Welcome

- Prof. Sakas, Department Chair and Co-Instructor
Introductions

Katherine Howitt  
Tutor Coordinator

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Not pictured: recitation instructors, undergraduate teaching assistants, faculty planning committee, technical & administrative staff.
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. Other topics include: organization of hardware, software, and how information is structured on contemporary computing devices. 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.
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(Show syllabus webpage)
Introductions: Your Turn

- Introduce yourself to two classmates (that you have not met before).
- Write down names & interesting fact on lecture slip.
Overview of Computer Science
Problem Solving & Computational Thinking
Hardware & software of contemporary computing devices
Programming in Python & C++
Logical Circuits
Overview of Machine Language
Introduction to Unix (& command line interface)
Today’s Topics

- Introduction to Python
- Definite Loops (for-loops)
- Turtle Graphics
- Algorithms
First Program: Hello, World!

#Name: Thomas Hunter
#Date: September 1, 2017
#This program prints: Hello, World!

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

- Output to the screen is: Hello, World!
- 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,')
Variations on Hello, World!

#Name: L-M Miranda
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#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.")
Variations on Hello, World!

#Name:  L-M Miranda
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#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.
Variations on Hello, World!

#Name: L-M Miranda
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print('Get your education,')
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- Each print statement writes its output on a new line.
- Resulting in three lines of output.
Variations on Hello, World!

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

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

- A simple, whimsical graphics package for Python
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- A simple, whimsical graphics package for Python
- Dates back to Logos Turtles in the 1960s
Turtles Introduction

- A simple, whimsical graphics package for Python
- Dates back to Logos Turtles in the 1960s
- (Demo from webpage)
A simple, whimsical graphics package for Python
Dates back to Logos Turtles in the 1960s
(Demo from webpage)
(Fancier turtle demo)
Turtles Introduction

- Creates a turtle, called taylor
Turtles Introduction

- Creates a turtle, called taylor
- Changes the color (to purple) and shape (to turtle-shaped)
Turtles Introduction

- Creates a turtle, called `taylor`
- Changes the color (to purple) and shape (to turtle-shaped)
- Repeats 6 times:
Turtles Introduction

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

Working in pairs or triples:

1. Write a program that will draw a 10-sided polygon.

2. Write a program that will repeat the line:
   
   I’m lookin’ for a mind at work!

   three times.
Decagon Program

- Start with the hexagon program.
Decagon Program

- Start with the hexagon program.
- 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

3 Write a program that will repeat the line:

I’m lookin’ for a mind at work!

three times.
Write a program that will repeat the line:

I’m lookin’ for a mind at work!

three times.

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

```python
for i in range(3):
    print("I’m lookin’ for a mind at work!")
```
Write a program that will repeat the line:

I’m lookin’ for a mind at work!

three times.

- Repeats three times, so, use `range(3)`:  
  ```python
  for i in range(3):
  ```
- Instead of turtle commands, repeating a print statement.
Write a program that will repeat the line:

I’m lookin’ for a mind at work!

three times.

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

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

Instead of turtle commands, repeating a print statement.

Completed program:

```python
# Your name here!
for i in range(3):
    print("I’m lookin’ for a mind at work!")
```
What is an Algorithm?

From our textbook:

- An **algorithm** is a process or set of rules to be followed to solve a problem.
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From our textbook:

- An **algorithm** is a process or set of rules 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 followed by a computer.
Working in pairs or triples:

1. Write an algorithm to tie your shoes.
Recap

- Writing precise algorithms is difficult.
Recap

- Writing precise algorithms is difficult.
- In Python, we introduced:
  - strings, or sequences of characters,
  - print() statements,
  - for-loops with range() statements, &
  - variables containing turtles.

On lecture slip, write down a topic you wish we had spent more time.
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Lecture Slips & Writing Boards

- Turn in lecture slips & writing boards as you leave...