Simple and compound shapes
For loops

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CS151: Computational Thinking: Visual Media

Lecture 05, Spring 2021

Friday February 19
Quizzes

- There will be a 10-15 min quiz that is available for you to take after class today.
- Given most weeks on online over Moodle after class on Fridays.
- You have from after Friday's class to Sunday 11:59pm to take it.
- Weekly homework is a great study tool.
- **Focus:** read short code samples, answer questions about them.
- Usual question types: T/F, multiple choice, type in the number.
Project grading

• How projects are graded.

• What counts as extensions changes as you advance through CS151.
Project 2

**Goal:** Draw two different space-themed scenes!

- Convert `lab2.py` into your "shape library" (`shapelib.py`): Holds all functions to draw simple and compound shapes.

- In shape library, make two more simple shapes (other than triangle — rectangles, pentagon, parallelogram, circle, etc.)

- In shape library, make two space-themed compound shape by calling your simple shape functions (e.g. rocket ship, planets, stars, etc.).

- Design a space themed scene using all your shapes.
Project 2 guidelines

• Use best practices for code organization that we discussed on Wednesday (e.g. headers, docstrings, code comments, main code at bottom etc.).

• Use single empty lines in between blocks of code that accomplish subtasks to improve readability (analogous to new paragraphs when writing an essay).

• Use function names that make it clear what they are doing (e.g. triangle()).
Practice: make a house out of a triangle on top of a rectangle

- Adding position and scale parameters to a compound shape function
- Let's also show how we can access functions in a different file.
- Changing color, fill, and pen width in a function
For loops
Simplifying code for repetitive tasks

Until now, we've had to write one line of code per command.

- Functions have helped reduce code, but for highly repetitive tasks, it is still annoying!

- Example: Draw a square, we need 4 sets of forward and right commands.

- With a **for loop**, we can *substantially* reduce the amount of code we need to write for repetitive tasks.
For loops in Swift Playgrounds
For loops in Python

In general, for loops have the following structure:

```python
for <loop index> in range(<number of loop iterations>):
    <loop body>
```

Let's try a simple example: `lecture_05_for_loop.py`
Example: Using a for loop to simplify drawing hexagon
Example: Using a for loop to draw any polygon