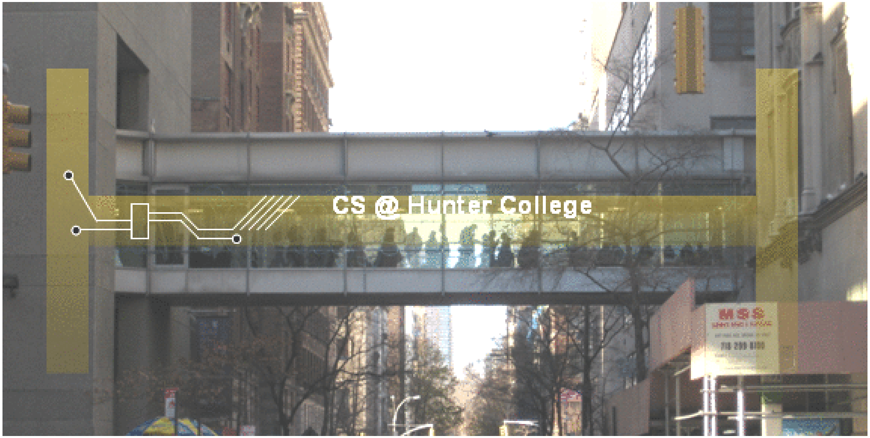
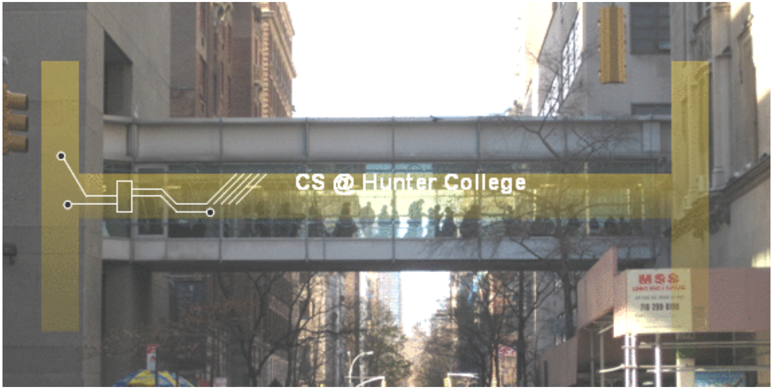
CSci 127: Introduction to Computer Science



hunter.cuny.edu/csci

Welcome



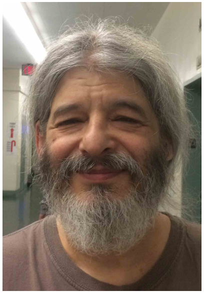
Introductions: Course Designers

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

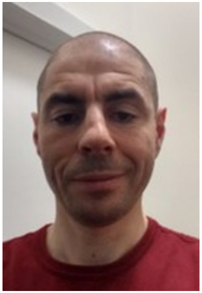
Introductions: Undergraduate Teaching Assistants

Alvin Wu	Anika Sujana	Arsen Tumanian	Arterio Rodrigues	Bode Chiu
Brendan South	Christopher Asma	Diana Luna	Filip Trzcinka	Georgina Woo
Ghazanfar Shahbaz	Hanz De Guzman	Hnin Lwin	Jeffrey Waters	Kazi Mansha
Michelle Thaung	Moududur "Moody" Rahman	Omer Skaljic	Rita Chen	Roy Delgado
Ryan Vaz	Sheikh Fuad	Tyler Robinson	Yoomin Song	Adrian Mysliwiec
Amy Ng	Andy Li	Arshadul Monir	Farhin Bhuiyan	Jessica Flores Olmos
Kevin Perez	Maliha Tasnim	Manuel Reyes	Mashiyat Mahdi	Zeeshan Gondal Ahmed

Introductions: Advisors

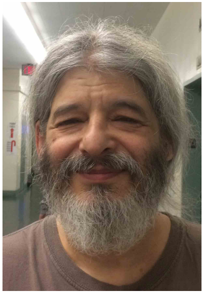
Justing Tojeira
CS Advisor

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/s23.html

Where to find Course Content

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

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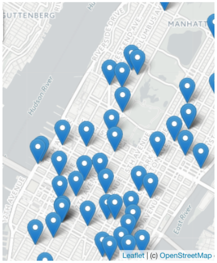
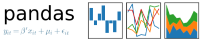
- Course Website: https://huntercsci127.github.io/s23.html
- Blackboard
- Gradescope (program submission)

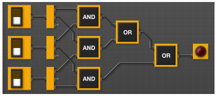
Syllabus

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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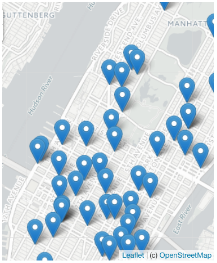

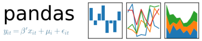

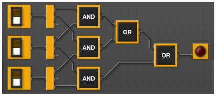

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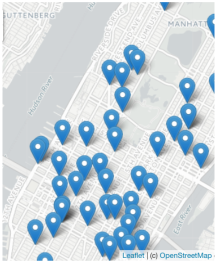

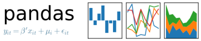

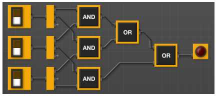

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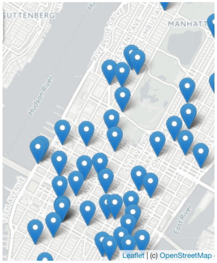

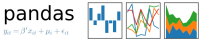

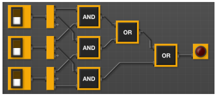

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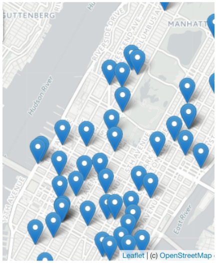

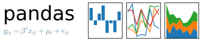

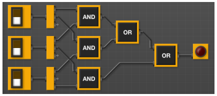

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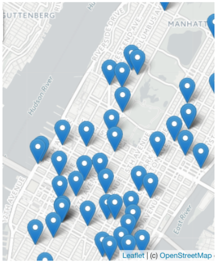

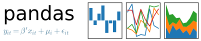

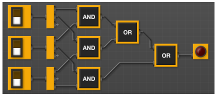

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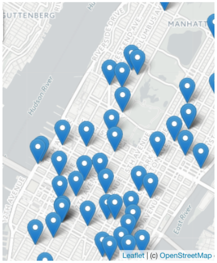

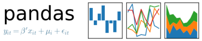

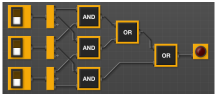

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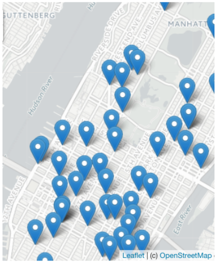

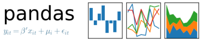

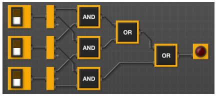

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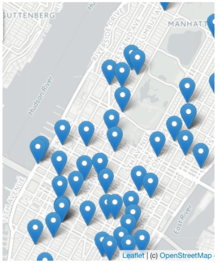
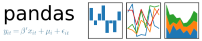
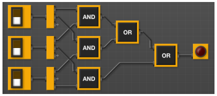
    - for the markup language for github,

Syllabus: Topics







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    - ★ for the simplified machine language, &

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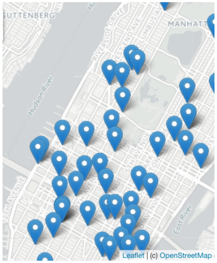

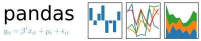

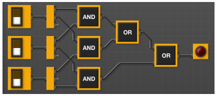

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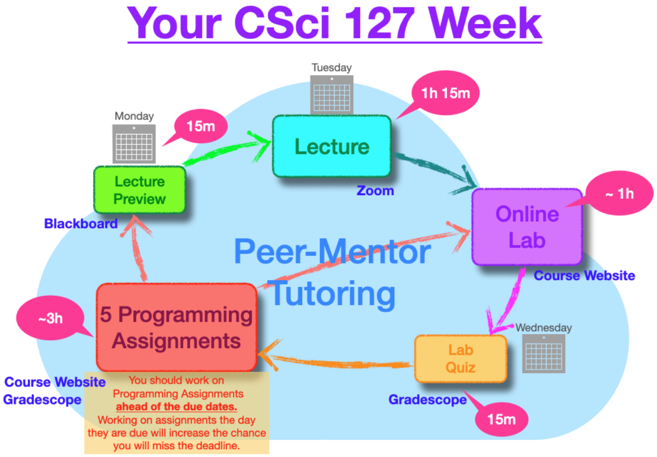
    - for the simplified machine language, &
    - for C++.

Course Structure



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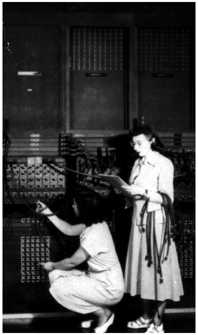
1&2 - Lecture

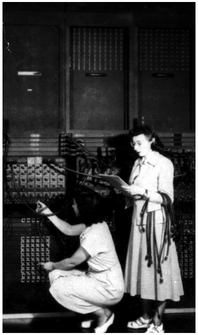


First "computers"

ENIAC, 1945.

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

1&2 - Lecture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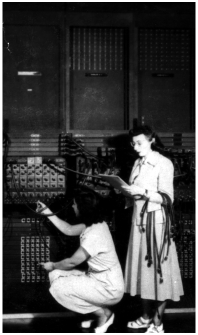

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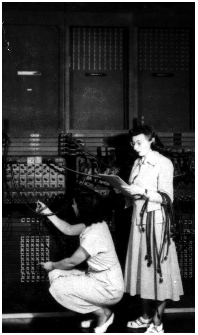

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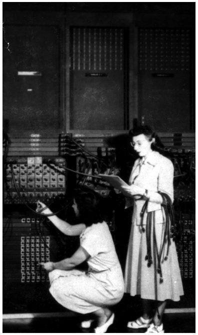

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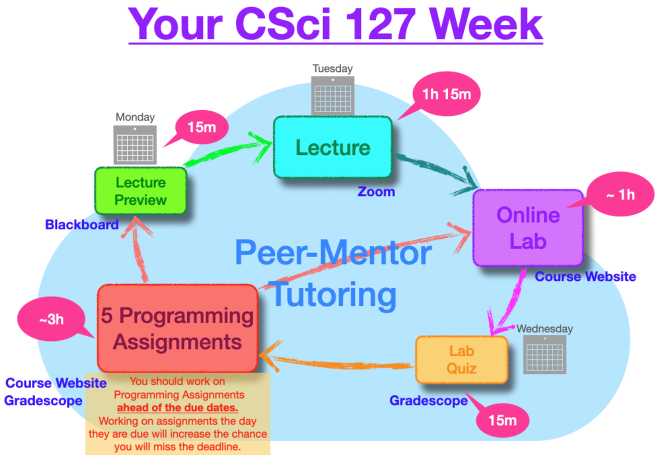
- Lecture Slips: group challenges during lecture.
- Ask questions during group work.

Course Structure


Your CSci 127 Week
Tuesday
1h 15m
Monday
15m
Lecture
Lecture Preview
Zoom
Blackboard
Online Lab
~ 1h
Peer-Mentor Tutoring
Course Website
~3h
5 Programming Assignments
Wednesday
Lab Quiz
Course Website
Gradescope
Gradescope
15m
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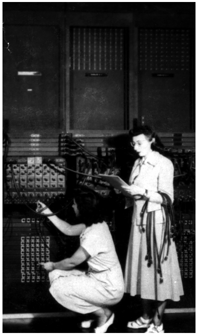
3 - Online Lab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Each Week:

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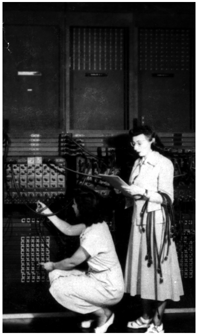
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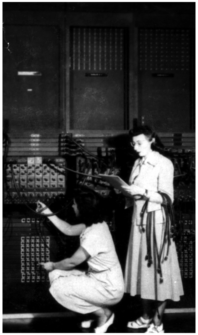

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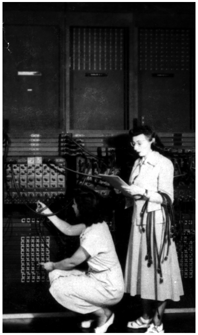
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- **You must independently read through the weekly online Lab.**
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- Lab content directly supports weekly programming assignments.

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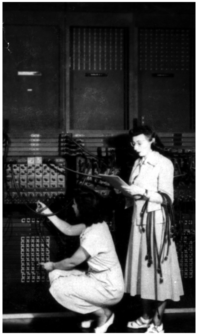
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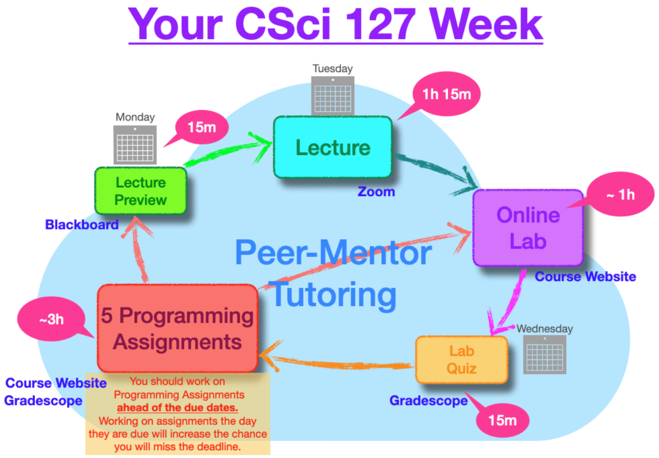
- Labs found on course website (Handouts column in Course Outline)

Course Structure



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4 -In-person Quiz & Code Review

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

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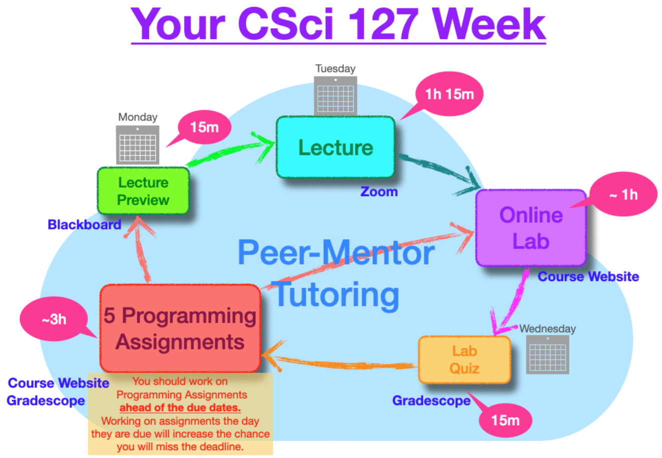
- Quiz and code review topics and due dates can also be found on the course website

Course Structure



You should work on Programming Assignments **ahead of the due dates.** Working on assignments the day they are due will increase the chance you will miss the deadline.

Homework

First "computers"

ENIAC, 1945.

Each Week:

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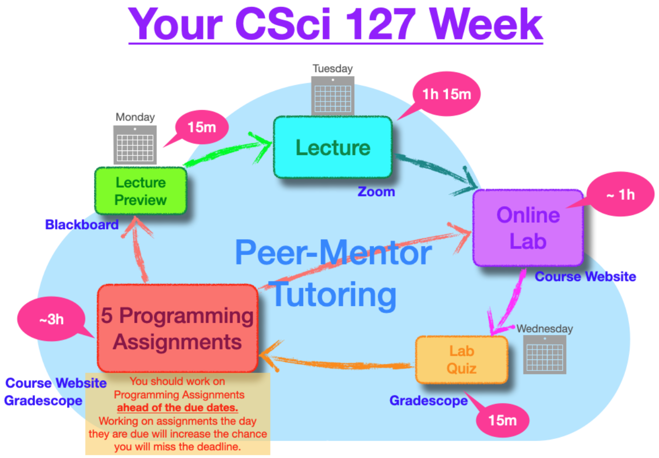

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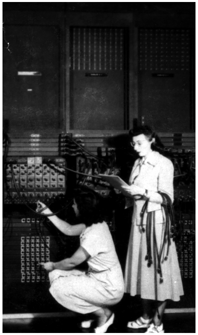
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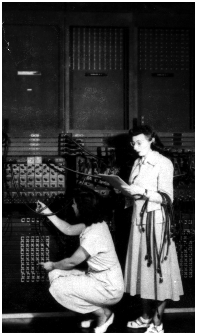
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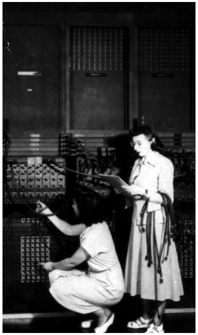
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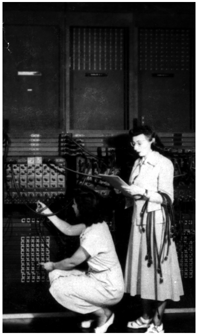
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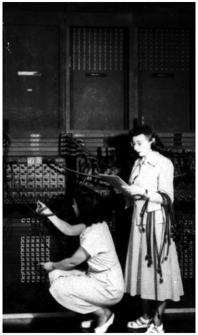

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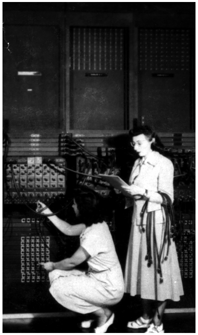

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  - Drop-in Hours: **Tuesday 12-2pm**
  - By appointment: email ty680@hunter.cuny.edu

Benefits of Tutoring and Code Review

Explain Technical Concepts
Develop your Technical Vocabulary
Expert Help
Procedural Thought Organization
Learn Debugging
Build Community

Academic Dishonesty

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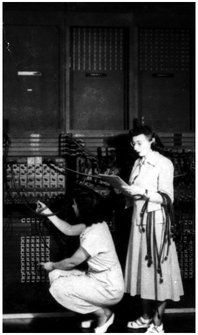
- **All instances of academic dishonesty will be reported to the office of Student Affairs**

Communication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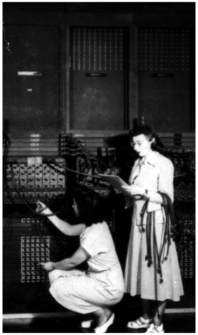
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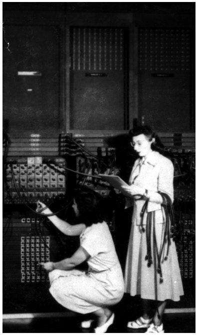
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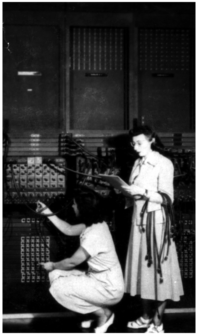

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Today's Topics

- 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
```

- Output to the screen is: `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

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.

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

- A simple, whimsical graphics package for Python.

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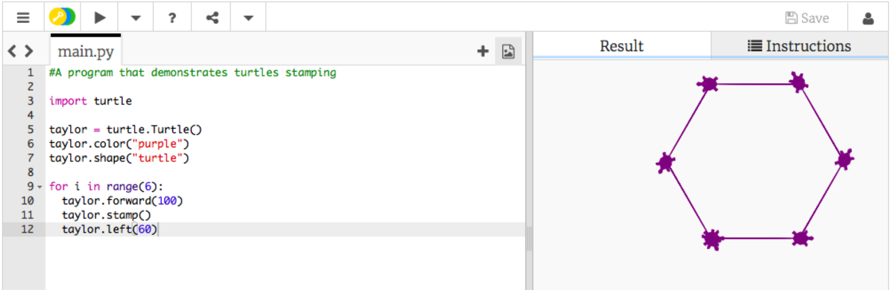

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#A program that demonstrates turtles stamping

import turtle

taylor = turtle.Turtle()
taylor.color("purple")
taylor.shape("turtle")

for i in range(6):
  taylor.forward(100)
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- Creates a turtle **variable**, called `taylor`.

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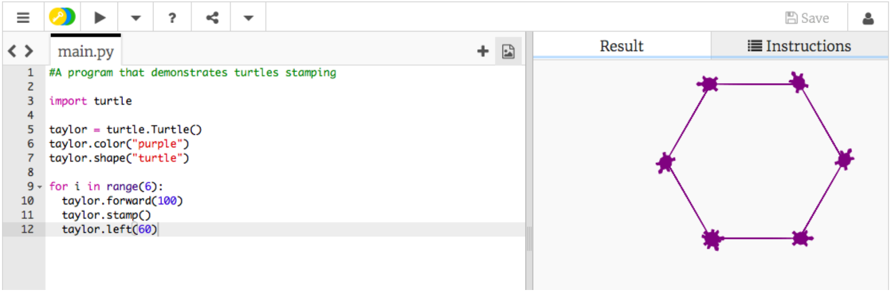

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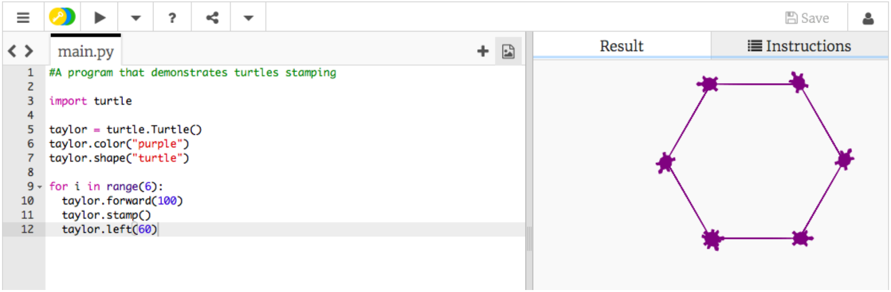

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- Repeats 6 times:

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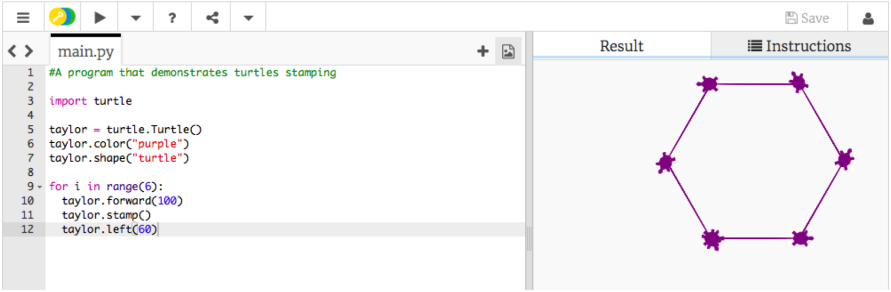

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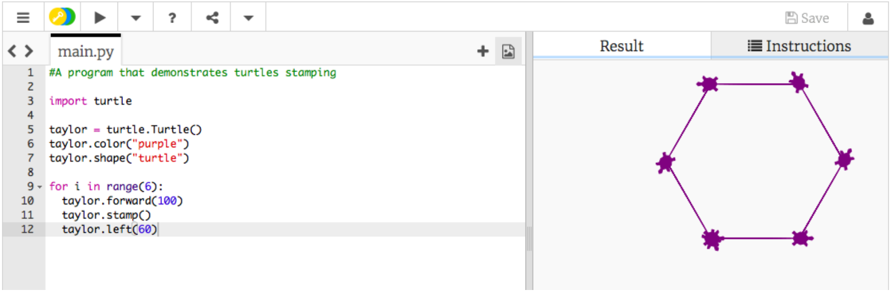

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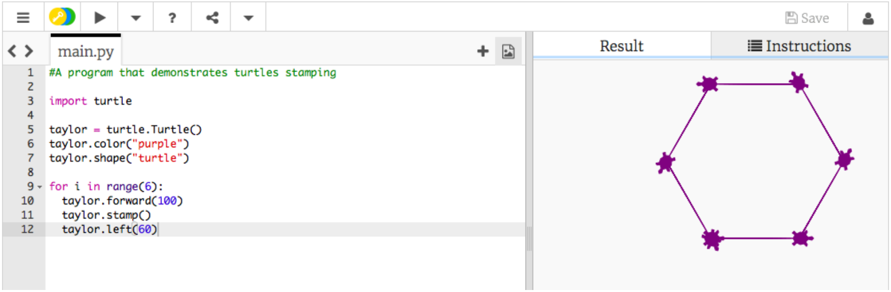

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- Repeats any instructions **indented** in the "loop block"
- This is a **definite** loop because it repeats a fixed number of times

Group Work

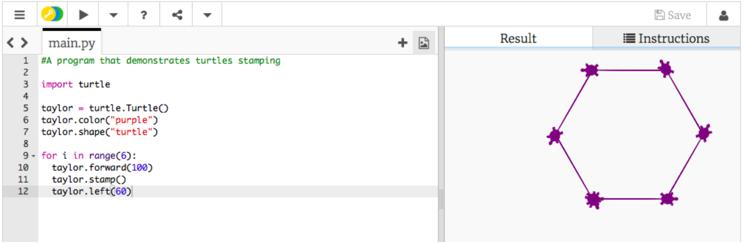
Working in pairs or triples:

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



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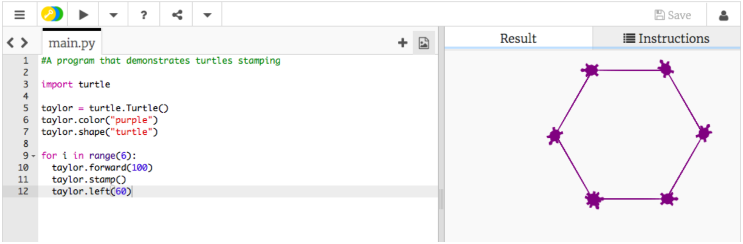

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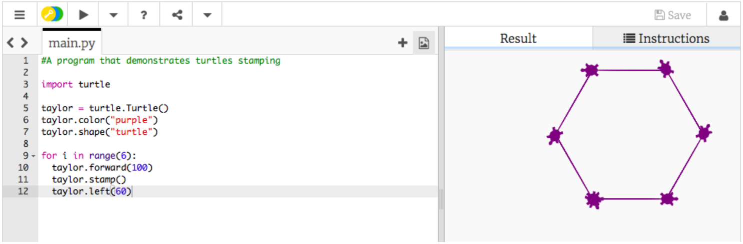

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- Start with the hexagon program.
- Has 10 sides (instead of 6), so change the `range(6)` to `range(10)`.
- Makes 10 turns (instead of 6),
  so change the `taylor.left(60)` to `taylor.left(360/10)`.

Work Program

2. Write a program that will repeat the line:

   `I'm lookin' for a mind at work!`

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

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

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- Instead of turtle commands, repeating a print statement.

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   ```
   I'm lookin' for a mind at work!
   ```

   three times.

- 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!")
  ```

Today's Topics

- 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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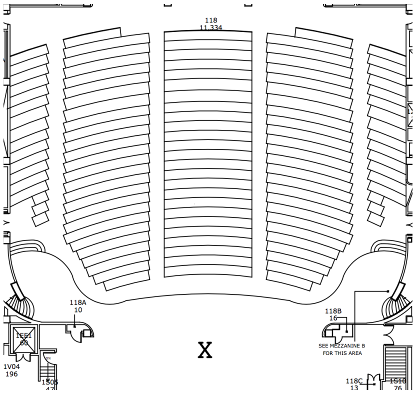
From our textbook:

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

Group Work



Working in pairs or triples:

1. On the floorplan, mark your current location.
2. Write an algorithm (step-by-step directions) to get to `X`.

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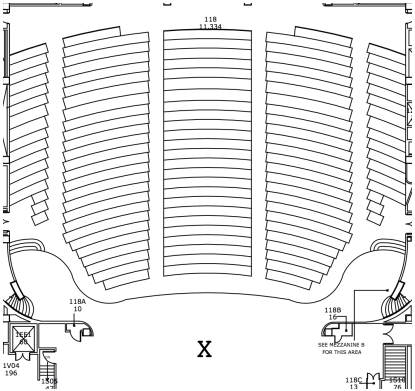

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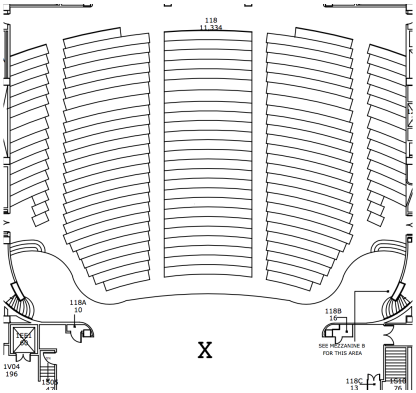

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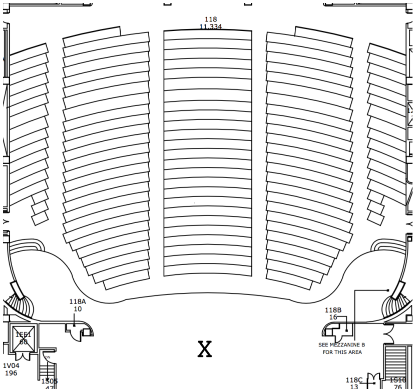

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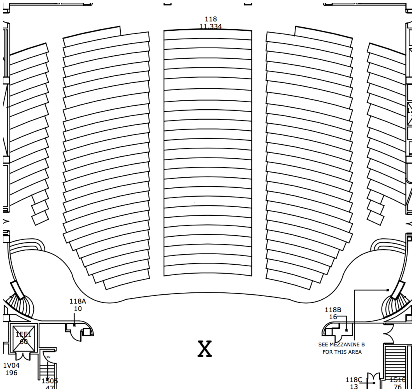

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    - Turtles cannot climb walls, must use stairs.

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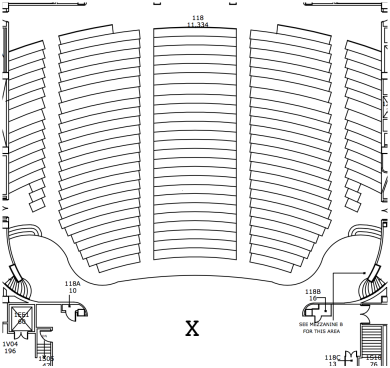

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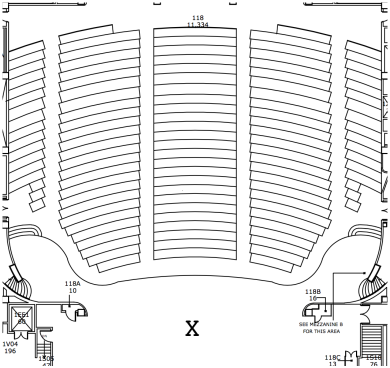

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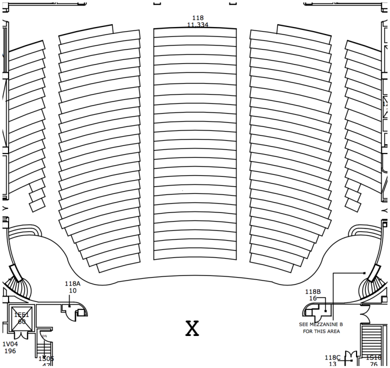

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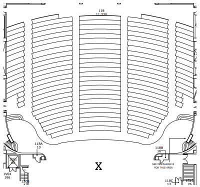
- Annotate any changes needed to the directions (i.e. debug your work).

Recap

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



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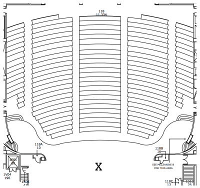

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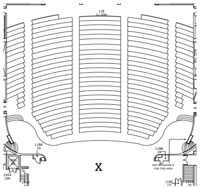

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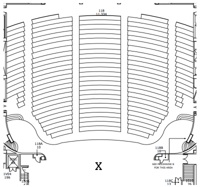

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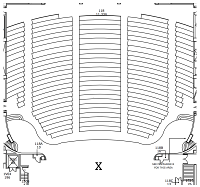

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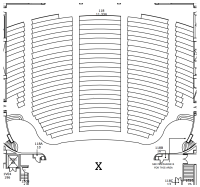

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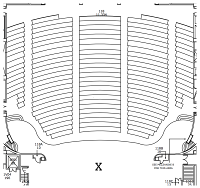

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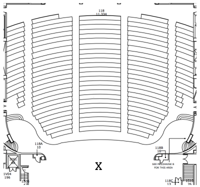

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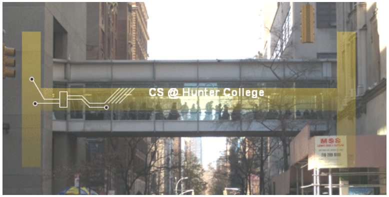
- Pass your lecture slips to the aisle for the UTA's to collect.

Weekly Reminders!



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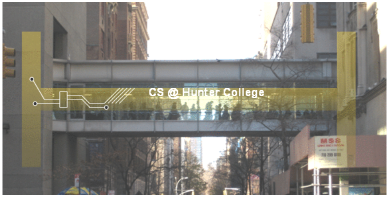

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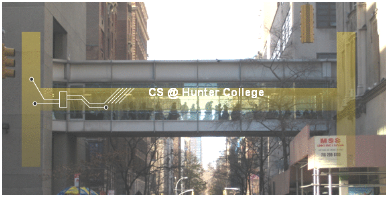

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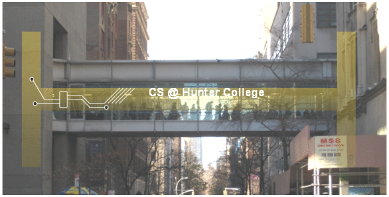

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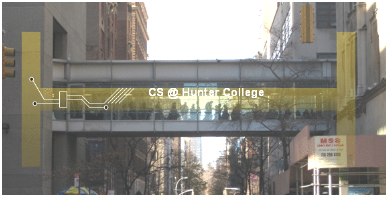

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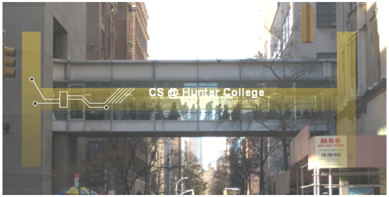

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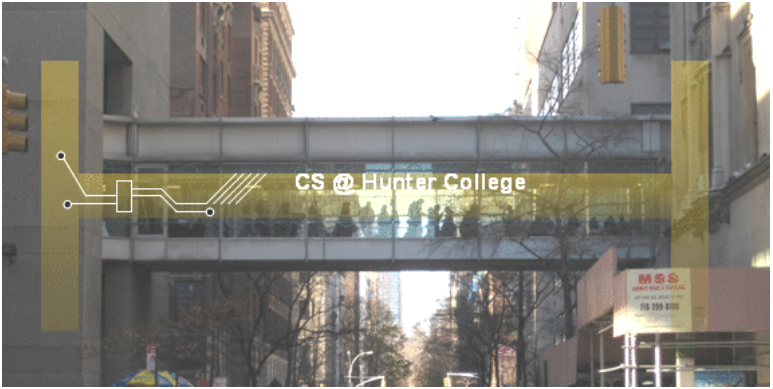
- Take the Lecture Preview on Blackboard on Monday (or no later than 10am on Tuesday)

Lecture Slips & Writing Boards



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