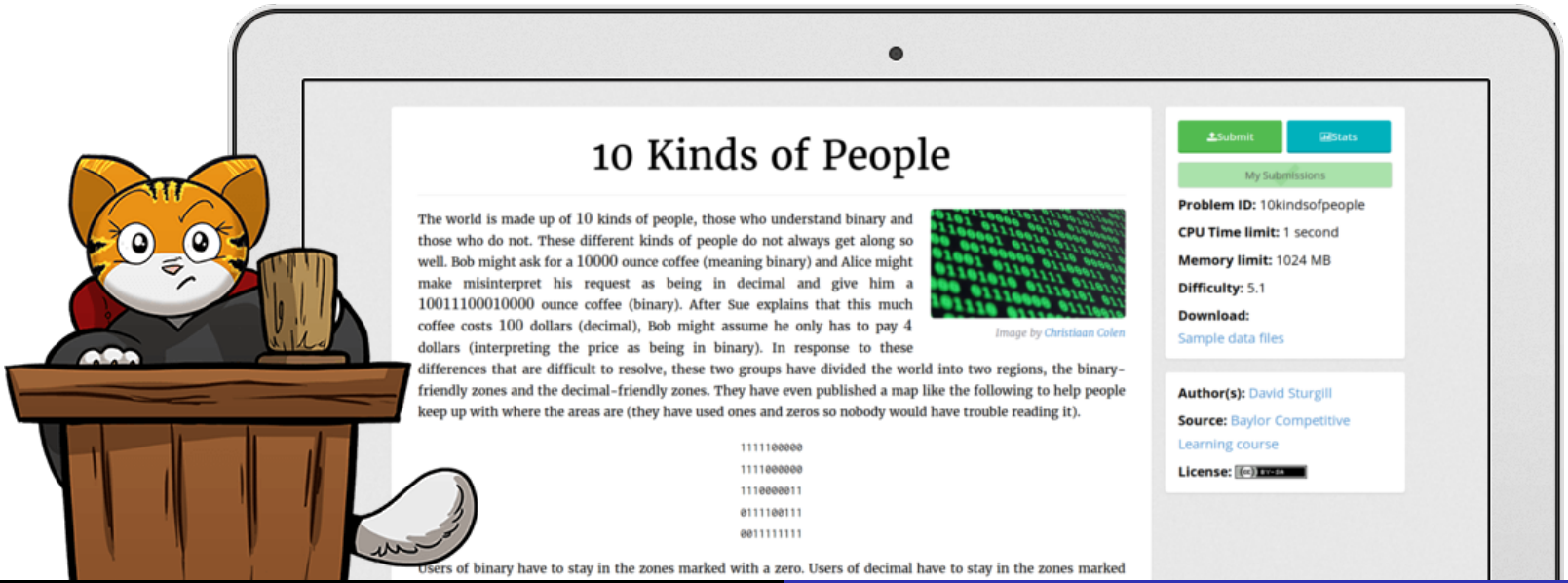
The `len` function takes a sequence (such as a string) and returns its length. For example:

```
>>> len("Jack")
4
>>> len("Hello World!")
12
```

Kattis

Kattis is a website that can automatically check your solution to problems. You may optionally use Kattis in this workshop for mini-projects. Kattis could be used in K-12 classrooms.

1. Click *Hello World!* Kattis problem from workshop website
2. Create an account on Kattis
3. Upload a solution to *Hello World!*
4. Make sure it got accepted!



Input & Output on Kattis

Input on Kattis corresponds to the `input` function, and output corresponds to the `print` function.

- Kattis is pretty lenient on whitespace, so you should be OK adding extra spaces where needed.
- Kattis considers any prompt you use on the `input` function to be output, and this will confuse her. So, to get a line of input, use no prompt at all:

```
line = input()
```

- Remember `input` returns a string, so you will need to convert it to an integer if you need it as one.

```
N = int(input())
```