CSE 503

Introduction to Computer Science for Non-Majors

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Day 07

Python Exercises, Intro to JavaScript

Announcements

- Solutions for previous lecture's exercises posted to website

Recap

- Comments and assertions are ways to document your code and your reasoning/assumptions
  - Comments are ignored by Python. Allow you to explain to the reader what is going on and **why**
  - Assertions are a way to codify assumptions you've made about your code in a way that Python understands and can enforce
- 3 exercises bringing together all of our knowledge so far

Recap (Exercise #1 from Last Time...)

Assume we have a standard deck of playing cards.

Write a function named **`color`** that returns the color of a card based on the suit of the card.

Assume the function takes a single string, and that the string passed in corresponds to the suit of the card: "Clubs", "Diamonds", "Hearts" or "Spades"

For example, **`color("Clubs")`** should return **`"black"`**.

Recap (Exercise #2 from Last Time...)

Write a function named **`name`** that takes the numerical value of a card and returns a string corresponding to the name of the card.

For example, **`face(12)`** would return **`"Queen"`**.

If the card does not have a special name, the function should just return the number as a string.

For example, **`face(9)`** would return **`"9"`**. *Reminder: str(x) converts x to a string...*

Write some tests with **`assert`** to verify your assumptions.

Recap (Exercise #3 from Last Time...)

Time to put it all together!

Define a function named **`description`**, which takes a numerical value, and a suit, and returns a description of the card.

For example, **`description(12, "Clubs")`** should return:

```
"The Queen of Clubs is black!"
```

Introduction to JavaScript

- Another programming language
  - Commonly used for web-based applications
  - Good for visualization/GUI
  - To make a REPL on replit.com choose Node.js template
- Just like Python, JavaScript has:
  - expressions
  - statements
  - variables
  - functions
  - etc…

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  - etc…

Much of what we've learned in Python we can now apply to JavaScript…

…but with different *syntax*
(and sometimes different *semantics*)

Expressions in JavaScript

Simple Expressions:

`null`, `true`, `false`

numeric literals (floating point)

string literals

variables

Compound Expressions:

<expression> <operator> <expression>

or

<operator> <expression>

or

<expression> <operator>

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`null`, **`true`**, **`false`**

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Compound Expressions:

<expression> <operator> <expression>

or

<operator> <expression>

or

<expression> <operator>

binary expressions

unary expressions

Operators in JavaScript

Some examples of binary operators:

arithmetic: +, -, *, /, %, **

string: +

relational: <, <=, >, >=, ==, !=

boolean (w/short circuiting): &&, ||

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equal to
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Some examples of binary operators:

arithmetic: +, -, *, /, %, **

string: +

equal to
not equal to
(both same as in Python)

relational: <, <=, >, >=, ==, !=

and
or

boolean (w/short circuiting): &&, ||

(both same semantics as Python, but different syntax)

Operators in JavaScript

Some examples of unary operators:

arithmetic: +, -

boolean: !

Operators in JavaScript

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arithmetic: +, -

boolean: ! $\leftarrow$ not

Variables in JavaScript

- Variables in JavaScript **must** be *declared* before use
  - Similar to how we must assign a value to a variable in Python before use
  - Variable declaration is a statement
- Statements in JavaScript **must** end with `;`

```
let x;

x = 13;

let y = 12;
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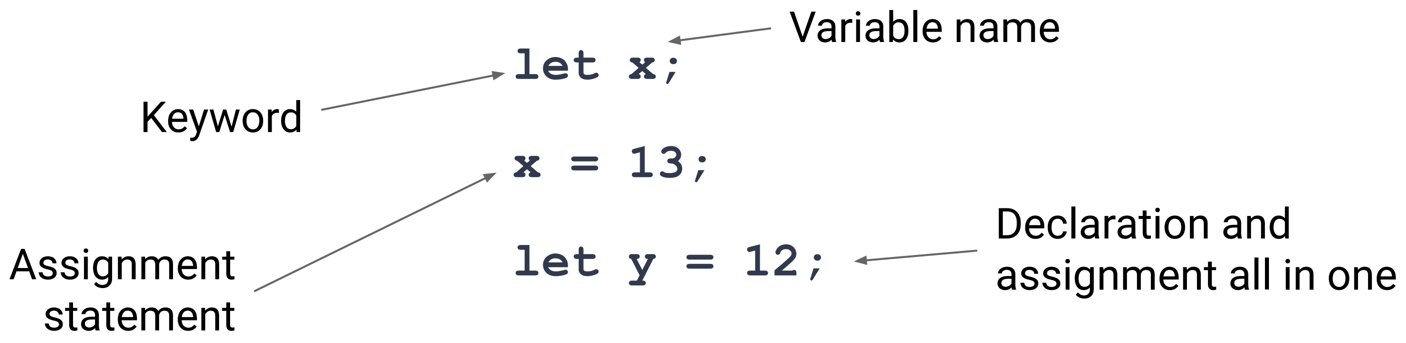

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Technically…this isn't a strict requirement, but it's safer to follow this rule

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x = 13;

let y = 12;
```

Function Definitions in JavaScript

- Two parts: **header** and **body** (...sound familiar?)

```
function area(w, h) {
    return w * h;
}
```

Function Definitions in JavaScript

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header

keyword

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Function Definitions in JavaScript

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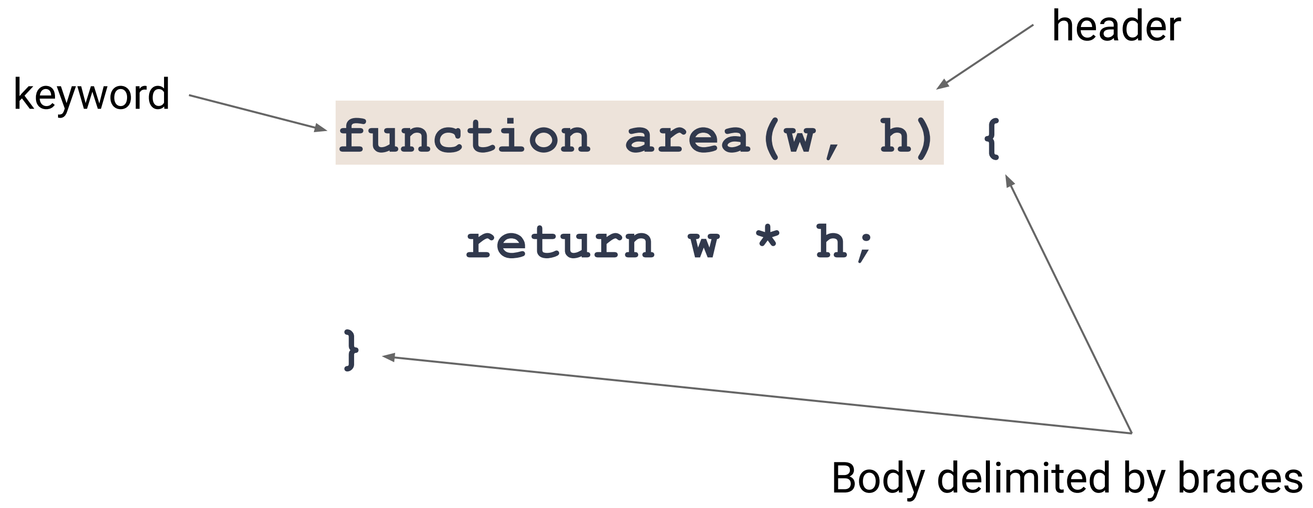

```
function area(w, h) {
    return w * h;
}
```

Function Calls in JavaScript

- …they look the same

```
let x = area(10, 12);
```

Function call

Comments in JavaScript

```
// This is a single line comment
/* This comment is one that
   spans multiple lines… */
```

Output in JavaScript

```
console.log("some cool string");
```

Type Names in JavaScript vs Python

Python	JavaScript
`bool`	`Boolean`
`str`	`String`
`int`	`Number`
`float`	

Type Names in JavaScript vs Python

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…And many many more…