Carnegie Mellon University
Computer Science Academy

CS1: Unit 2 Review

Functions

Function Basics



- Indent the body of a function by 4 spaces
- Function parameters can be different types, including numbers, strings (like 'hello'), and booleans (True or False)
- You can call the same function multiple times
- Python has rules for legal function names
    - Upper and lower case are different, so sayHi is not the same as sayhi
    - Names must start with letters
    - Names can contain digits, but they cannot start with a digit
    - Names cannot contain spaces, newlines, or punctuation
    - Python reserves some special words that you cannot use for function names
- Legal names aren't necessarily *good* names.
    - Good names are short and clear
    - Good names are camelCased
- we can use pass to tell Python to do nothing for that function

Multiple Parameters

- Parameters and arguments must match -- the same number, in the same order
- When calling a function with no parameters, still use parentheses like: beHappy()

Mouse Events

Mouse Press Events

- The onMousePress(mouseX, mouseY) function is called every time the canvas is clicked
    - The name of the function must match
    - We can name the parameters whatever we want, but they will represent the x and y coordinate of where the mouse was pressed on the canvas

Using and Debugging Events

- Using print properly:
    - Use print to help you understand and debug your code
    - The console is for programmers, not users.
    - Delete your print calls when you no longer need them.
- Use the control or ctrl key to access the inspector

- Top-level code: any code not inside a function
  - Runs exactly once before any event is called
- A little Math
  - Use `+` to add, `-` to subtract, `*` to multiply, `/` to divide

Globals

- To modify a shape after creating it, store the shape in a global variable
  - You can get and set the properties of that shape in any function

Mouse Release Events

- `onMouseRelease(mouseX, mouseY)` is called every time the mouse is released
  - it is most common to use mouse release events to modify existing shapes

Properties

General Shape Properties

- There are many shape properties that you can get and set:
  - Position Properties
    - `left`, `right`, `top`, `bottom`, `centerX`, `centerY`
  - Size Properties
    - `width`, `height`
  - Alignment Properties
    - `Align`
      - Can not be changed after the shape is initialized
  - Fill and Border Properties
    - `fill`, `border`, `borderWidth`, `opacity`, `dashes`
  - Other Properties
    - `rotateAngle`, `visible`
  - Changing Properties
    - Use `+=` to add, `-=` to subtract, `*=` to multiply, `/=` to divide

Shape-Specific Properties

- Some shapes have additional properties just for them
  - Circle Properties
    - `radius`
  - RegularPolygon Properties
    - `radius`, `points`
  - Star Properties
    - `radius`, `points` , `roundness`
  - Line Properties
    - `x1`, `y1` , `x2`, `y2`, `dashes`, `lineWidth`
  - Label Properties
    - `value`, `font`, `size`, `bold`, `italic`
- App Background Property: `app.background`