CompSci 6
Programming Design and Analysis

January 10, 2008

Prof. Rodger
Announcements

• Read for next time Chap. 1, Chap 2.1-2.2
• Assignment 1
• Reading Quiz on Blackboard
  – Due beginning of class next time
• Bring laptops if you want starting next time
• Must install Eclipse and Ambient
  – See Resources page
  – Update if you already have it installed
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
Scientists and Engineers

- Scientists build to learn, engineers learn to build. - Fred Brooks

- Duke alum
- Chair of UNC’s Computer Science Department
- Turing Award Winner
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.
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?

• What is it that distinguishes it from the separate subjects with which it is related? What is the linking thread which gathers these disparate branches into a single discipline? My answer to these questions is simple --- it is the art of programming a computer. It is the art of designing efficient and elegant methods of getting a computer to solve problems, theoretical or practical, small or large, simple or complex.

C.A.R. (Tony) Hoare
C.A.R. (Tony) Hoare

- Turing Award Winner
- Knighted by Queen Elizabeth
Young People Can Have a Big Impact

- Who are these people and what did they do at the given age?
  - Shawn Fawning (19 years old)
  - Marc Andreessen (21 years old)
  - Claude Shannon (21 years old)
  - Linus Torvalds (21 years old)
  - Dmitry Sklyarov (26 years old)
  - Tim Berners-Lee (35 years old)
  - Jim Ellis (Duke alum) (23 years old)
  - Richard Stallman (37 years old)
  - Luis Von Ahn (28 years old)
  - Grace Hopper (? Years old)
  - Randy Pausch (30’s)
What is Computer Science?

- Artificial Intelligence

Roomba

Mars Rover

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
Why is Programming Fun?

• What delights may its practitioner expect as a reward
  – First is the sheer joy of making things.
  – Second is the pleasure of making things that are useful.
  – Third is the fascination of fashioning complex puzzle-like objects of interlocking moving parts.
  – Fourth is the joy of always learning.
  – Finally, there is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly removed from pure thoughtstuff.

Fred Brooks
Problem Solving

• Nim
A Java Program

public class HelloCompSciClass
{
    public static void main(String [] args)
    {
        // display a greeting
        System.out.println("Hello, CompSci 6!");
    }
}
About the Java Program

• What is the name of the class?
• What is the name of the method?
• What is printed?
• What does the “;” mean?
• What does “public static void” mean?
• What is “String [] args”? 
Environment we will use

• Eclipse – an Integrated Development Environment
  – Editor
  – Compiler
  – An output console
  – Visualization of files and folders
  – Submission of programs (Ambient)

• See CompSci 6 page for installing on your computer