CompSci 4
Introduction to Programming
Animation and Virtual Worlds
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What is Computer Science?

• Computer science is no more about computers than astronomy is about telescopes.  - Edsger Dijkstra

• Computer science is not as old as physics; it lags by a couple hundred years. However this does not mean that there is significantly less on the computer scientist’s plate than on the physicist’s: younger it may be, but it has had a far more intense upbringing!  - Richard Feynman
Computer Science is a young discipline

- First computer science department formed in 1962

Samuel D. Conte
Professor emeritus of computer science and mathematics was the founding department head of the nation's first computer science program. October 1962.
What is Computer Science?

• Artificial Intelligence

Mars Rover

Roomba

CMU’s Sandstorm
What is Computer Science?

• Animation
What is Computer Science?

• The Organization of Data, and Searching
What is Computer Science?

- Medicine, Genomics
What is Computer Science?

• Devices
Computer Science and Programming

• Computer Science is more than programming
  – Called *Informatics* in many countries
  – Elements of both science and engineering
  – Elements of math, physics, cognitive science, music, art, and many other fields

• To some programming is an art, to others a science, to others an engineering discipline.
What Will We Do in CompSci 4?

• Web pages/html (one week)
• Learn to program with Alice
• Java (2-3 weeks at the end)

• Logistics
  – Bring laptop or use class laptops
  – Textbook
How CompSci 4 Will Work

• In Class
  – Lecture/demos
  – Tutorials
  – Classwork (in assigned pairs)
  – REQUIRED ATTENDANCE

• Outside of class
  – Complete work not finished in class
  – Reading
  – Assignments
What Is Alice?

• A modern programming tool
  – 3-D graphics
  – 3-D models of objects

• Animation
  – Objects can be made to move around virtual world (a simulation or video game)
What does Alice run on?

• Alice is written in Java – should run on many systems
  – supports Mac and PC
• Which version of Alice are we using?
  – Alice 2.2 Beta,
  – don’t use the version in the book or on the alice web page, see the CompSci 4 resources page
  – May also use Alice 3.0 Beta a little
Fast Start Up

• Can quickly learn to create
  – A simple animation in a few minutes
  – A non-trivial animation in a few class periods

• Can learn to use the Alice interface after a few more class periods
The Power of Alice

• Automatically keeps track of 3-D objects
  – What objects are in the virtual world
  – Types of objects
  – Positions of objects in the world
Objects Have Multiple Parts that are moveable

- Objects already exist in libraries
Program an Object

World.my first method

No variables:

- Chicken.Neck.Head turn right 0.25 revolutions
- Chicken move up 0.5 meters
- Chicken.Neck.Head turn left 0.25 revolutions
- Chicken roll right 2 revolutions

- Do together
  - Chicken say CompSci 4 is going to be fun! duration = 4 seconds
  - Chicken move down 0.5 meters
  - Chicken move forward 10 meters style = abruptly
Class Today

- Demo of Alice
  - Simple world
  - Projects from last semester
- Go over syllabus, web page
- A simple html web page
- Assignment 1