

CIS 122

Intro to Programming and
Algorithms

Welcome to CIS 122!

- Intro to Programming and Algorithms
- Class Times
 - Weekdays
 - 1:00 - 1:50
 - Klamath Lab B26

Who am I?

- Greg Bickerman
 - Deschutes 241
 - gbick@cs.uoregon.edu
- Office Hours
 - Daily
 - 2:00 - 2:50
 - The other Klamath Lab

What is this class all about?

- Learn how to program
 - (in Python)
- Learn to think computationally
 - Solving problems programmatically
- Learn about computer science
 - Maybe you'll take more CS classes
- Have fun!

Logistics

- Grade Breakdown
 - 60% Homework
 - 15% Midterm Exam
 - 25% Final Exam
- Homework
 - Weekly
 - Due Sunday night 11:59
 - Blackboard Submission

Logistics

- Course Website

- www.cs.uoregon.edu/classes/11U/cis122

- Homework

- Announcements

- Useful information

- Blackboard

- Homework submission

- That's it

Logistics - Homework

- Multi-part assignments
 - Builds on concepts from class
 - Won't be able to do it all at once
 - But don't wait until the last minute
- Late policy
 - Due Sunday night 11:59
 - 3 Late credits
 - Don't use them all at once!
- Pair Programming
 - Work together!

Pair Programming

- You are encouraged (but not required) to work in pairs
 - Easier Work!
 - Finish Faster!
 - Learn More!
- Pair Programming is NOT
 - An excuse for someone to do your work for you
 - Splitting up the assignment
- So, what is pair programming?
 - Both members present while coding
 - Both members should be contributing
 - Equal time at the keyboard

Academic Honesty

- Plagiarism is a fine line
- Brainstorming together is good
 - But don't copy other people's work
- As a rule, you should be writing your own code

Lab Space

- This class is held in a computer lab
- That can be a good thing!
 - Hands on experience
 - Don't just watch...
 - Experiment and explore
- It can also be a bad thing...
 - Distractions
 - Facebook
 - Email

What is Computer Science?

What is Computer Science?

- Hardware vs Software
- Hardware
 - The physical computer
 - Wires, keyboard, mouse, monitor...
 - If you can smash it, it's hardware
- Software
 - Hardware is dumb
 - Software tells the hardware what to do
 - Sets of instructions

What is Computer Science?

- Software Engineering
- Computer Architecture
- Complexity
- Computability
- Artificial Intelligence
- Graphics
- ...

What is Computer Science?

- Computer science is the art of problem solving
- I want to accomplish some task
 - Convert 7 centimeters to inches
 - Draw a picture of a tree
 - Play tic-tac-toe
- Where do I start?
 - These problems are complicated (relatively speaking)
 - Break down your problem into basic steps

How exactly do you play tic-tac-toe?

What is Computer Science?

"Computer Science may be more than programming, but it is not less than programming"

~Kurt Guntheroth

What is Programming?

What is Programming?

- Communicating with a computer
 - Not just any type of communication
 - Using Facebook is not programming
- Set of instructions
 - Specific
 - Precise
- General purpose
 - You can code whatever you want

How do we Communicate?

- We communicate with each other using **Natural Languages**
 - English
 - Spanish
 - Japanese

- We communicate with computers using **Programming Languages**
 - C++
 - Java
 - Python

Why use Python?

- Why can't we just talk directly to the computer

Why use Python?

Natural
Language

Programming
Language
(Python)

Machine
Language



Why use Python?

Natural Language

Programming Language
(Python)

Machine Language



How many inches are in 7 centimeters?

Why use Python?

Natural
Language

Programming
Language
(Python)

Machine
Language

```
10110101010101110101000110101  
00101101010101010101010100100  
10100010100010101111010100101  
11010101010100111110001010111
```

Why use Python?

Natural
Language

Programming
Language
(Python)

Machine
Language



```
centimeters = 7
ratio = 0.4
inches = centimeters * ratio

print inches
```


Why use Python?

- There are lots of programming languages
- Many in common use
 - C++
 - Java
 - Python
- Why use Python specifically?

Hello World in Java

```
class Hello
{
    public static void main(String[] args)
    {
        System.out.println("Hello World");
    }
}
```

Hello World in Python

```
print "Hello World"
```

So how do we talk to Python?

- We write code using an editor
- Python reads code using an interpreter
- IDLE
 - Editor and Interpreter in one!
- Let's get started

