

# CSci 127: Introduction to Computer Science



[hunter.cuny.edu/csci](http://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



Arsen Tumanian



Arshadul Monir  
lecture TA



Arterio Rodrigues



Bode Chiu



Brendan South



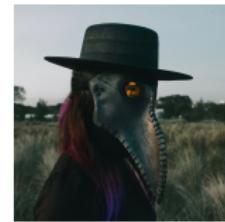
Christopher Asma



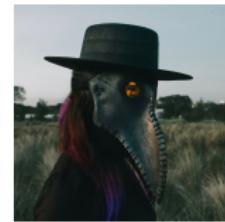
Diana Luna



Farhin Bhuiyan



Filip Trzcinka



Georgina Woo  
lecture TA

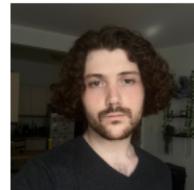
# Introductions: Undergraduate Teaching Assistants:II



Ghazanfar Shahbaz



Hanz De Guzman



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

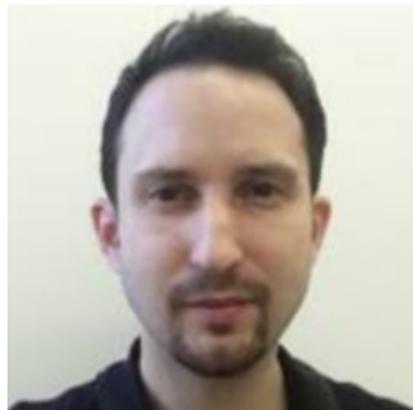


Yoomin Song

Tyler Robinson

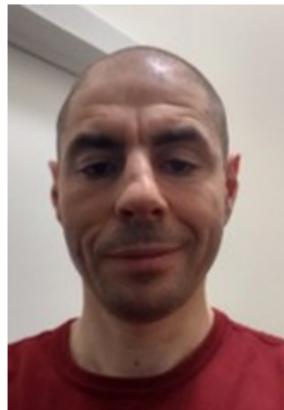
Zeeshan Ahmed Gondal

# Introductions: Advisors



Justin Tojeira  
CS Advisor

jtojeira@hunter.cuny.edu



Pavel Shostak  
CS Advisor

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Eric Schweitzer  
Undergraduate  
Program Coordinator

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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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- **Blackboard:** Announcement, Discussion Board, Lecture Preview, Supplement course materials

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- **Gradescope** (programming assignments submission)

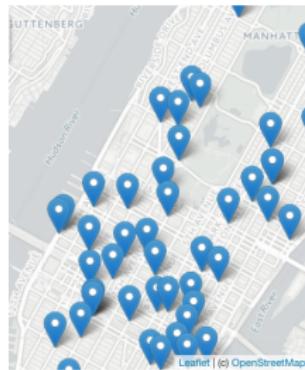
# Syllabus

## 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...*

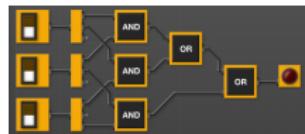
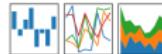
*This course is pre-requisite to several introductory core courses in the CS Major. The course is also required for the CS minor. MATH 12500 or higher is strongly recommended as a co-req for intended Majors.*

# Syllabus: Topics

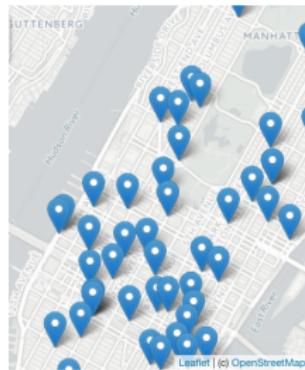


- This course assumes no previous programming experience.

pandas  
 $y_t = \beta' x_t + \mu_t + \epsilon_{it}$

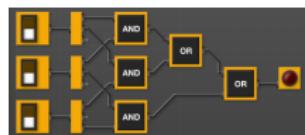
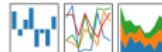


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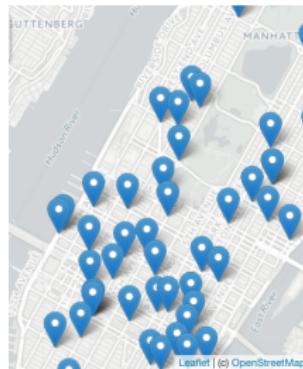


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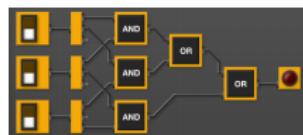
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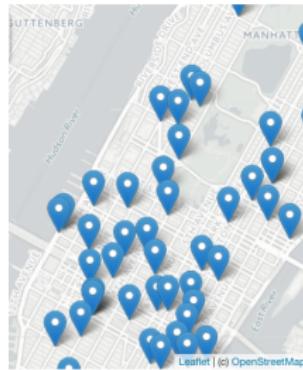
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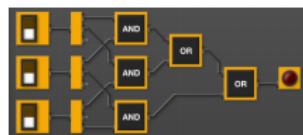
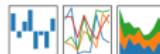


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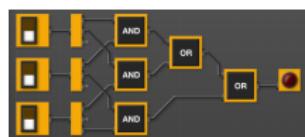
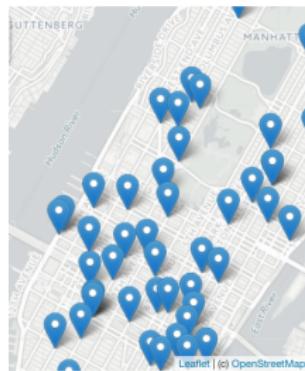


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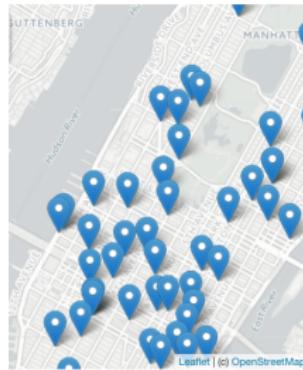


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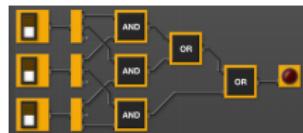


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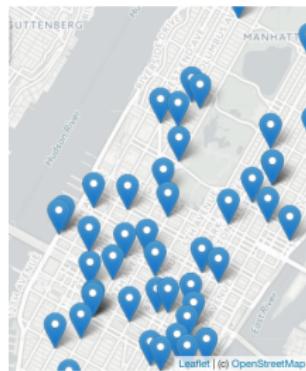


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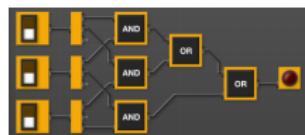
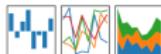
Four small square icons representing different types of data analysis or visualization: a bar chart, a line graph, a scatter plot, and a histogram.

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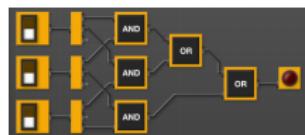
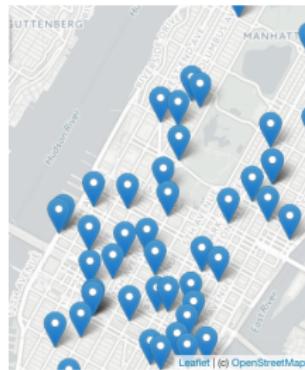


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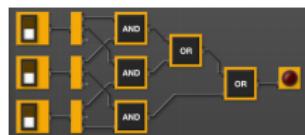
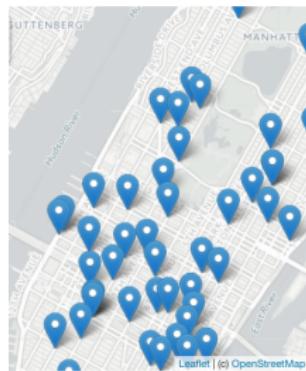
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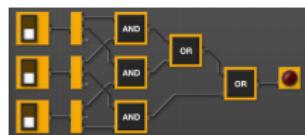
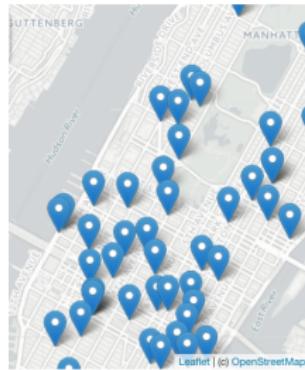
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    - ★ for the simplified machine language, &
    - ★ for C++.

# Course Structure: Overview

## Your CSci 127 Week

MO

TU

WE

TH

FR

11:30 – 5:30, HN 1001G

Help: Peer-Mentor Tutoring

Blackboard, 15 min

Lecture Preview

10:00 – 11:15, HN 118

Lecture

course website, ~ 1 hour  
Online lab

11:30 – 5:30, HN 1001G

Lab Quiz & Code Review

P1

P2

P3

P4

P5

~3-4 hrs

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 ( <b>exception:</b> 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	<b>Lecture Slip</b>
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	<b>Online Lab</b>
Where	The labs are put online, for example, Lab 1 is in <a href="https://huntercsci127.github.io/s23/lab1.html">https://huntercsci127.github.io/s23/lab1.html</a> . 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	<b>Paper Quiz in In-Person Lab</b>
Where	North Building 1001 G
When	A total of 13 paper quizzes. Make appointments through <a href="#">navigate</a> before due dates. ( <b>exception:</b> 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 <a href="#">deadlines for paper quizzes, code reviews, and programming assignments</a> .
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	<b>Code Review in In-Person Lab</b>
Where	North Building 1001 G
When	A total of 12 code reviews. Make appointments through <a href="#">navigate</a> before due dates. ( <b>exception:</b> 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 <a href="#">deadlines for paper quizzes, code reviews, and programming assignments</a> .
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	<b>Programming Assignments</b>
Where	Questions are posted in <a href="#">programming assignments web page</a> and submit to <a href="#">gradescope</a> .
Due Date	Each programming assignment's due date is shown in <a href="#">deadlines for paper quizzes, code reviews, and programming assignments</a> .
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	<b>Final Exam</b>
Where	North Building 118 (lecture room)
Due Date	9 - 11 AM, May 22, 2023, Monday.
Number of Tries	at most once
Importance	<b>NO midterm. You must pass the final to pass the course.</b> 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



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

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

# 3 - Online Lab



Each Week:

- You must independently read through the weekly online Lab.

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- Lab content directly supports weekly programming assignments.

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- Labs found on course website.

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

# Programming Assignments

Each Week:

- Starting February 9, there will be one program due each day!



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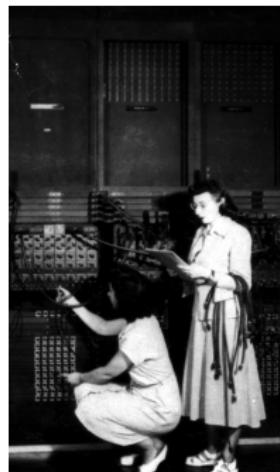
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- Implement and test on your computer.
- Submit to Gradescope.
- Multiple submissions accepted.
- For help to run and submit programming assignments, please visit the 1001G lab.

# Make Your Schedule!

- This is a hybrid course: there is some work you must do independently outside of class meetings.



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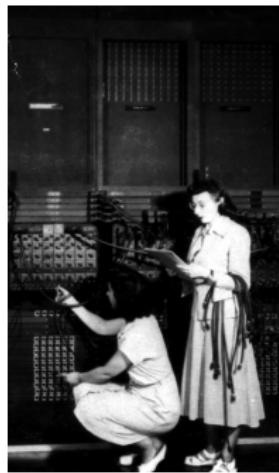


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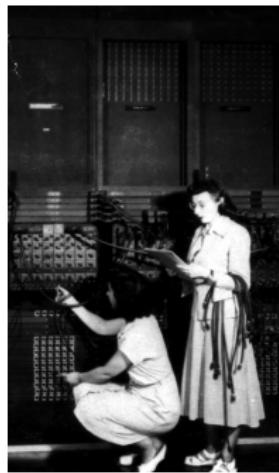


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- Schedule a regular time for the **Quizzes and Code Review**, plan ahead!

# Make Your Schedule!



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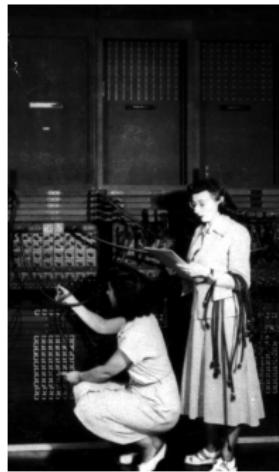


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- Schedule a regular time for taking the **Lecture Preview**
- Put them in your calendar now and then adjust if necessary.

# Help and Support

- Peer-mentor Support (UTAs)
  - ▶ **Tutoring:** in-person tutoring and programming help in 1001G Hunter North



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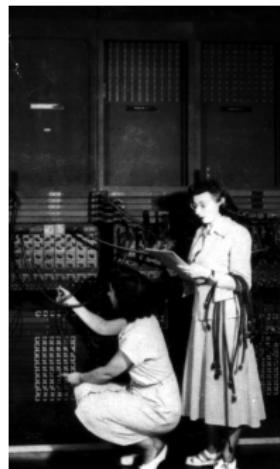
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**11:30am-5:30pm** when classes are in session



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# Help and Support



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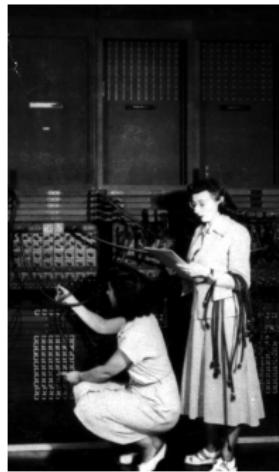
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- Office Hours with Dr. Tong Yi
  - ▶ Drop-in Hours: **Tuesday 12-2pm**
  - ▶ By appointment: email  
[ty680@hunter.cuny.edu](mailto:ty680@hunter.cuny.edu)

# Benefits of Tutoring and Code Review



# Academic Dishonesty

- *The person who does the work gets the benefit! Learning is personal!!!*



First "computers"

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# Academic Dishonesty

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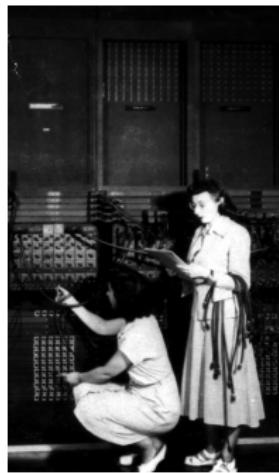


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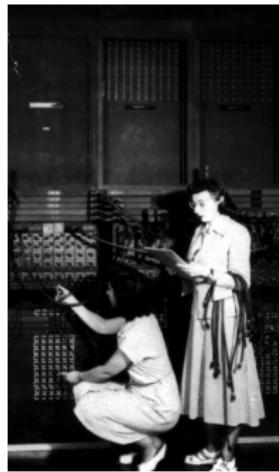


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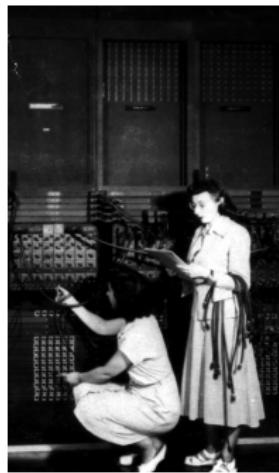
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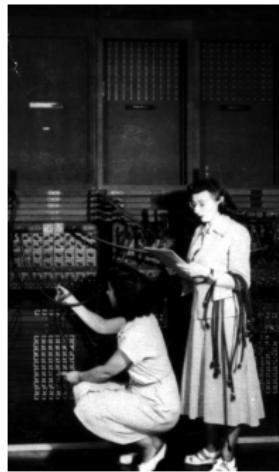


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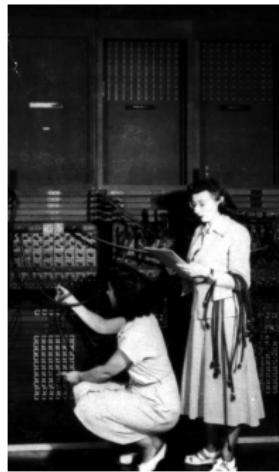


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- **All instances of academic dishonesty will be reported to the office of Student Affairs**

# Communication



First "computers"

ENIAC, 1945.

- Important weekly communication sent via Blackboard

# Communication



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ENIAC, 1945.

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# Communication



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ENIAC, 1945.

- Important weekly communication sent via Blackboard
- Check your email account associated with Blackboard
- **Check your Spam folder**
- 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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- **Introduction to Python**
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- Our first language, Python, is popular for its ease-of-use, flexibility, and extensibility, supportive community with hundreds of open source libraries and frameworks.
- 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.

# Today's Topics



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

# Turtles Introduction

- A simple, whimsical graphics package for Python.



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- ([Fancier turtle demo](#))

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- Introduction to Python
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- Algorithms

# Turtles Introduction

The screenshot shows a Python code editor interface. At the top, there are standard file operations like Save and Print. Below the toolbar, the file name is "main.py". The code itself is:

```
1 #A program that demonstrates turtles stamping
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3 import turtle
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5 taylor = turtle.Turtle()
6 taylor.color("purple")
7 taylor.shape("turtle")
8
9 for i in range(6):
10     taylor.forward(100)
11     taylor.stamp()
12     taylor.left(60)
```

To the right of the code editor is a "Result" panel which displays the output of the program. It shows a purple turtle shape that has drawn a regular hexagon on the screen. The turtle has stamped its head at each vertex of the hexagon, resulting in six purple star-like marks where the sides of the hexagon meet.

- Creates a turtle **variable**, called `taylor`.

# Turtles Introduction

The screenshot shows a Python code editor interface. At the top, there are standard file operations like Save and Open. Below the toolbar is a tab bar with 'main.py' selected. The code area contains the following Python script:

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To the right of the code area is a 'Result' panel and an 'Instructions' panel. The 'Result' panel displays the output of the program: a regular hexagon drawn in purple, with each vertex marked by a purple star-like stamp.

- Creates a turtle **variable**, called `taylor`.
- Changes the color (to purple) and shape (to turtle-shaped).

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- Repeats 6 times:

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The "Result" tab shows the output of the program: a purple hexagon with six star-shaped stamps at each vertex, representing the turtle's path.

- 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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- 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

The screenshot shows a code editor interface with a toolbar at the top. The file tab shows "main.py". The code in the editor is:

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The "Result" panel shows a purple hexagon drawn on a white background, with a purple star at each vertex where the turtle stamped.

- Start with the hexagon program.

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The screenshot shows a code editor window with a toolbar at the top. The file name is "main.py". The code is as follows:

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```

The "Result" panel shows a purple hexagon drawn by the turtle, with six purple star-like stamps at each vertex.

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

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To the right of the editor is a "Result" window showing a purple hexagon drawn by the turtle. The "Instructions" window is also visible.

- 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)`.

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# Work Program

- ② Write a program that will repeat the line:

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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:

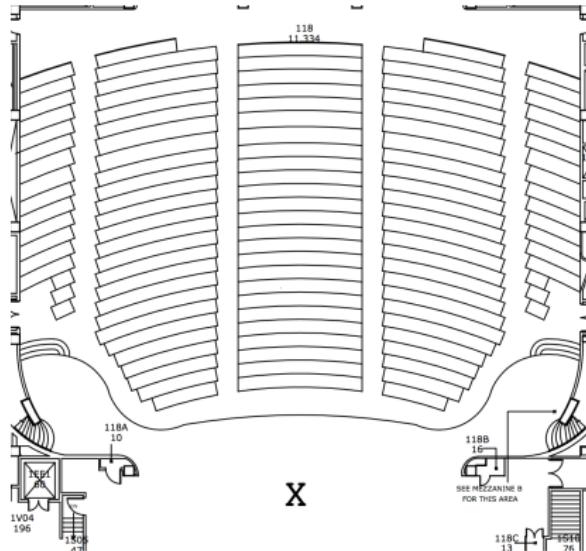
- An **algorithm** is a process or sequence of steps to be followed to solve a problem.

# What is an Algorithm?

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.

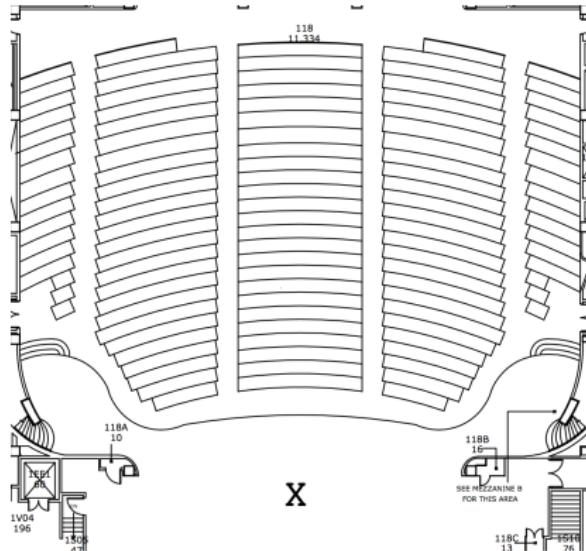
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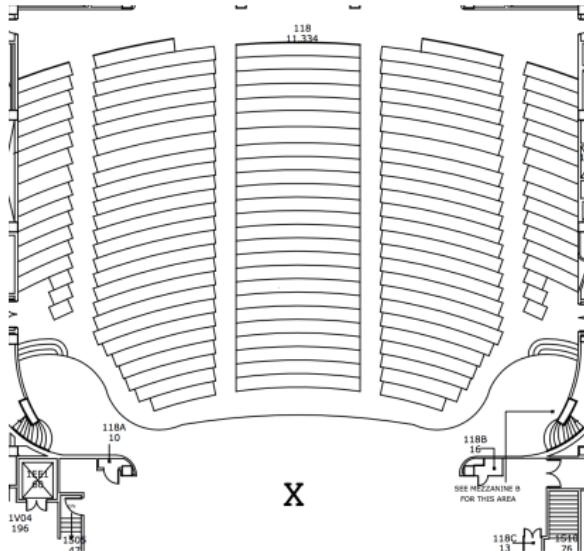
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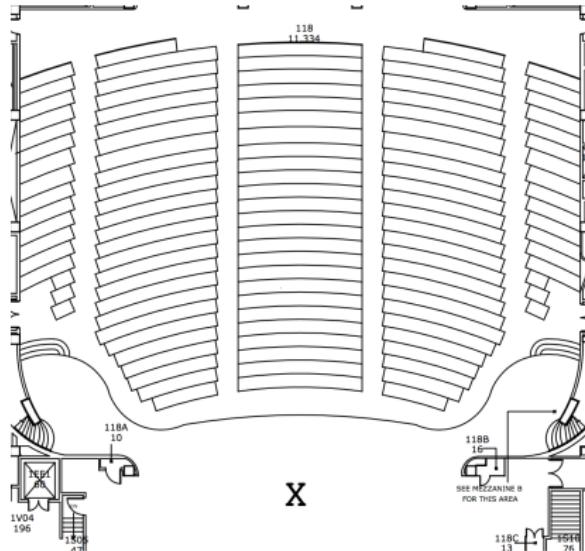
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  - ▶ Use turtle commands.

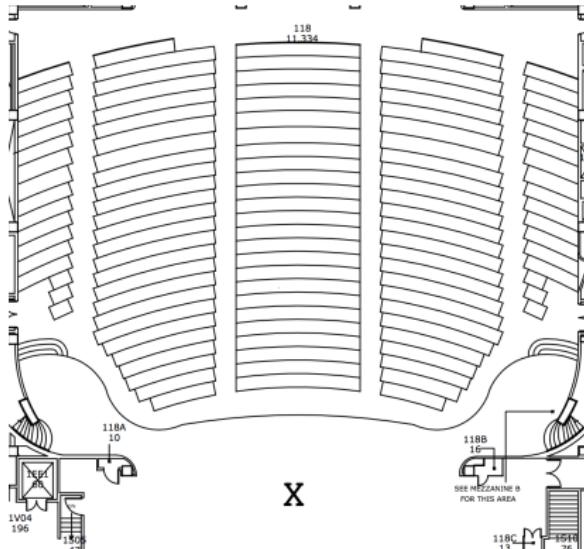
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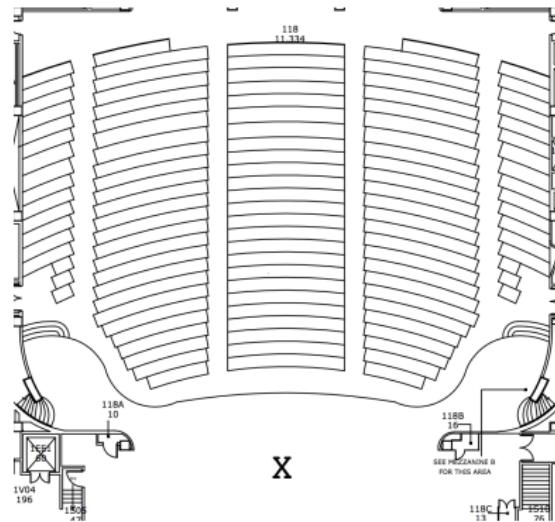
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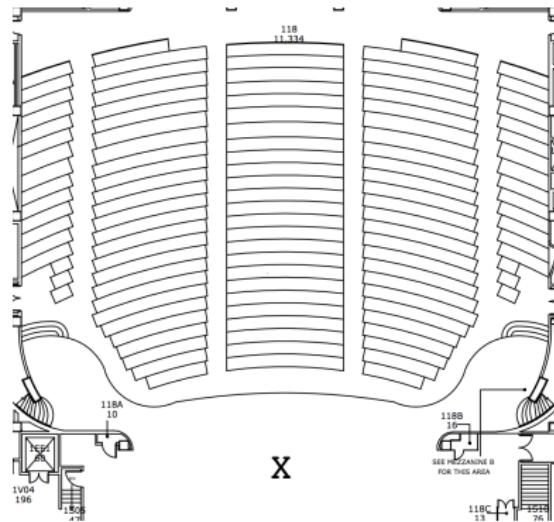
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  - ▶ Use turtle commands.
  - ▶ Do not run turtles into walls, chairs, obstacles, etc.
  - ▶ Turtles cannot climb walls, must use stairs.

# Group Work



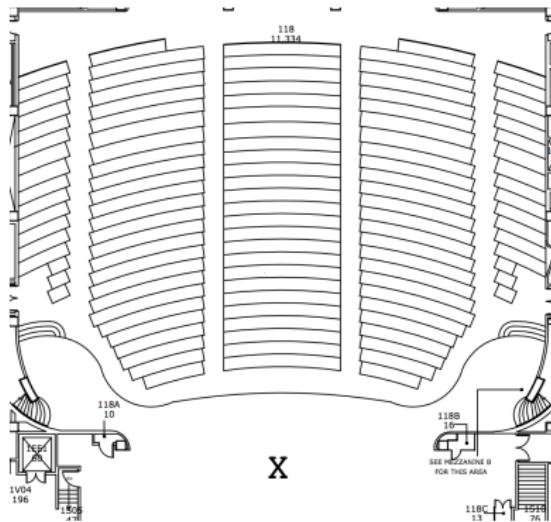
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- Follow the directions to get to X.

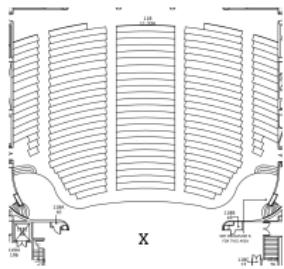
## Group Work



- Have one person in your group be the “turtle.”
  - Follow the directions to get to X.
  - Annotate any changes needed to the directions (i.e. debug your work).

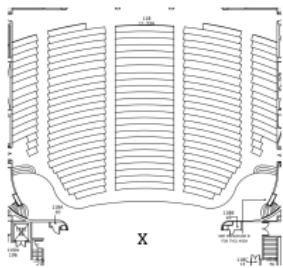
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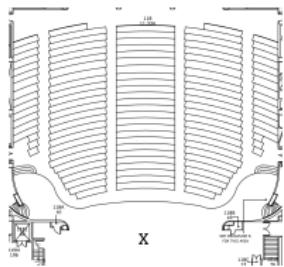


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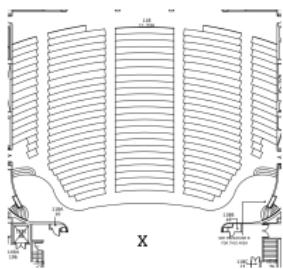
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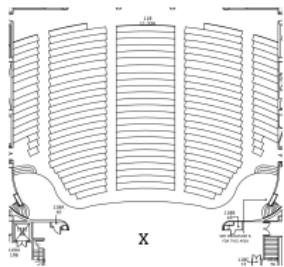
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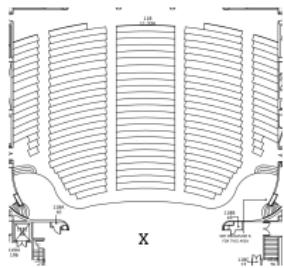


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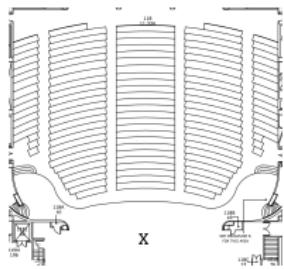
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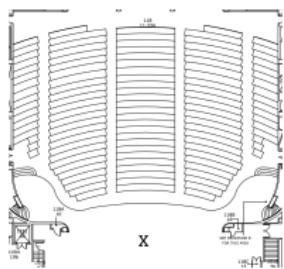
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- Pass your lecture slips to the aisle for the UTA's to collect.

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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.