Welcome to CSci 1103

Introduction to Programming in Java
Instructor (me)

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Questions?

Direct questions to:
csci1103@cs.umn.edu
Moodle forum discussion
Textbook

Online at:

http://math.hws.edu/javanotes/

Introduction to Programming Using Java, Seventh Edition

Version 7.0, August 2014

(Version 7.0.1, with just a few corrections, August 2015)

Author:  David J. Eck  (eck@hws.edu)

Welcome to the Seventh Edition of Introduction to Programming Using Java, a free, on-line textbook on introductory programming, which uses Java as the language of instruction. This book is directed mainly towards beginning programmers, although it might also be useful for experienced programmers who want to learn something about Java. It is certainly not meant to provide complete coverage of the Java language.

The seventh edition requires Java 7, with just a couple brief mentions of Java 8. Previous versions included Java applets on the web pages that make up this book, but the applets have been eliminated from this version. Earlier editions of the book are still available; see the preface for links.

You can download this web site for use on your own computer. PDF and print versions of the textbook are also available. The PDF that includes links might be the best way to read it on your computer. Links to the downloads can be found at the bottom of this page.

Readers are strongly encouraged to try out the sample programs as they read the book! You can download the source code separately or as part of the web site using the links below. See README file for information about how to compile and run the examples.

Search this Text: Although this book does not have a conventional index, you can search it for terms that interest you. Note that this feature searches the book at its on-line site, so you must be working on-line to use it.

Search Introduction to Programming Using Java for pages...

Short Table of Contents:

- Full Table of Contents
You need a CSE Labs account to participate in labs in this course

Lab attendance is mandatory
http://cselabs.umn.edu

College of Science and Engineering Public Computer Classrooms and Labs

The College of Science and Engineering operates several public computer labs that are reserved for CSE students. Students must open a CSE labs account in order to use these labs. This site provides information regarding CSE lab account creation, access, and use. If you are unable to find what you are looking for on this site or have comments, suggestions, or questions, please send e-mail to operator@cselabs.umn.edu.

Door Access: The Mechanical Engineering building now has 24 hour access for CSE Labs students. If you have an active CSE Labs account your U Card will now have access to the NEC building at night. If you would like to test your U Card to ensure it works, please use the door in the far southwest corner of the courtyard between the old Mechanical Engineering building and the new Mechanical Engineering building. This is NOT the glass door next to the elevator.

Quick links for new students
- Account Information
- Account Authorization form
- Classroom and Lab Information
- Other Links

Related Links and Sites
- Association for Computing Machinery (ACM)
- Borchert Map Library
- Charles Babbage Institute (CBI)
- College of Continuing Education Programs (CCE)
- Computer Science and Engineering (CSE)
- Electrical and Computer Engineering (ECE)
- Geometry Center
- College of Science and Engineering (CSE)
- Laboratory for Computational Science and Engineering (LCS&E)
- Minnesota Supercomputing Institute (MSI)
- Science and Engineering Library (SciWeb)
- Student Dashboard (CSE)
- University of Minnesota (umn)
http://cselabs.umn.edu
http://cselabs.umn.edu

CSE Labs Account Creation

CSE Labs accounts no longer closing every term

If you have had a previous CSE Labs account, you do not need to reopen it every term. Accounts will now only be closed after a year of inactivity.

Welcome to the CSE Labs Account Creation Site

Use this site to initiate your CSE Labs account. CSE Labs use is open to any student currently enrolled in the College of Science and Engineering.

If you do not know what your username is, or you are having problems see the U of M Student Internet Account Initiation Form.

Create CSE Labs Account

For further information send email to operator@cselabs.umn.edu or stop by the Systems Staff Office in Keller Hall 1-201.

For a list of our hours see Systems Staff Contact Information and Hours.

Changing your Password

If you want to change your password, you will need to use the U of M Internet Account Options web page.
Welcome to the Fall2012 CSE Labs Account Creation Form.

Use this form to initiate or change your CSE Labs account for the Fall2012 semester. CSE Labs use is open to any student currently enrolled in the College of Science and Engineering.

Please enter the following information:

- Your student email **username**.
- Your **password** for your general UMN email account. (To verify your eligibility for a CSE Labs account.)

Username: park0580@umn.edu
Password: [Redacted]

If you do not know what your username is, or you are having problems see the U of M Student Internet Account Initiation Form.

For further information send email to operator@cselabs.umn.edu or stop by the Systems Staff Office in Keller Hall 1-213.

For a list of our hours see Systems Staff Contact Information and Hours.

Submit
CSELabs account

CSELabs account used in lab on Monday Sep. 12th

Register ASAP

Problems?
Bug operator@cselabs.umn.edu
Class website

www.cs.umn.edu/academics/classes

Or google “umn.edu csci class”

Syllabus, schedule, other goodies

Moodle page will have grades and homework submissions
Class website

Moodle also has a link to the website:
Class website

CSci 1103: Introduction to Programming in Java

Class Announcements

- 09/05/2012
  Welcome to CSci 1103. Be sure to check here often for important announcements.
Syllabus

20% Labs (Mondays)
30% Homework (due Fridays 6pm)
20% Midterm (Friday, Oct. 21)
30% Final (Thursday, Dec. 22)

Late homework not accepted, but will drop the lowest
Syllabus

Labs can be checked off up until a week after the lab

Homework must be coded individually

Don't cheat
Really... don't cheat
Homework

Homework will be both a creative and problem solving endeavor:

Lego example
Build a castle with:
- 4 walls enclosing
- Door
- At least one tower (higher than wall)
Homework
Syllabus

Grading scale:
93% A
90% A-
87% B+
83% B
80% B-

77% C+
73% C
70% C-
67% D+
60% D
Below F
Prerequisites

None

If you are already familiar with programming in an object oriented language, this class will be boring
What can I program?

If you can think of an explicit process (of simple steps) to solve your problem, then it can be programmed.
Banana Nut Bread

Ingredients

* 3 or 4 ripe bananas, smashed
* 1/3 cup melted butter
* 1 cup sugar
* 1 egg, beaten
* 1 teaspoon vanilla
* 1 teaspoon baking soda
* Pinch of salt
* 1 1/2 cups of all-purpose flour
Banana Nut Bread

Directions
1. Preheat the oven to 350°F (175°C).
2. Mix butter into the mashed bananas in a large mixing bowl.
3. Mix in the sugar, egg, and vanilla.
4. Sprinkle the baking soda and salt over the mixture and mix in.
5. Add the flour and nuts last, mix.
6. Pour mixture into a buttered 4x8 inch loaf pan.
Repetitive tasks
ATMs

How do you get change for $18.26?
Repetitive tasks

If you feel like a mindless zombie when you do it a lot, you can probably program it.
Repetitive tasks

brains

ZOMBIE!!!
Auto leveling?
Software vs Hardware

Software - the more intangible code on a computer

Hardware - the physical Parts of the computer
Hardware interaction

Input → CPU → Output

Memory
Memory addressing

Data is stored in “addresses” inside the memory

Later in this class, we will use these addresses to manipulate and share data
Memory addressing
Object oriented programming

OOP - focus on data and how they interact

To make algorithms for OOP, it is often useful to identify the data you are working with and their relationships before programming.
Object oriented programming

Data for...

Banana nut bread?
ATM?
Ball game?
Object oriented programming

Data for...

Banana nut bread? Ingredients
ATM?
Ball game?
Object oriented programming

Data for...

Banana nut bread?  Ingredients
ATM?  Dollars & coins
Ball game?
Object oriented programming

Data for...

Banana nut bread? Ingredients
ATM? Dollars & coins
Ball game? Balls & mouse
Object oriented programming

Data for...

Banana nut bread? Ingredients
ATM? Dollars & coins
Ball game? Balls & mouse

Lots of pixels (tiny color dots)