## Intro

* Bio – product, arch, programmer, 19yrs
* Teaching – always wanted to, approached by uprep

## Why did you sign up for this class

* Like to know more about why you signed up for this class
* Survey at the end

## What is computer science

* Do you know?
* Do I know?
* This definition is a good approximation
* ACM
* Algorithms, data structures

## What is an algorithm?

* Steps, inputs, outputs
  + Understandable: chocolate chips
  + Always give an answer: baking forever
  + Always give a correct answer: what is a “good” chocolate chip cookie
* X in, add one to x, that is output

## Shopping algorithm

* Family, camping, get in/out quickly
* Inputs: shopping list, sections of the grocery store
* How can you shop quickly?
* No right answer
* Break into 4 groups, report back

## Shopping algorithm – report back

* Go down list and walk to item
* Walk by section
* Tear the list into parts, give to each family member
* Group the list by areas
* Many items? Alphabetize
* Cross things off the list

## Shopping algorithm – is it correct?

* All items purchased

## Shipping algorithm – best one?

* How to pick best one?
* Could try them and measure
* May know without trying it at all

## Data structure

* Refers to how the inputs and outputs are structured
* Not specific values (list of items)

## Data structure – questions

* Inputs
  + Grocery list of items
  + Each item has a name
  + Sections in store
  + Each item is part of a section
* Outputs
  + Path through the store
  + Items bought
* Other data:
  + Cross off the list? Need a “checkmark”
  + Group the list? Need paper
  + Alphabetize, need paper

## So, what is computer science?

* Correct (did we buy all the groceries)?
* Are they efficient (did we get out of the store quickly?)
* How can we build computers?
* How can we write down algorithms and data structures?
* Applications are everything else: web page, xbox, iphone, graphing calculator

## Essential questions for this class

* What are computers good at (and not good at)
* Magic happens when you find something that matters (to you, to others)

## Units

* 1. Basic concepts
* 2. Getting better at taking a problem and coming up with a solution
* 3. Build a game/app
* 4. Techniques for improving what we did

## Expectations

* Do the exercises for each lesson, answer the questions (schoology)
* Quiz will be similar to questions after the exercises (but cover multiple lessons)
* Tests will similar to quizzes (but cover whole unit)