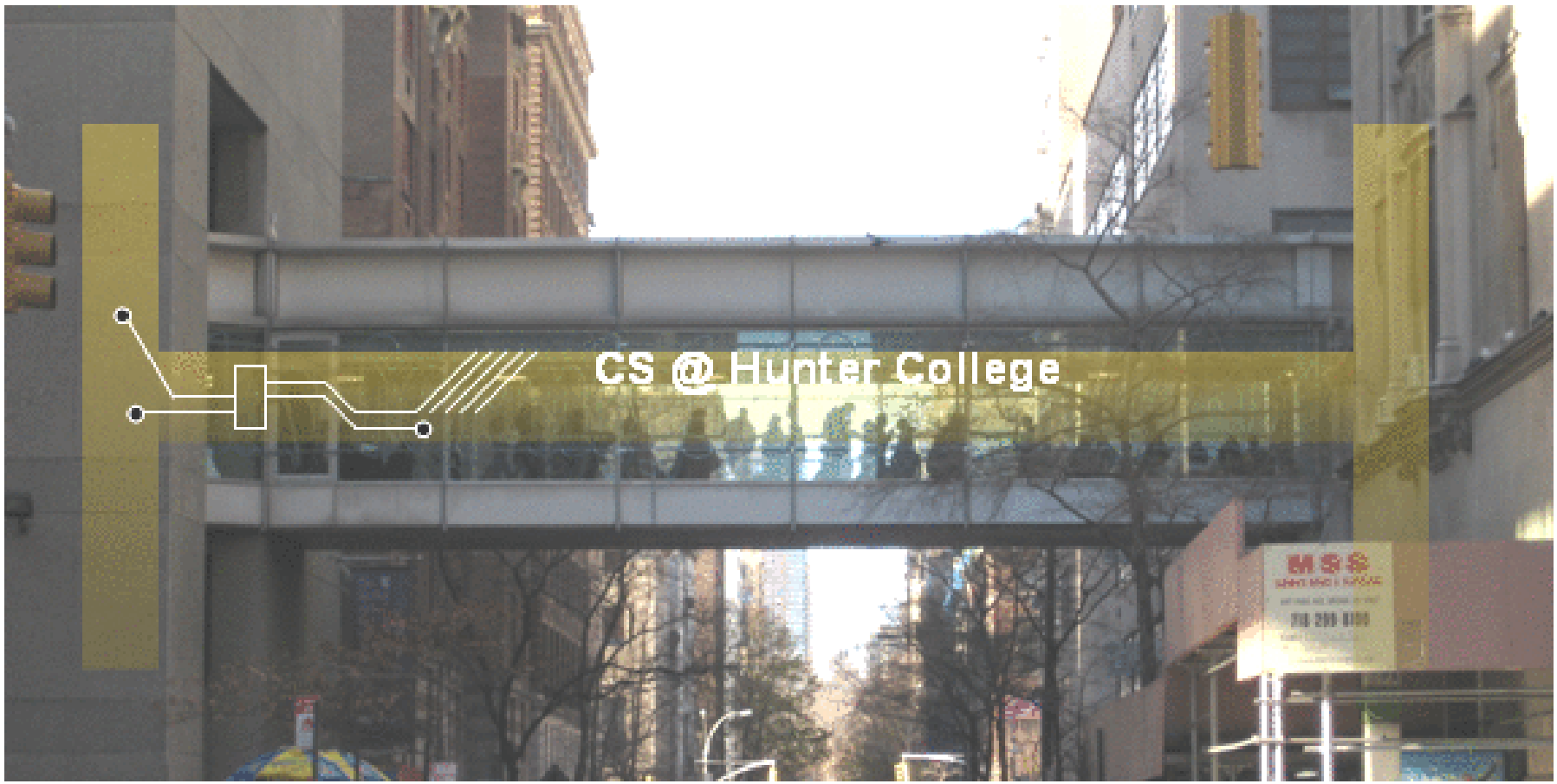
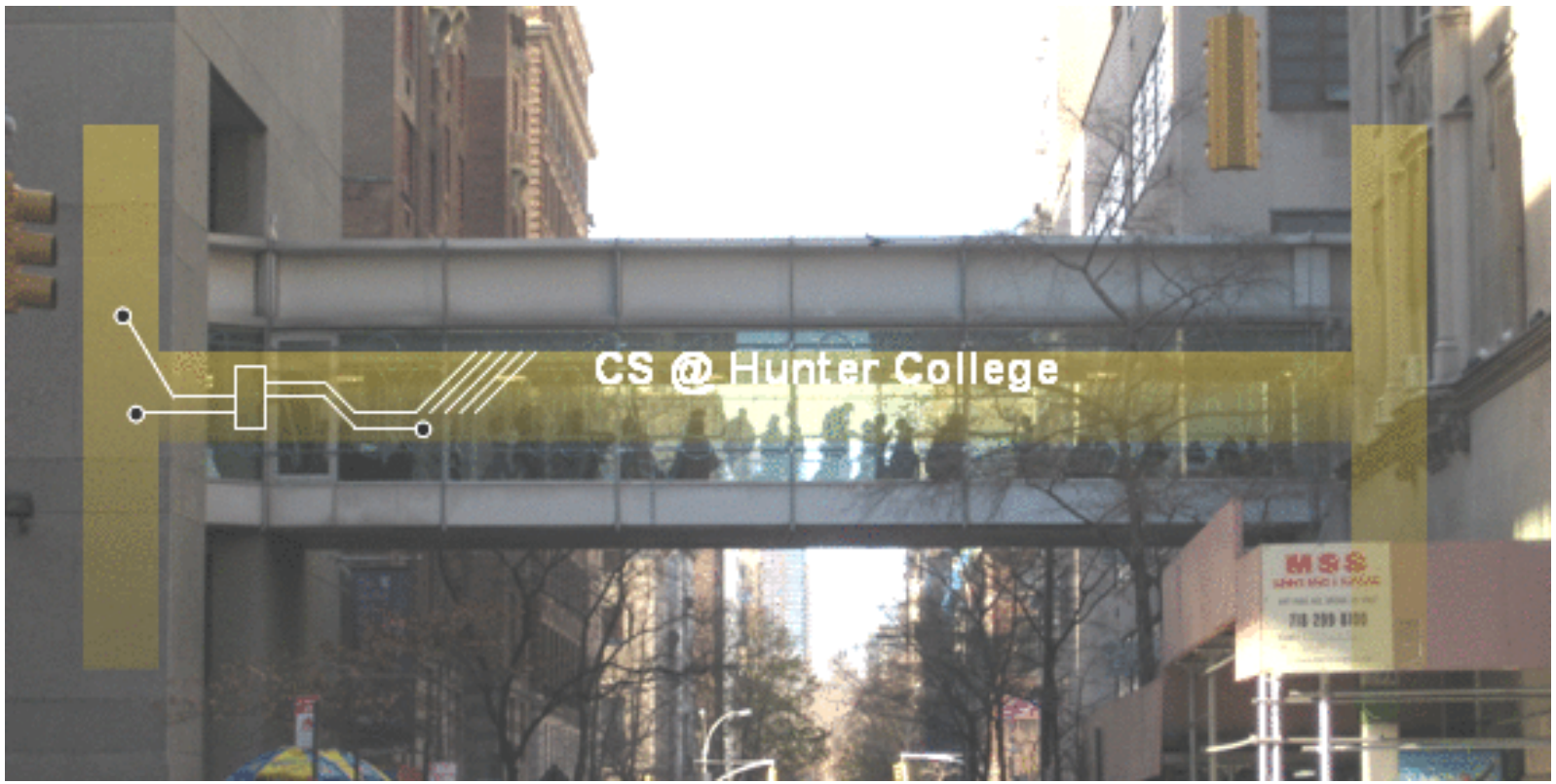
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Welcome



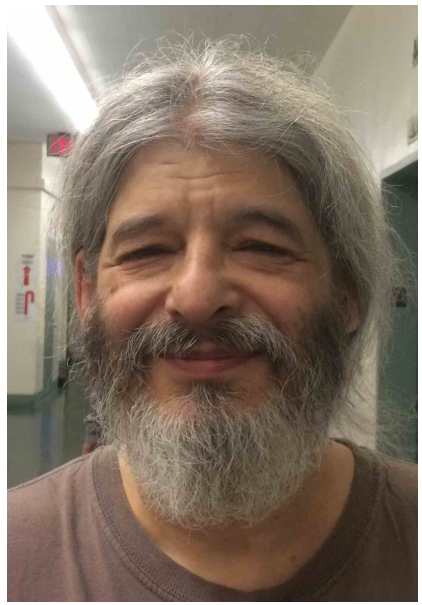
Introductions: Course Designers

Dr. Katherine St. John

Professor,
Interim Chair

Dr. William Sakas

Associate Professor,
Chair



Prof. Eric Schweitzer

Undergraduate Program
Coordinator

Introductions: Instructors

Dr. Tong Yi

Large Lecture
Course Coordinator

Lola Samigjonova

Early College
Initiative

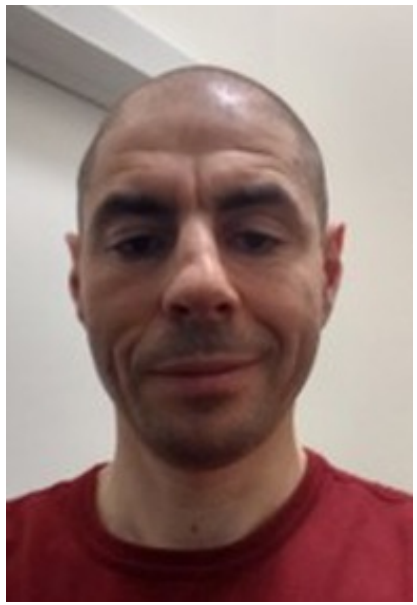
Introductions: Undergraduate Teaching Assistants

Abir Banik	Abu Butt	Alvin Wu	Ammar Siddiqui	Angelica Bailey
Arsen Tumanian	Arterio Rodrigues	Ashfak Uddin	Axel Batista	Bahtija Durakovic
Bode Chiu	Brendan South	Christopher Asma	Diana Luna	Eric Grachev
Eva Georgieva	Filip Tracinka	Georgina Woo	Gustavo Grijalba	Hnin Lwin
Jessie Lin	Kazi Mansha	Lauren Ailla	Moises Acero	Moody Rahman
Omer Skaljic	Rawad Yakub	Ryan Vaz	Sheikh Fuad	Syeda Nahar
Umar Faruque	Yoomin Song	Youssef Elshabasy	Zhipeng Lin	Zongming Ke

Introductions: Advisors

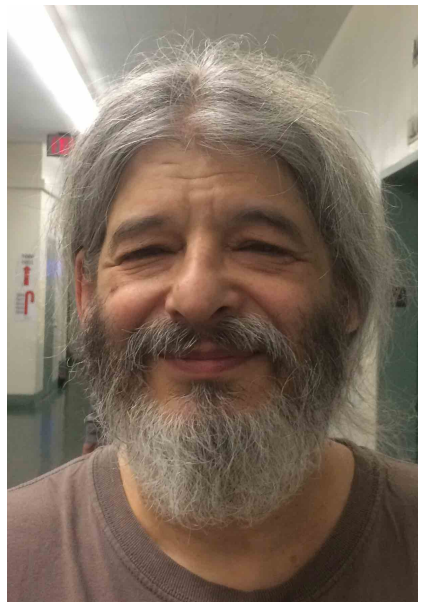
Justing Tojeira
CS Advisor

jtojeira@hunter.cuny.edu



Pavel Shostak
CS Advisor

ps57@hunter.cuny.edu



Eric Schweitzer
Undergraduate
Program Coordinator
eschweit@hunter.cuny.edu

Where to find Course Content

- Course Website: https://huntercsci127.github.io/f22.html

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- Course Website: https://huntercsci127.github.io/f22.html
- Blackboard

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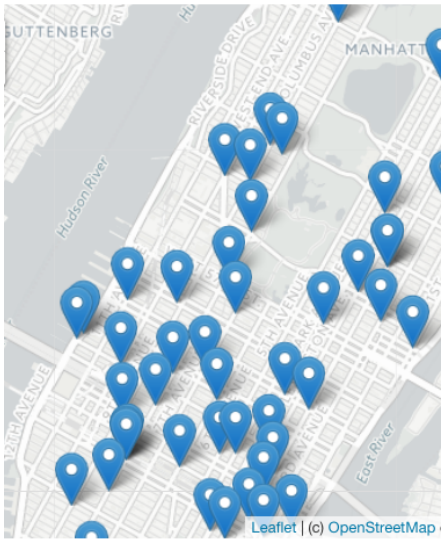
- Blackboard
- Gradescope (program submission)

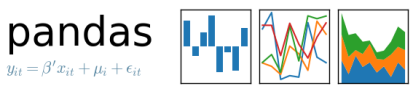
Syllabus

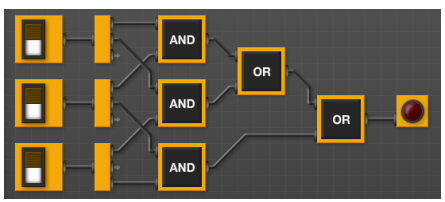
CSci 127: Introduction to Computer Science
Catalog Description: 3 hours, 3 credits: This course presents an overview of computer science (CS) with an emphasis on **problem-solving and computational thinking through 'coding'***: computer programming for beginners...*

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







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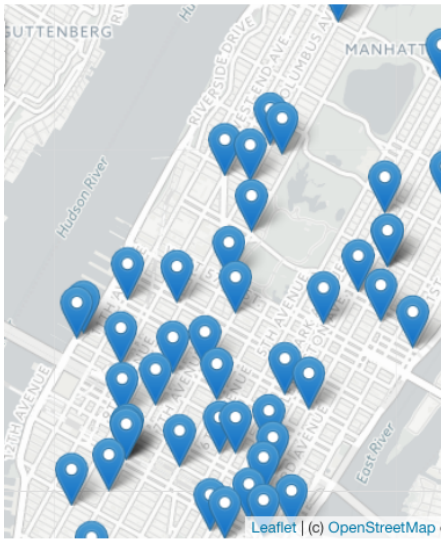

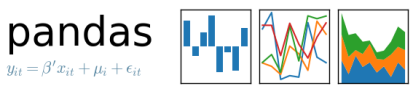

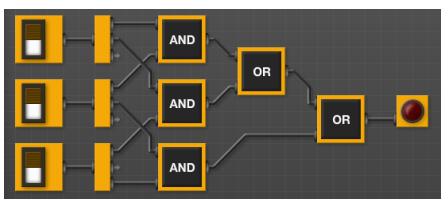

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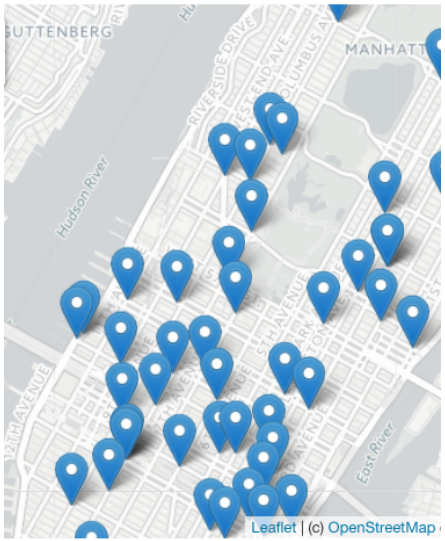

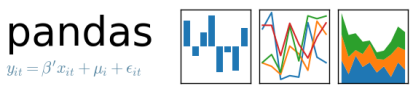

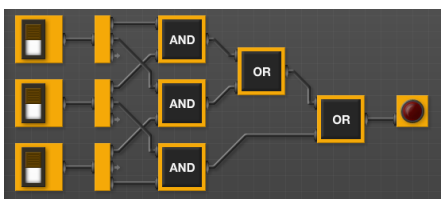

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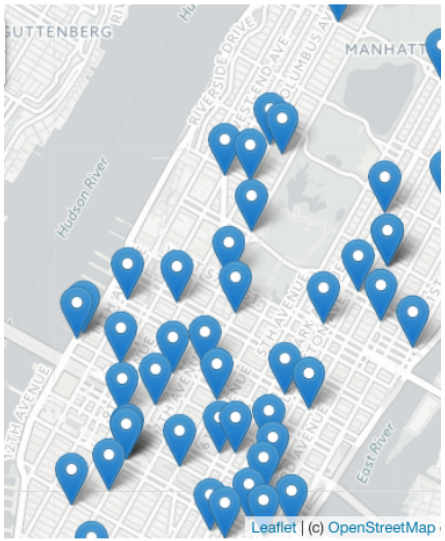

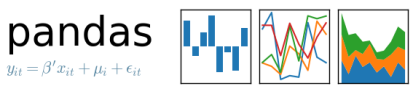

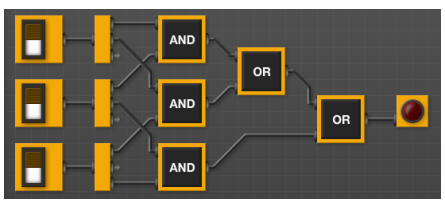

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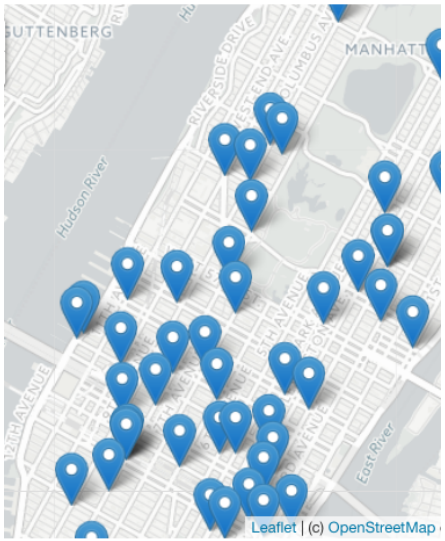

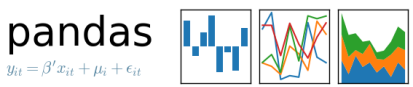

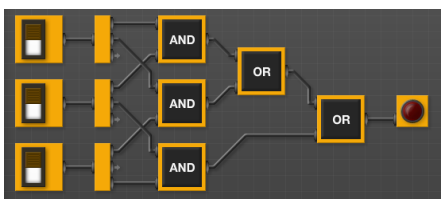

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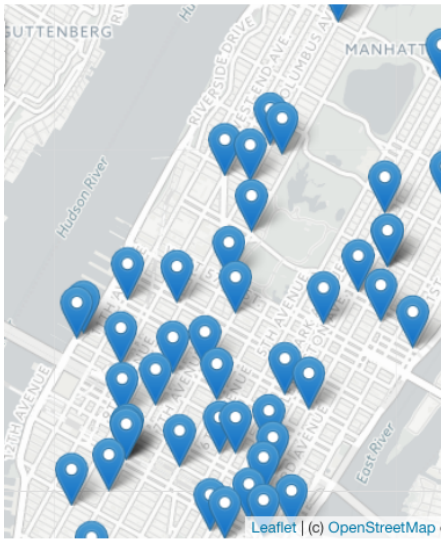

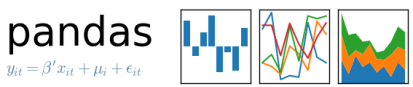

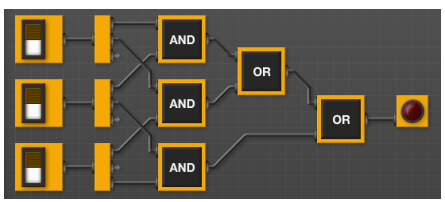

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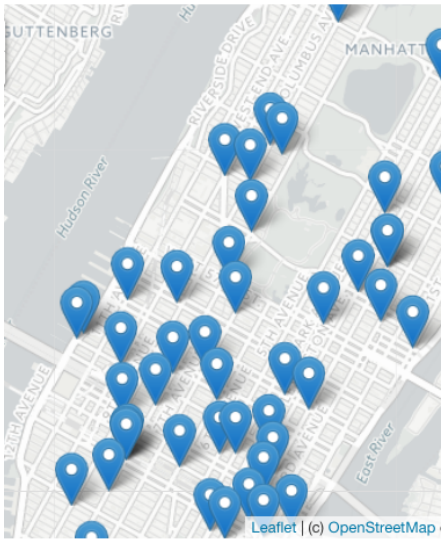

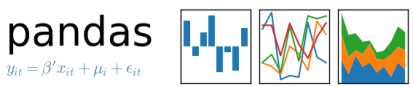

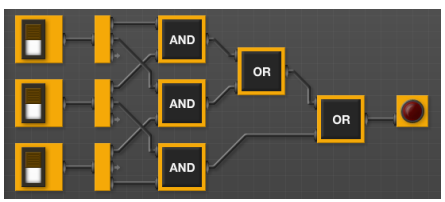

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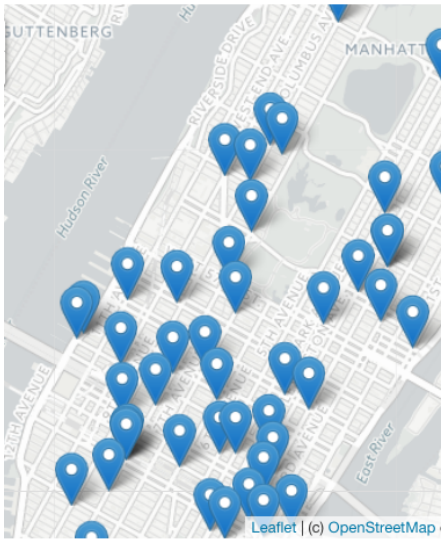

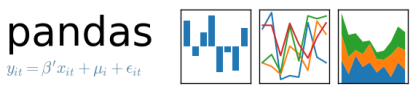

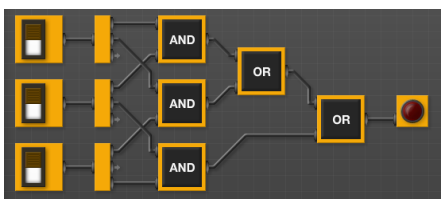

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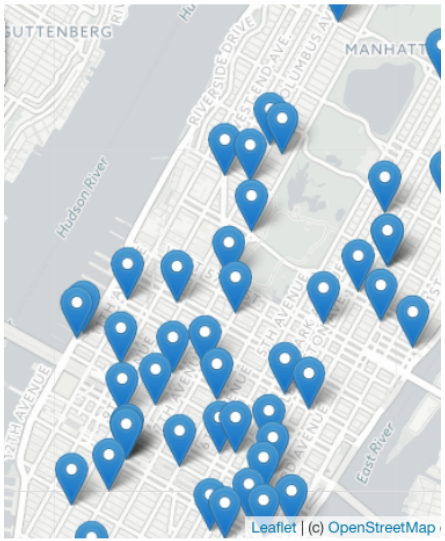

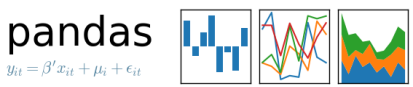

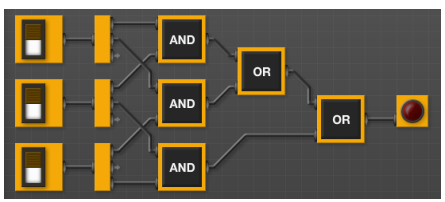

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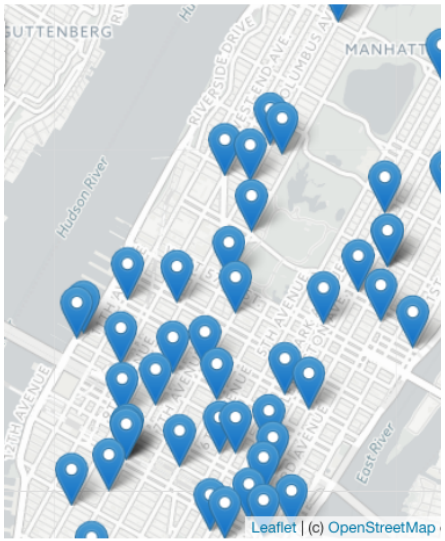

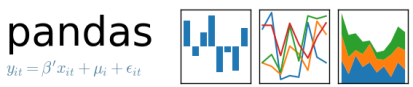

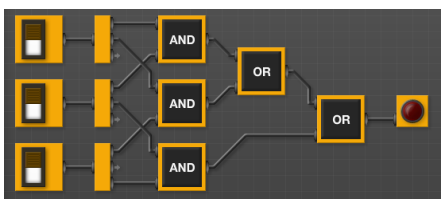

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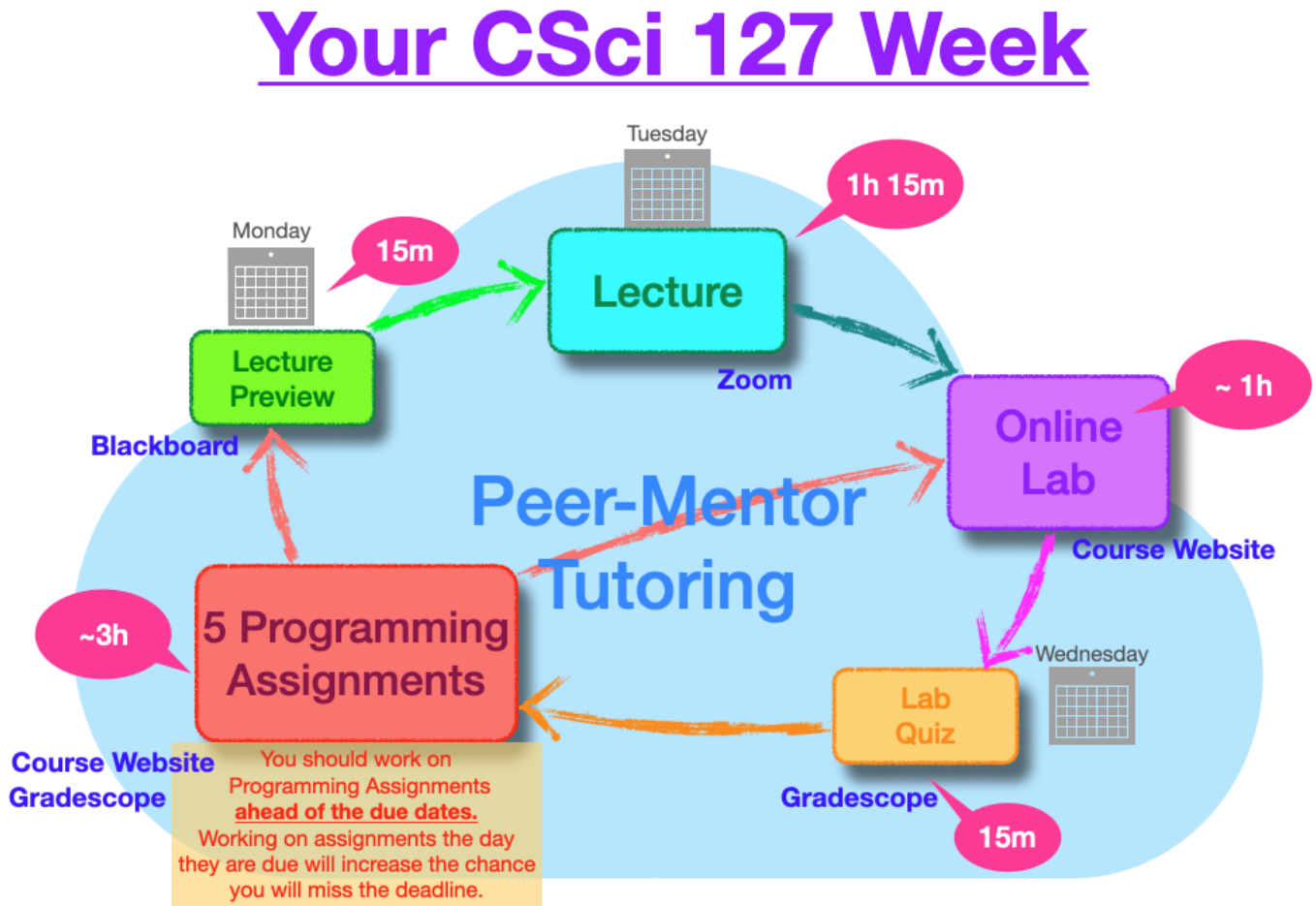
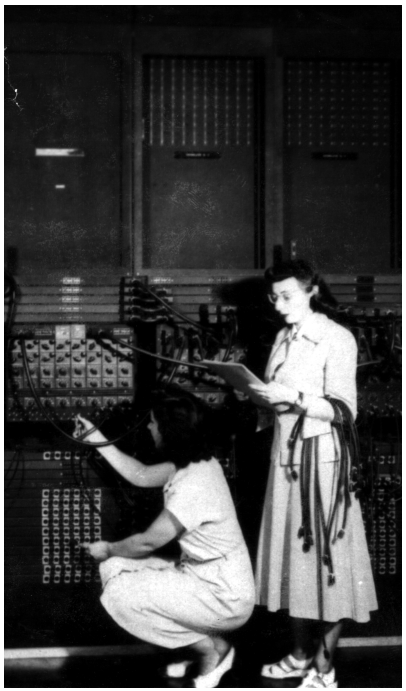
Course Structure



1&2 - Lecture

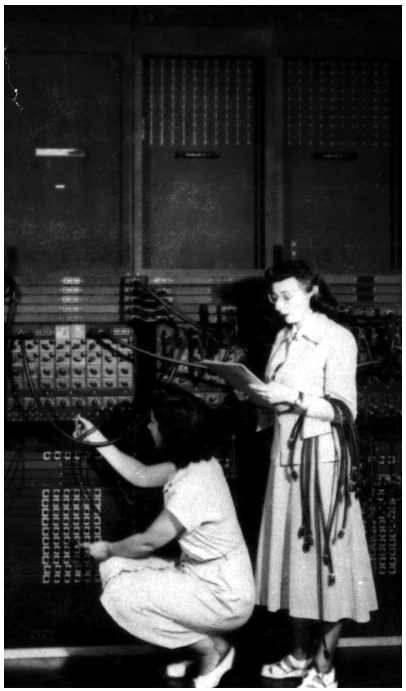


First "computers"

ENIAC, 1945.

- Tuesdays, 9:45-11:00am, In person: 118 HN, Assembly Hall

1&2 - Lecture



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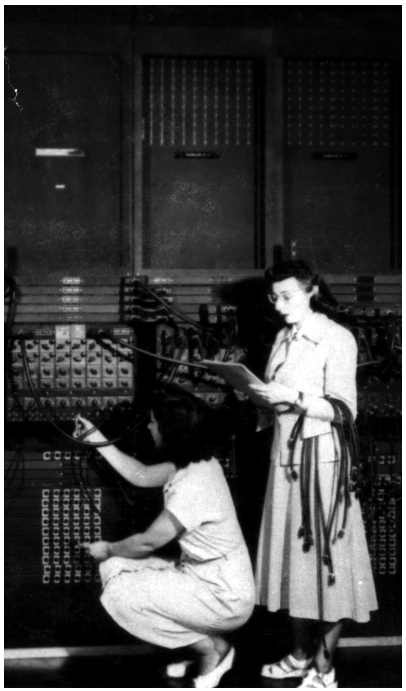

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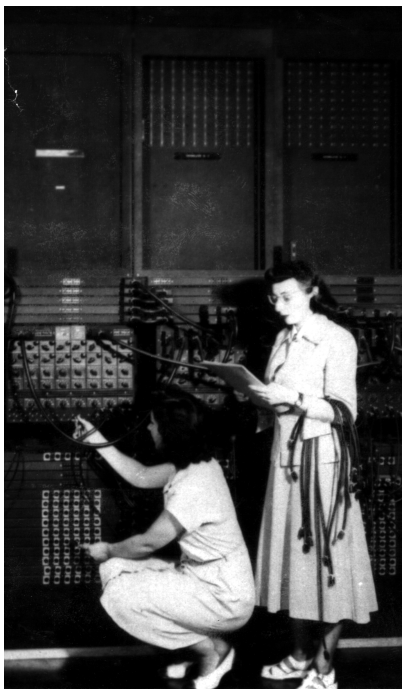

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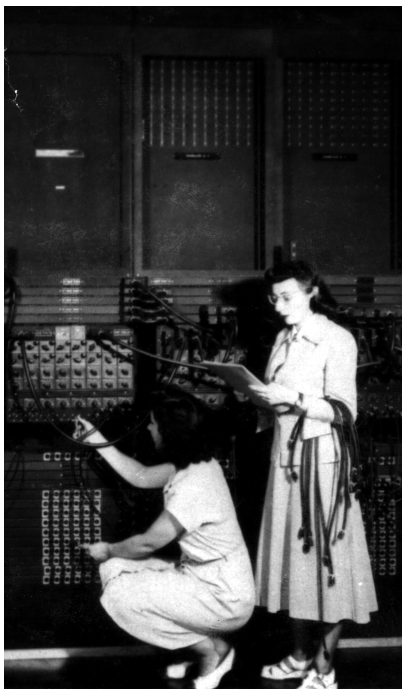

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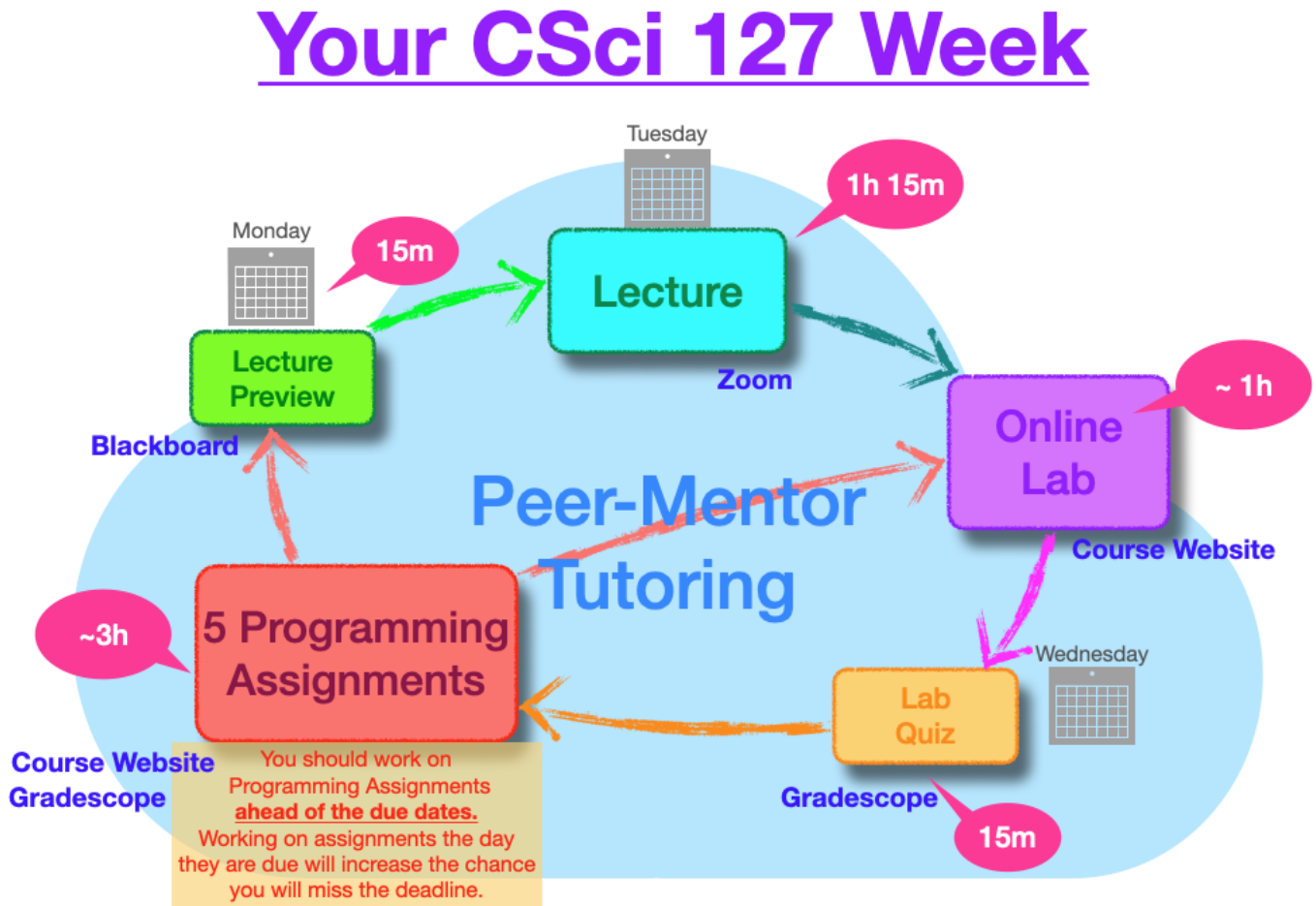
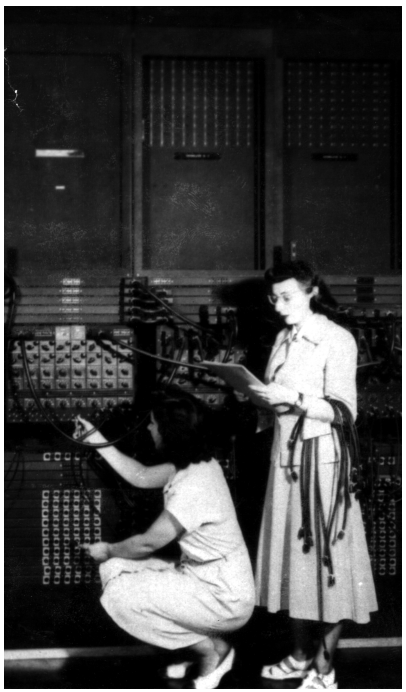


3 - Online Lab



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Each Week:

- **You must independently read through the weekly online Lab.**

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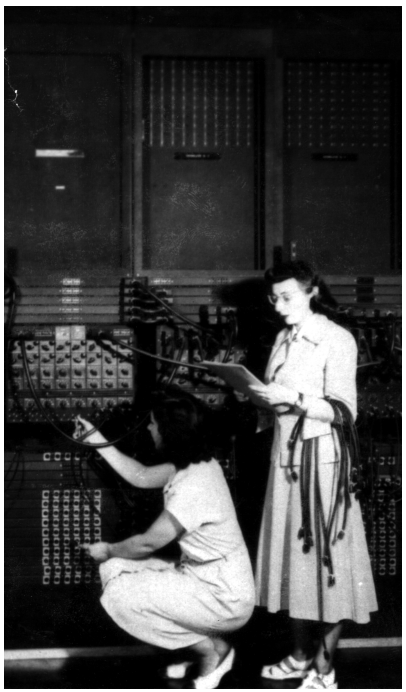

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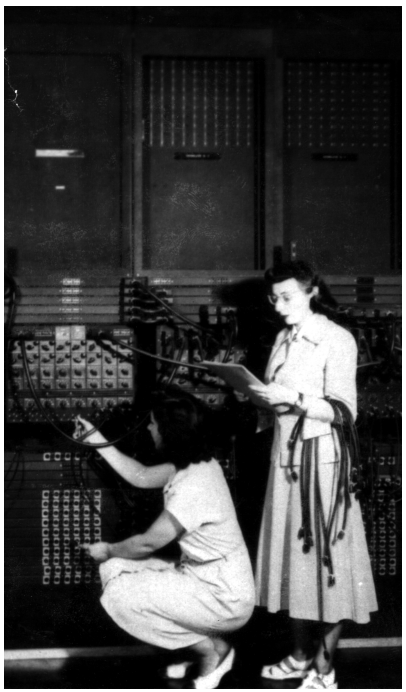

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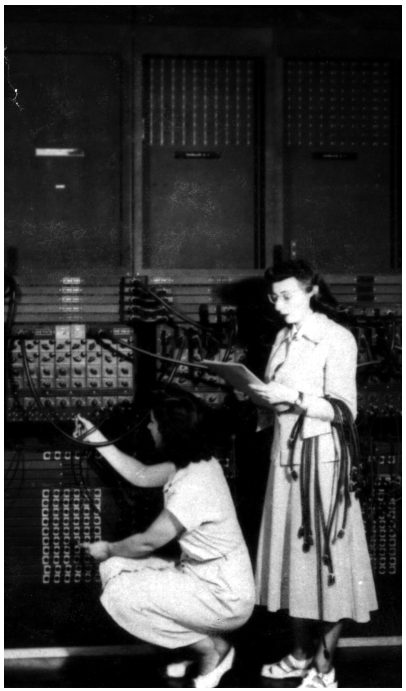

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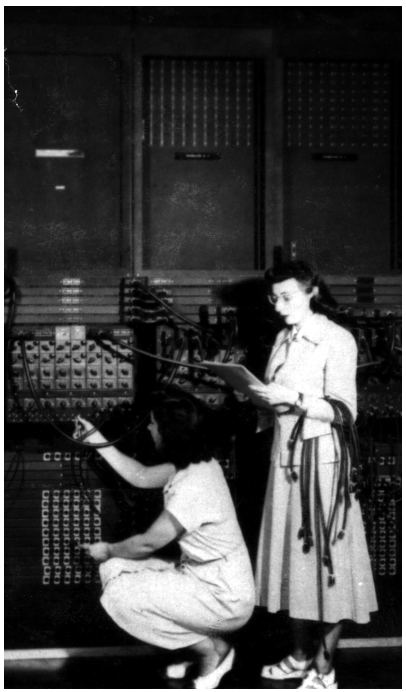
- Lab content directly supports weekly programming assignments.

3 - Online Lab



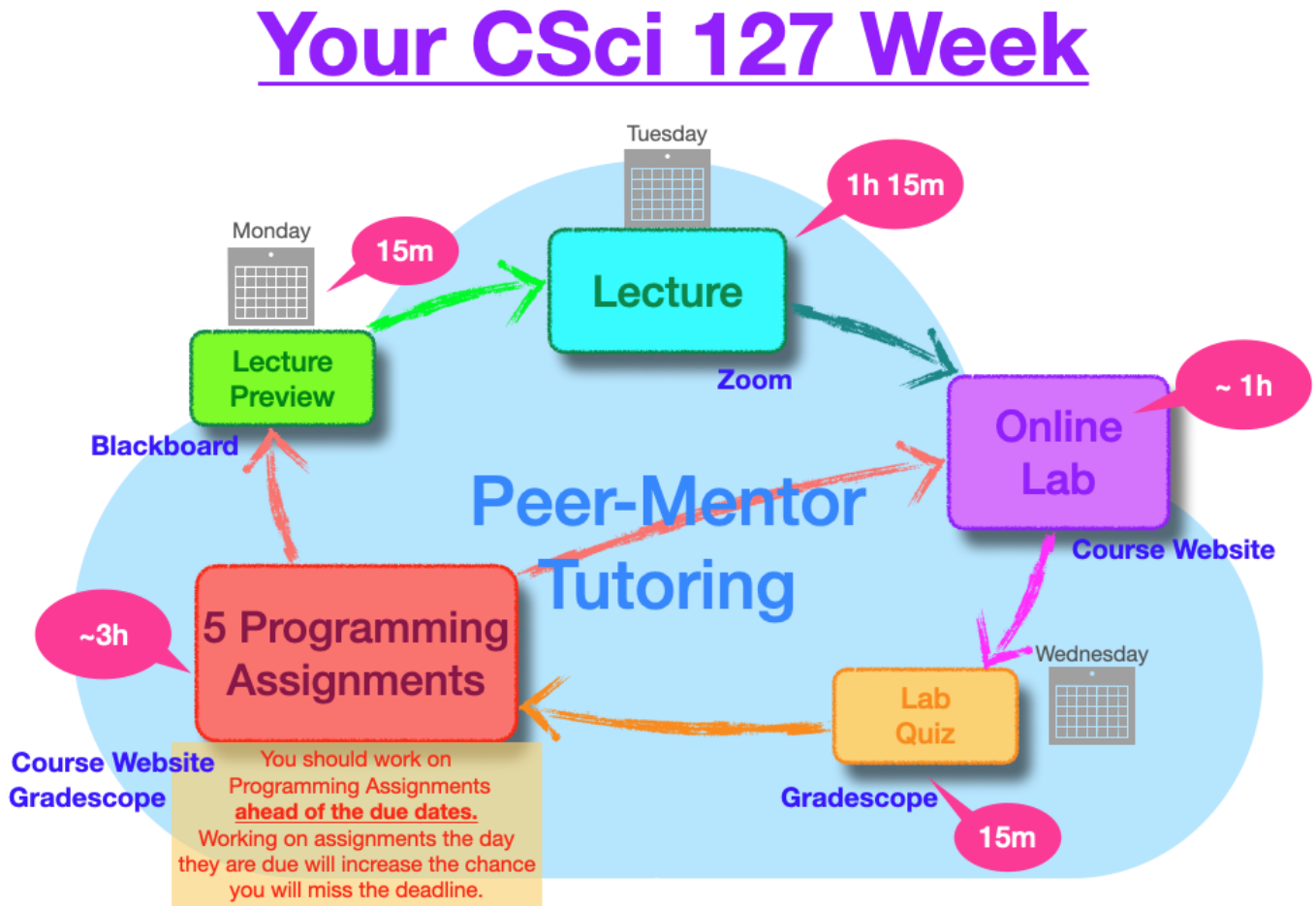
First "computers"

ENIAC, 1945.

Each Week:

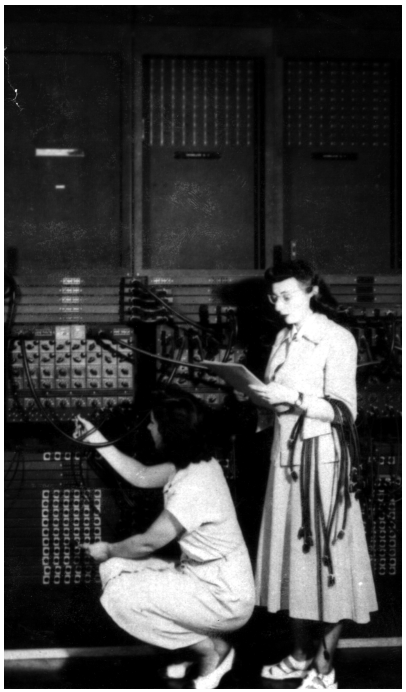
- **You must independently read through the weekly online Lab.**
- Replaces scheduled recitation meeting.
- Set aside about 1 hour each week, preferably at the same time, add it to your schedule.
- Lab content directly supports weekly programming assignments.
- Labs found on course website (Handouts column in Course Outline)

Course Structure



4 -In-person Quiz & Code Review

- **Every week you must take a paper quiz** in Lab 1001E Hunter North



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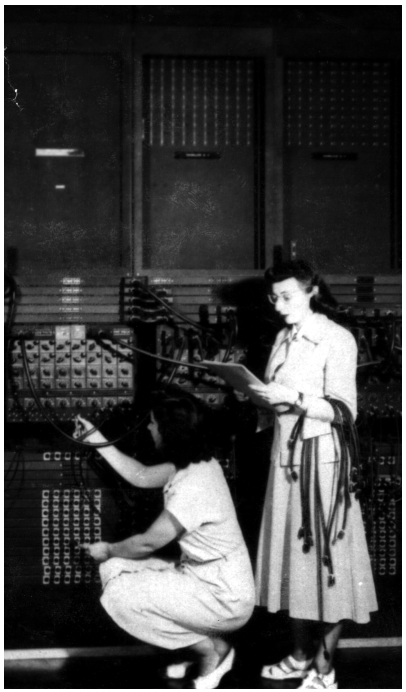

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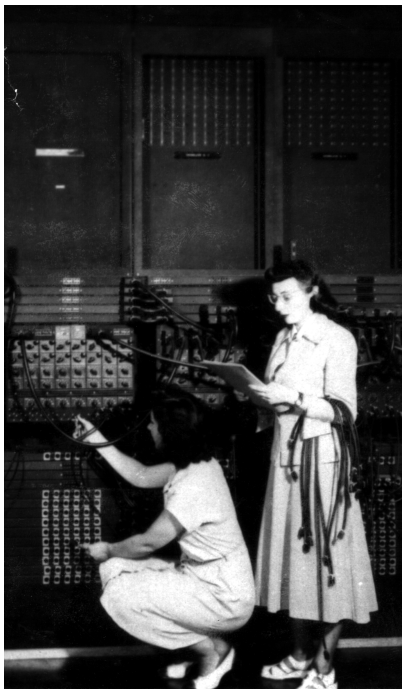

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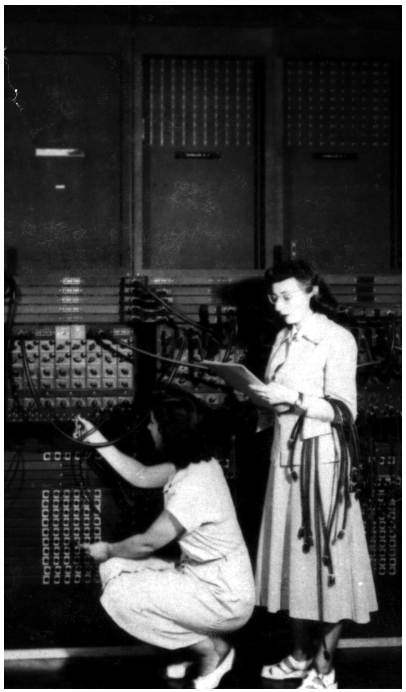

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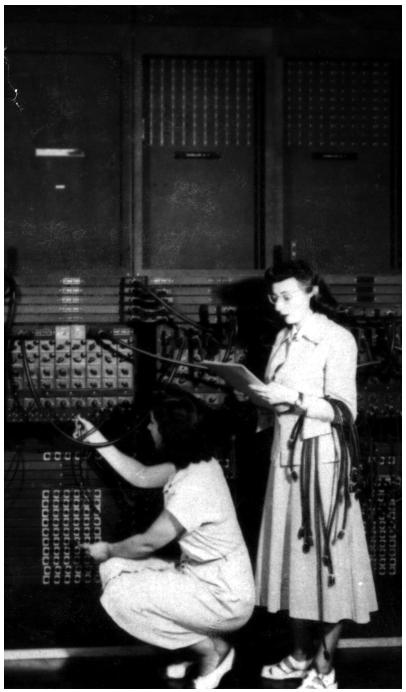

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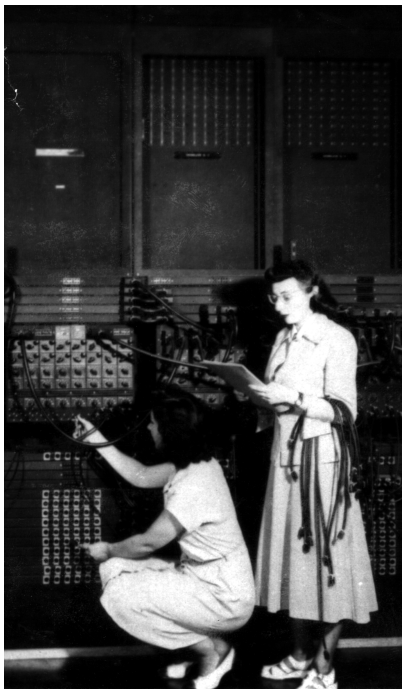

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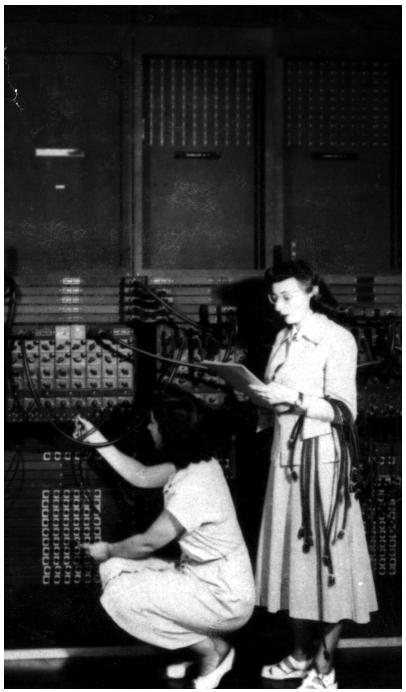

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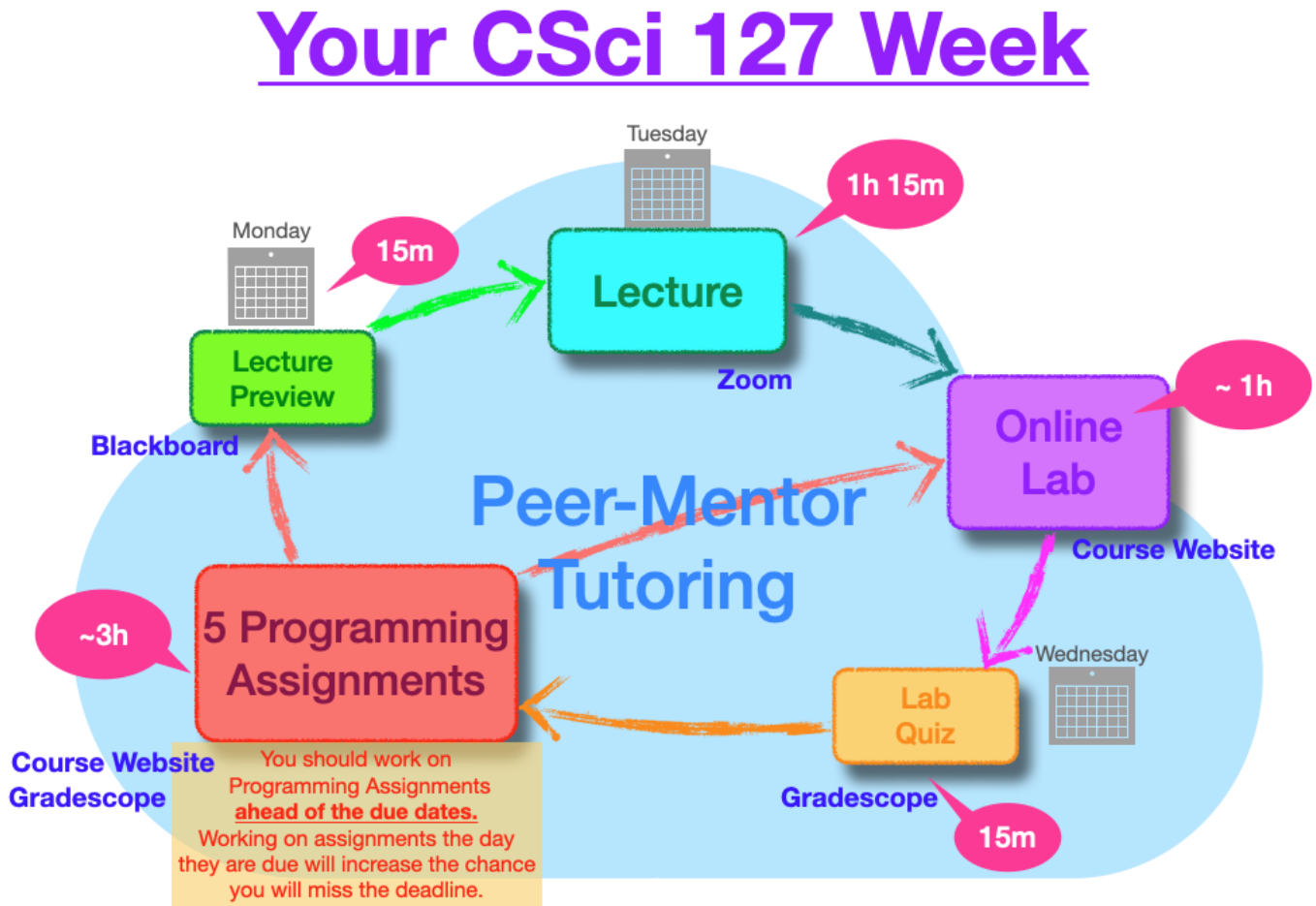

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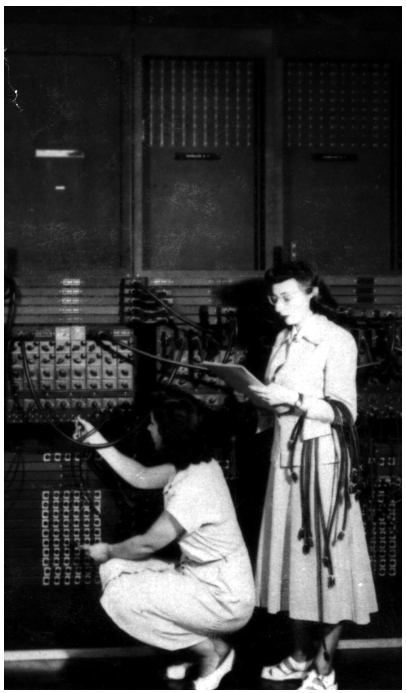

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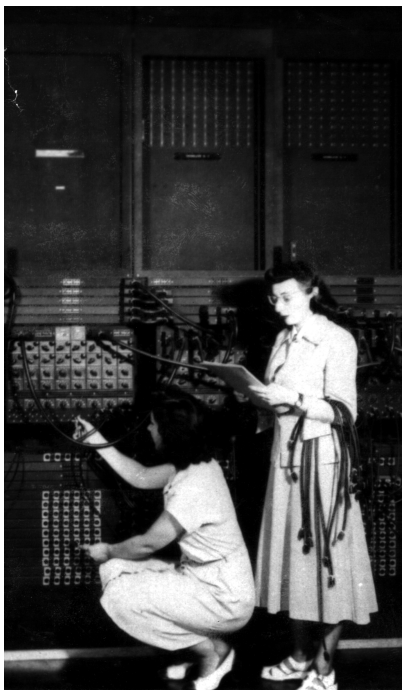

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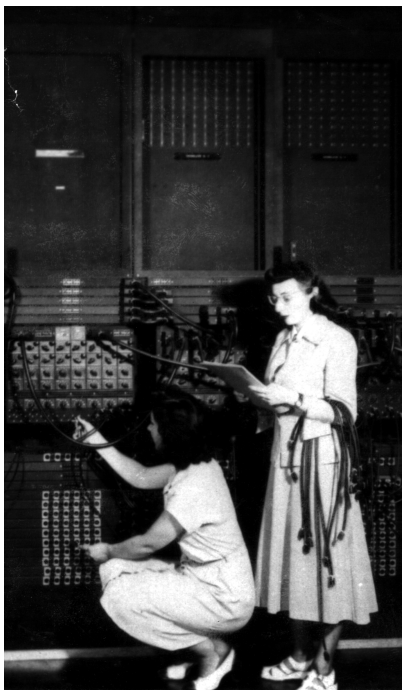

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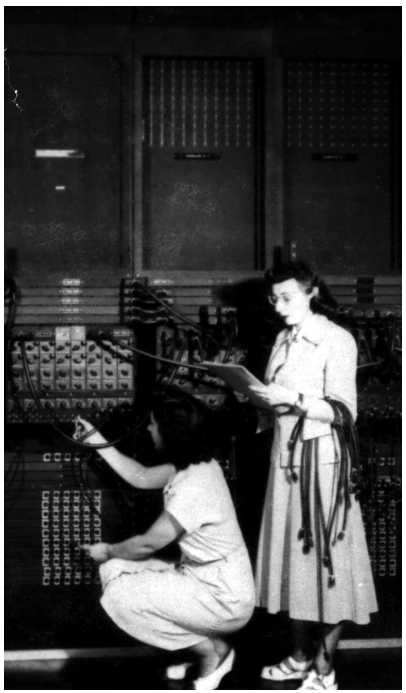

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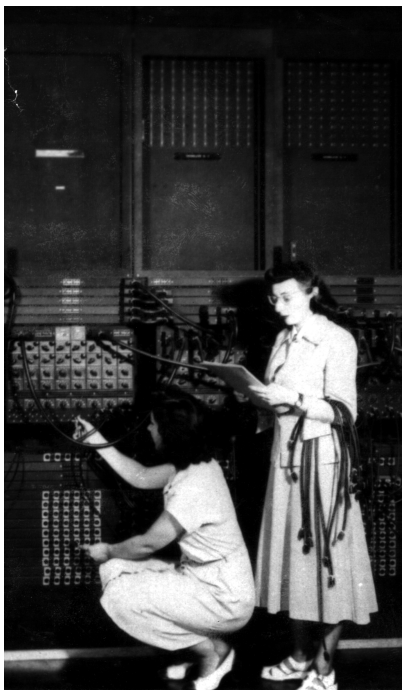

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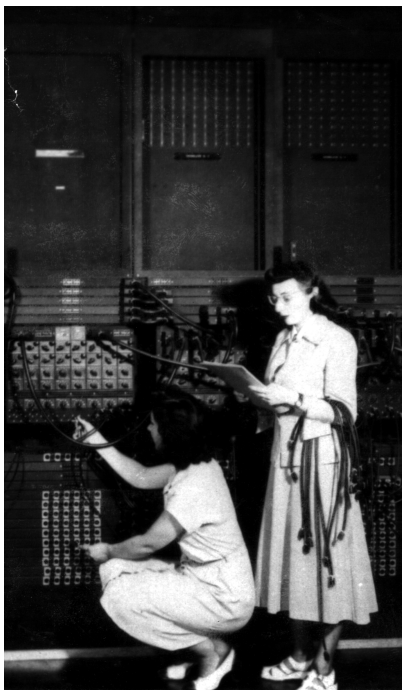

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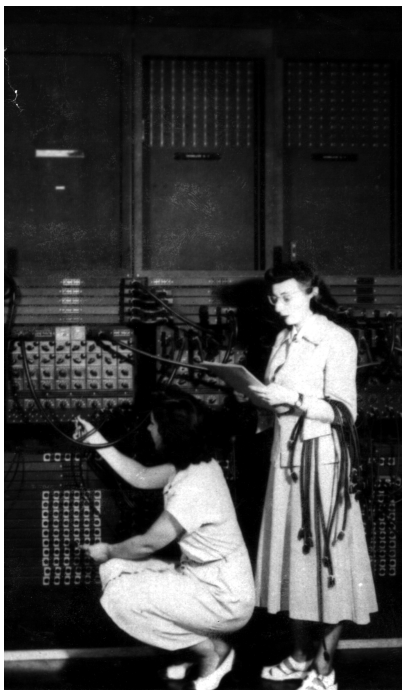

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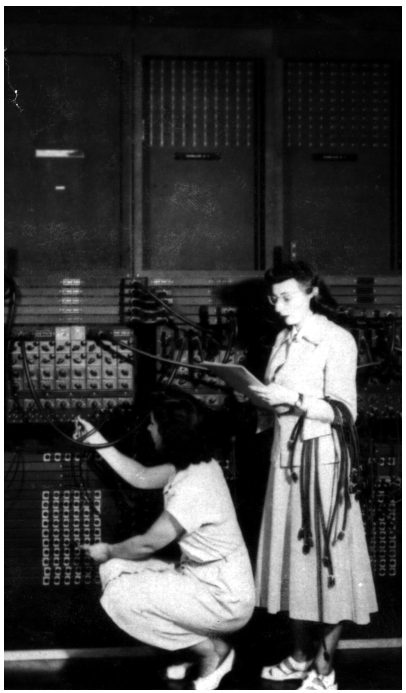

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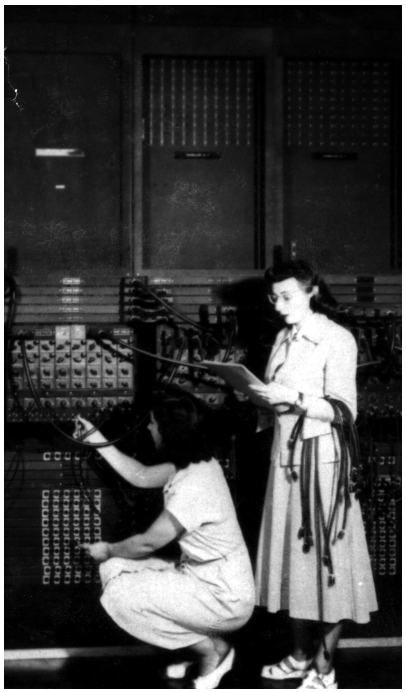
- For help to run and submit programming assignments, please visit the 1001E lab.

Make Your Schedule!



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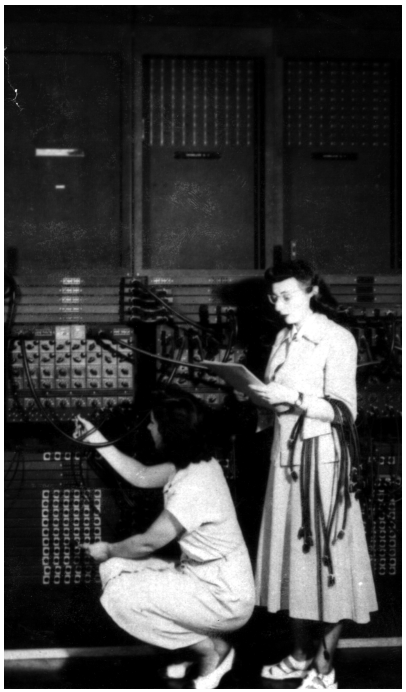

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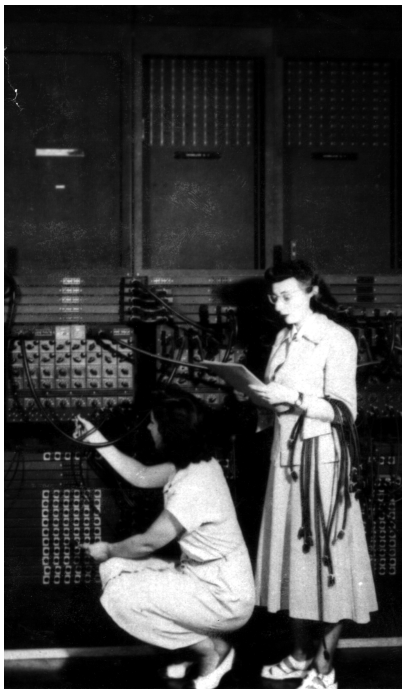

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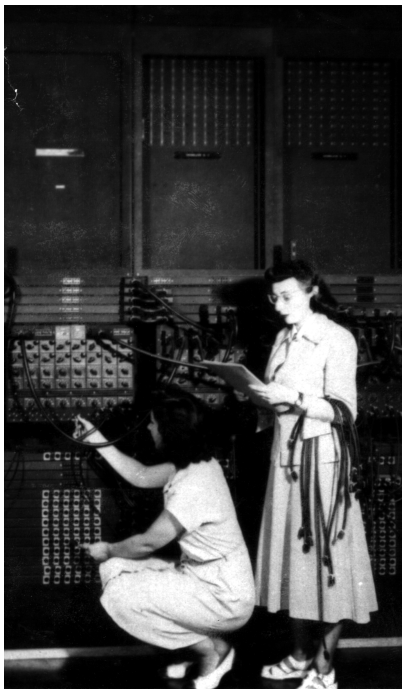

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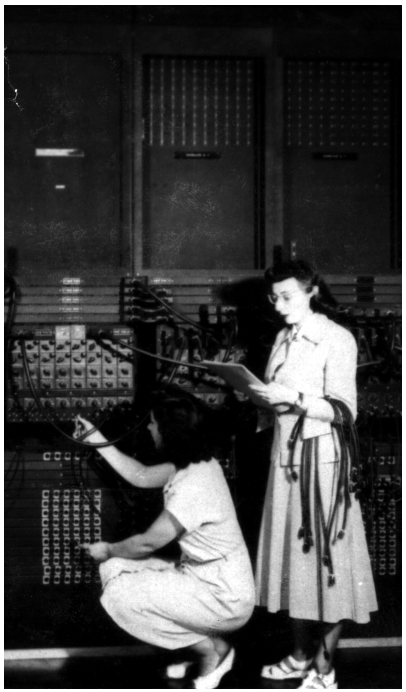

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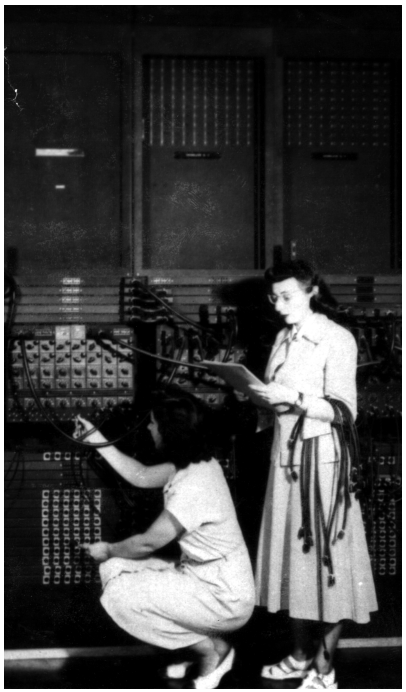

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- Put them in your calendar now and then adjust if necessary.

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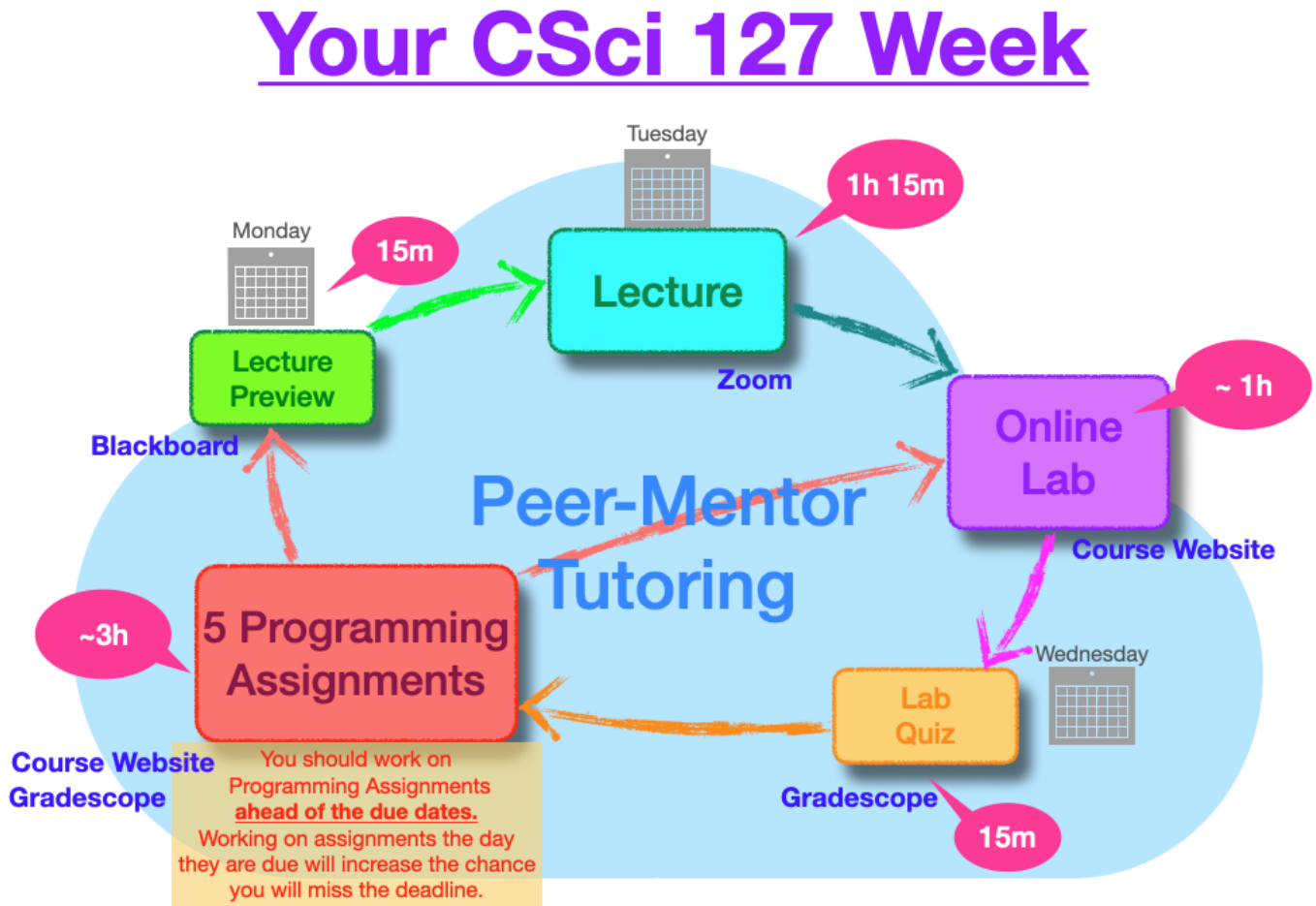

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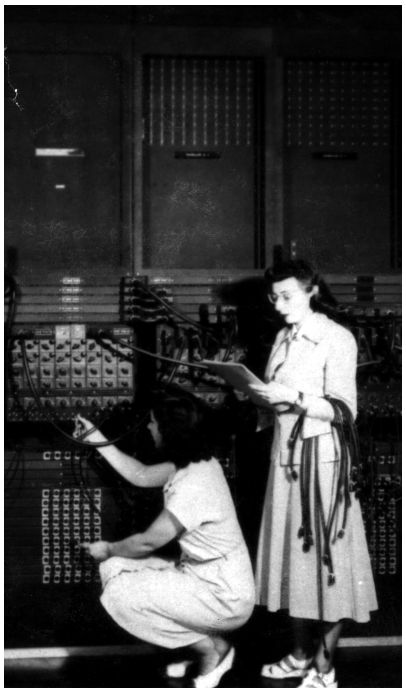

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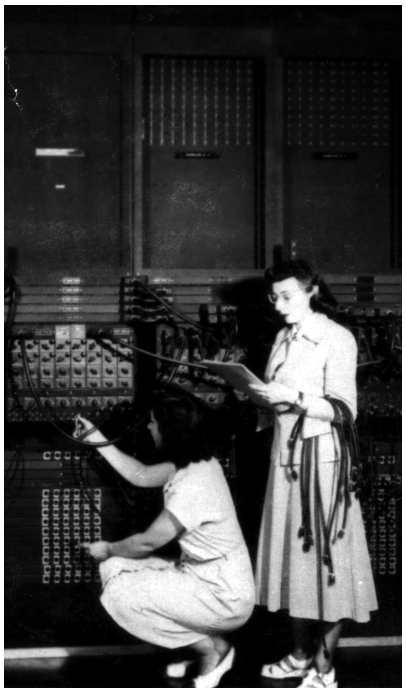

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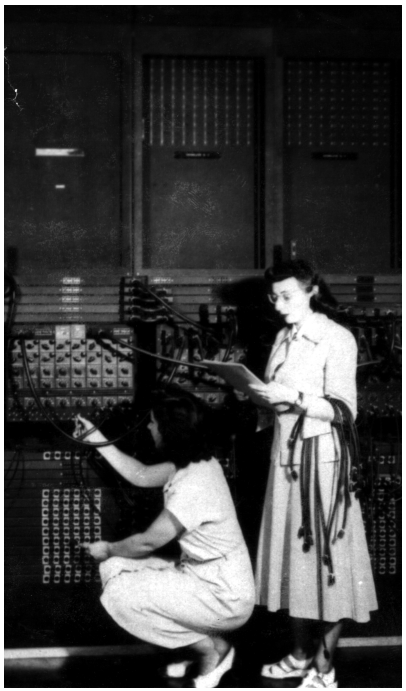

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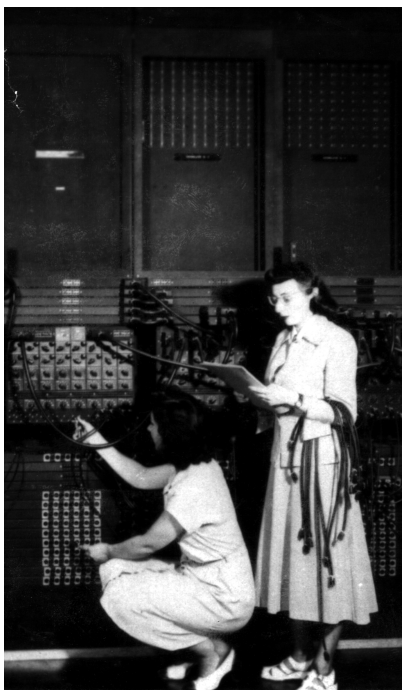

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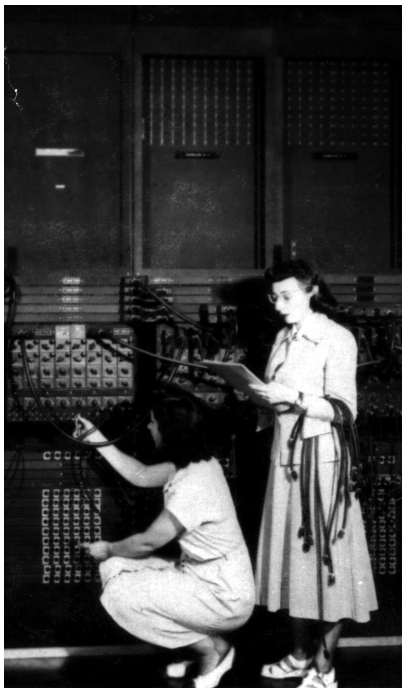

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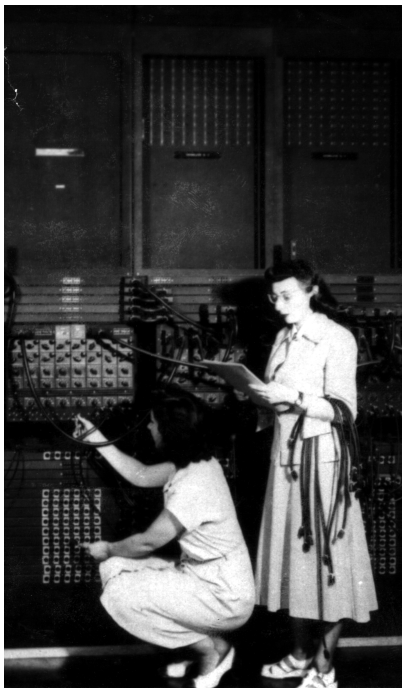

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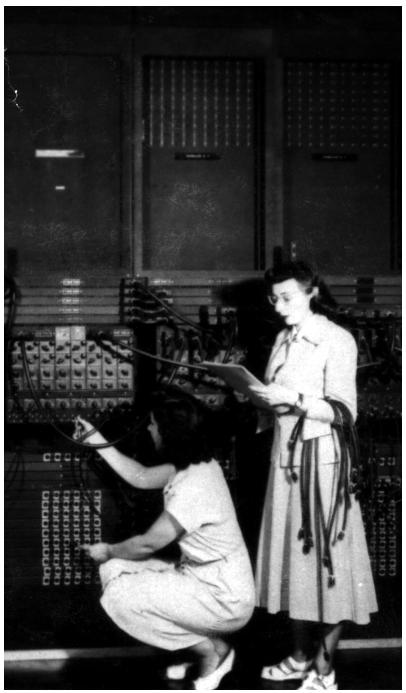
Benefits of Tutoring and Code Review

Academic Dishonesty



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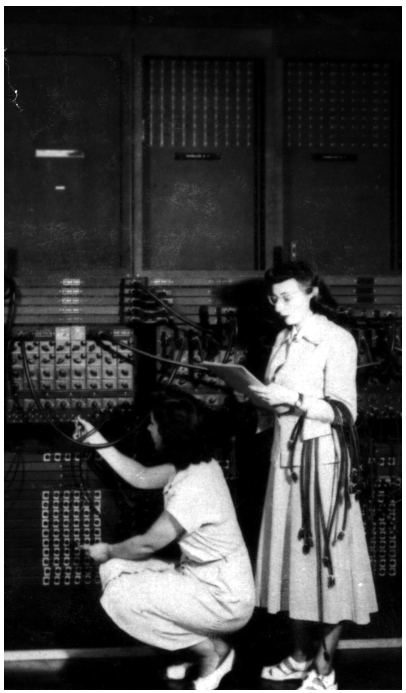

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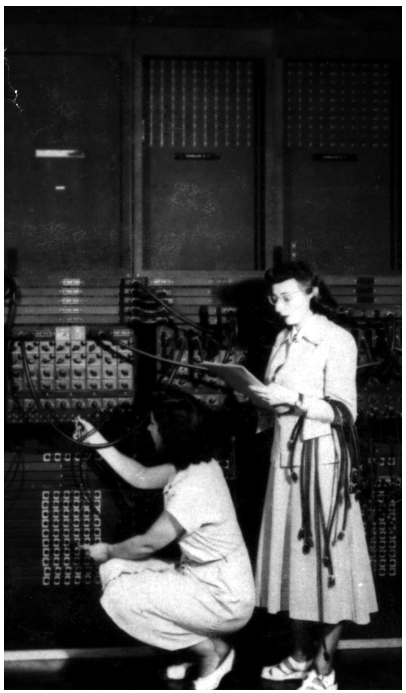

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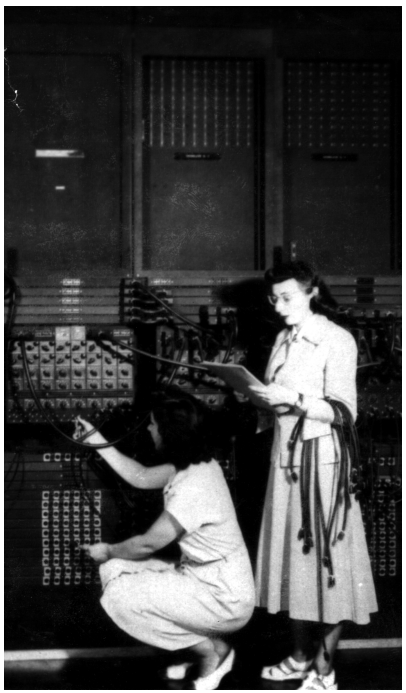

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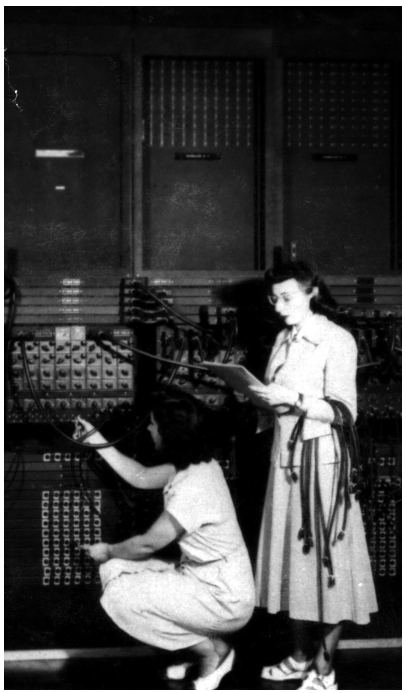

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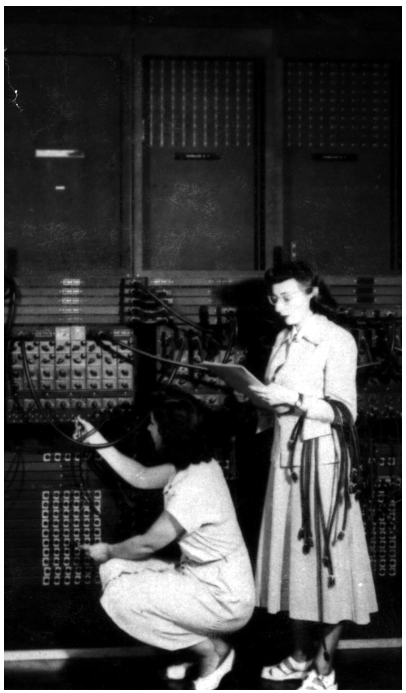

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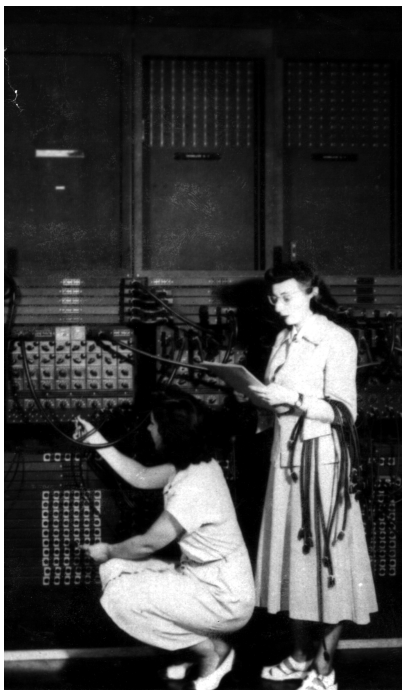
Academic Dishonesty

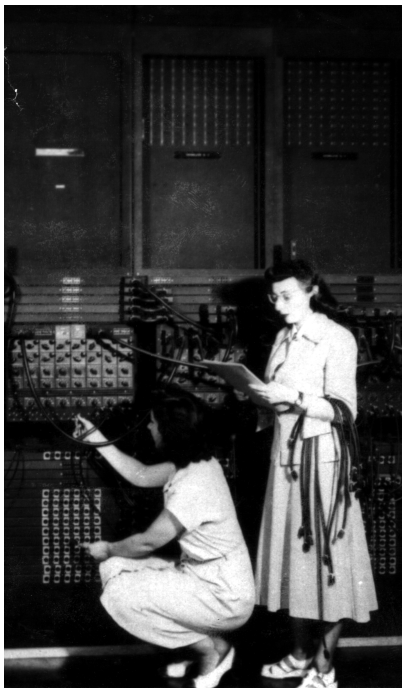


First "computers"

ENIAC, 1945.

- *The person who does the work gets the benefit! Learning is personal!!!*
- **Don't waste your time and money!**
- A few semesters down the road will be too late to catch up on core knowledge and **skills**.
- Cheating is immoral and it lowers the quality of our students and institution.
- Students that pose as experts often circulate bad/incorrect solutions
- Our UTAs are the true experts and equipped to help you learn and succeed!
- **All instances of academic dishonesty will be reported to the office of Student Affairs**

Communication



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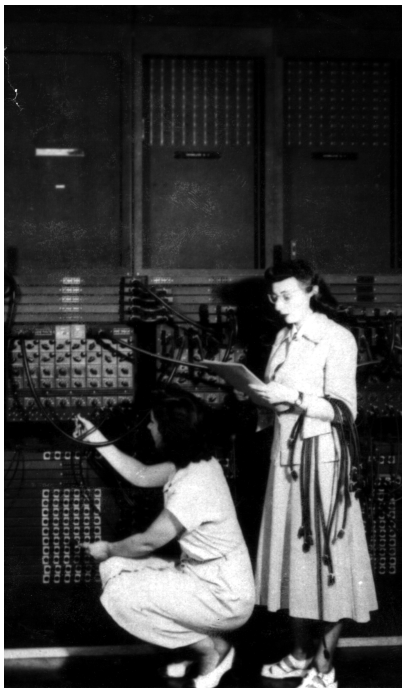

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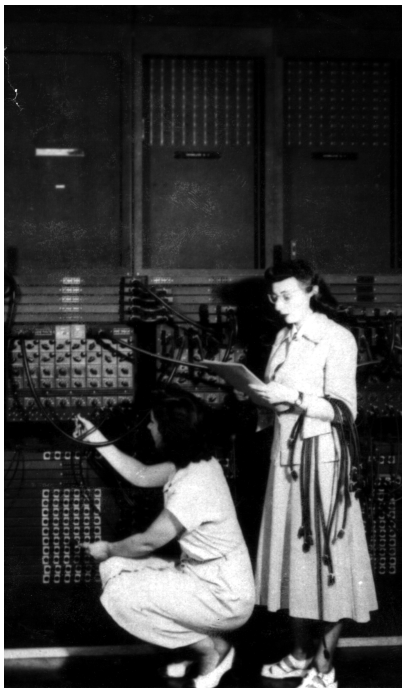

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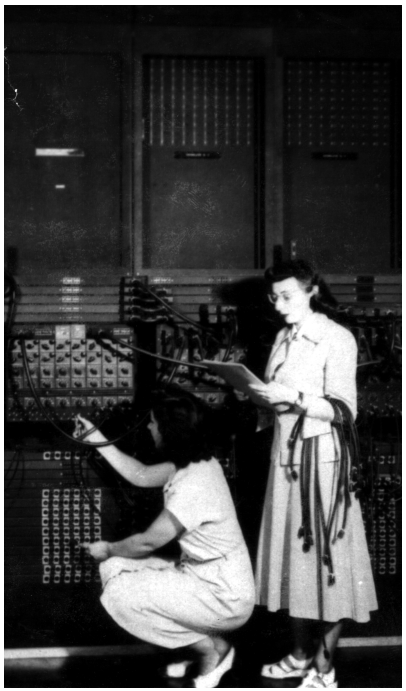

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- Instructions for changing your email on Blackboard announcements

Today's Topics

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

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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`

First Program: Hello, World!

```
#Name:  Thomas Hunter
#Date:  Aug 31, 2022
#This program prints:  Hello, World!

print("Hello, World!")
```

First Program: Hello, World!

```
#Name:  Thomas Hunter                          ← These lines are comments
#Date:  September 1, 2017                      ← (for us, not computer to read)
#This program prints:  Hello, World!           ← (this one also)

print("Hello, World!")                         ← Prints the string "Hello, World!" to the screen
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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

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)
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Turtles Introduction

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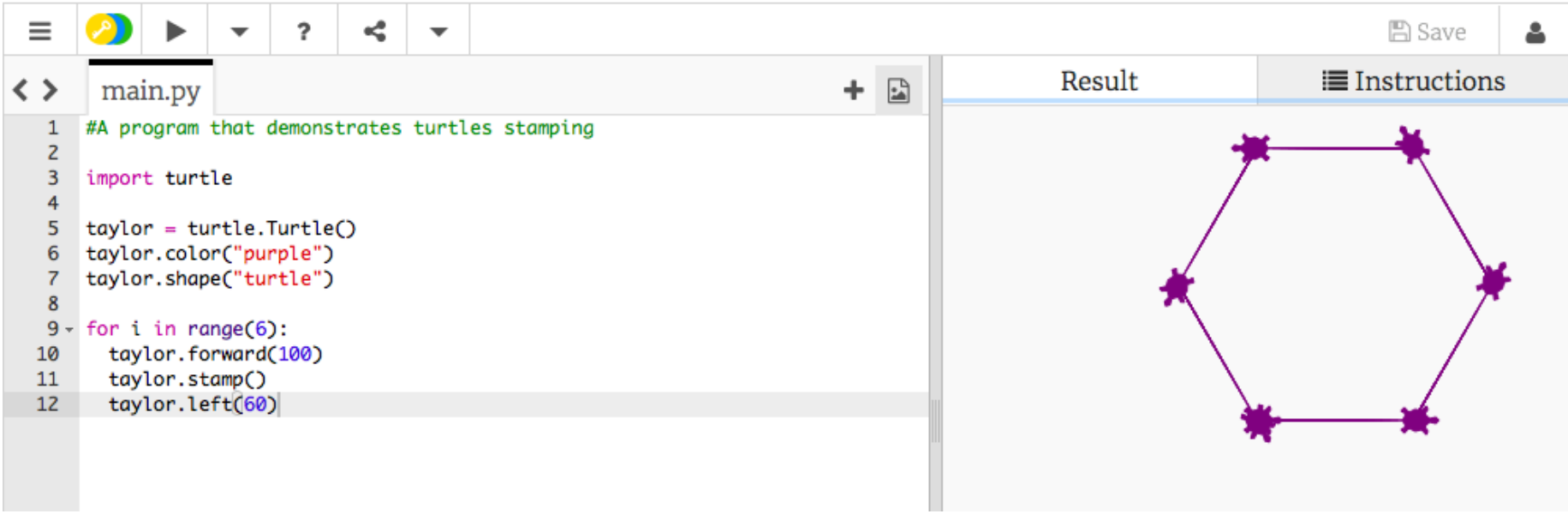
Turtles Introduction



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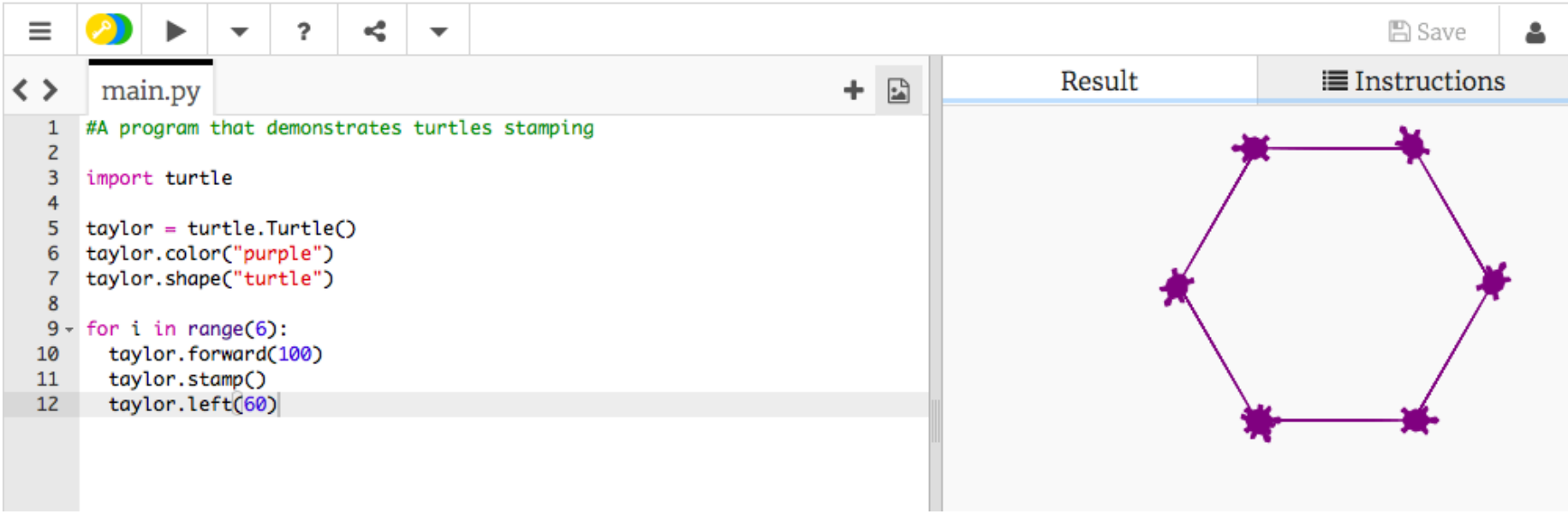

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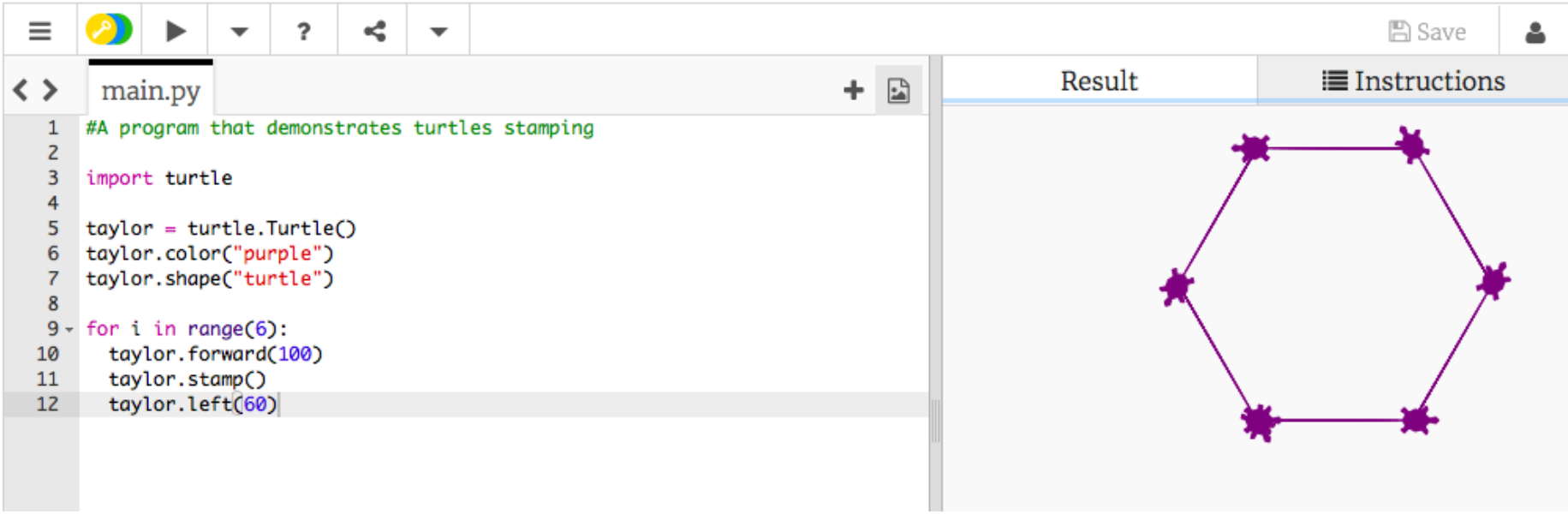

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- Repeats 6 times:

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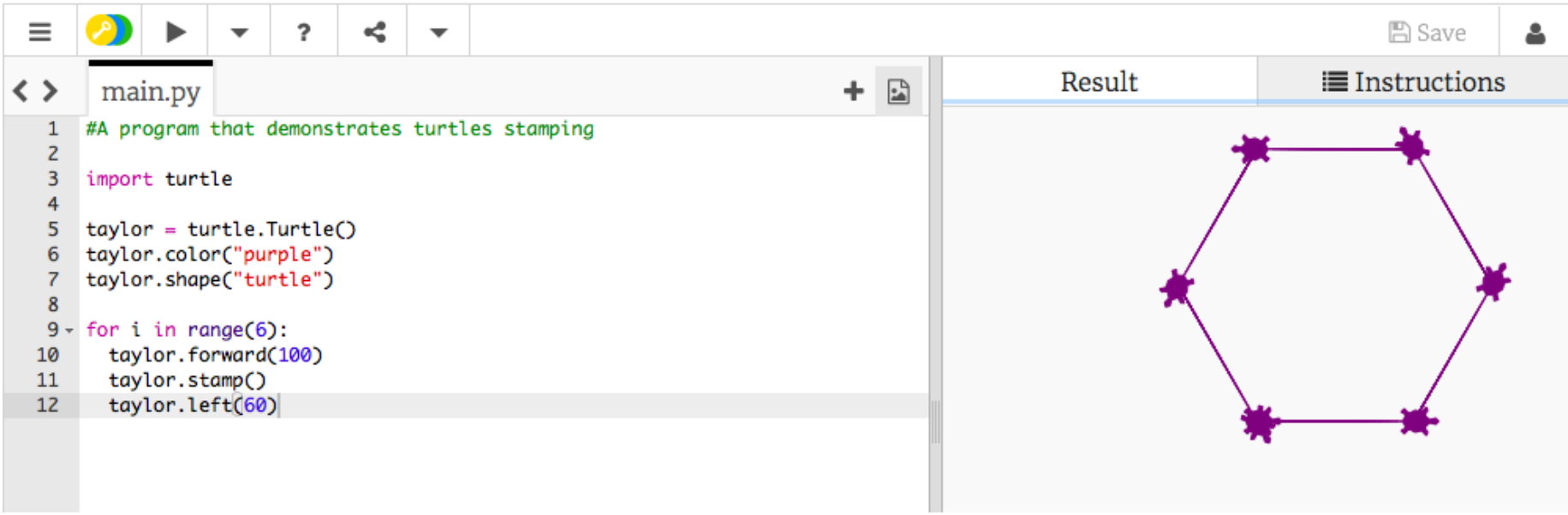

- Creates a turtle **variable**, called `taylor`.
- Changes the color (to purple) and shape (to turtle-shaped).
- Repeats 6 times:
  - Move forward; stamp; and turn left 60 degrees.

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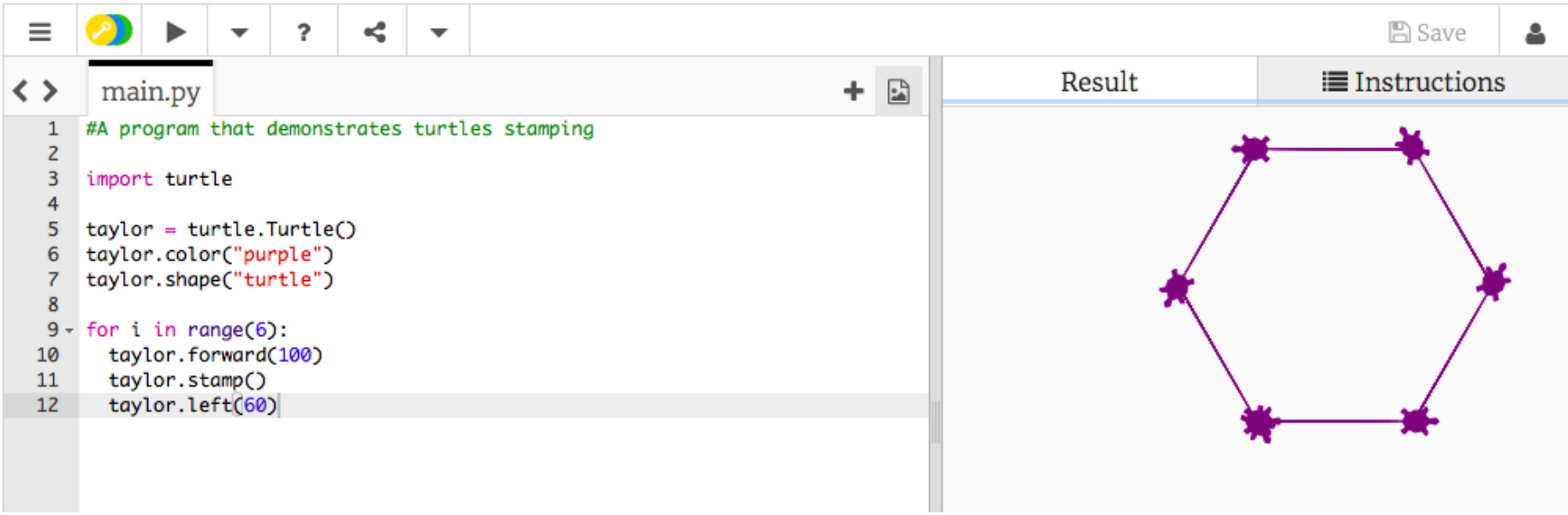

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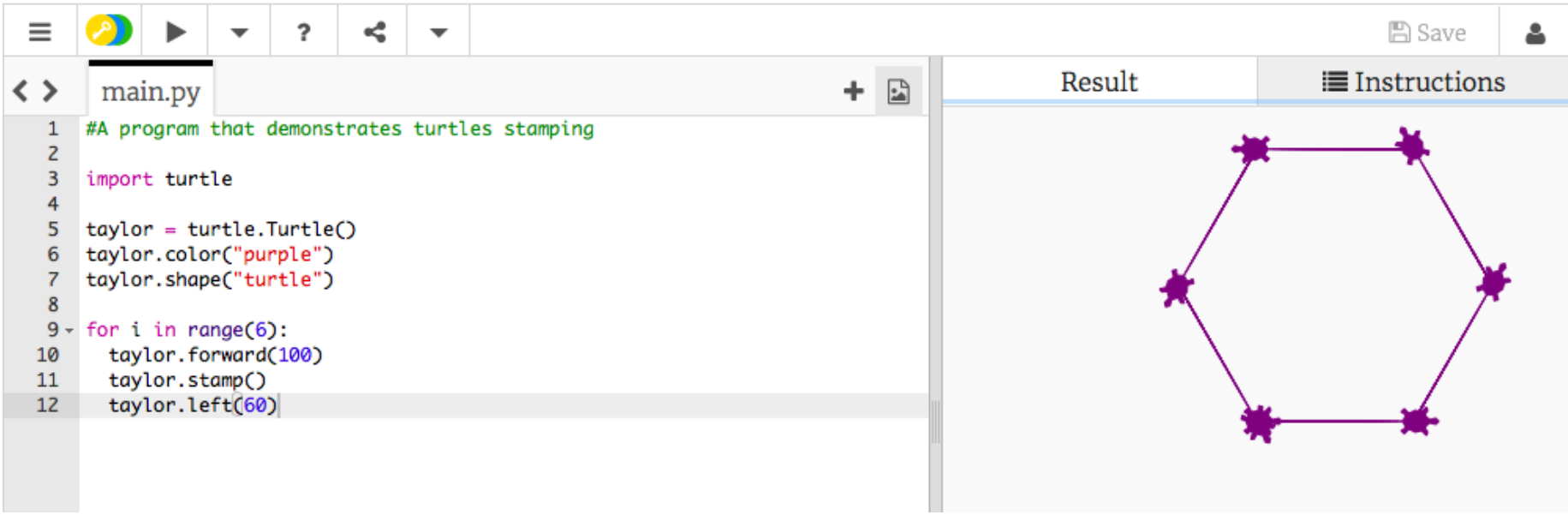

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- Repeats 6 times:
  - Move forward; stamp; and turn left 60 degrees.
- Repeats any instructions **indented** in the "loop block"
- This is a **definite** loop because it repeats a fixed number of times

Group Work

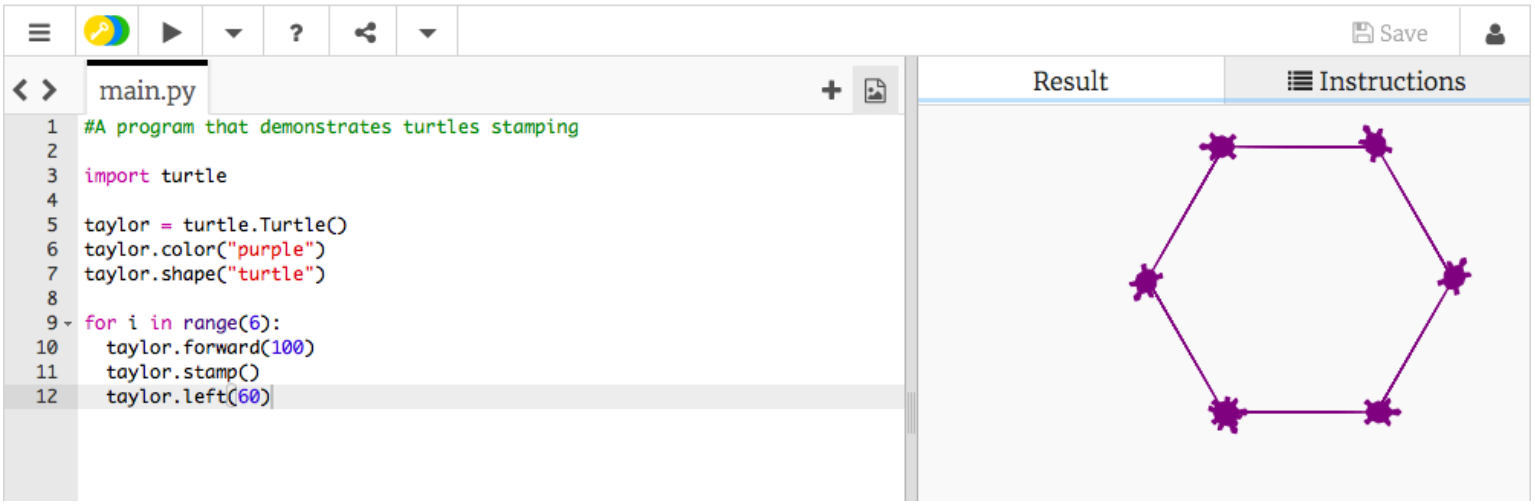
Working in pairs or triples:

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!
   ```

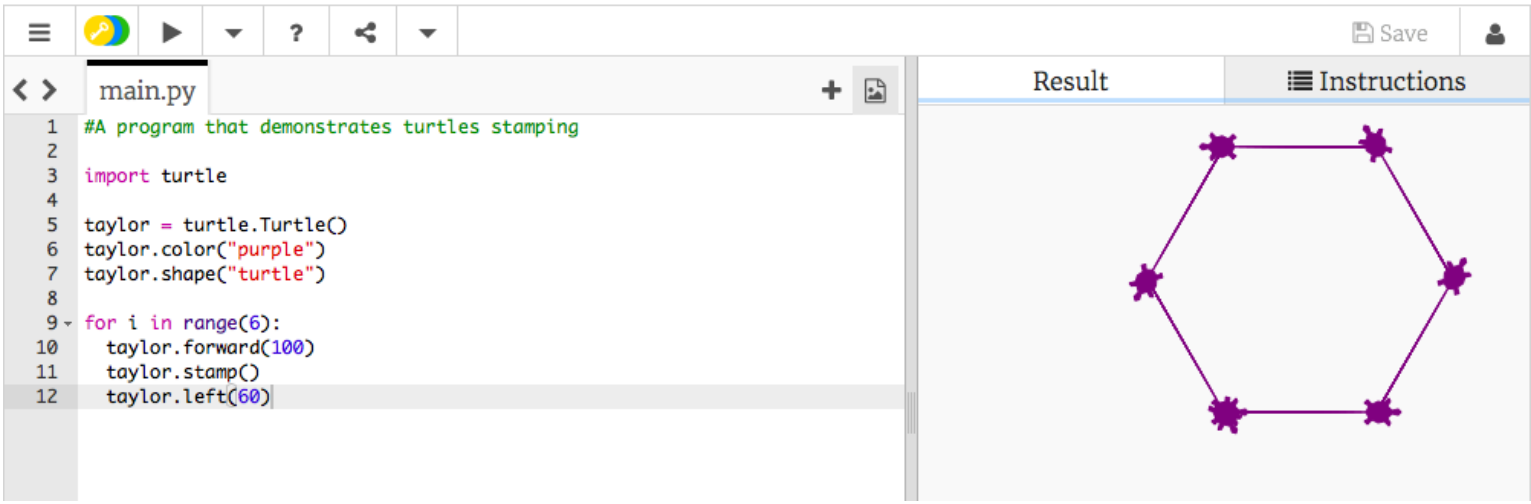
   three times.

Decagon Program



- Start with the hexagon program.

Decagon Program



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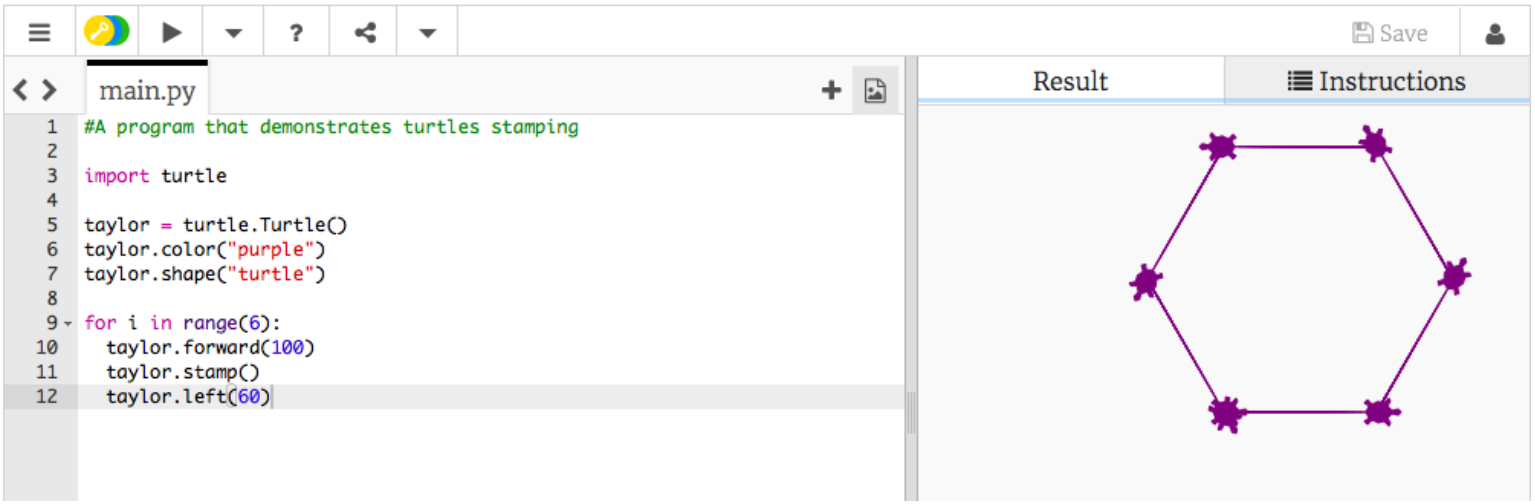

- Start with the hexagon program.
- Has 10 sides (instead of 6), so change the `range(6)` to `range(10)`.
- Makes 10 turns (instead of 6),
  so change the `taylor.left(60)` to `taylor.left(360/10)`.

Work Program

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- Repeats three times, so, use `range(3)`:

  ```
  for i in range(3):
  ```

- 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
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- **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.

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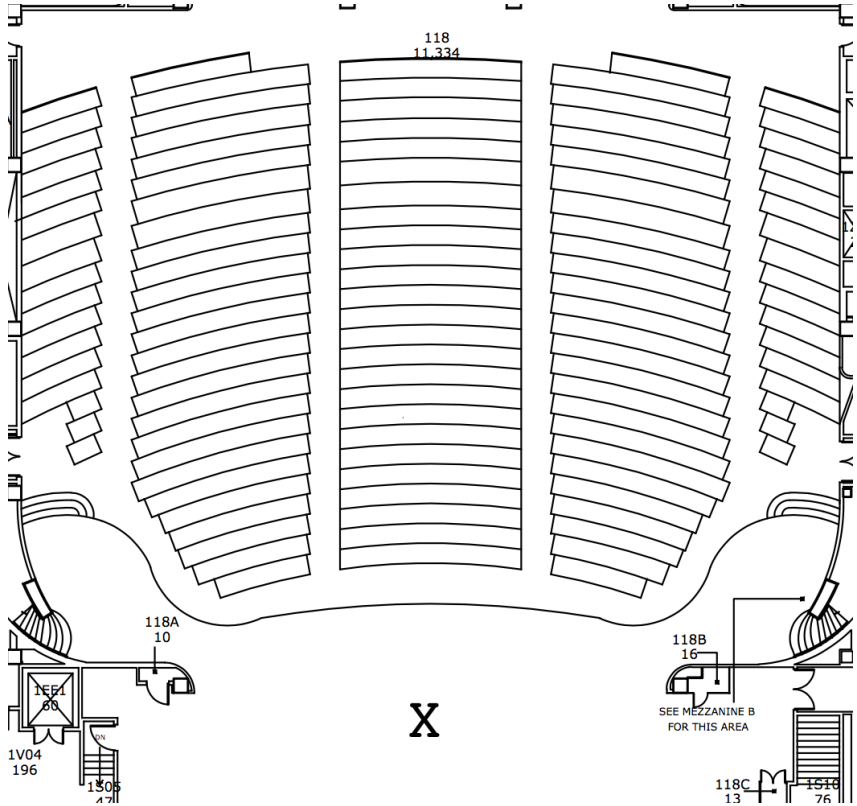

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1. On the floorplan, mark your current location.
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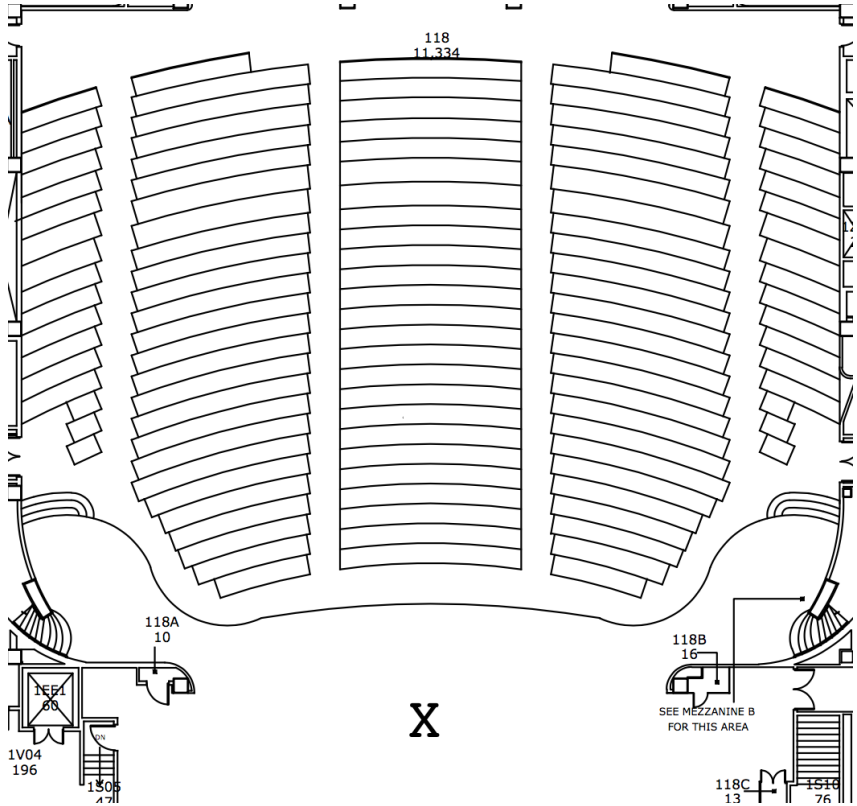

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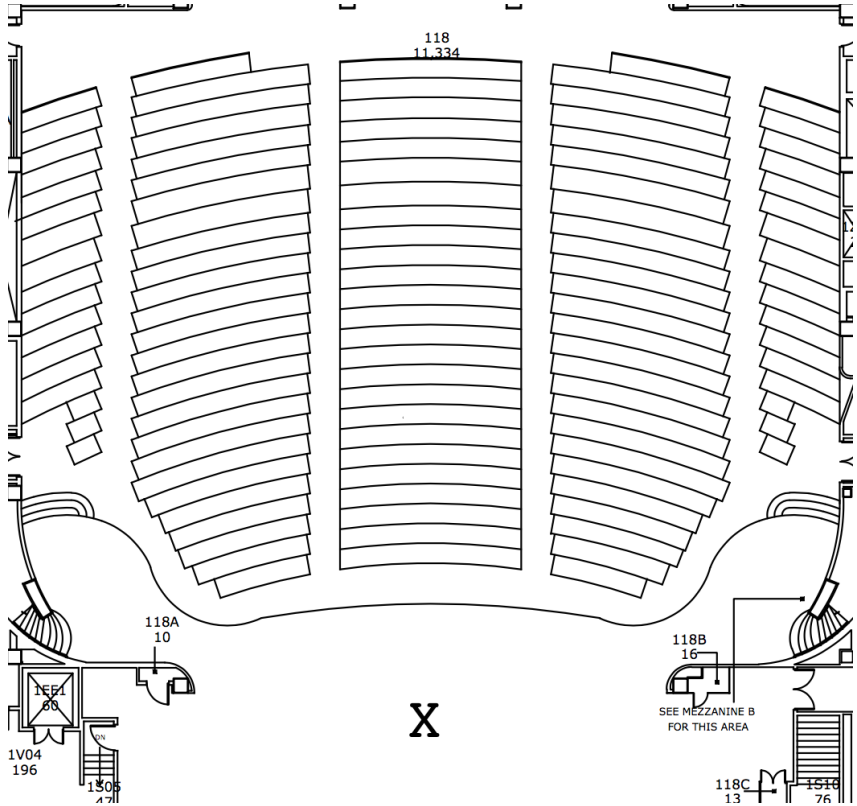

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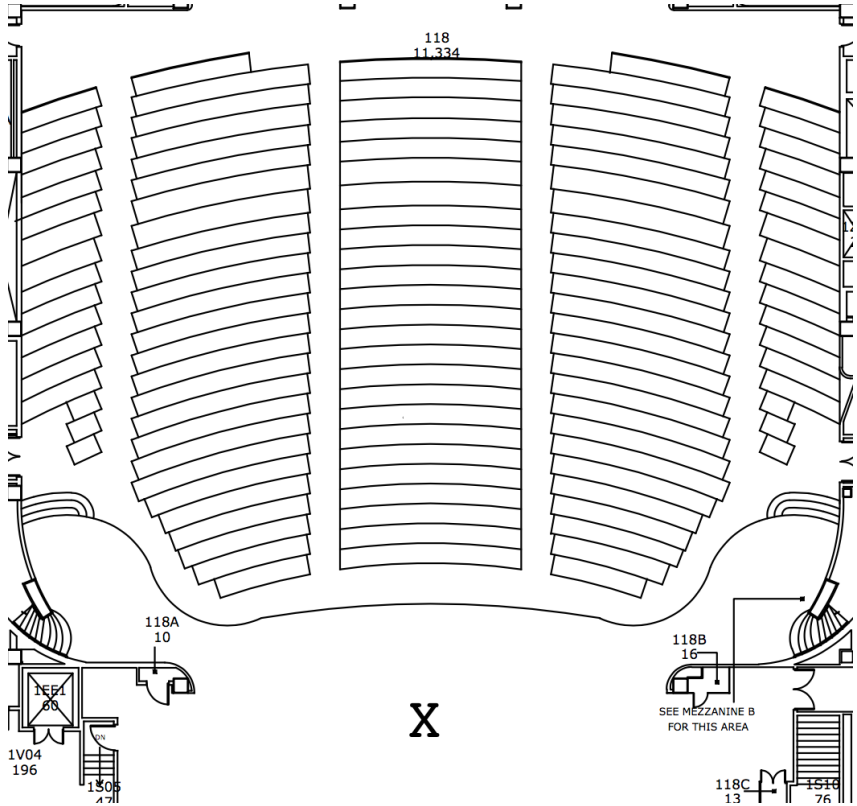

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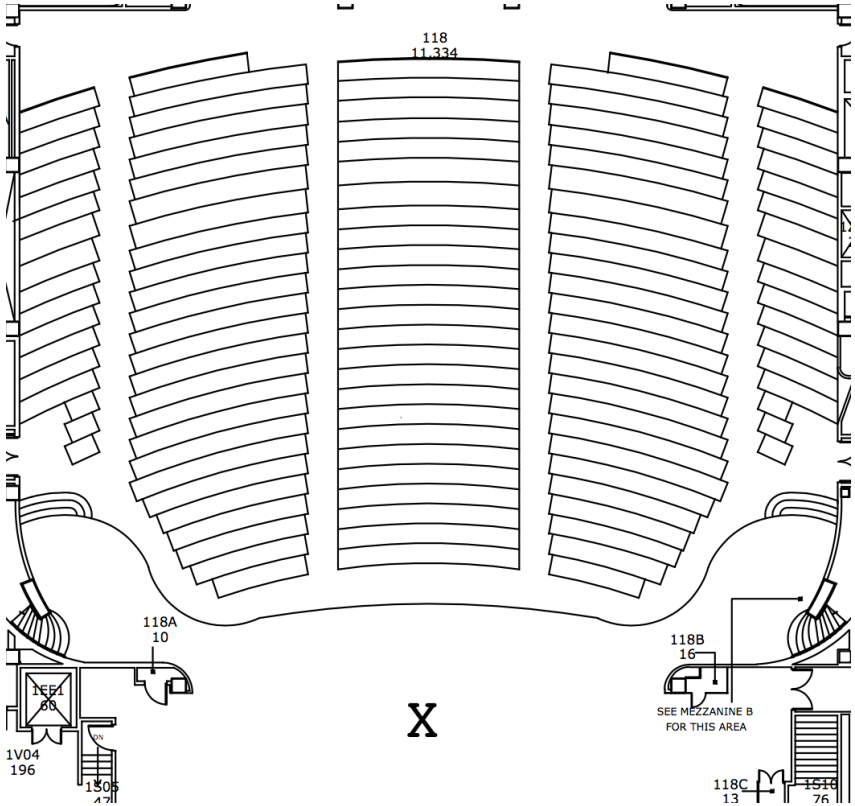

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   - Turtles cannot climb walls, must use stairs.

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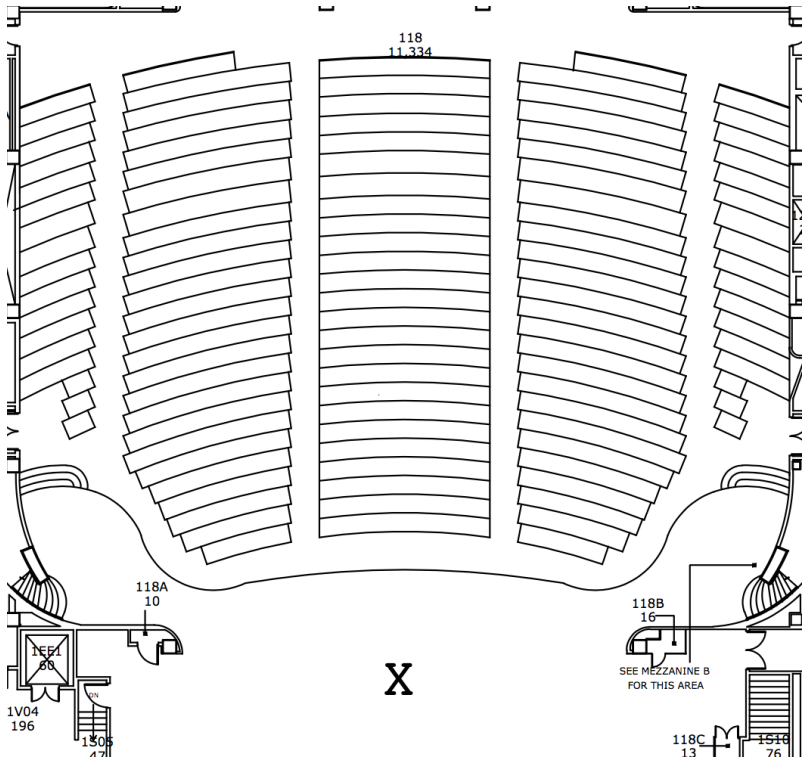

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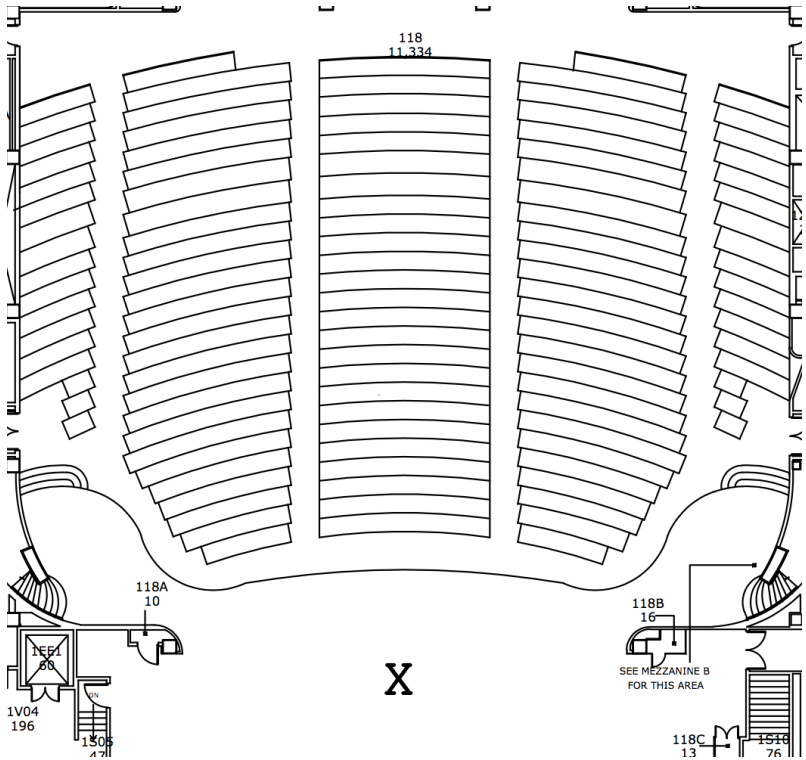

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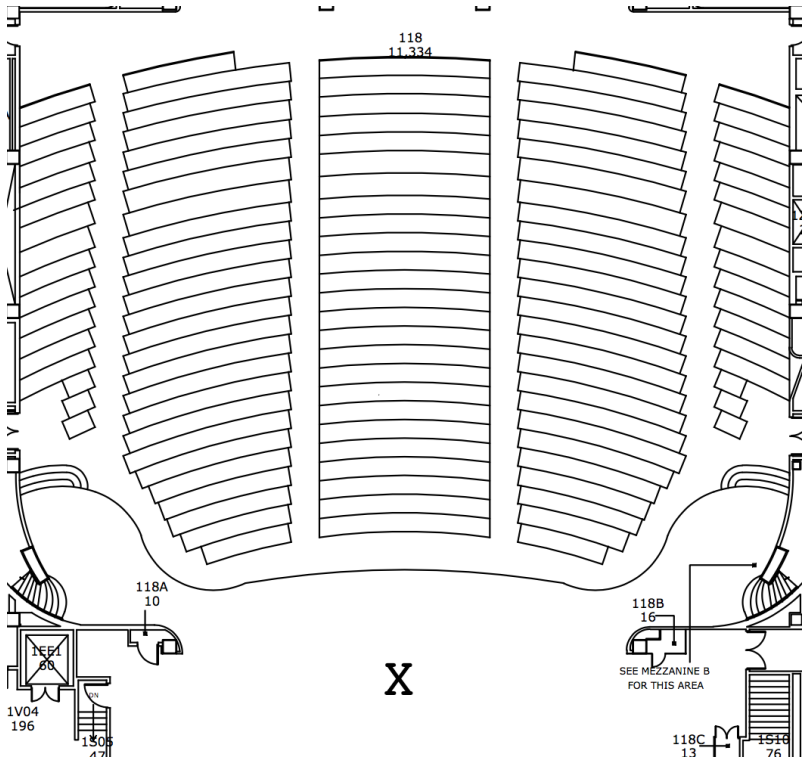

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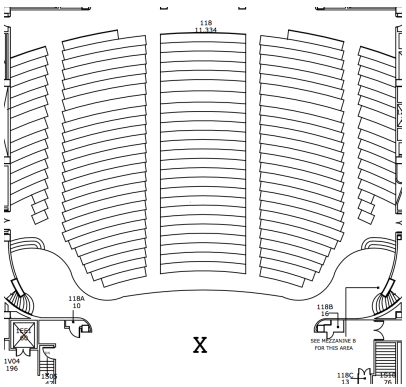
- Annotate any changes needed to the directions (i.e. debug your work).

Recap

- On lecture slip, write down a topic you wish we had spent more time (and why).



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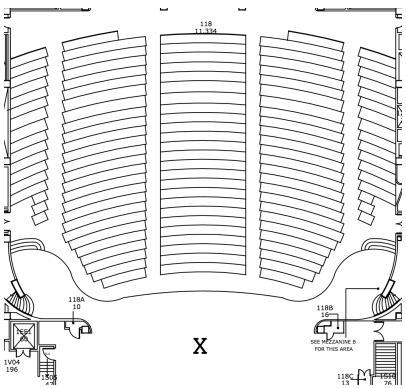

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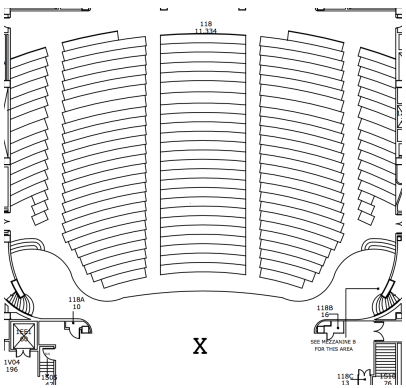

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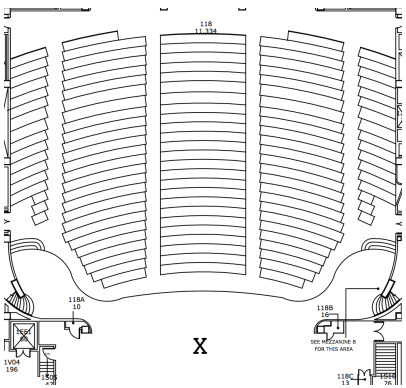

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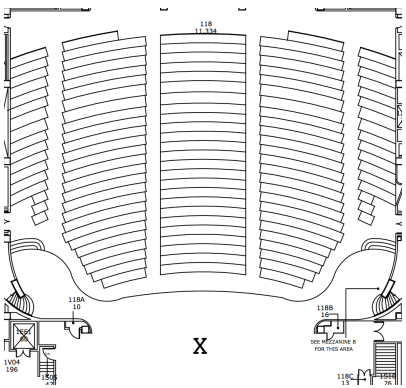

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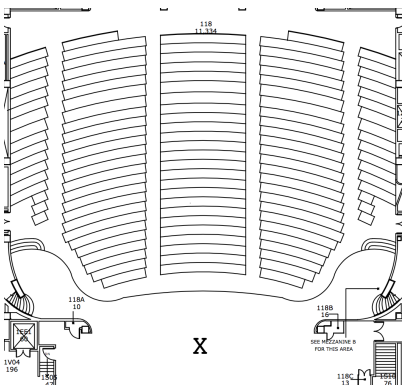

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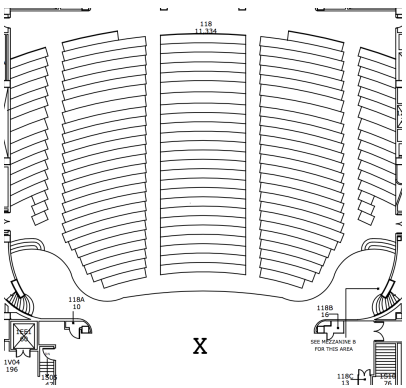

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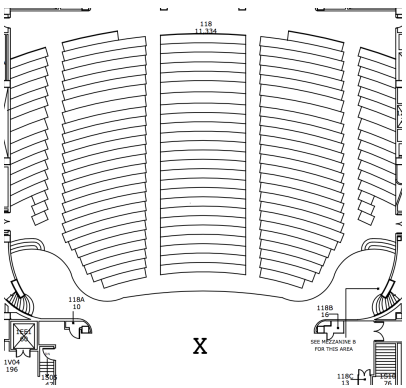

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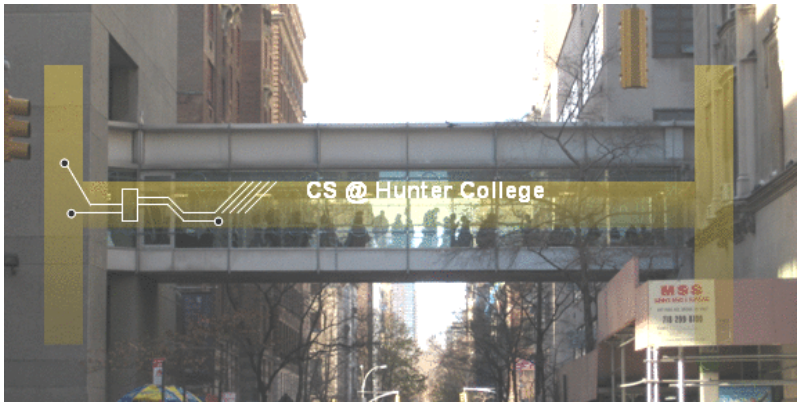
- Pass your lecture slips to the aisle for the UTA's to collect.

Weekly Reminders!



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- Submit this week's 5 programming assignments (programs 1-5)
- If you need help, schedule an appointment for Tutoring in lab 1001E 11am-5pm

Weekly Reminders!

Before next lecture, don't forget to:

- Work on this week's Online Lab
- Schedule an appointment to take the Quiz in lab 1001E Hunter North
- If you haven't already, schedule an appointment to take the Code Review (**one every two weeks**) in lab 1001E Hunter North
- Submit this week's 5 programming assignments (programs 1-5)
- If you need help, schedule an appointment for Tutoring in lab 1001E 11am-5pm
- Take the Lecture Preview on Blackboard on Monday (or no later than 10am on Tuesday)

Lecture Slips & Writing Boards

- Hand your lecture slip to a UTA
- Return writing boards as you leave.