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/12U/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
  - Assignments due Sunday night 11:59
  - -10% per day late
  - Tell me about extenuating circumstances beforehand

- 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
  - Possibly while pair programming

- Credit the people and sources that help you
  - Especially while pair programming
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 centimeters to inches
  - Sort a deck of cards
  - Play a game of tic-tac-toe

- Where do I start?
  - These problems are complicated (relatively speaking)
  - Break down your problem into basic steps
How do you sort a deck of cards?
What is Computer Science?

- **Algorithm**
  - a step-by-step procedure for solving a problem or accomplishing some end, especially by a computer

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?
Why use Python?

- Natural Language
- Programming Language (Python)
- Machine Language

How many inches are in 7 centimeters?
Why use Python?
Why use Python?

Natural Language

Programming Language (Python)

Machine Language

```python
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?
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