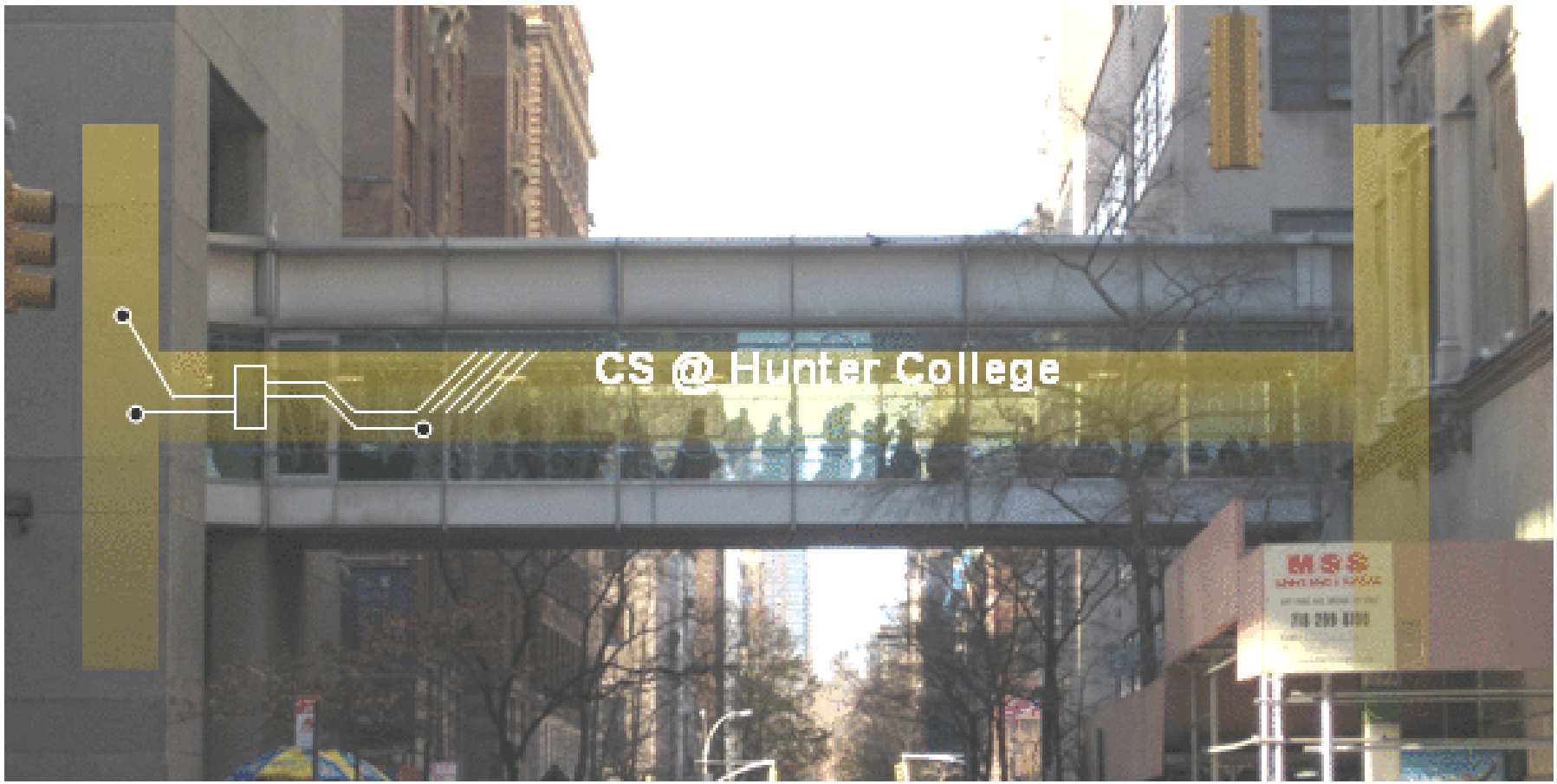
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

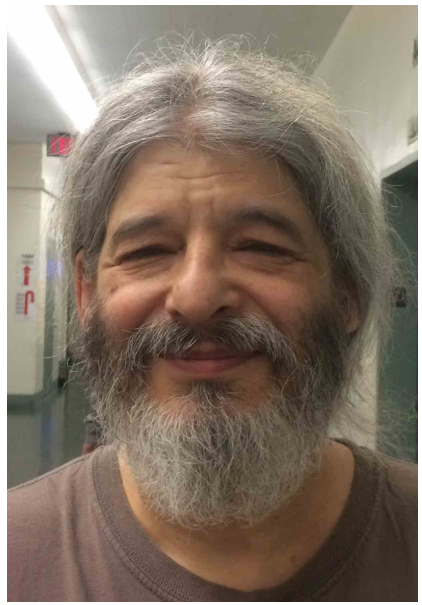
Introductions: Course Designers

Dr. Katherine St. John

Professor,

Dr. William Sakas

Associate Professor, Chair



Prof. Eric Schweitzer

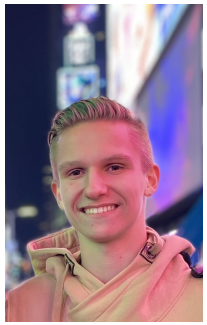
Undergraduate Program Coordinator

Introductions: Instructors

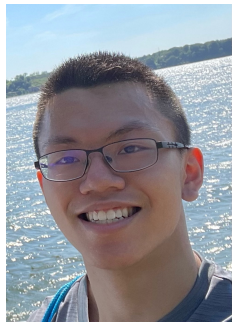
Dr. Tong Yi

Large Lecture
Course Coordinator

Introductions: Undergraduate Teaching Assistants



Adrian Mysliwiec



Alvin Wu

Amy Ng
lecture TA

Andy Li

Anika Sujana

Arsen Tumanian

Arshadul Monir
lecture TA

Arterio Rodrigues

Bode Chiu

Brendan South

Christopher Asma

Diana Luna

Farhin Bhuiyan

Filip Trzcinka

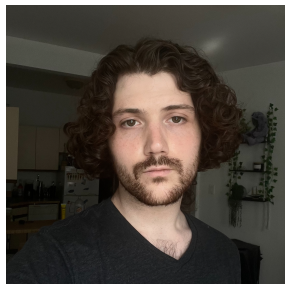
Georgina Woo
lecture TA

Introductions: Undergraduate Teaching Assistants:II

Ghazanfar Shahbaz

Hanz De Guzman

Hnin Lwin



Jeffrey Waters

Jessica Flores Olmos

Kazi Mansha
lecture TA

Kevin Perez

Maliha Tasnim
lecture TA

Manuel Reyes
lecture TA

Mashiyat Mahdi
lecture TA

Michelle Thaung

Moududur "Moody" Rahman
lecture TA

Omer Skaljic

Rita Chen

Roy Delgado

Introductions: Undergraduate Teaching Assistants: III

Ryan Vaz

Sheikh Fuad
lecture TA

Tyler Robinson

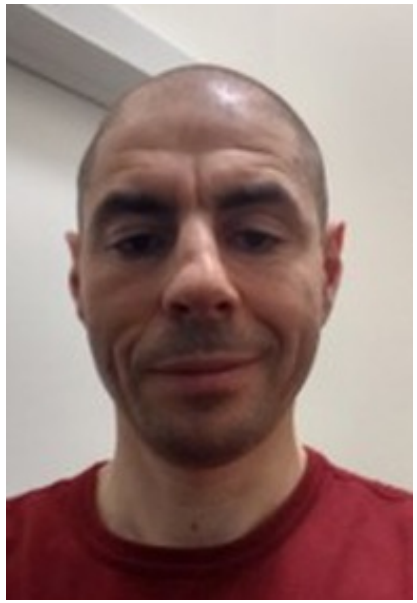
Yoomin Song

Zeeshan Ahmed Gondal

Introductions: Advisors

Justin Tojeira
CS Advisor

jtojeira@hunter.cuny.edu



Pavel Shostak
CS Advisor

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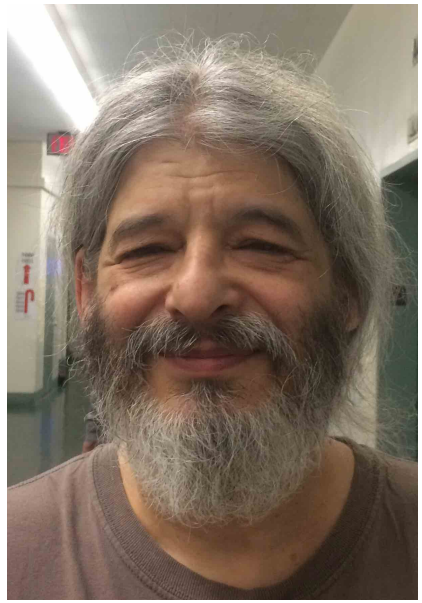

Eric Schweitzer
Undergraduate
Program Coordinator
eschweit@hunter.cuny.edu

Check https://www.hunter.cuny.edu/csci/advising/advising for details.

Where to find Course Content

- **Course Website:** https://huntercsci127.github.io/s23.html

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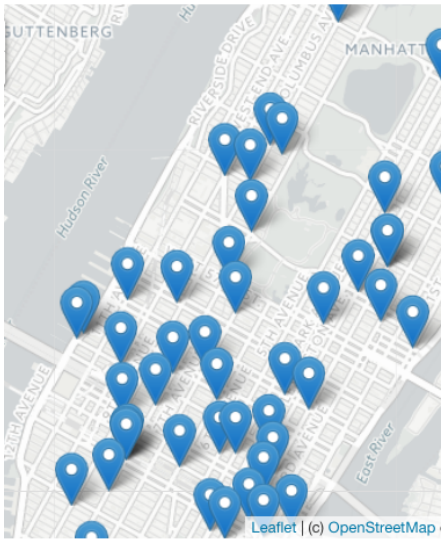
- **Gradescope** (programming assignments submission)

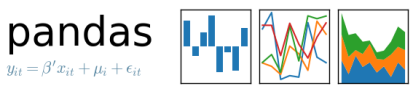
Syllabus

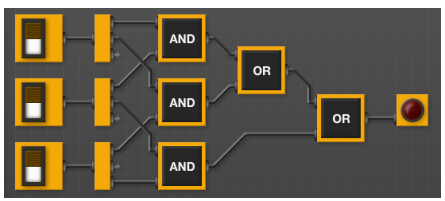
CSci 127: Introduction to Computer Science
Catalog Description: 3 hours, 3 credits: This course presents an overview of computer science (CS) with an emphasis on **problem-solving and computational thinking through 'coding'***: computer programming for beginners...*

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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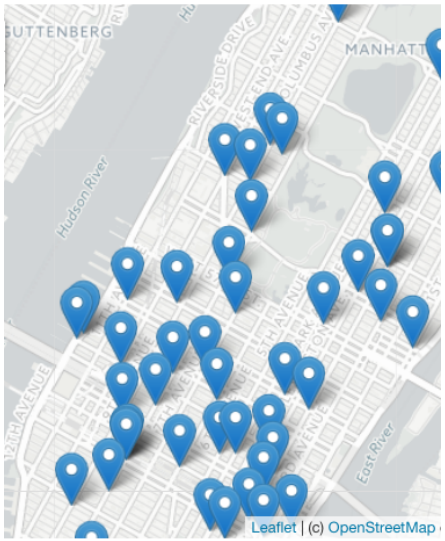

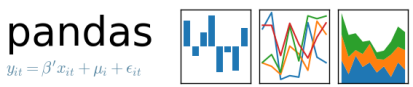

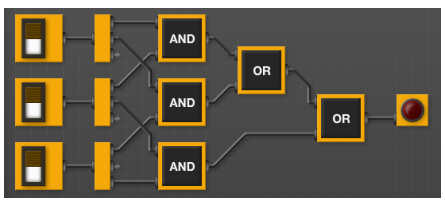

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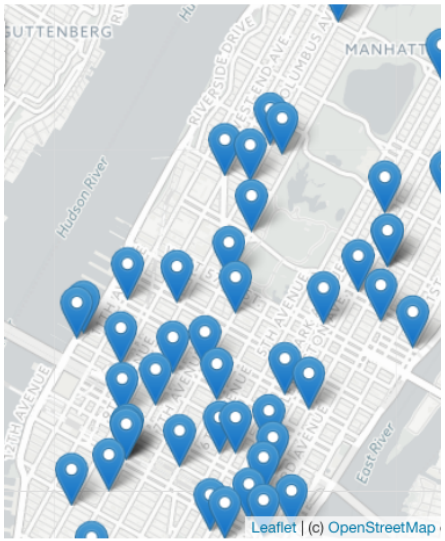
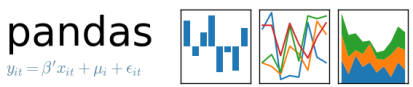
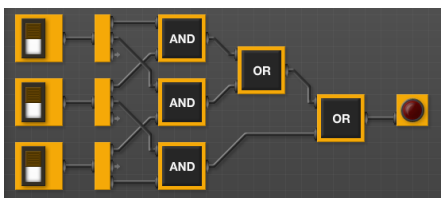
Syllabus: Topics







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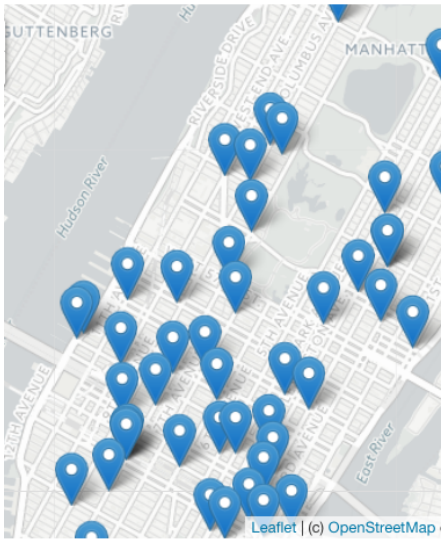

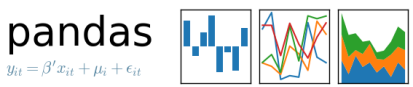

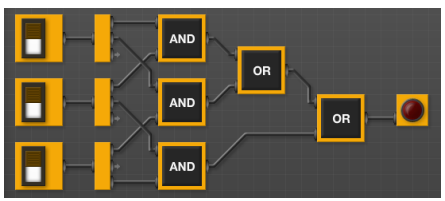

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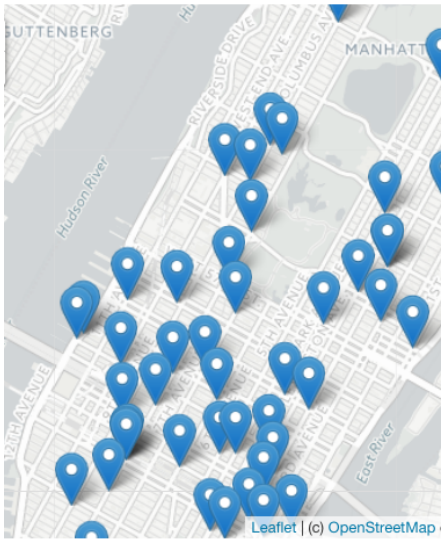

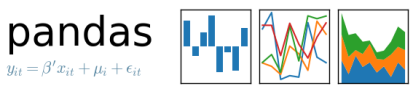

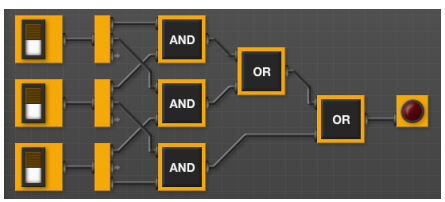

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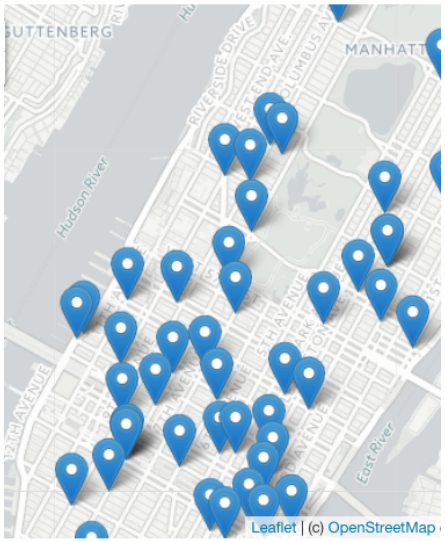

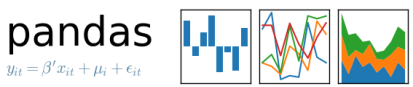

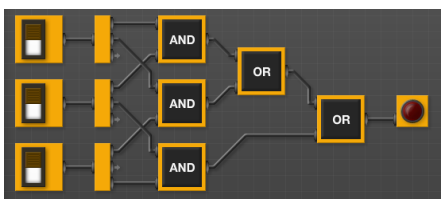

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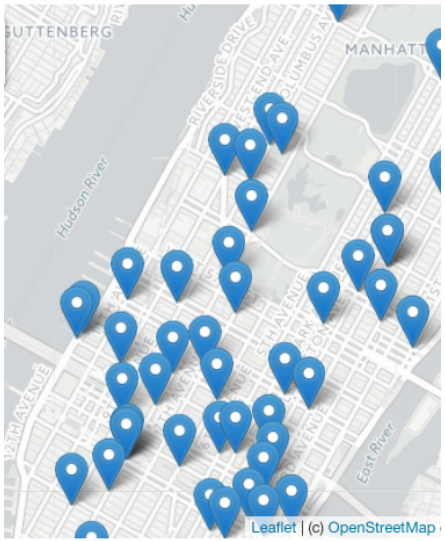

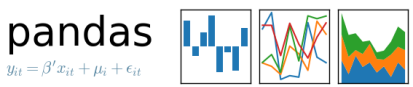

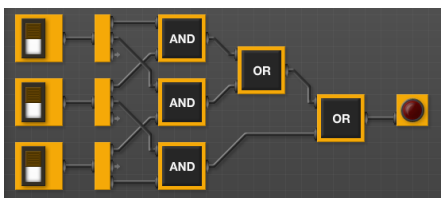

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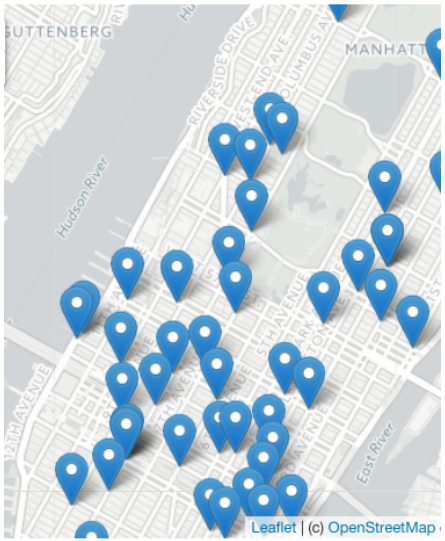

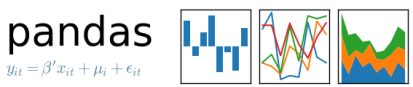

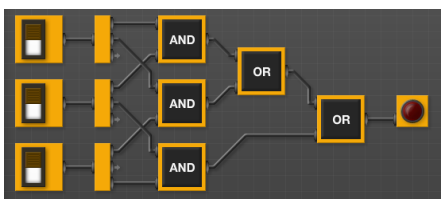

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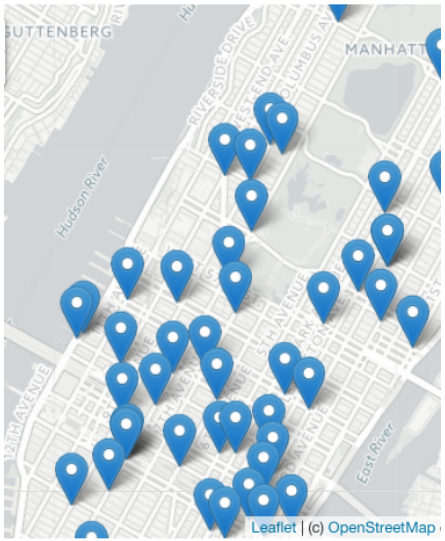
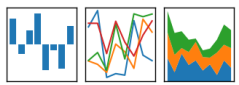
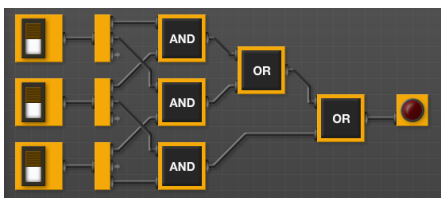
Syllabus: Topics



pandas

$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$





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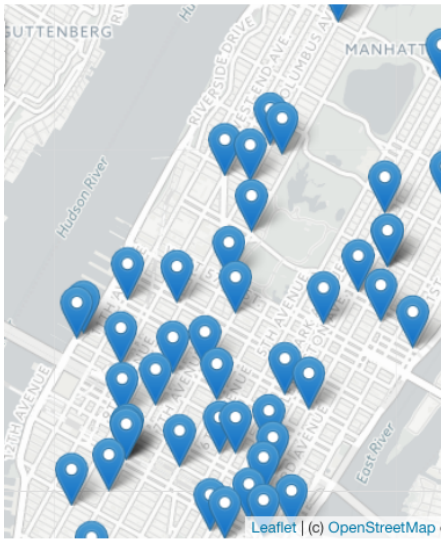
Syllabus: Topics



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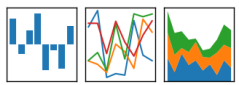

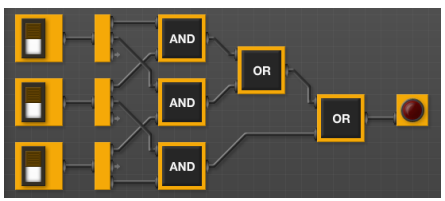

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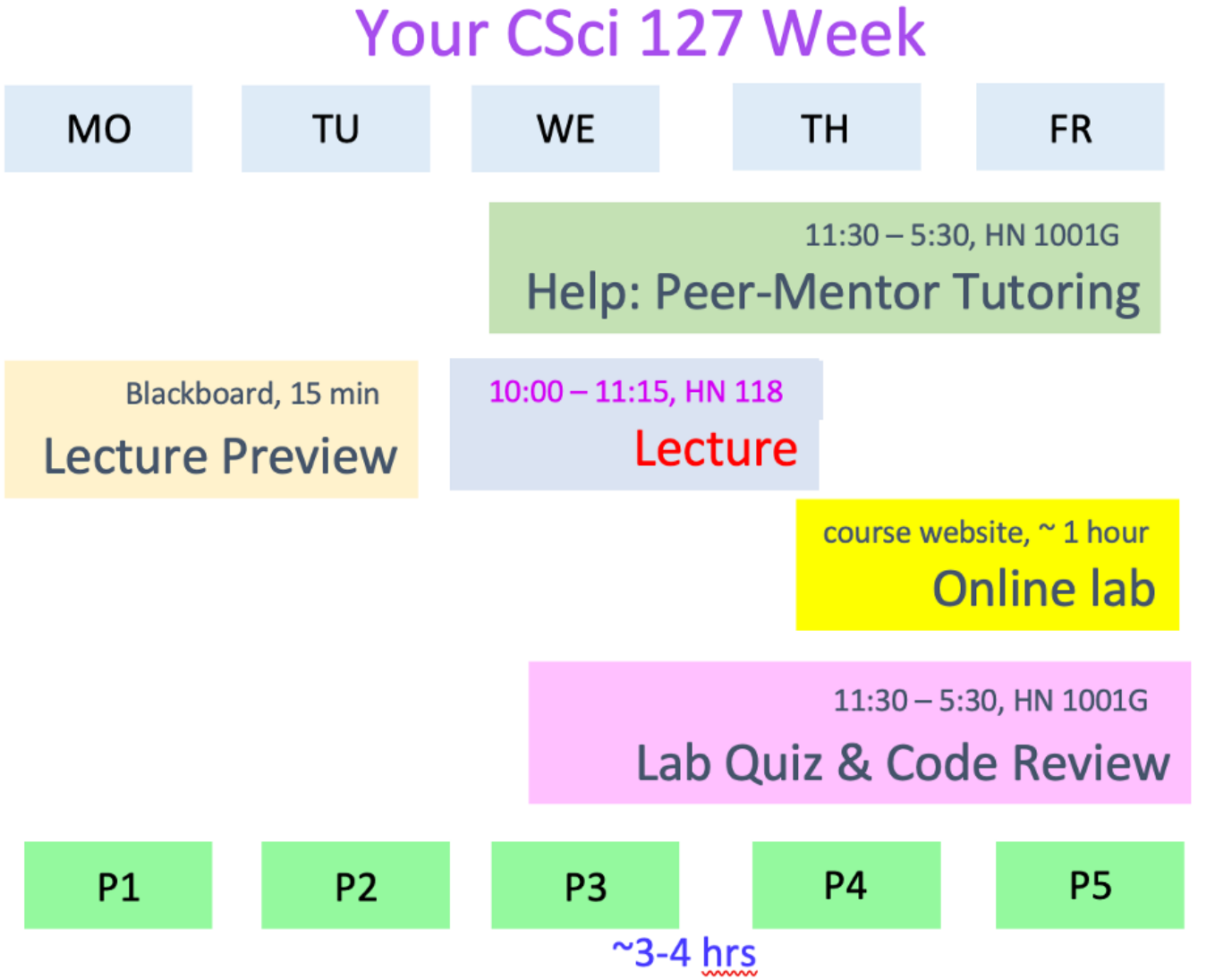
Course Structure: Overview



You should work on programming assignments ahead of due dates. Working on assignments on the days when they are due will increase the chance to miss deadline.

Course Structure: Lecture Preview

Category	**Lecture Preview**
Where	blackboard website, left pane
When	available on the Monday before lecture day, due at 10:15 AM on lecture day (**exception:** the first lecture preview is due at 10:15 AM on 2/1/23.)
Number of Tries	multiple tries before deadline
Expected time	15 minutes
Missing Assignments	No make up, will be replaced by the final grade.
Weight	5% of total grade
Note	also called online quiz

Course Structure: Lecture Slip

Category	**Lecture Slip**
Where	lecture room
When	distribute in each lecture, submitted to TAs before the end of lecture
Number of Tries	once in lecture
Missing Assignments	No make up, will be replaced by the final grade.
Weight	5% of total grade
Note	Need to write some meaningful things besides name and empl id. Grade for participation, not for correctness. But you need to try.

Course Structure: Online Lab

Category	**Online Lab**
Where	The labs are put online, for example, Lab 1 is in https://huntercsci127.github.io/s23/lab1.html. There are 13 labs, change 1 to the corresponding number to get that lab.
Expected Time	1 - 1.5 hours
Note	No submission is needed, you read a lab and work on its tasks before working on programming assignments and quizzes. This course is hybrid, besides in-person lecture and lab, you need to learn online labs.

Course Structure: Paper Quiz in In-Person Lab

Category	**Paper Quiz in In-Person Lab**
Where	North Building 1001 G
When	A total of 13 paper quizzes. Make appointments through navigate before due dates. (**exception:** Can walk in the week of 1/30/23 - 2/3/23 before navigate is ready.)
Due Date	Each quiz's due date is shown in deadlines for paper quizzes, code reviews, and programming assignments.
Number of Tries	at most one try before the deadline
Note	Close books, close notes, no electronic devices. Expect to take 15 minutes.
Missing Assignments	No make up, will be replaced by the final grade.
Weight	25% of total grade

Course Structure: Code Review in In-Person Lab

Category	**Code Review in In-Person Lab**
Where	North Building 1001 G
When	A total of 12 code reviews. Make appointments through navigate before due dates. (**exception:** Can walk in the week of 1/30/23 - 2/3/23 before navigate is ready.)
Due Date	Each code review's due date is shown in deadlines for paper quizzes, code reviews, and programming assignments.
Number of Tries	at most one try before the deadline
Expected time	15 minutes
Missing Assignments	No make up, will be replaced by the final grade.
Weight	5% of total grade

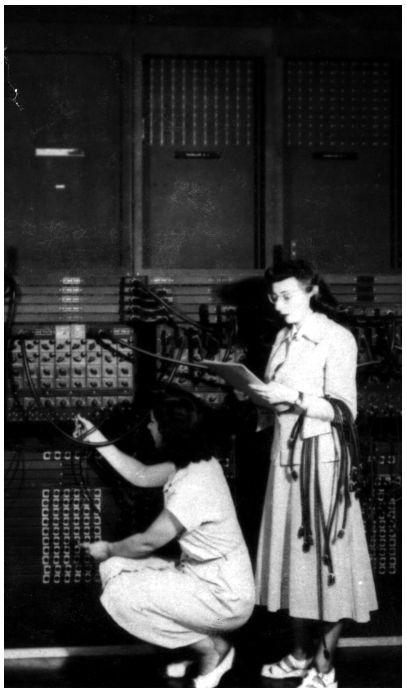
Course Structure: Programming Assignments

Category	**Programming Assignments**
Where	Questions are posted in programming assignments web page and submit to gradescope.
Due Date	Each programming assignment's due date is shown in deadlines for paper quizzes, code reviews, and programming assignments.
Number of Tries	as many times as you like before the deadline
Missing Assignments	No make up, CANNOT be replaced by the final grade. Will drop the lowest 5 programming assignments.
Weight	30% of total grade
Note	Start early. Do not wait until the last day.

Course Structure: Final Exam

Category	**Final Exam**
Where	North Building 118 (lecture room)
Due Date	9 - 11 AM, May 22, 2023, Monday.
Number of Tries	at most once
Importance	**NO midterm. You must pass the final to pass the course.** Furthermore, to take CS 135 or above, you need to pass the final and get a total grade of C or above.
Weight	30% of total grade
Note	If you need extra time, take the exam in accessibility office. Prepare enough time to come to the lecture room, public transportation might not be reliable.

1&2 - Lecture

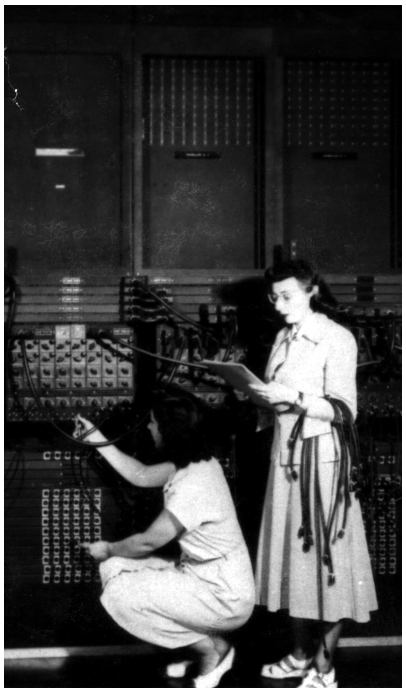


First "computers"

ENIAC, 1945.

- Tuesdays, 10:00 -11:15am, In person: 118 HN, Assembly Hall

1&2 - Lecture



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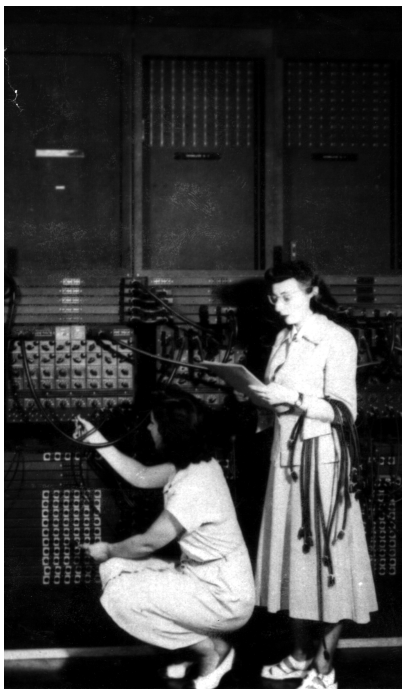

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- Lecture Preview: 15 minutes Quiz on Blackboard **prior** to each lecture (opens on Mondays).

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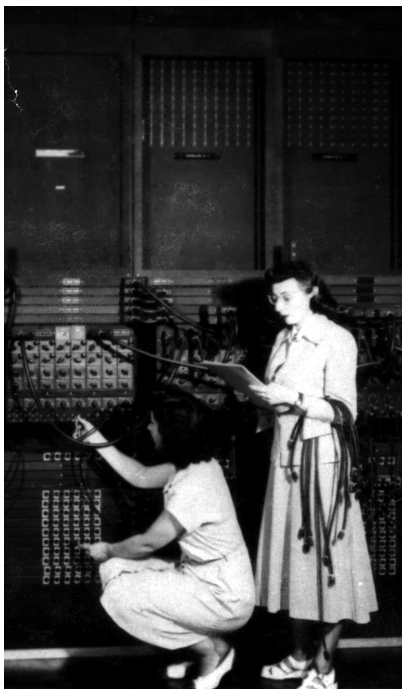

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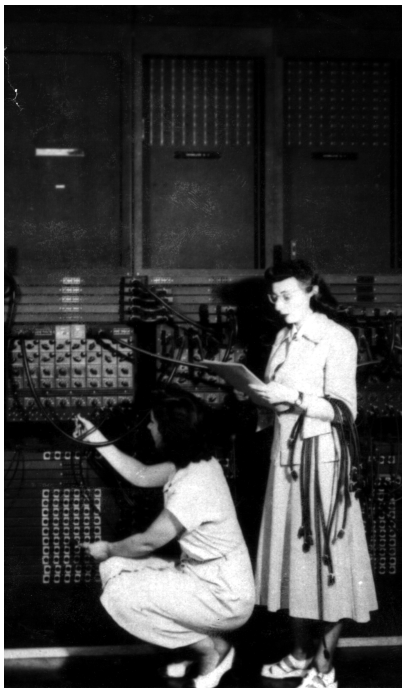

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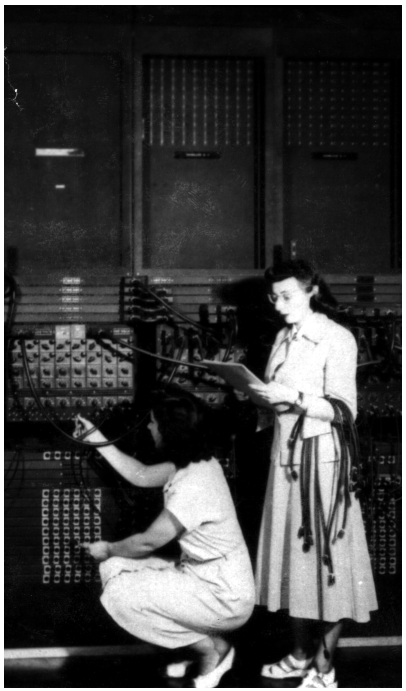

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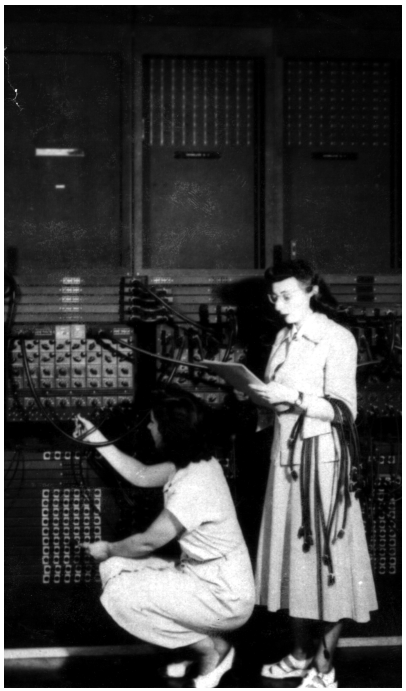

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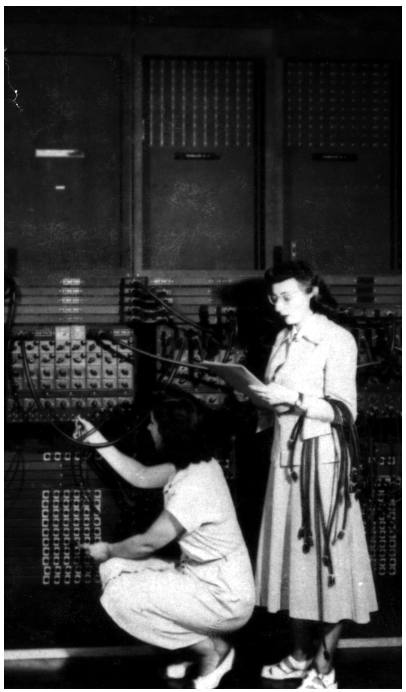

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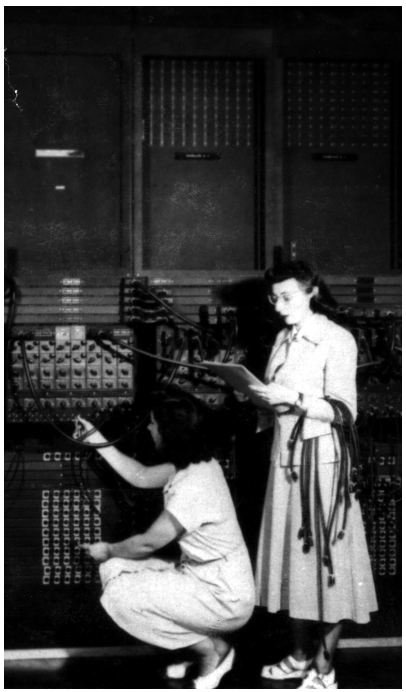

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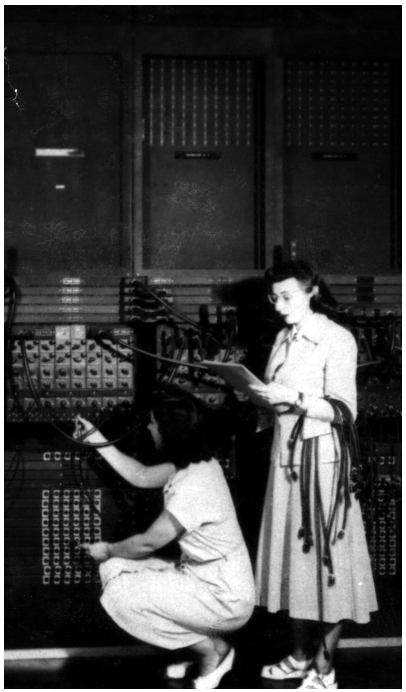

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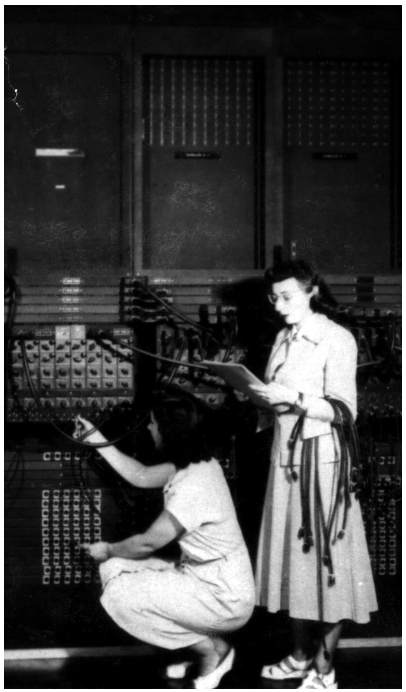

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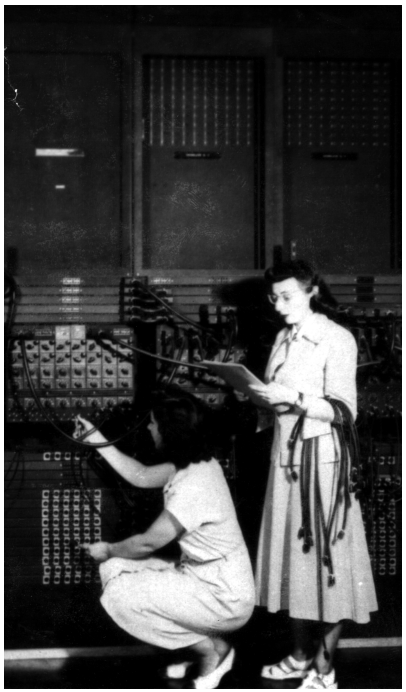

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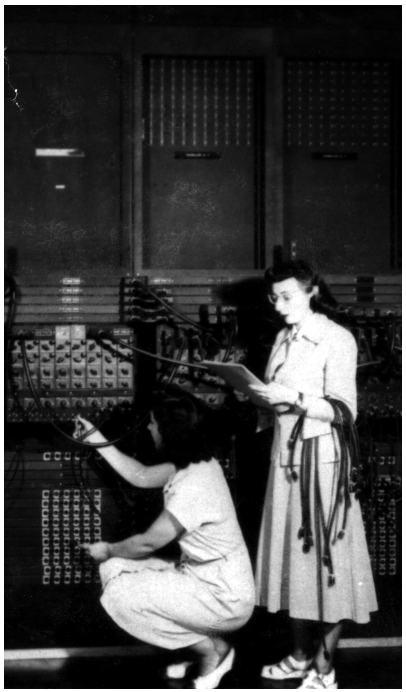

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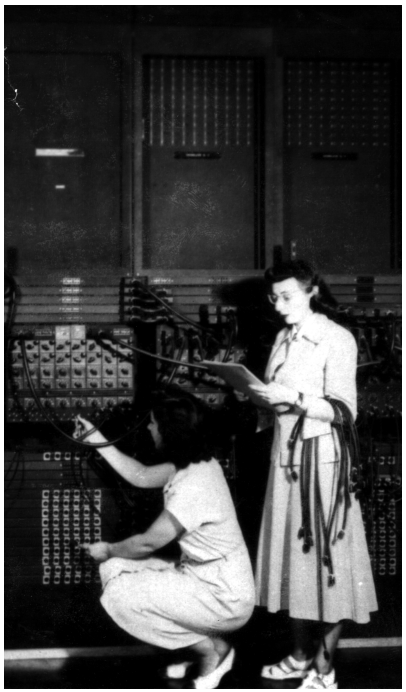

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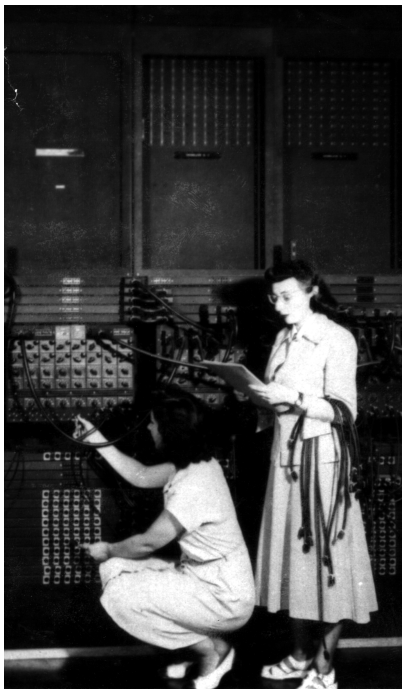

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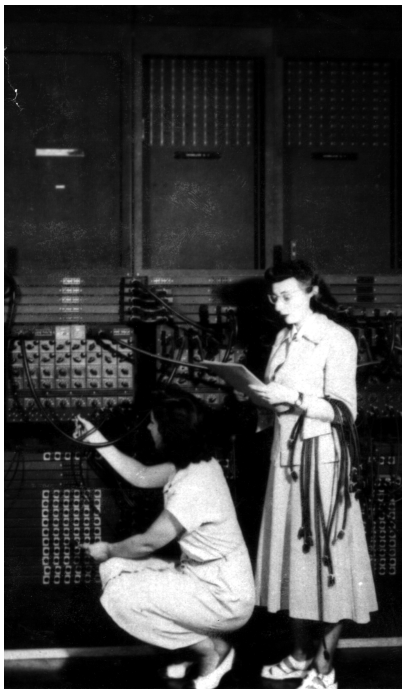

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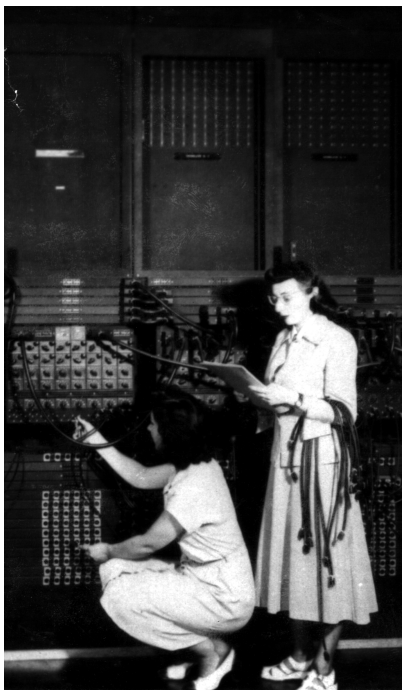

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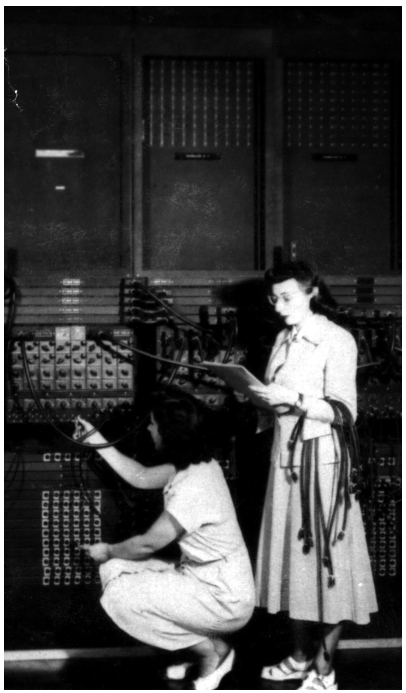

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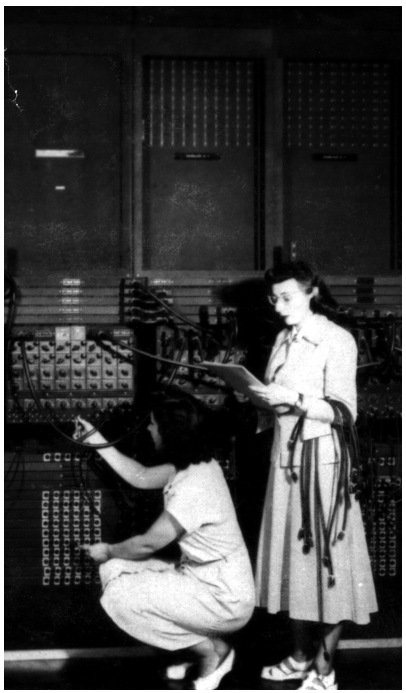

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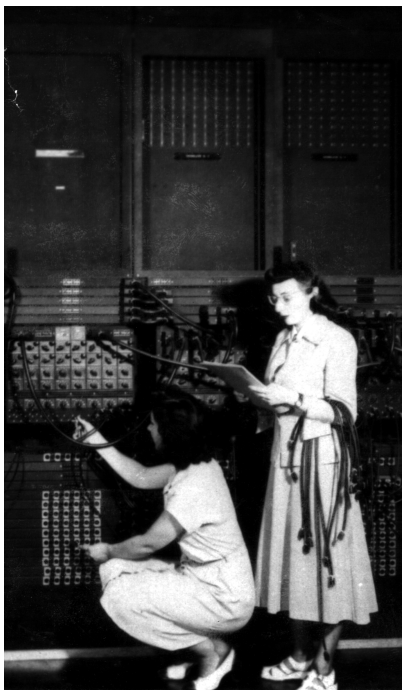

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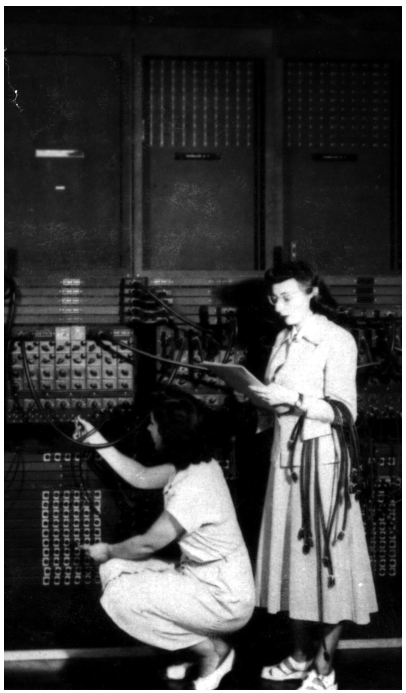

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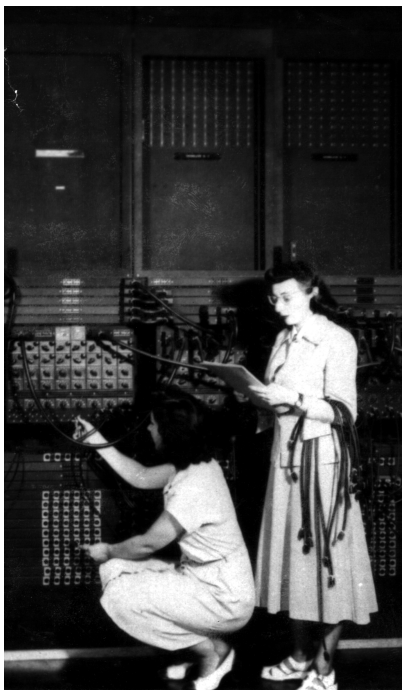

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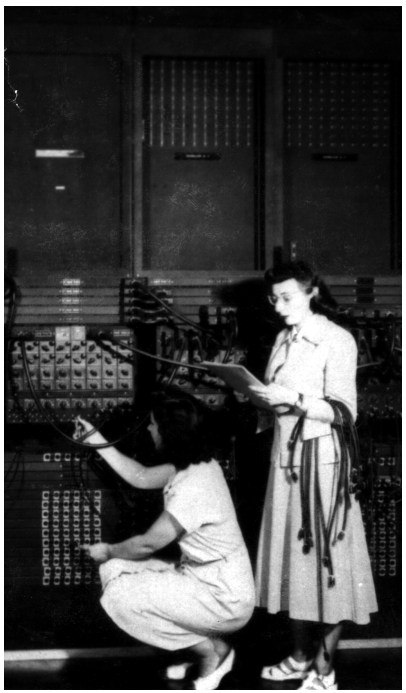

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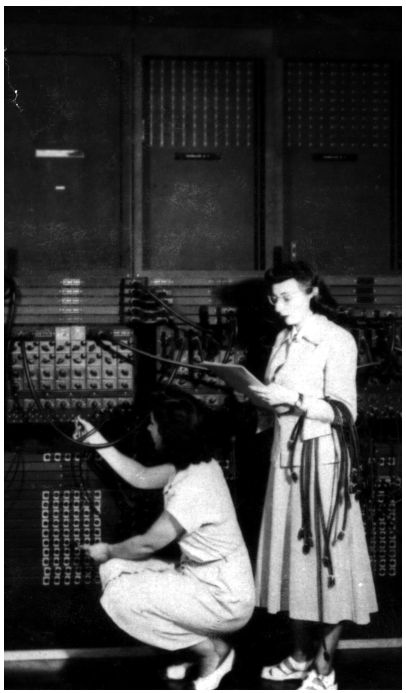

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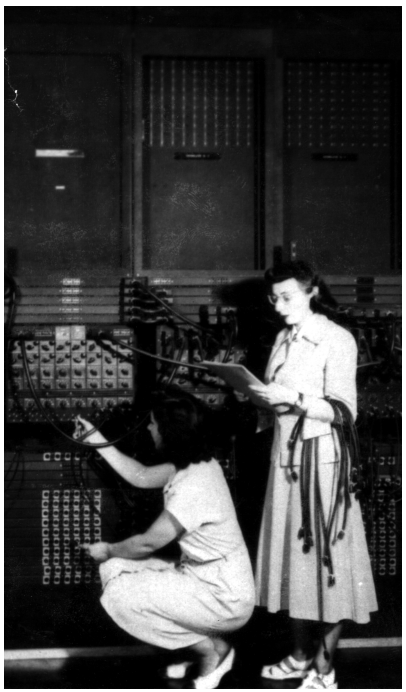

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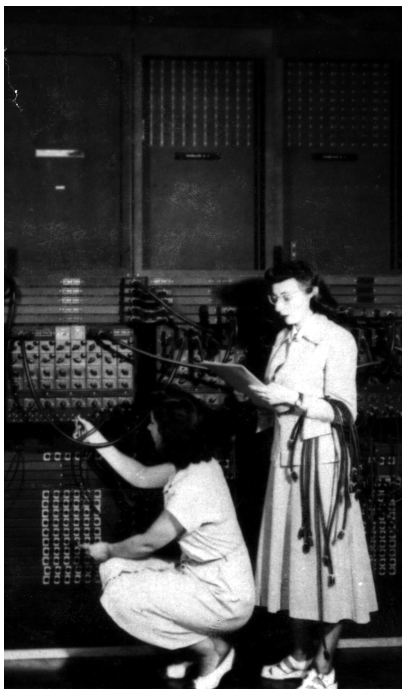

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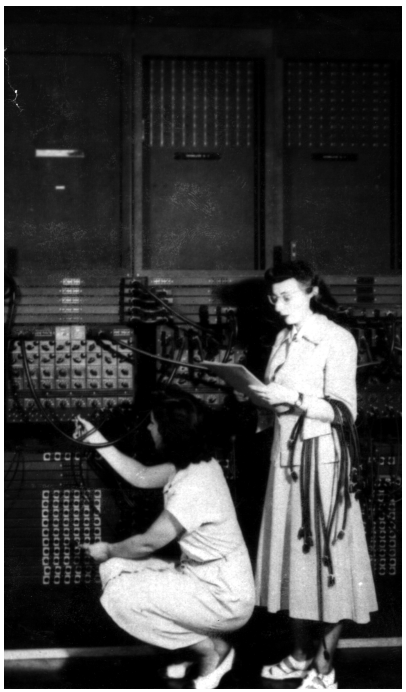

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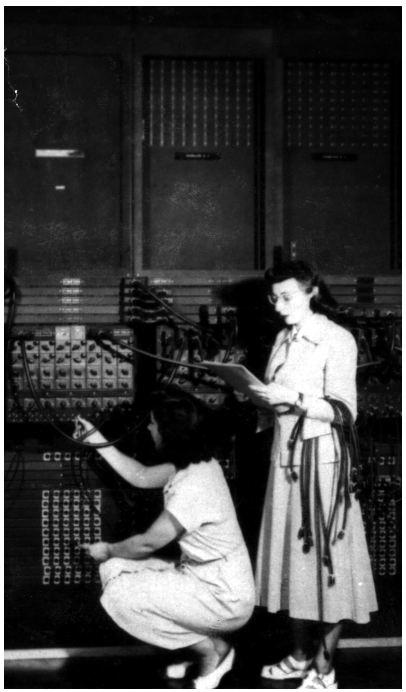

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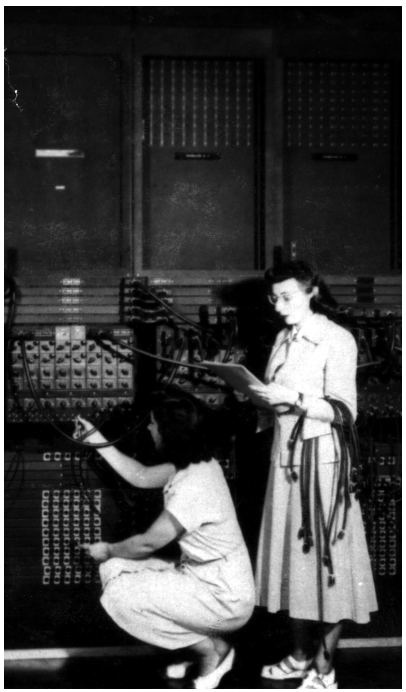

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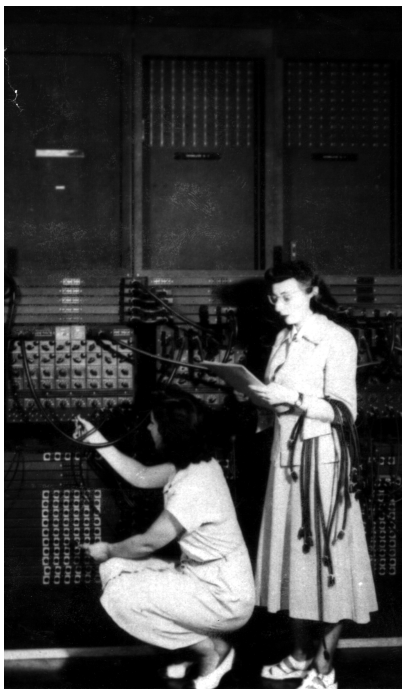

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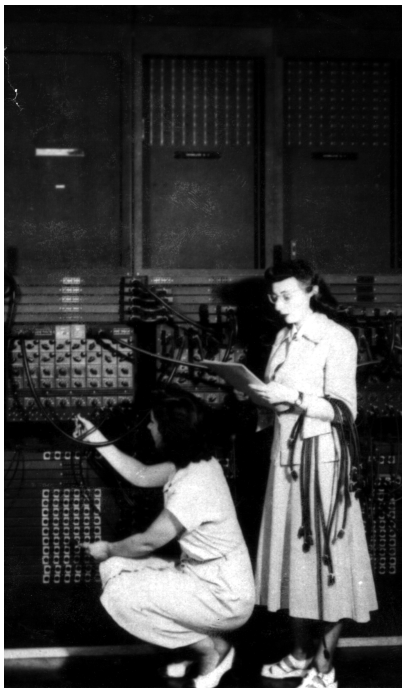

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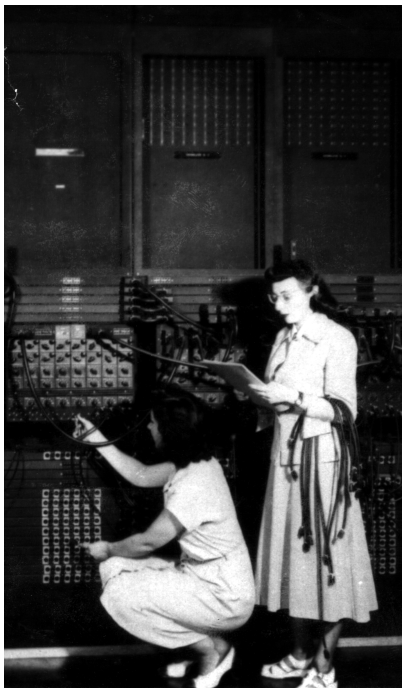

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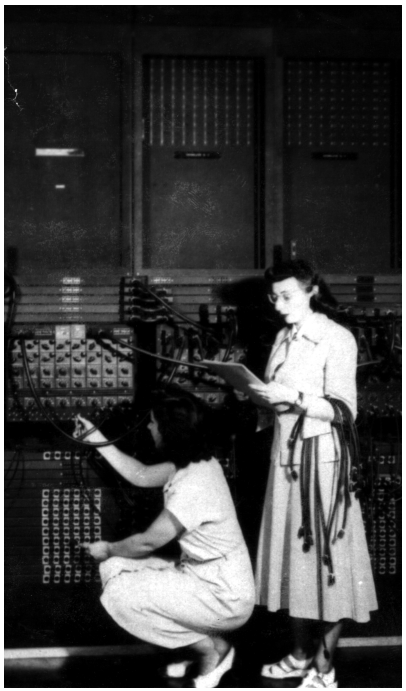

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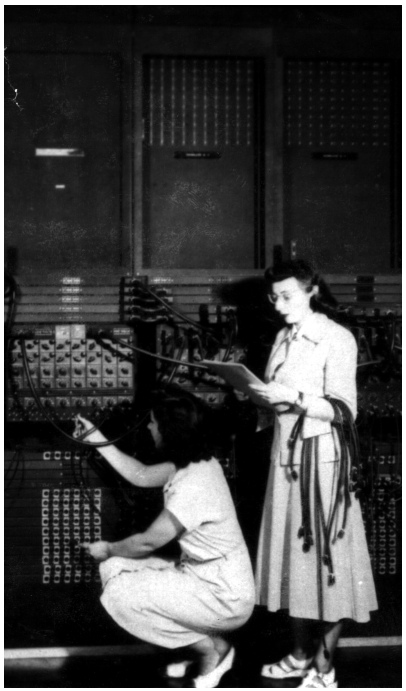

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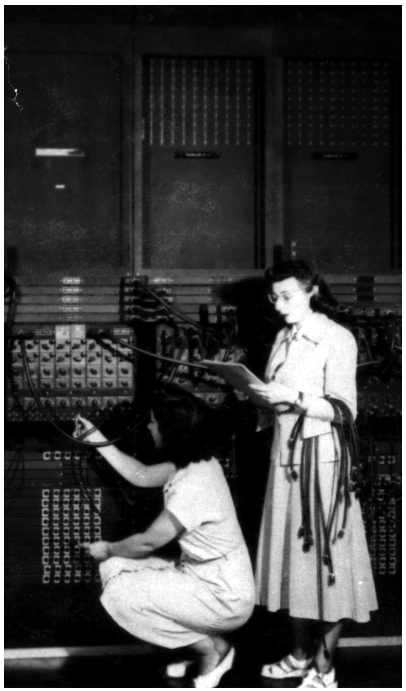

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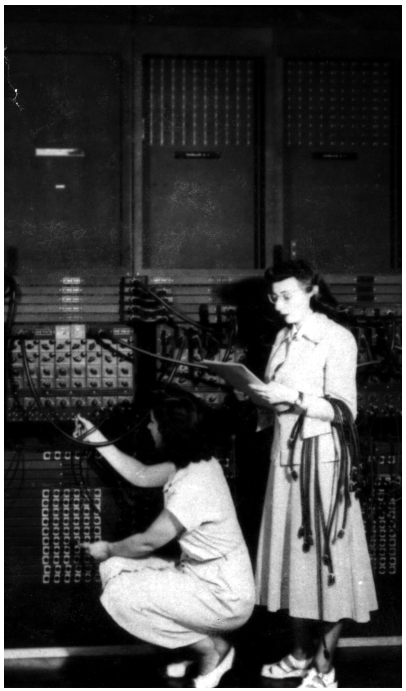

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  - By appointment: email ty680@hunter.cuny.edu

Benefits of Tutoring and Code Review

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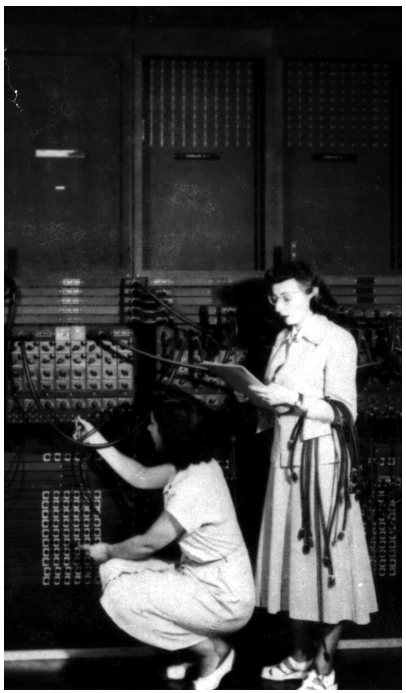

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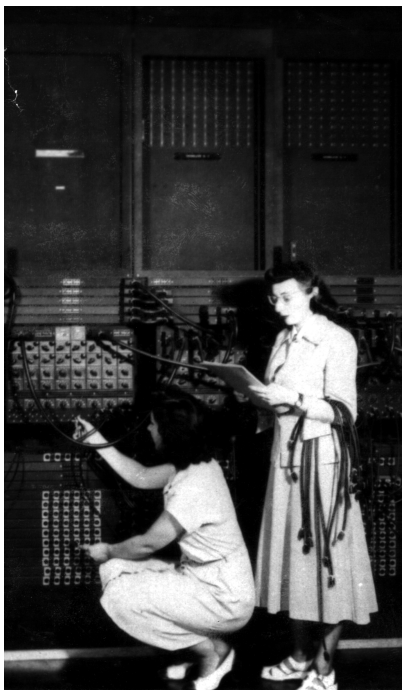

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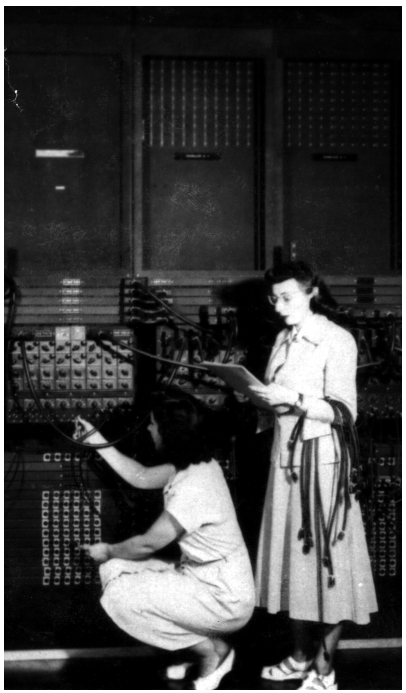

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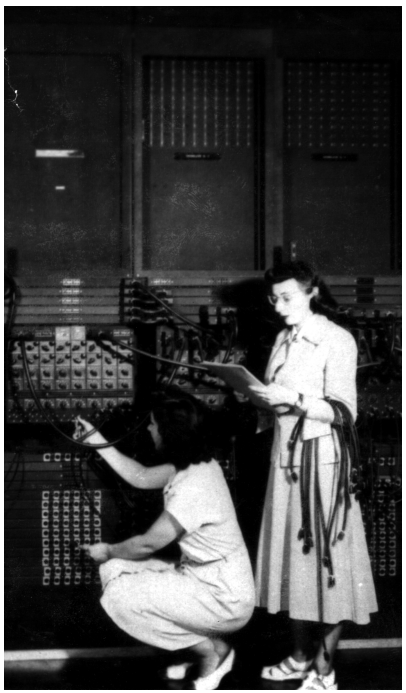

First "computers"

ENIAC, 1945.

- *The person who does the work gets the benefit! Learning is personal!!!*
- **Don't waste your time and money!**
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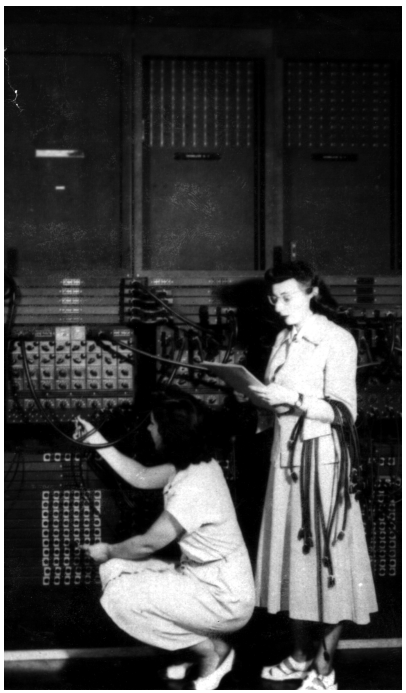

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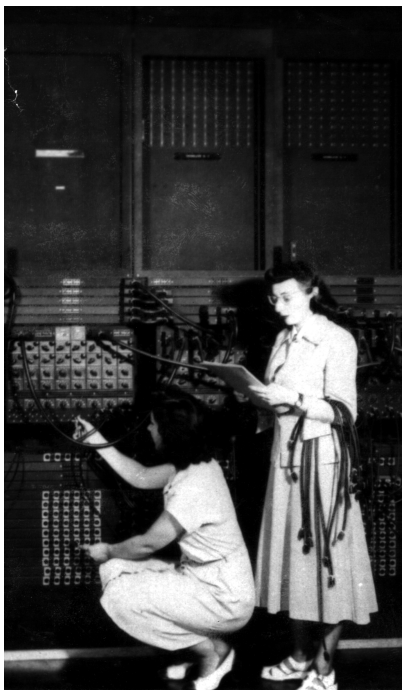

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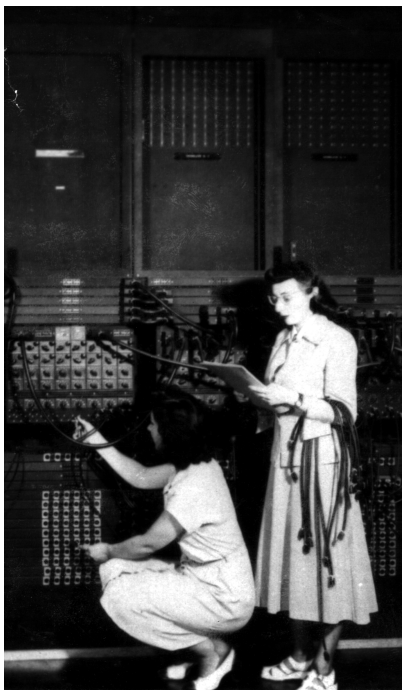

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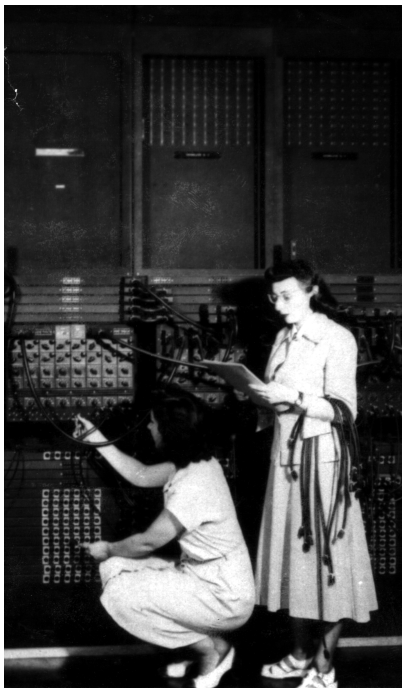
- **All instances of academic dishonesty will be reported to the office of Student Affairs**

Communication



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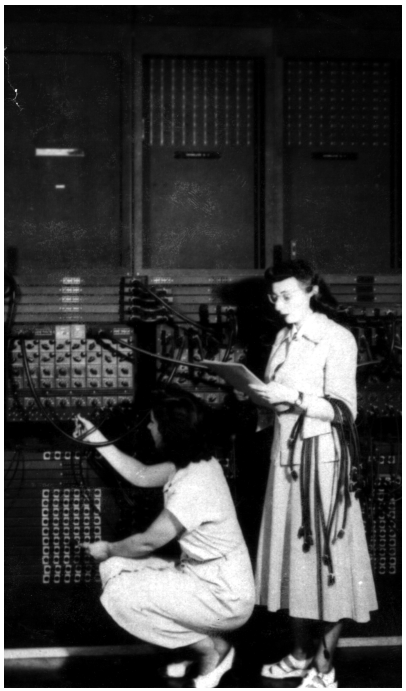

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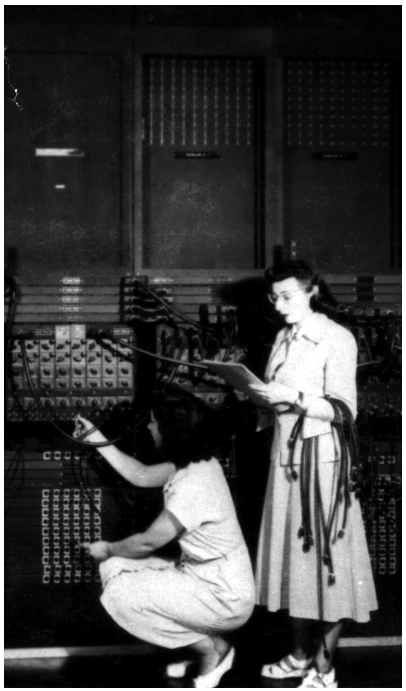

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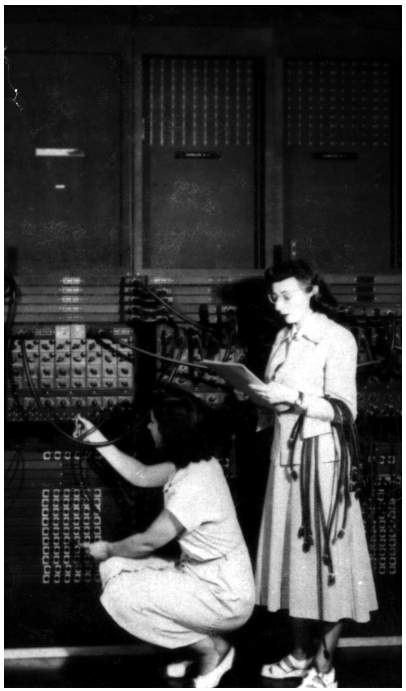

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Today's Topics

- 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)
- Algorithms

Turtles Introduction

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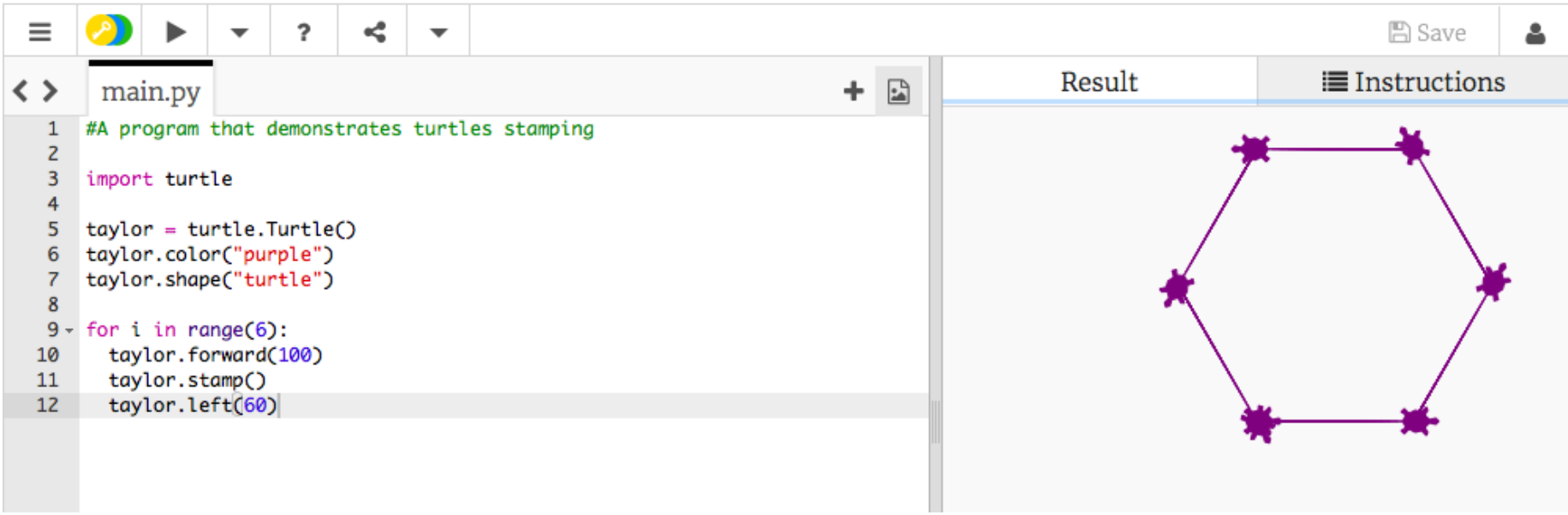
Turtles Introduction



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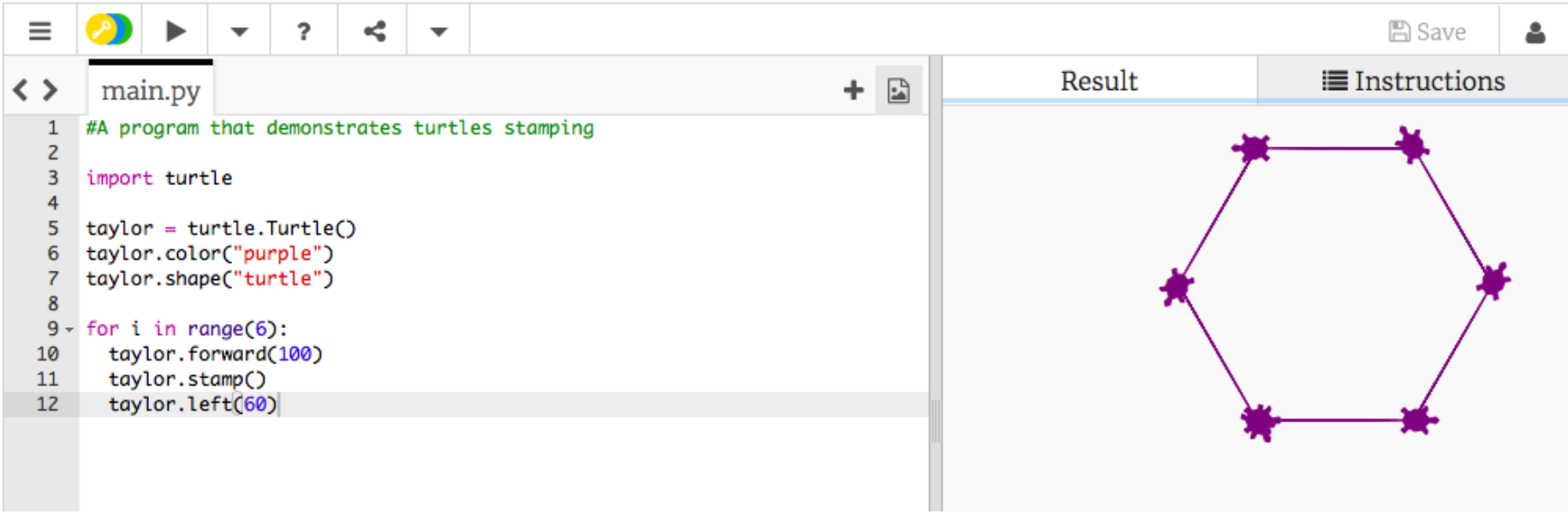

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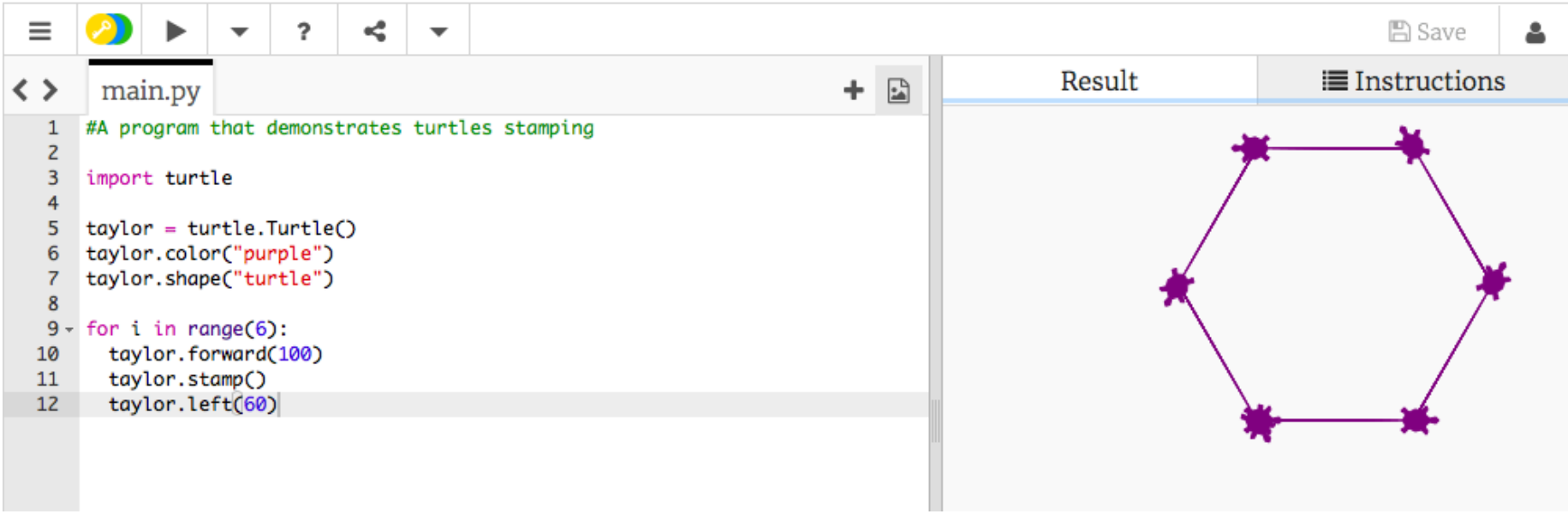

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- Repeats 6 times:

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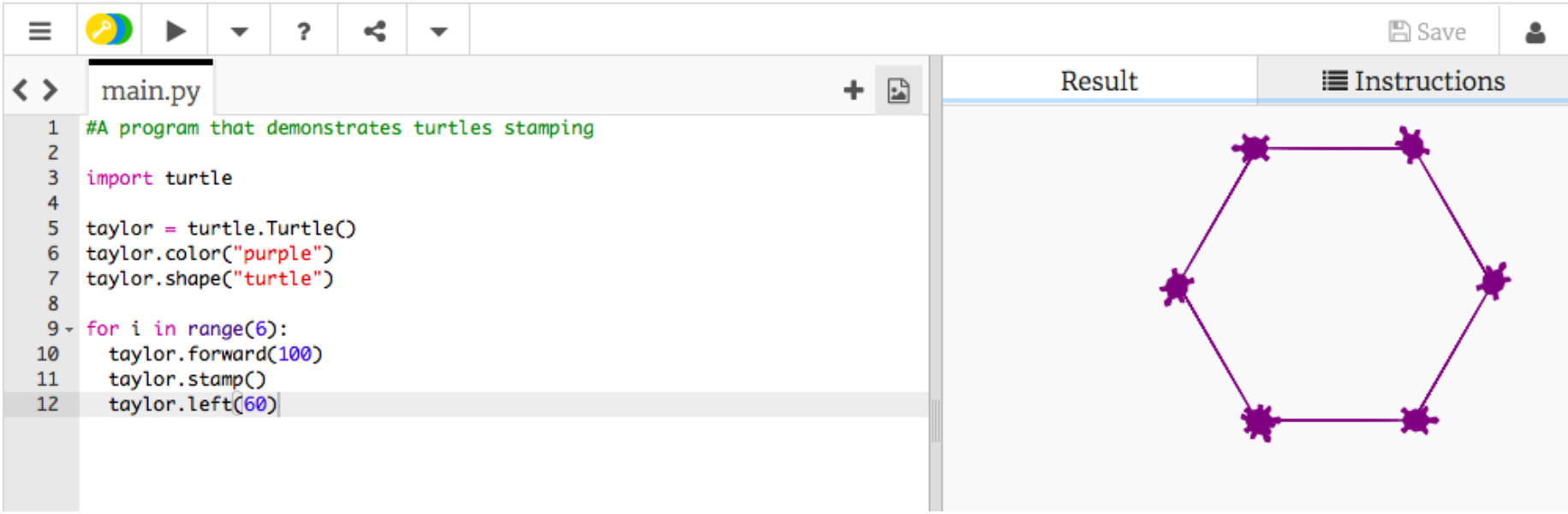

- Creates a turtle **variable**, called `taylor`.
- Changes the color (to purple) and shape (to turtle-shaped).
- Repeats 6 times:
  - Move forward; stamp; and turn left 60 degrees.

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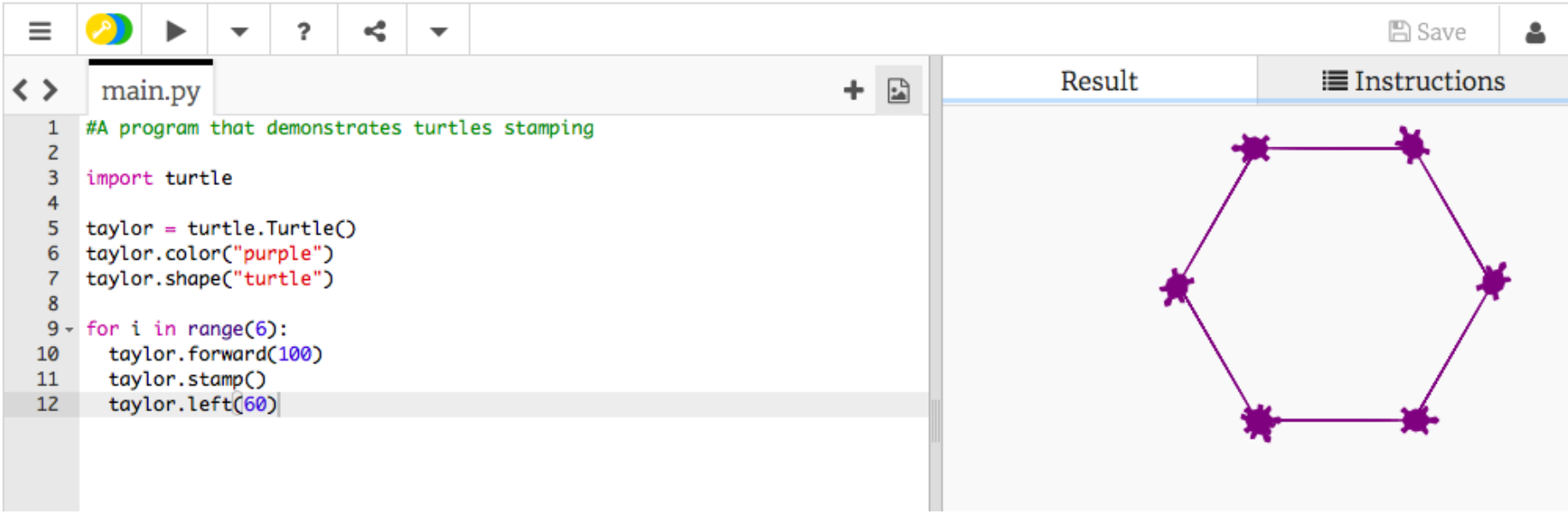

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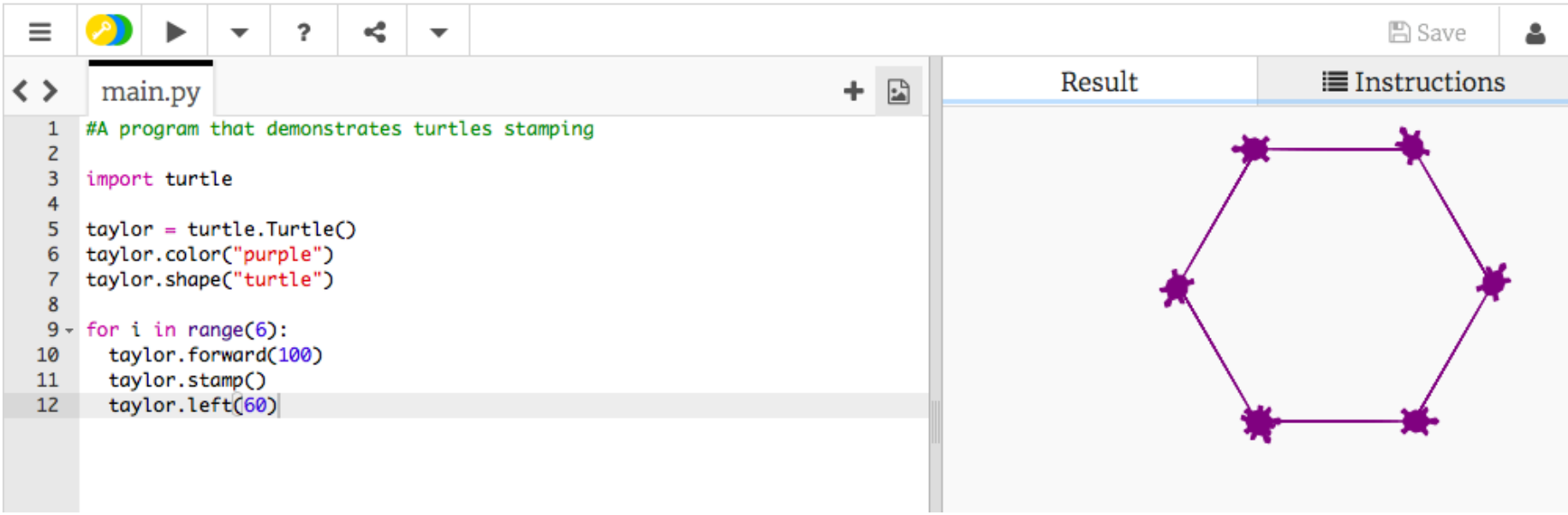

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- Repeats 6 times:
  - Move forward; stamp; and turn left 60 degrees.
- Repeats any instructions **indented** in the "loop block"
- This is a **definite** loop because it repeats a fixed number of times

Group Work

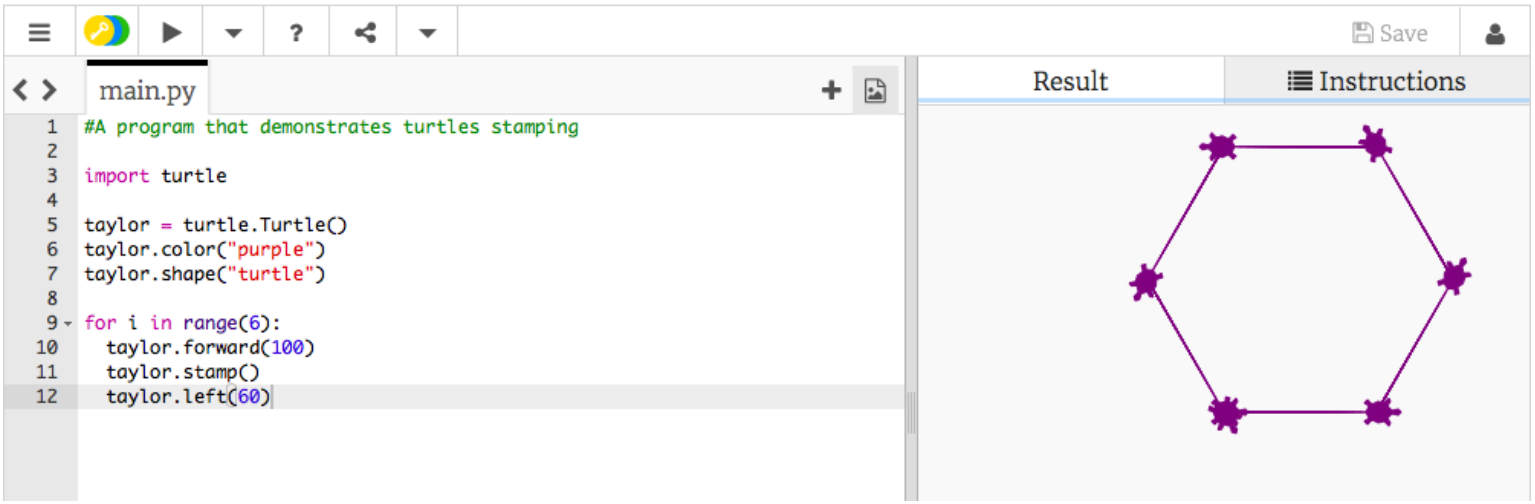
Working in pairs or triples:

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.

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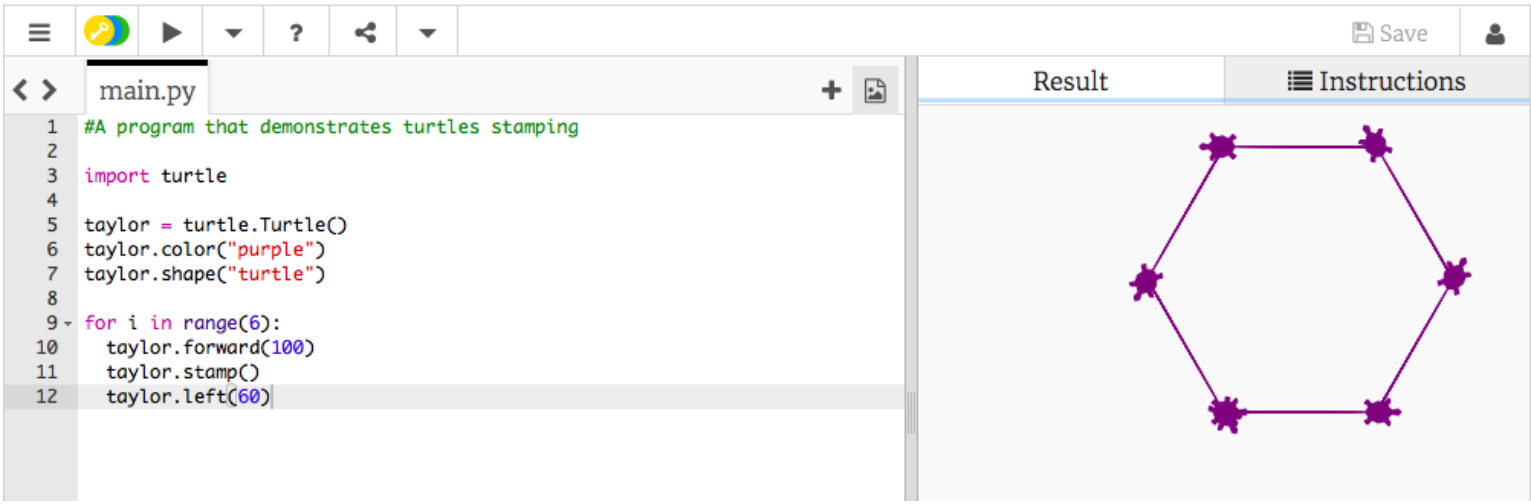

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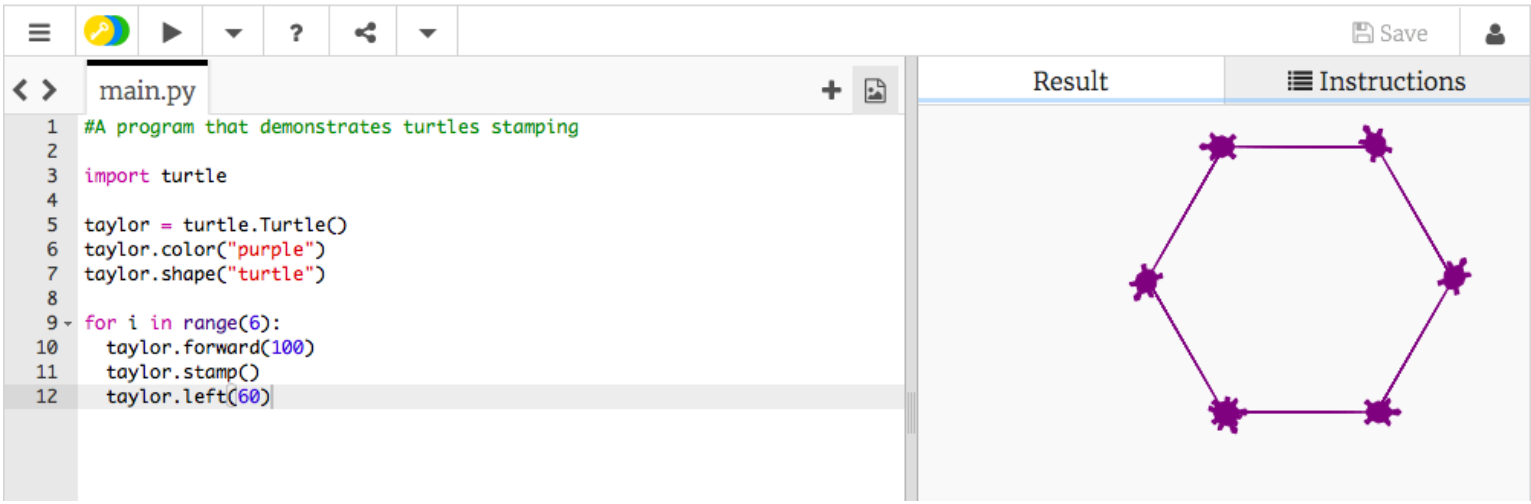
- Has 10 sides (instead of 6), so change the `range(6)` to `range(10)`.

Decagon Program



- 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.
- Completed program:

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

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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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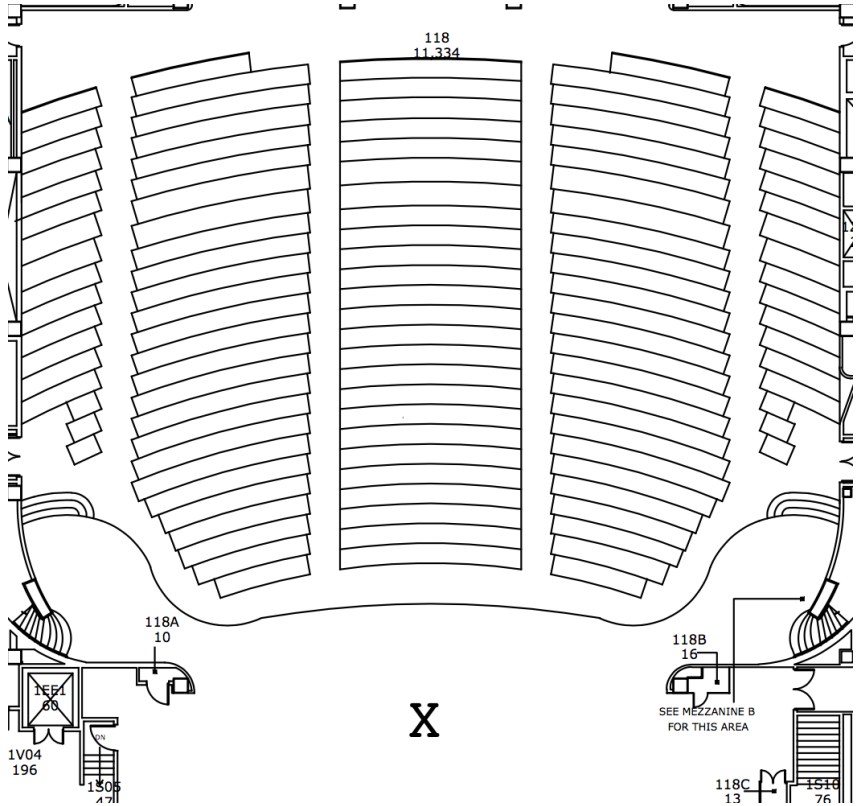

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2. Write an algorithm (step-by-step directions) to get to `X`.

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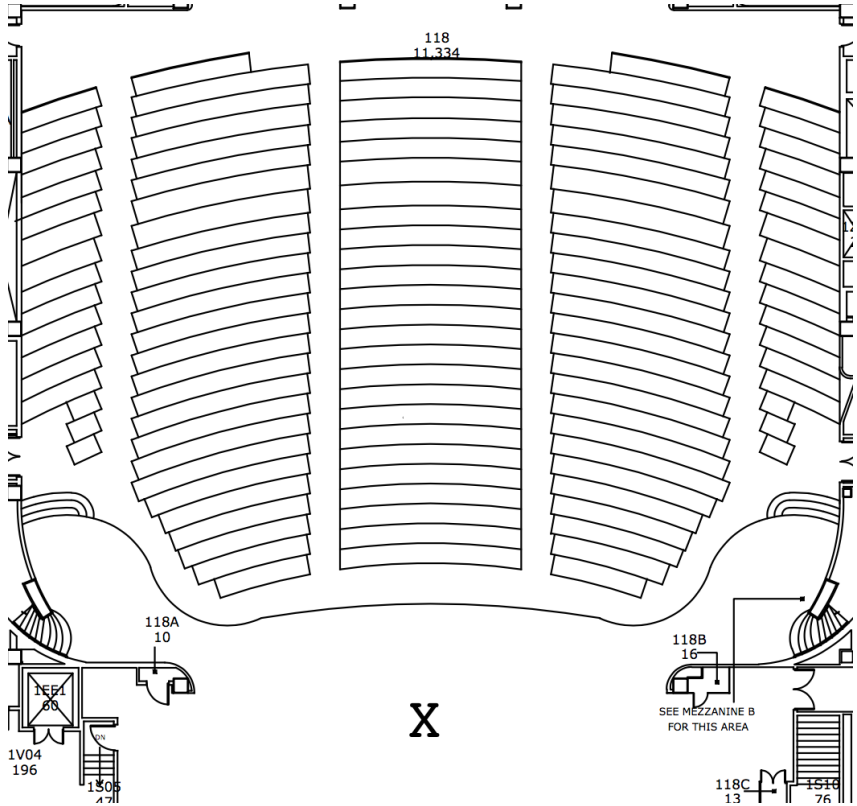

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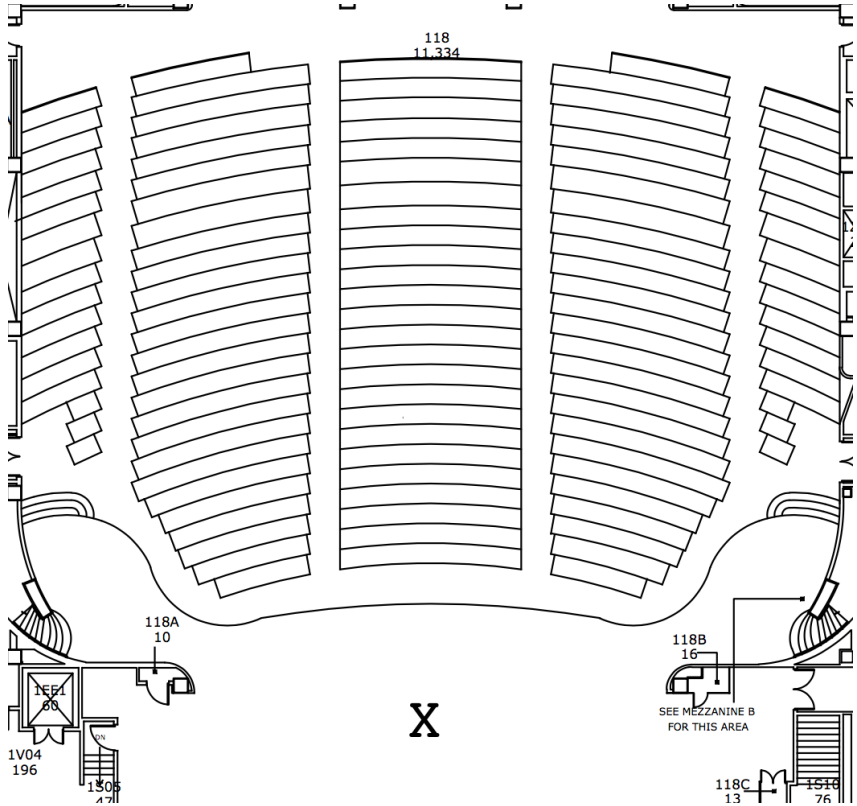

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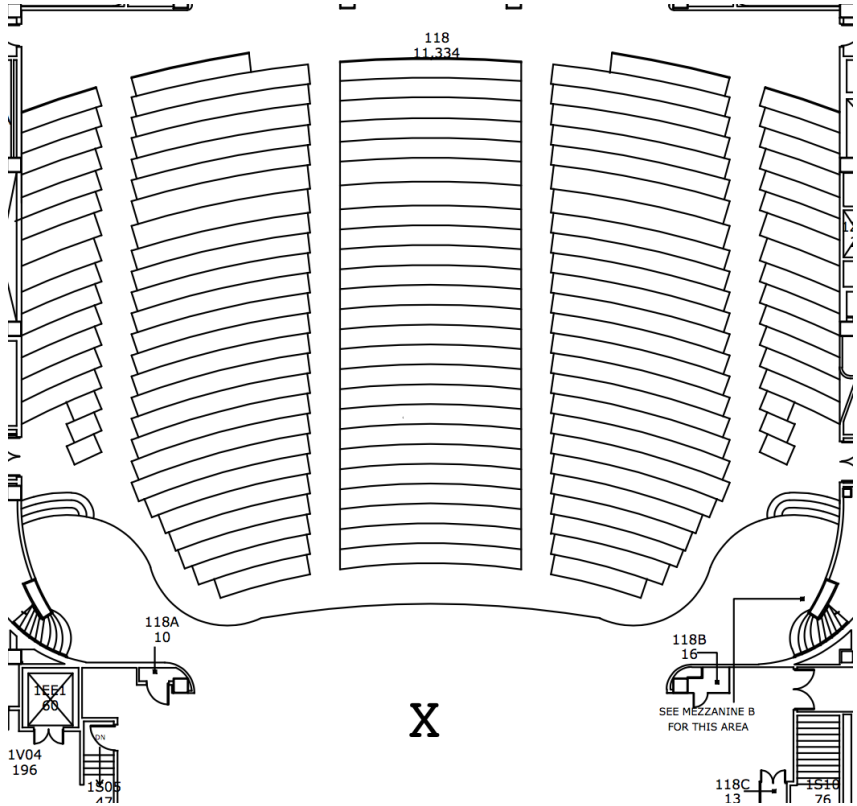

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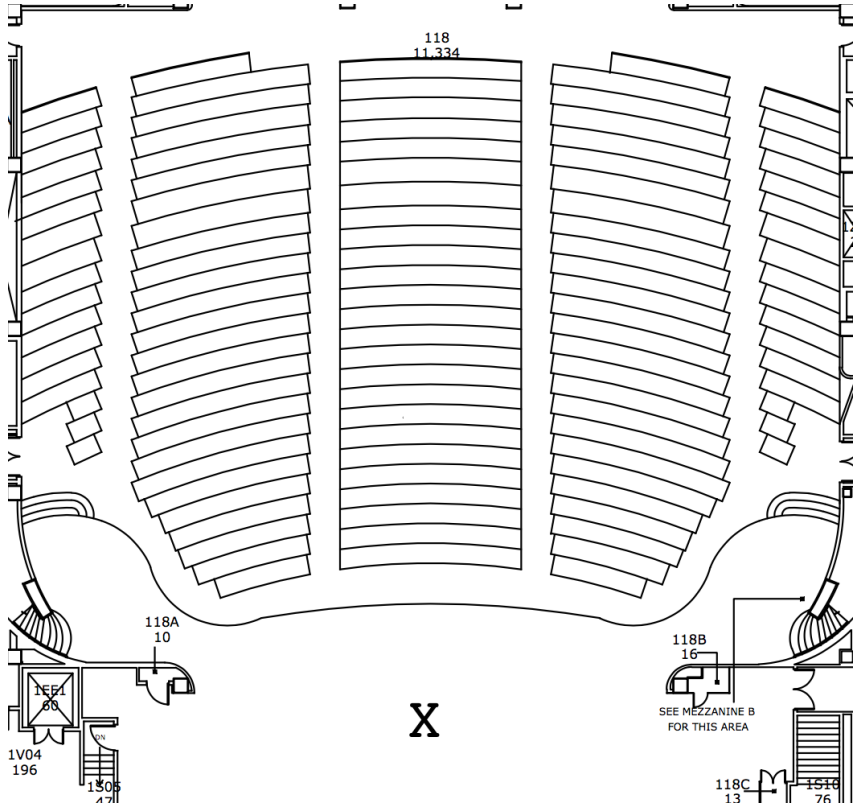

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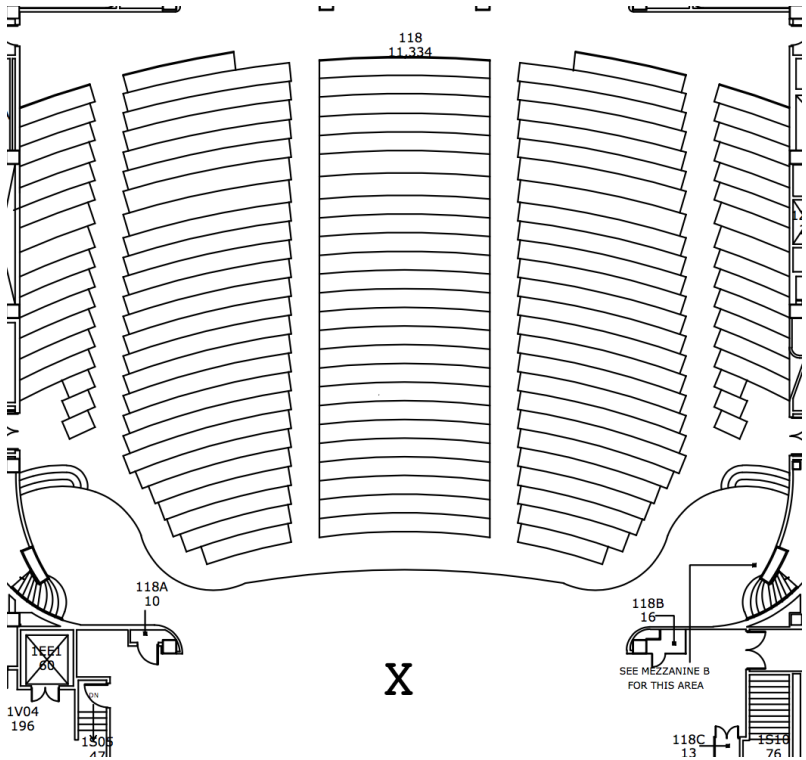

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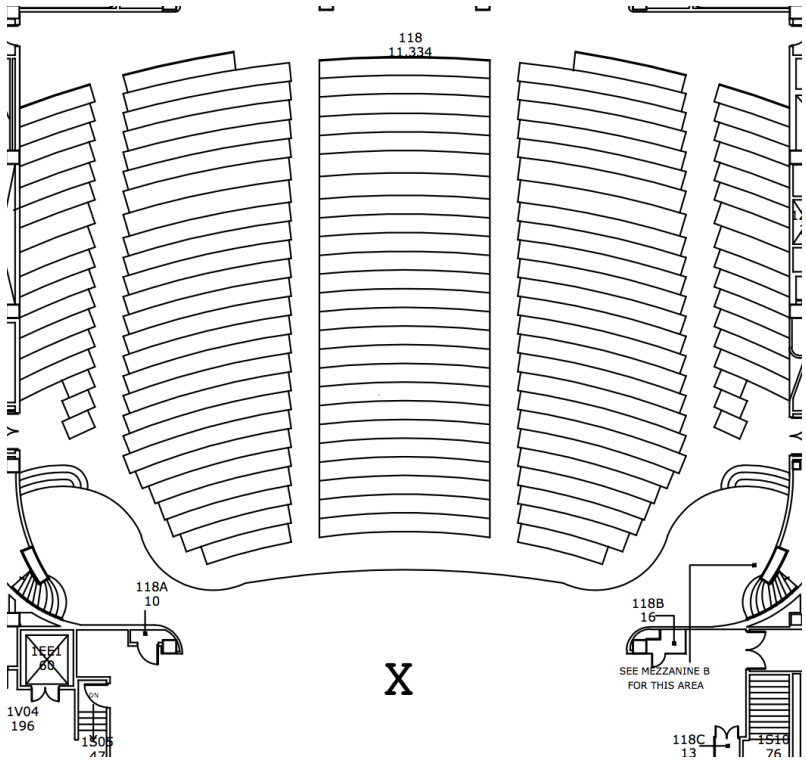

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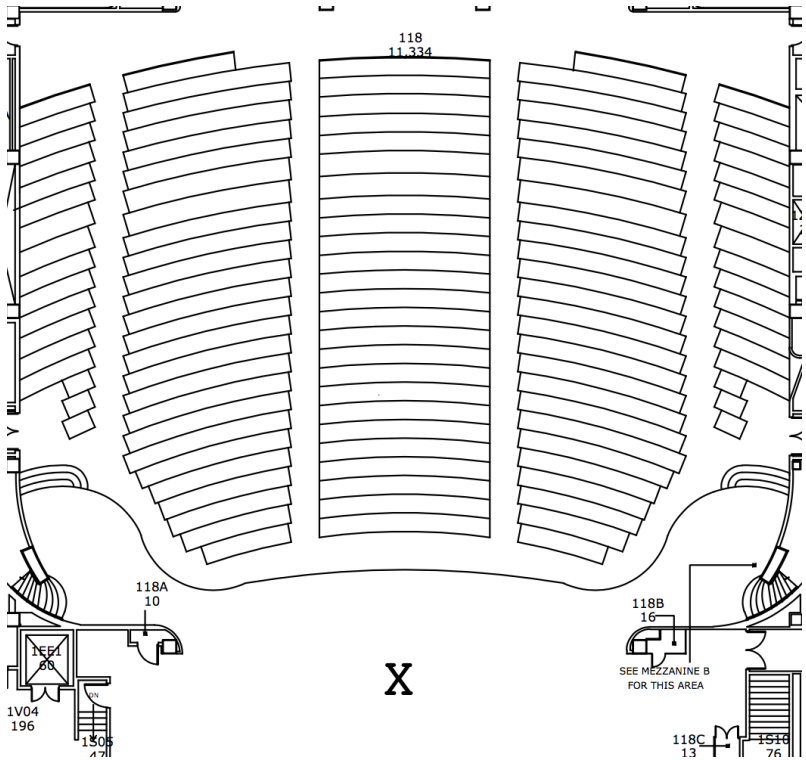

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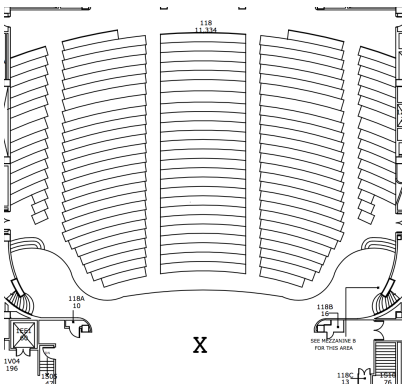
Recap

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



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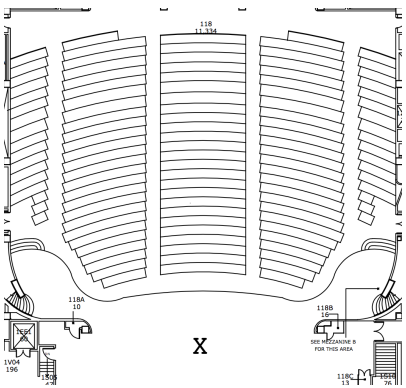

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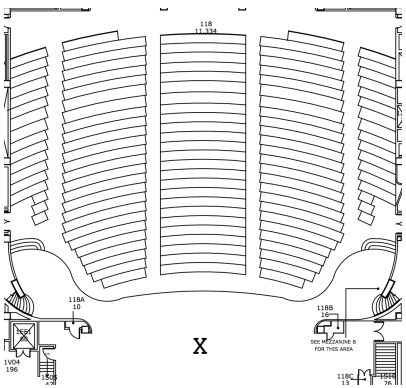

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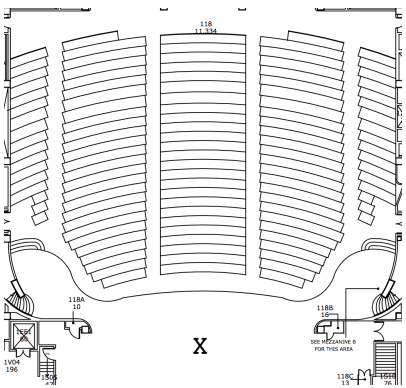

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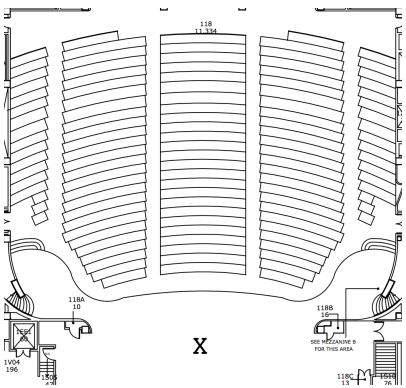

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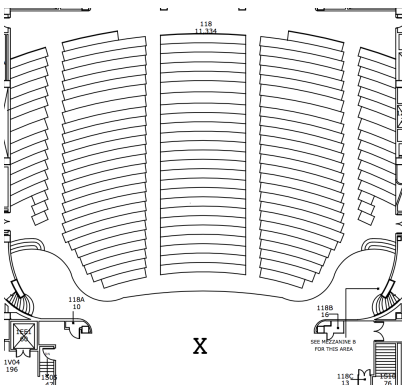

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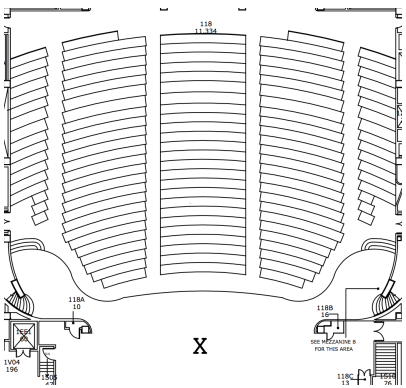

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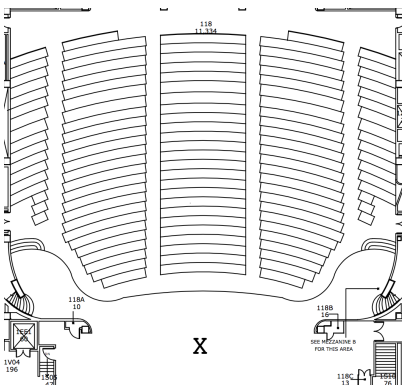
  - `for`-loops with `range()` statements, &
  - variables containing turtles.

Recap



- On lecture slip, write down a topic you wish we had spent more time (and why).
- Writing precise algorithms is difficult.
- In Python, we introduced:
  - strings, or sequences of characters,
  - `print()` statements,
  - `for`-loops with `range()` statements, &
  - variables containing turtles.
- Pass your lecture slips to the aisle for the UTA's to collect.

Weekly Reminders!

Before next lecture, don't forget to:

- Work on this week's Online Lab

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Before next lecture, don't forget to:

- Work on this week's Online Lab
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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 1001G 11:30am-5:30pm
- 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.