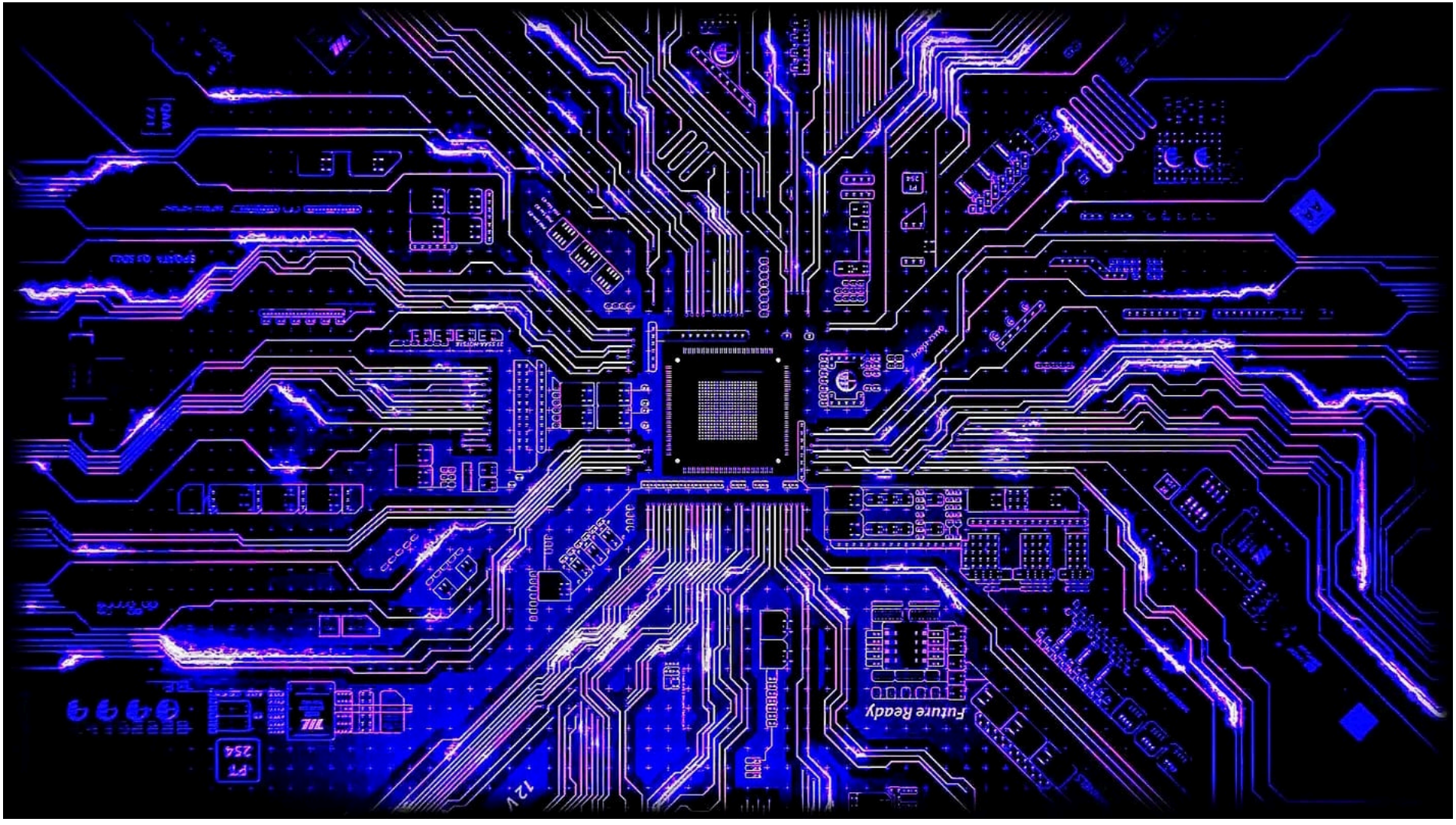
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Where to find Course Content

- Course Website: https://huntercsci127.github.io/summer24.html

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- Course Website: https://huntercsci127.github.io/summer24.html
- Blackboard

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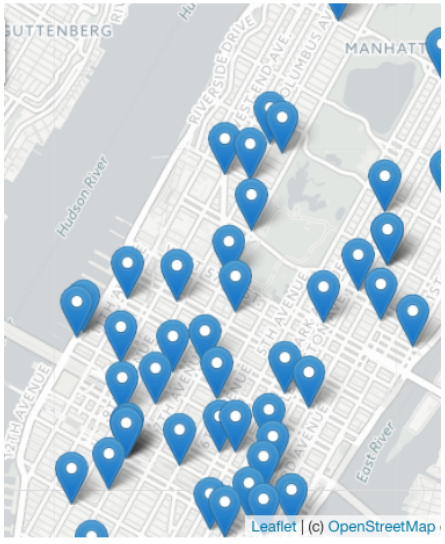
- Course Website: https://huntercsci127.github.io/summer24.html
- Blackboard
- Gradescope (assessment)

Syllabus

CSci 127: Introduction to Computer Science
Catalog Description: 3 hours, 3 credits: This course presents an overview of computer science (CS) with an emphasis on **problem-solving and computational thinking through 'coding'***: computer programming for beginners...*

This course is pre-requisite to several introductory core courses in the CS Major. The course is also required for the CS minor. MATH 12500 or higher is strongly recommended as a co-req for intended Majors.

Syllabus: Topics



pandas

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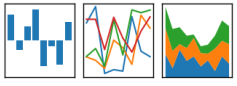

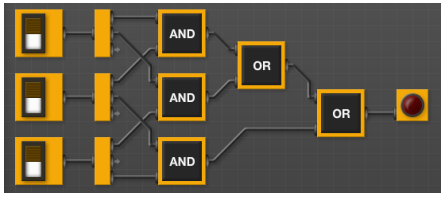

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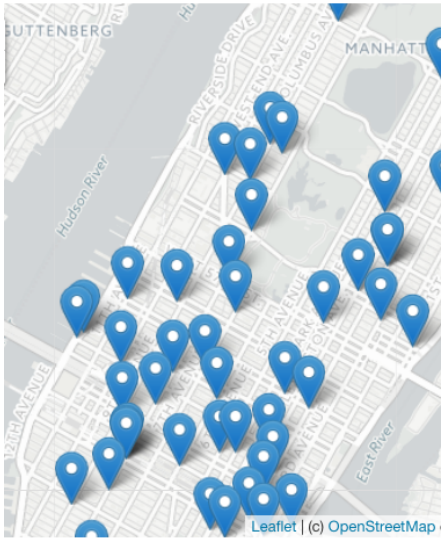

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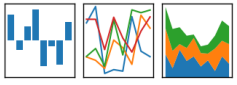

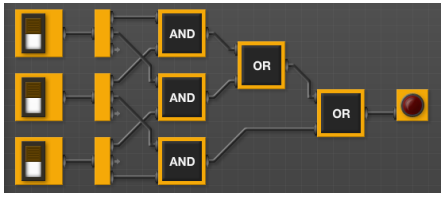

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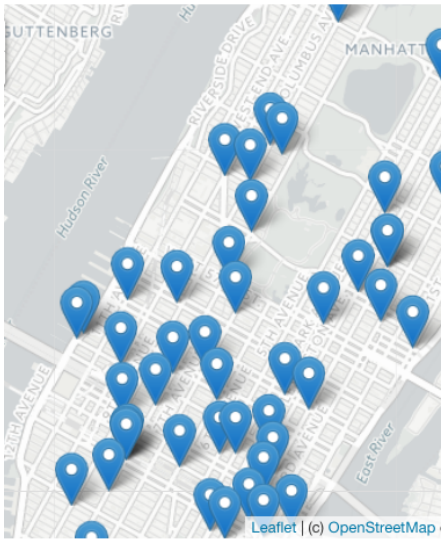
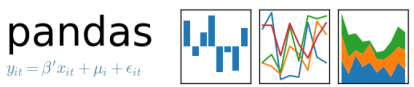
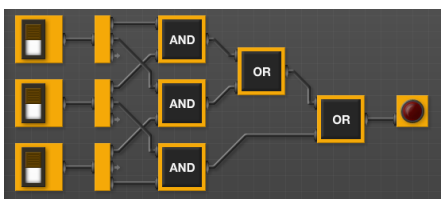
Syllabus: Topics







- **This course assumes no previous programming experience.**
- Organized like a fugue, with variations on this theme:
  - Introduce coding constructs in Python,

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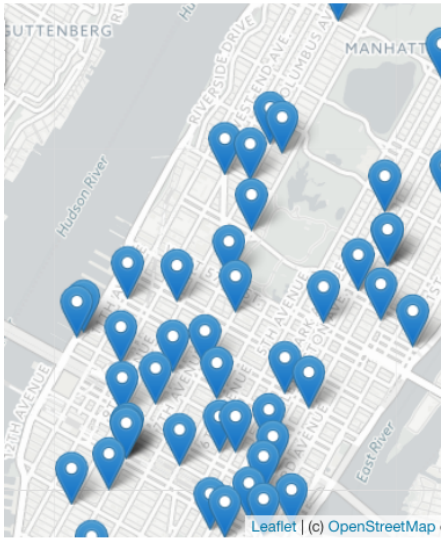

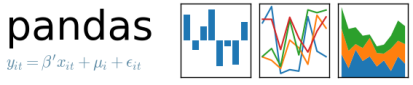

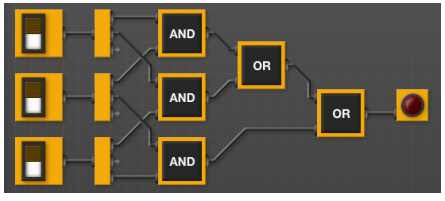

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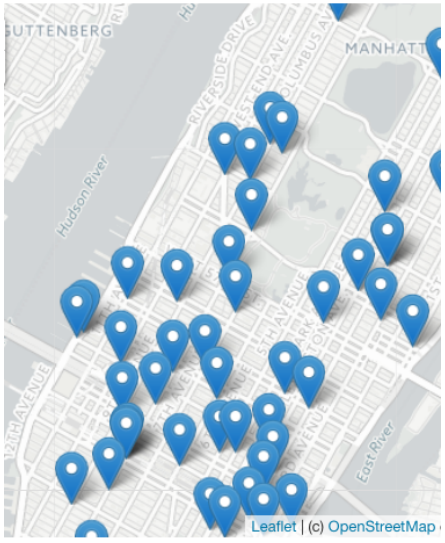

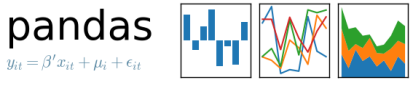

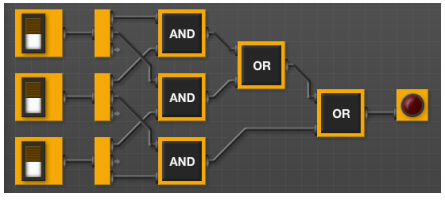

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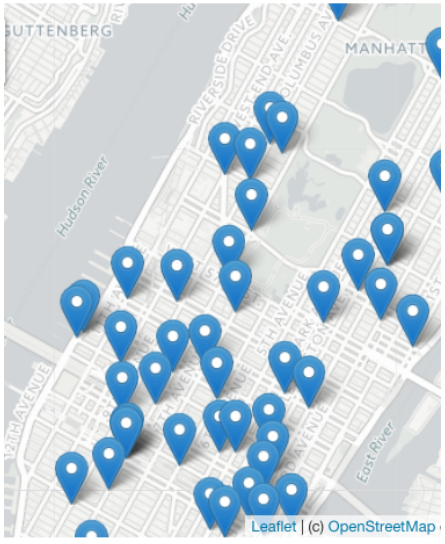

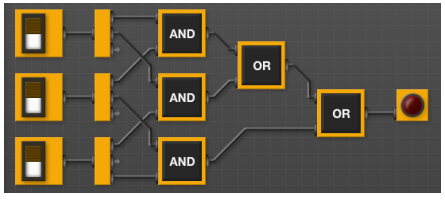

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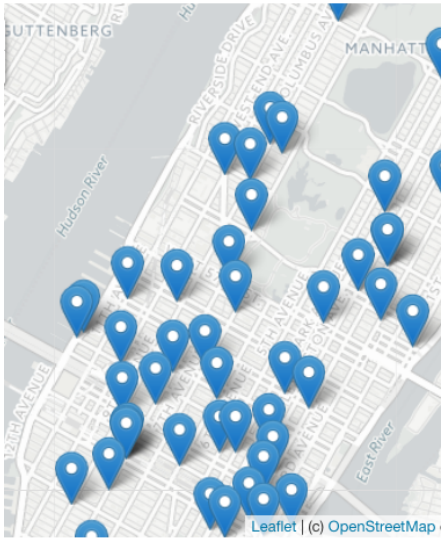

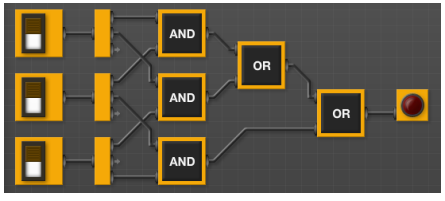

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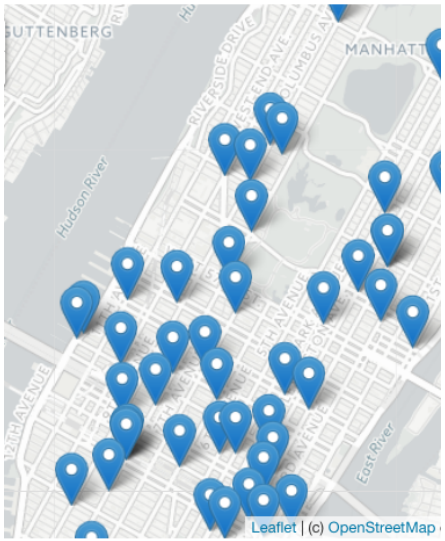

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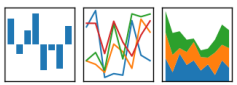

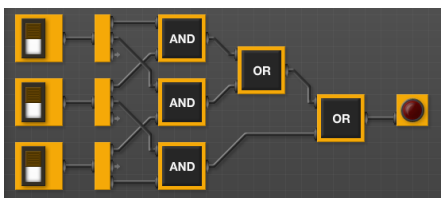

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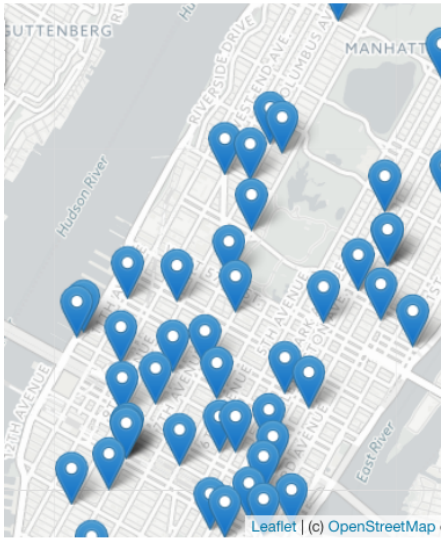

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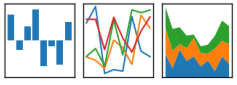

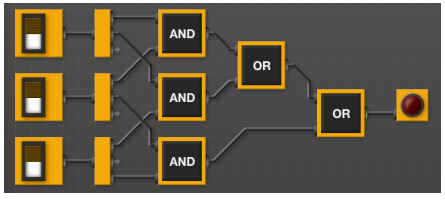

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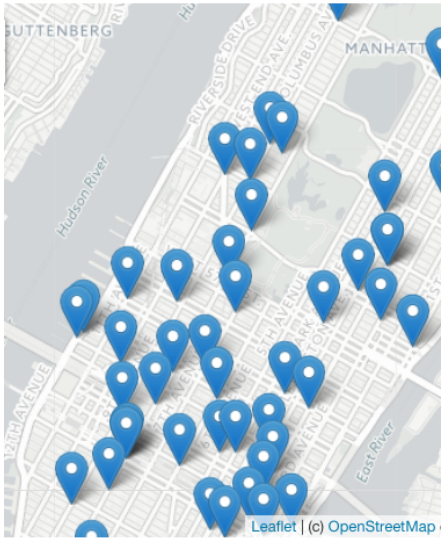
    - ★ for the simplified machine language, &

Syllabus: Topics



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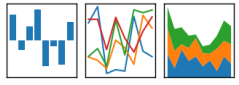

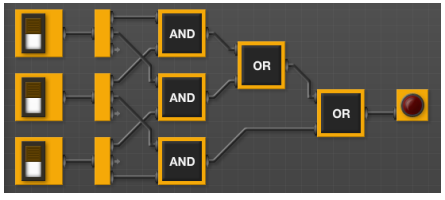

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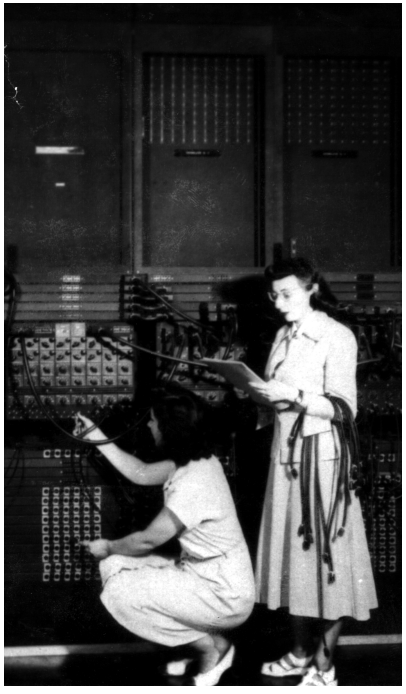
Course Structure



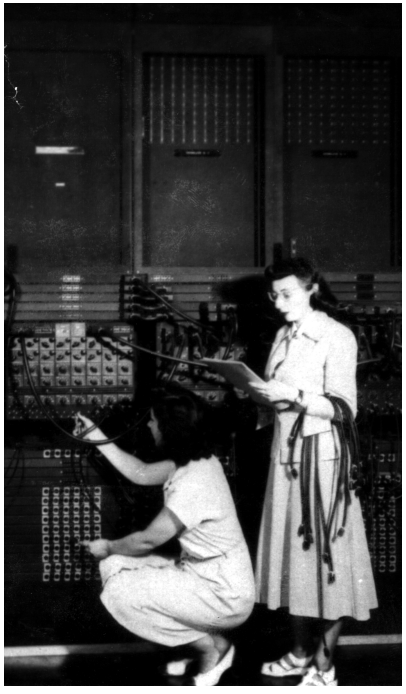
First "computers"

ENIAC, 1945.

Each Week:

- **Class Meets Four Times a Week**

Course Structure



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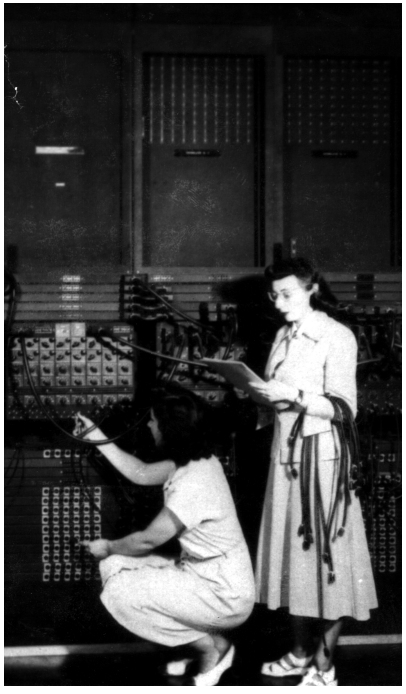

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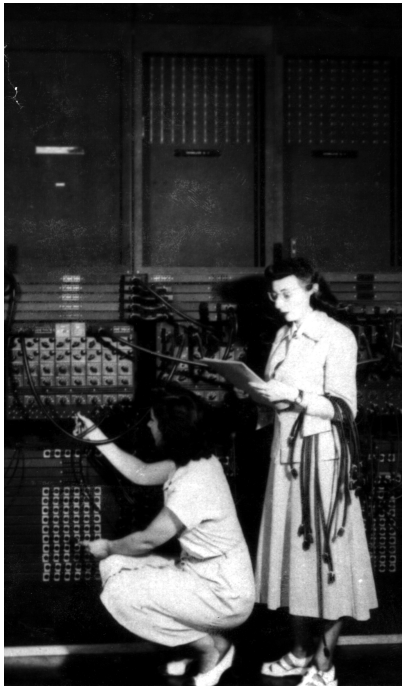

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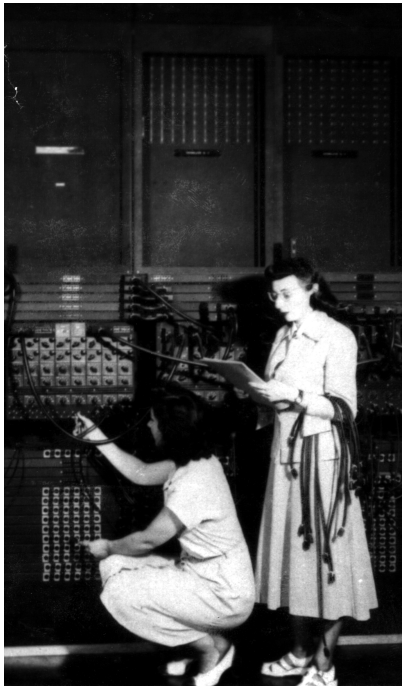

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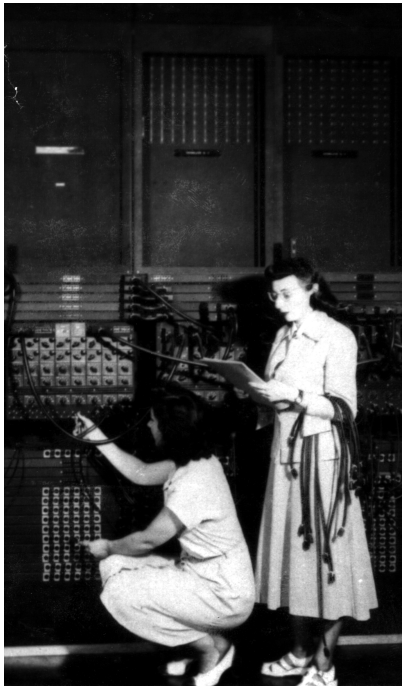

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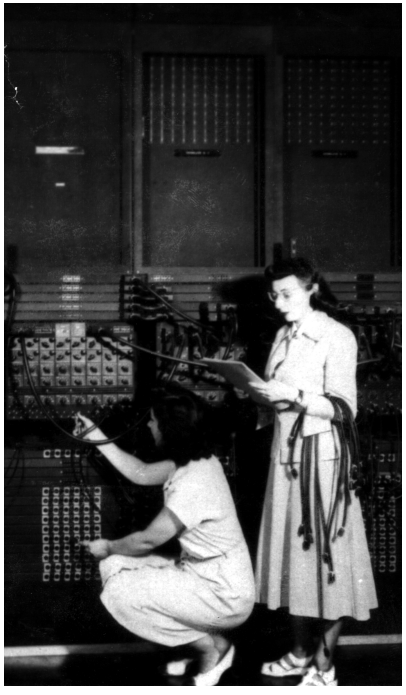
- After class you must complete 15 minute quiz.
- *The quiz is only available in person at the last 15 minutes of class.*

Homework



First "computers"

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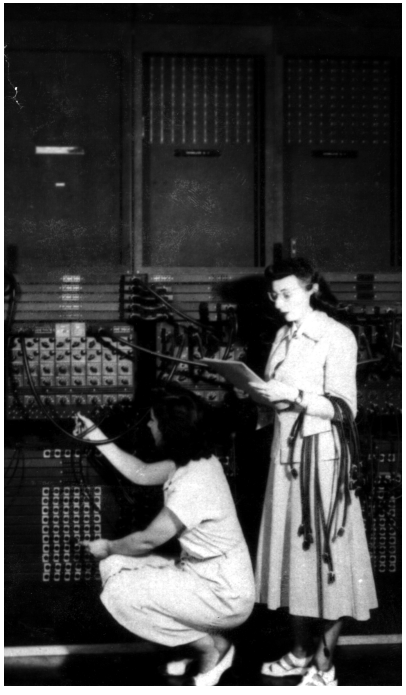
Each Class:

- **5 Programming Assignments.**

Homework



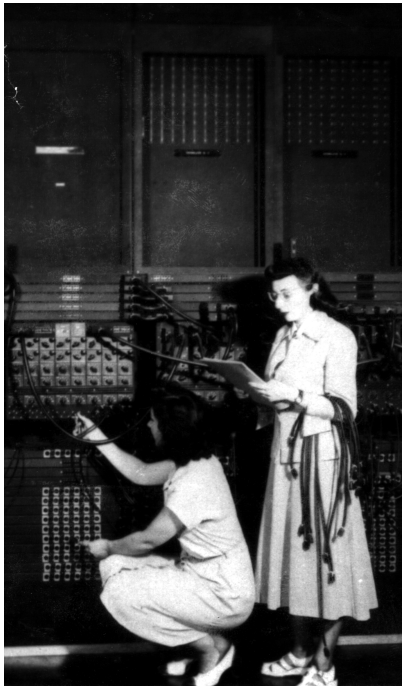
First "computers"

ENIAC, 1945.

Each Class:

- **5 Programming Assignments.**
- Description on Course Webpage.

Homework



First "computers"

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Each Class:

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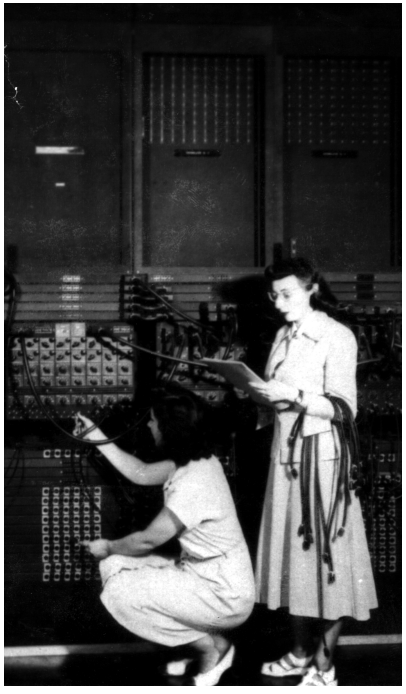
Homework



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Each Class:

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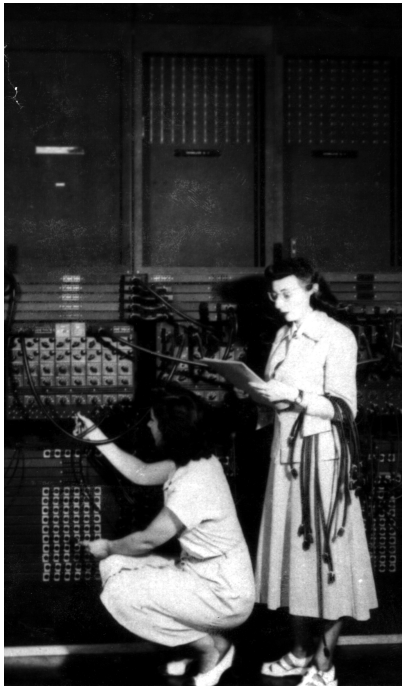
Homework



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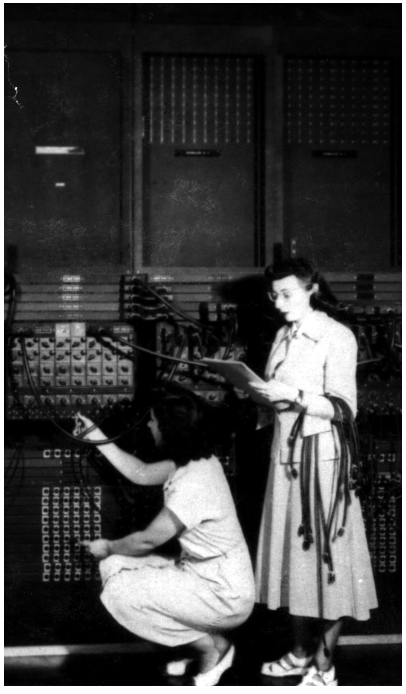

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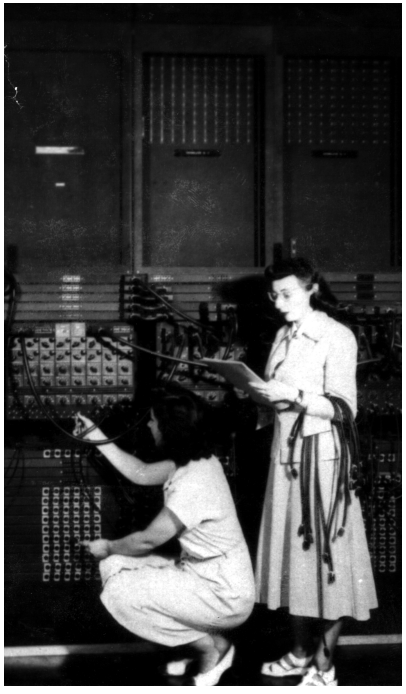
- Assignments are due in Batches (see course calendar)

Academic Dishonesty



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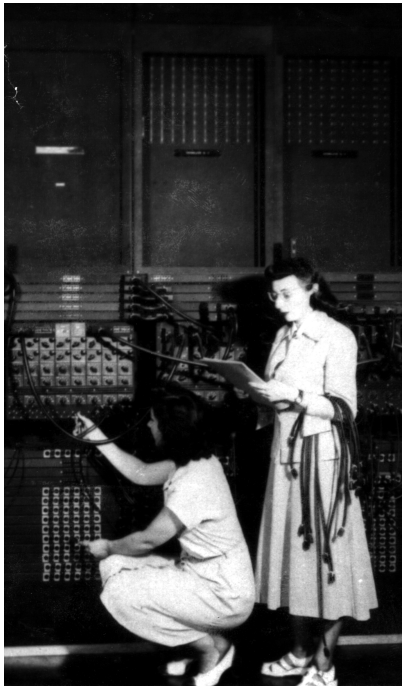

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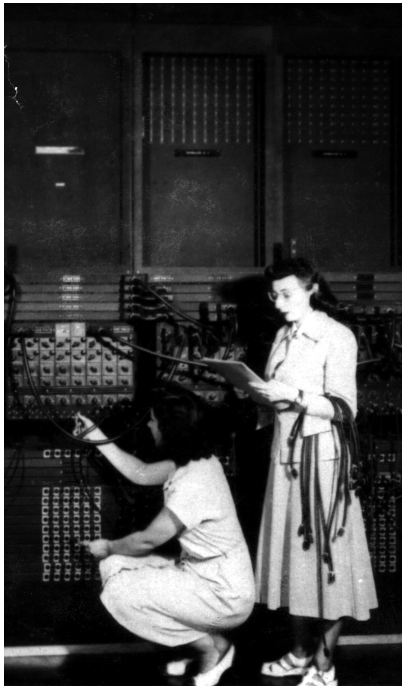

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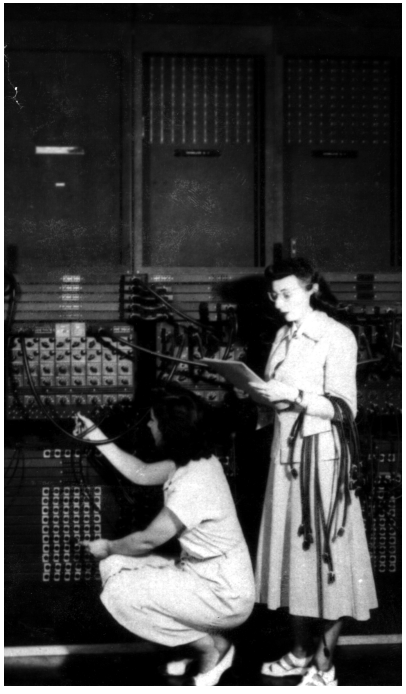

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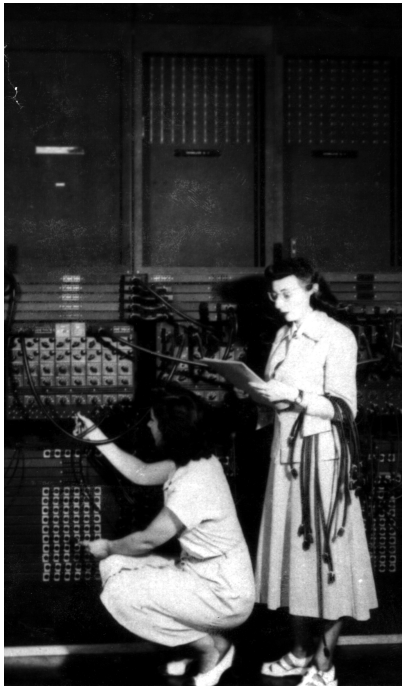

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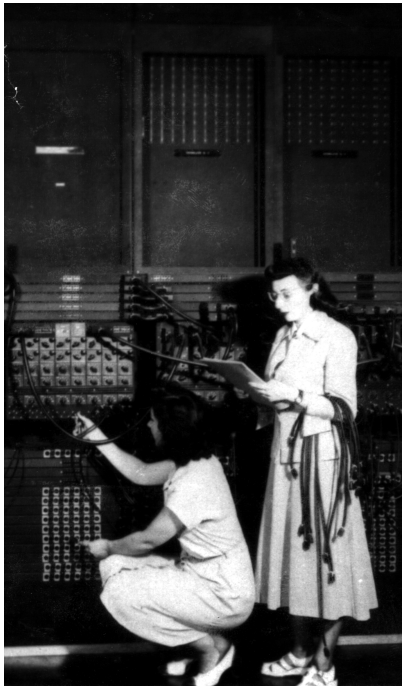

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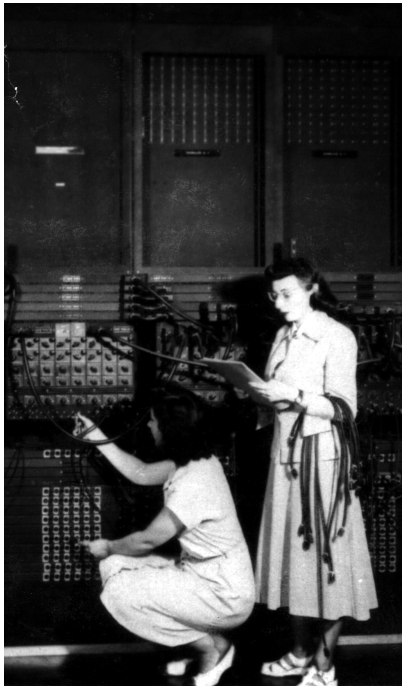
Communication



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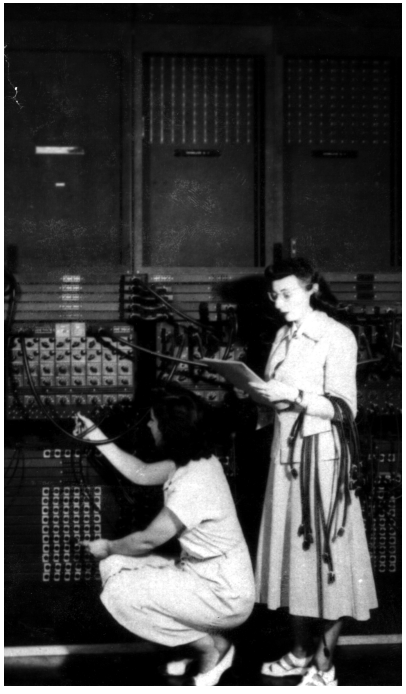

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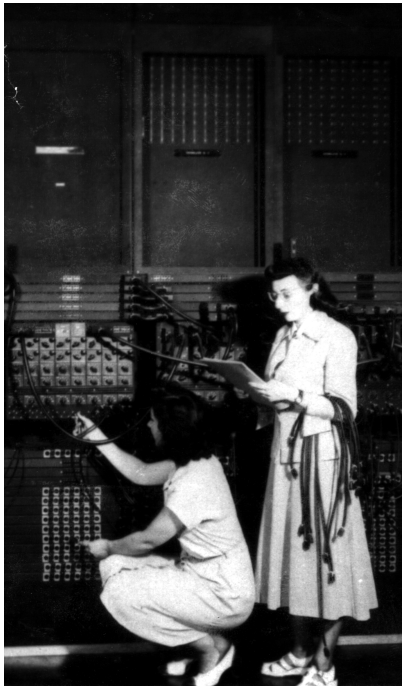

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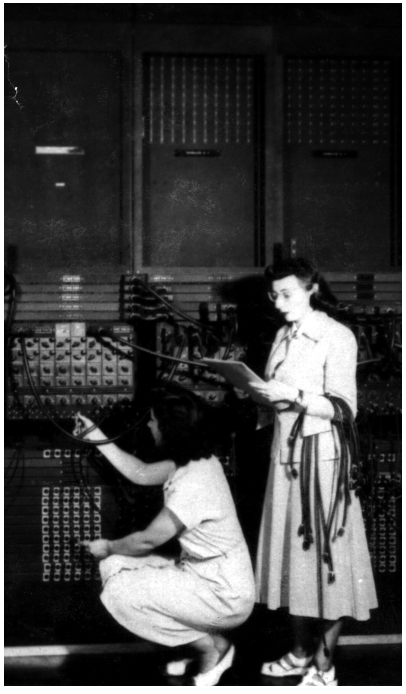

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How to Succeed in this Course

Each Week:

- Come to Class

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- Introduction to Python
- Turtle Graphics
- Definite Loops (`for`-loops)
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- The first lab goes into step-by-step details of getting Python running.
- We'll look at the design and basic structure (no worries if you haven't tried it yet).

First Program: `Hello, World!`

Demo in `pythonTutor`

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#Name: John Doe
#Email:
JohnDoe29@myhunter.cuny.edu
#This program prints: Hello, World!
print("Hello, World!")
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- Output to the screen is: `Hello, World!`
- We know that `Hello, World!` is a **string** (a sequence of characters) because it is surrounded by quotes
- Can replace `Hello, World!` with another string to be printed.

Variations on Hello, World!

```
#Name:  L-M Miranda
#Date:  Hunter College HS '98
#This program prints intro lyrics

print('Get your education,')
```

Spring18 here in Assembly Hall
Who is L-M Miranda?

Variations on Hello, World!

```
#Name:  L-M Miranda
#Date:  Hunter College HS '98
#This program prints intro lyrics

print('Get your education,')
print("don't forget from whence you came, and")
print("The world's gonna know your name.")
```

- Each print statement writes its output on a new line.
- Results in three lines of output.
- Can use single or double quotes, just need to match.

Today's Topics

- Introduction to Python
- **Turtle Graphics**
- Definite Loops (`for`-loops)
- Algorithms

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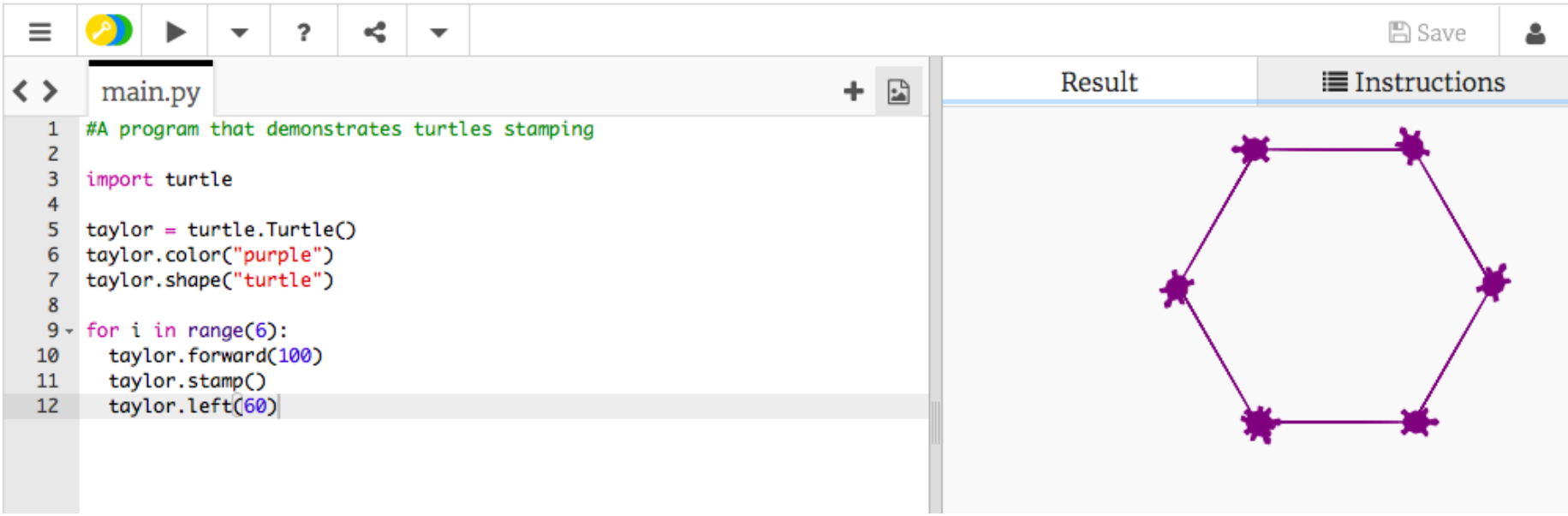

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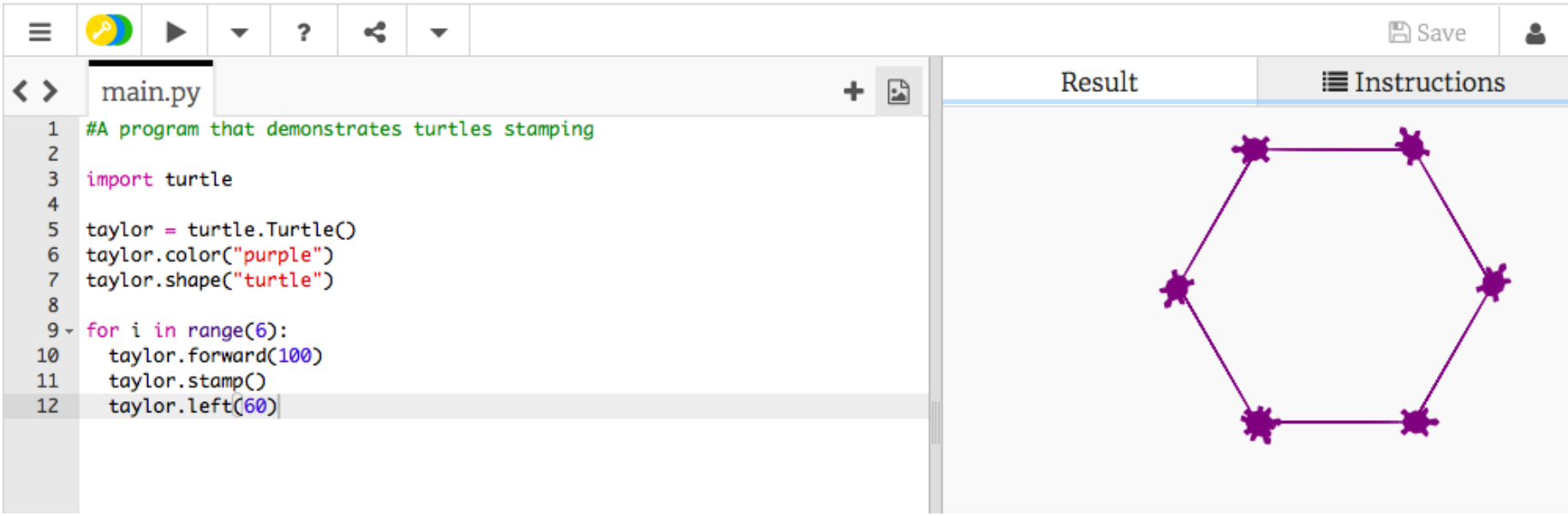

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- Changes the color (to purple) and shape (to turtle-shaped).

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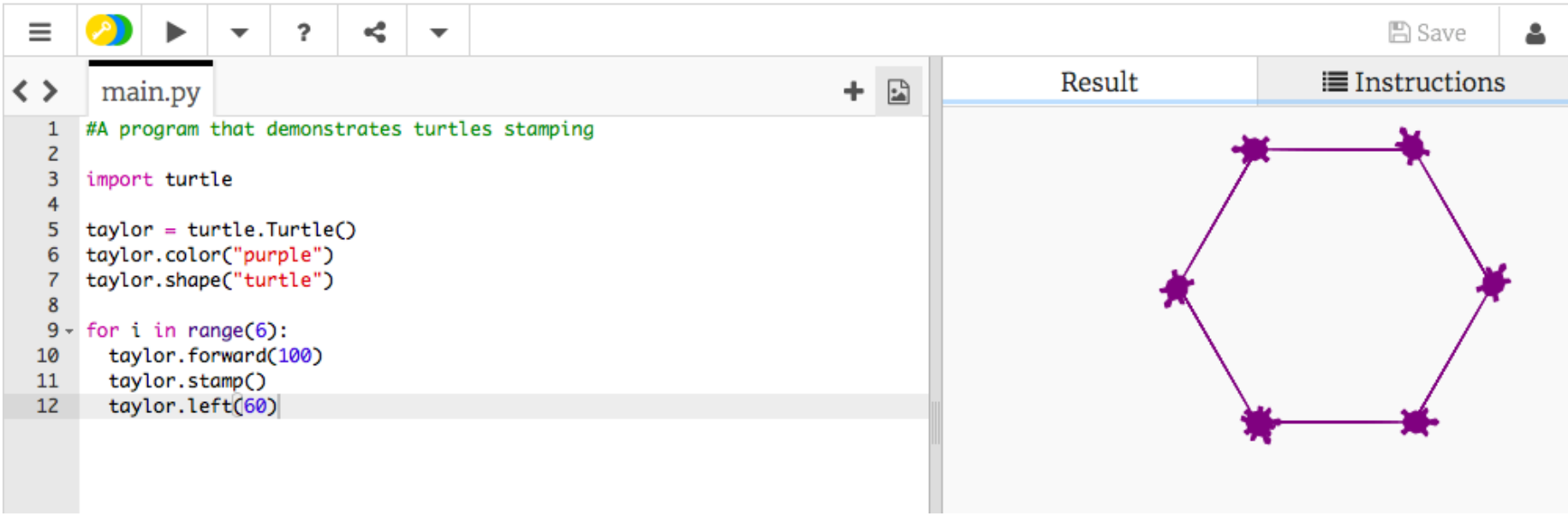

- Creates a turtle **variable**, called `taylor`.
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- Repeats 6 times:

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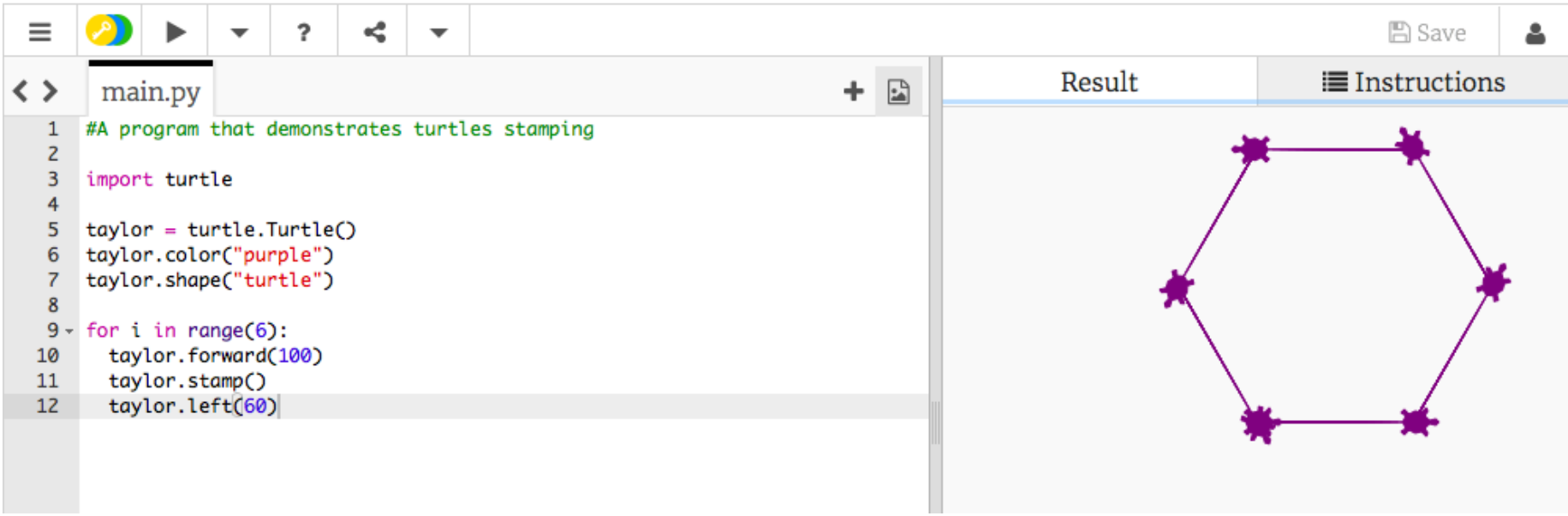

- Creates a turtle **variable**, called `taylor`.
- Changes the color (to purple) and shape (to turtle-shaped).
- Repeats 6 times:
  - Move forward; stamp; and turn left 60 degrees.

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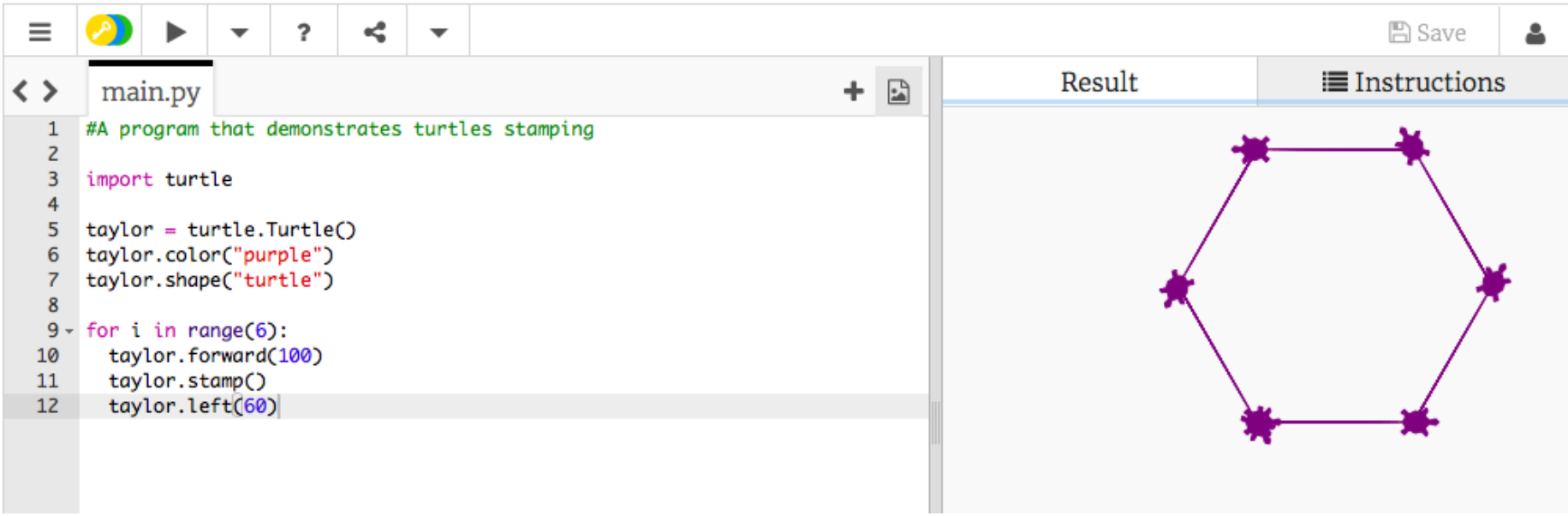

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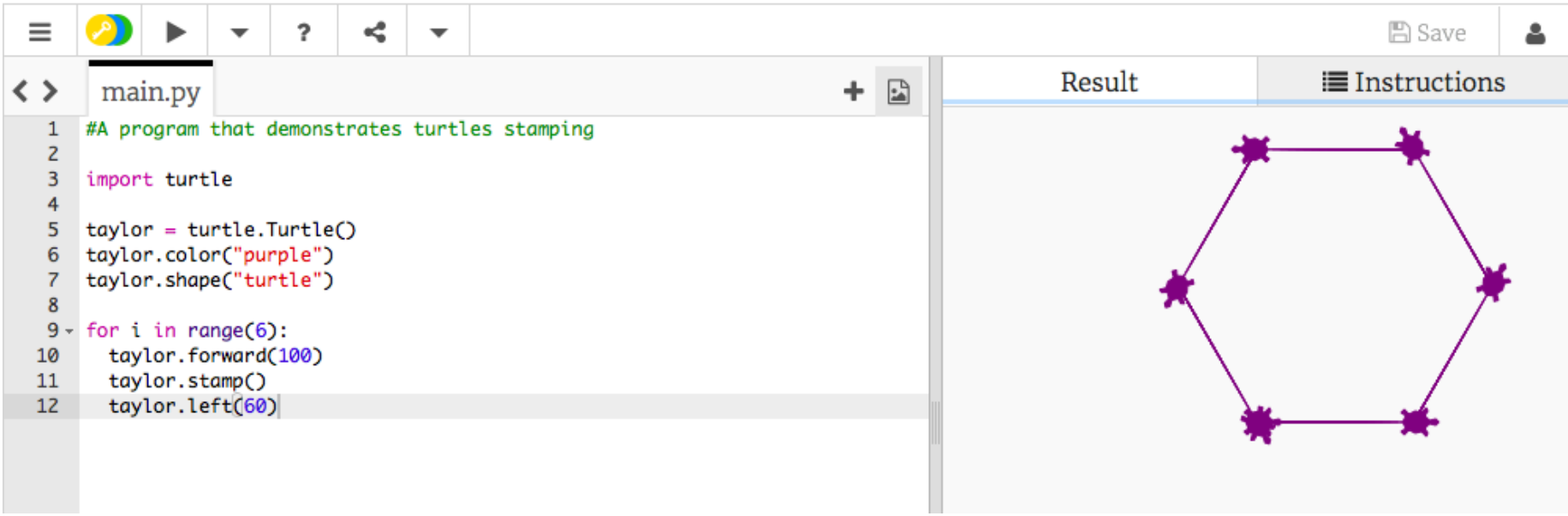

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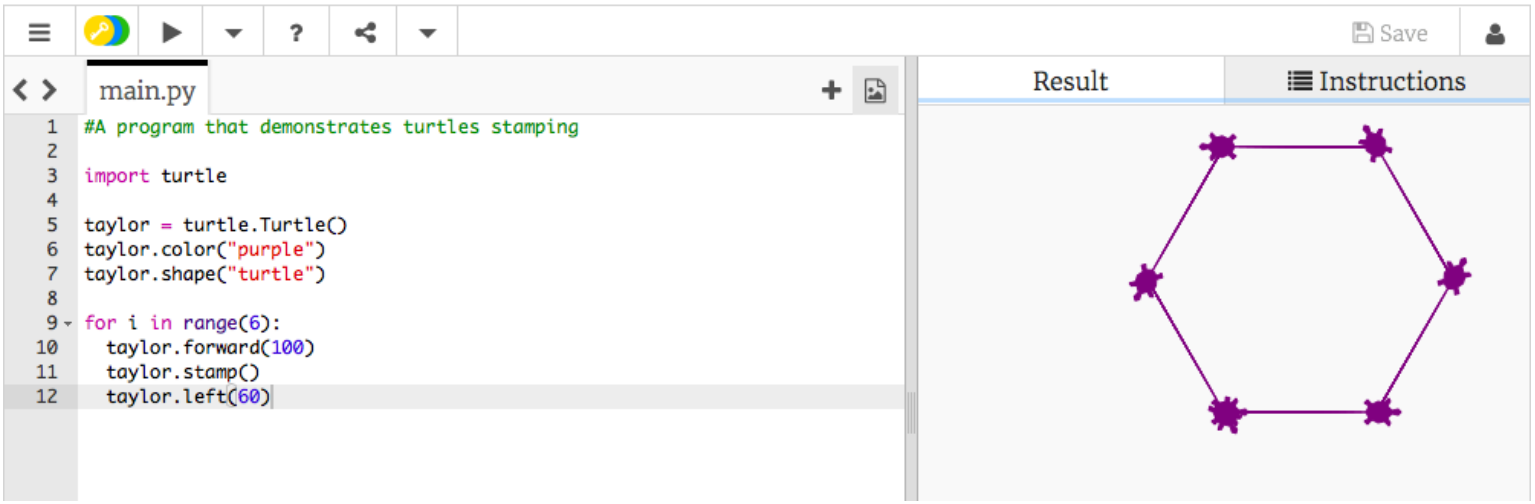
  - Move forward; stamp; and turn left 60 degrees.
- Repeats any instructions **indented** in the "loop block"
- This is a **definite** loop because it repeats a fixed number of times

Your Turn!!!

Try to solve this challenge:

1. Write a program that will draw a 10-sided polygon.
2. Write a program that will repeat the line:
   `I'm lookin' for a mind at work!`
   three times.

Decagon Program



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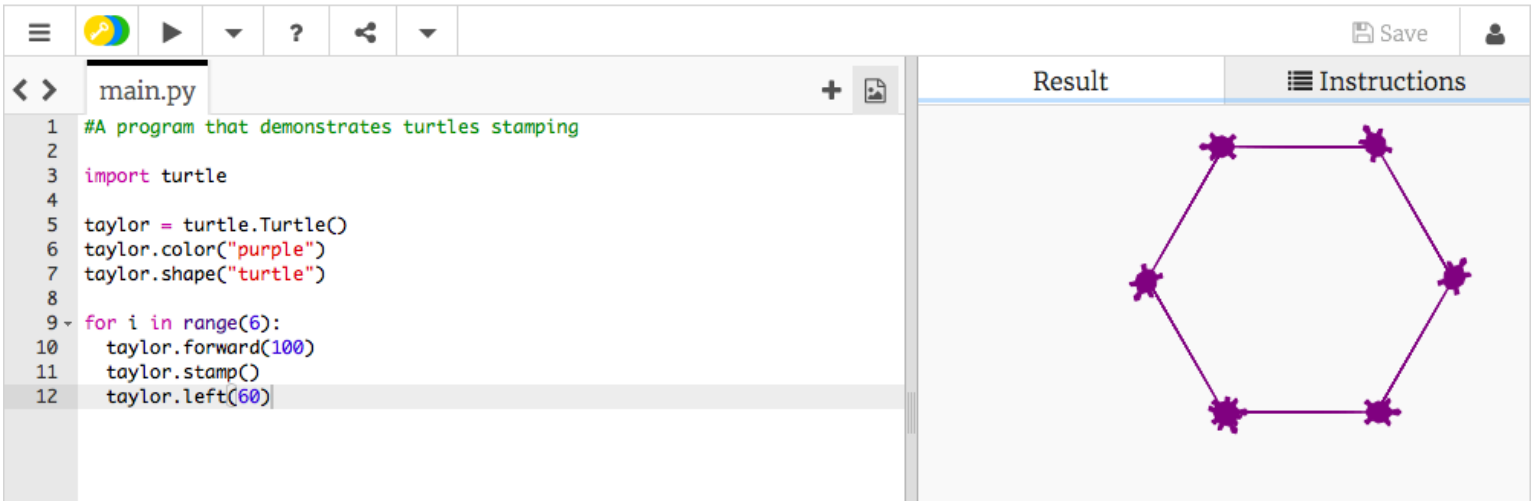

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- Has 10 sides (instead of 6), so change the `range(6)` to `range(10)`.

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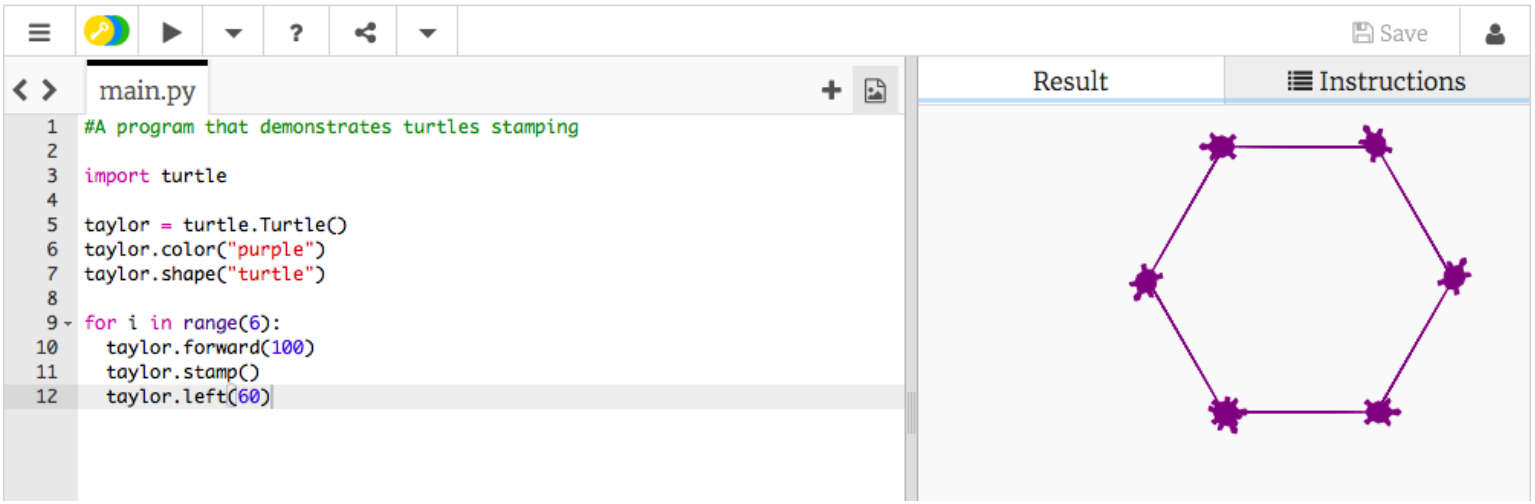

- Start with the hexagon program.
- Has 10 sides (instead of 6), so change the `range(6)` to `range(10)`.
- Makes 10 turns (instead of 6),
  so change the `taylor.left(60)` to `taylor.left(360/10)`.

Work Program

2. Write a program that will repeat the line:
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for i in range(3):
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- Instead of turtle commands, repeating a print statement.

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```
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- Instead of turtle commands, repeating a print statement.
- Completed program:

```
# Your name here!
for i in range(3):
    print("I'm lookin' for a mind at work!")
```

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- Introduction to Python
- Turtle Graphics
- Definite Loops (`for`-loops)
- **Algorithms**

What is an Algorithm?

From our textbook:

- An algorithm is a process or sequence of steps to be followed to solve a problem.

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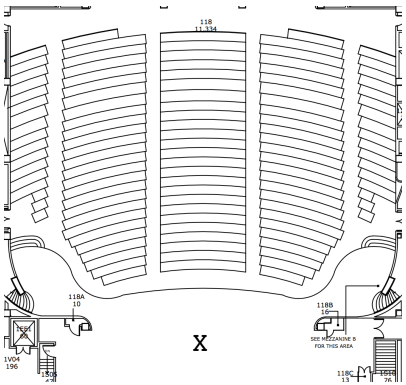
- Programming is a skill that allows a computer scientist to take an algorithm and represent it in a notation (a program) that can be executed by a computer.

Recap



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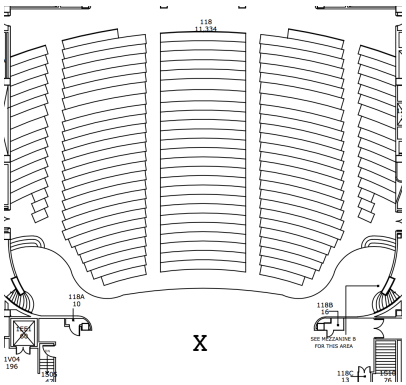

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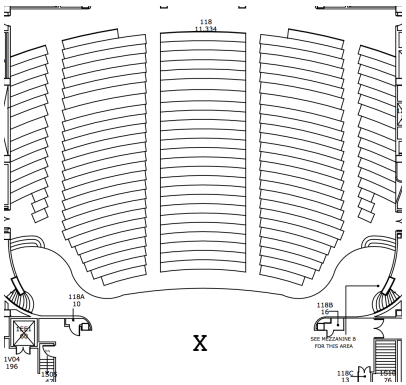

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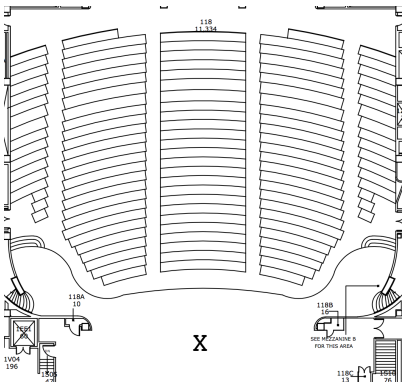

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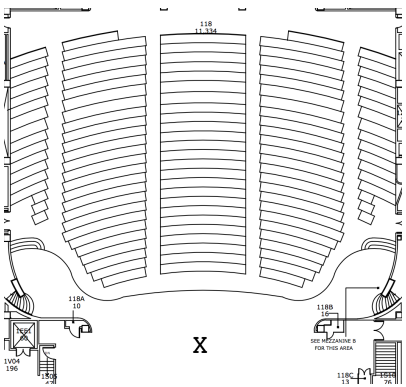

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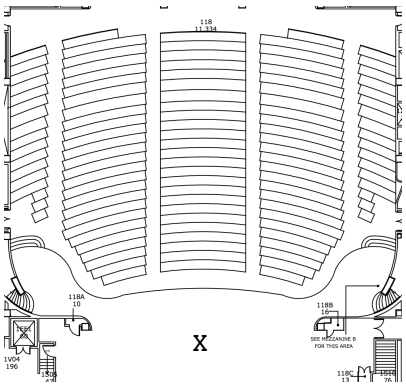

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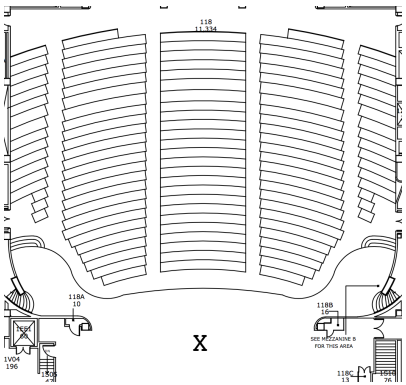

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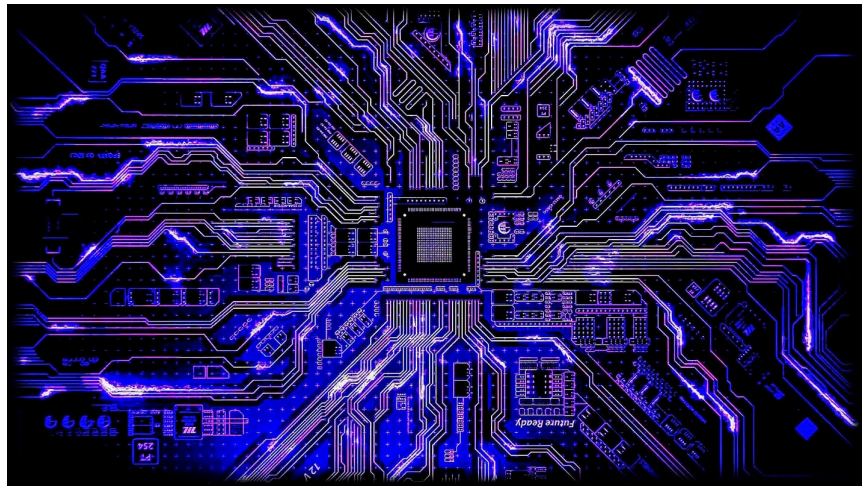
Reminders!



Before next class, don't forget to:

- Review LAB 1!
- Submit this week's 5 programming assignments (programs 1-5)