Welcome to CS 102

Multimedia Computing

What is Computer Science?

Computer Science Defined?

- “computer science” —which, actually is like referring to surgery as “knife science”
  - Prof. Dr. Edsger W. Dijkstra

- “A branch of science that deals with the theory of computation or the design of computers”
  - **Webster Dictionary**

- Computer science "is the study of computation and information”
  - **University of York**

- “Computer science is the study of process: how we or computers do things, how we specify what we do, and how we specify what the stuff is that we’re processing.”
  - **Your Textbook**

Computer Science in Reality

The study of using computers to solve problems.

Fields of Computer Science

- Software Engineering
- Multimedia (Game Design, Animation, Data Visualization)
- Web Development
- Networking
- Big Data / Machine Learning / AI
- Bioinformatics
- Robotics
- Internet of Things
- …

Computers Rule the World!

- Shopping
- Communication / Social Media
- Work
- Entertainment
- Vehicles
- Appliances
- Banking
- …

Overview of the Couse

- Learn a programming language
- Develop algorithms and write programs to implement them
- Understand how computers store data and multimedia
- Have fun!

Course Advice

- Read Materials Before Class
  - Any lectures or activities will make much more sense once you have read the content
  - Lecture or code demos in class may expand on the book content and require prerequisite knowledge for comprehension
- Practice
  - Anyone can write code, but it's a skill like playing an instrument, sports, or creating art. It takes practice to hone your skills.
  - Do the assignments, run and play with the code examples I provide, and follow along with book examples to help learn the materials.
  - If you have time, experiment and play! Everything you try to do is a learning experience.

Course Advice

- Start assignments early
  - You may not have time to begin work, but at least read the description twice through to make sure you understand the requirements. This will let you ask clarification questions early
  - There are always unexpected issues or nuance to assignments that you may not anticipate. Give yourself ample time to work through issues.
- Write a little bit of code at a time and run it frequently
  - The more code you write, the harder it is to find issues.
  - Instead, write just enough code for one feature/thing you need and test it out. If it works, then move on to the next thing. Build on top of already working code

Course Advice

- Limit your use of Google
  - For many assignments, I will provide all the things you need to know to complete them. Start with the course materials first before hitting the web.
  - If you try to find solutions to assignments (and sometimes examples), you will likely encounter overly complicated or confusing information that may do more harm than good. If you have questions, please ask me, a TA, or ZI and we'd be happy to help.
  - For open-ended assignments, like the final project, you may need to learn something specific to your assignment that is not explicitly covered in class. This is a good time to reach out with questions and supplement your knowledge with Google searching.

Programming Languages

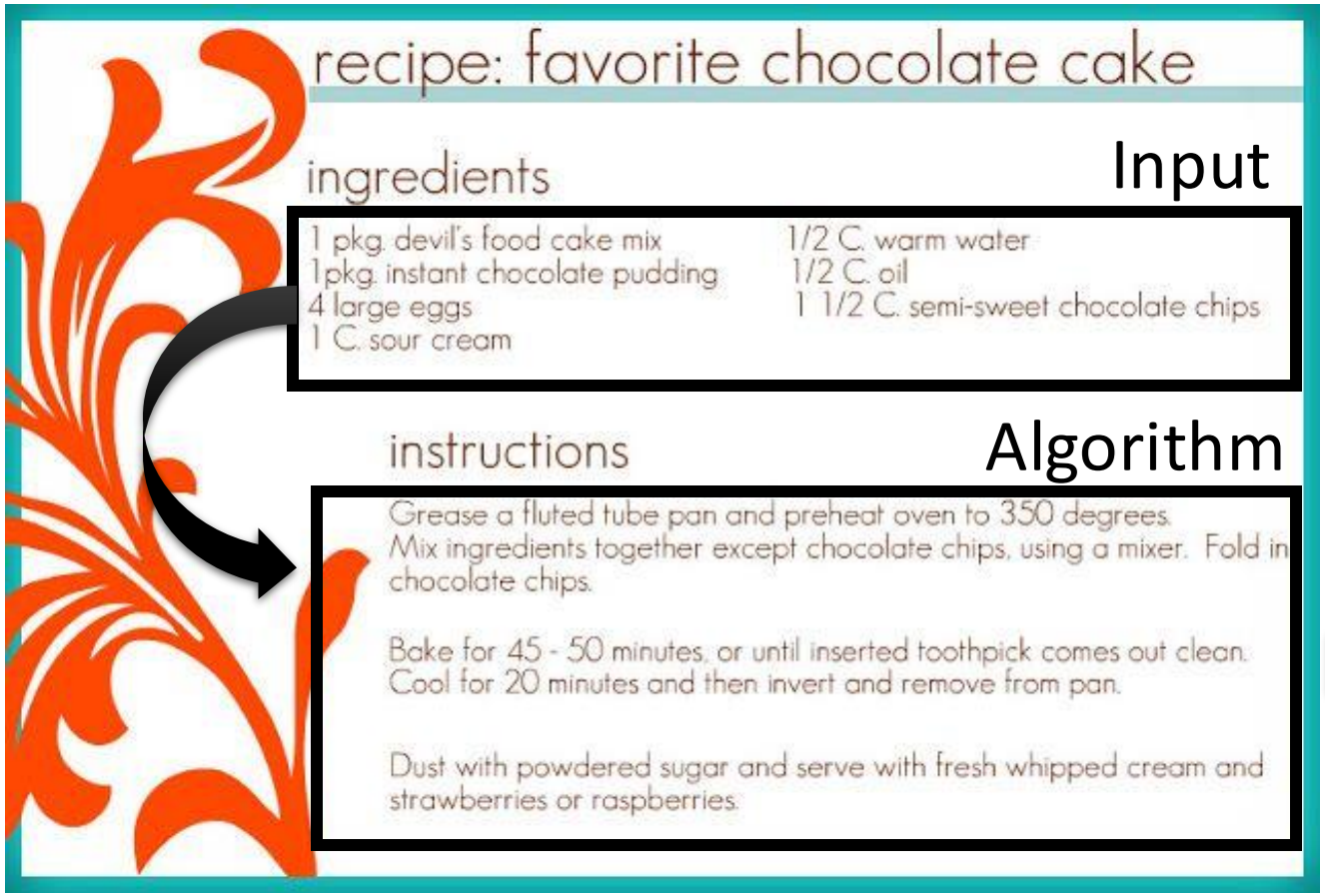
- How we communicate with computers in a way they understand
- Lots of different languages, some with special purposes
- How we write programs to implement algorithms

What's an Algorithm?

- An ***algorithm*** is a finite series of instructions applied to an input to produce output.

- Computer programs are made up of algorithms.

The “Recipe” Analogy



Output

But Computers Don’t Understand Cake!

Next time, we'll talk about what they **DO** understand!