

CSE 142

Computer Programming I

Overview and Welcome

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Winter Quarter 2001
*Slides based on those from previous
quarters, including work by Martin
Dickey and Richard Anderson*
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Today's Outline

Computers and Software
Programs, languages, and problem
solving
Should you be here?
Course organization, workload, and
grading
Resources
First Assignment

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Can't get in?

Some new spaces will open up this week!
History shows that many students drop 142
during the first two weeks of the course
All you can do is keep trying
No waiting list, no lottery
Matriculated undergrads have priority over
grads and non-matriculated students
Instructors do not have entry codes

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What to do until then...

You are welcome to attend this week and do
the first assignments, but... we cannot
guarantee you will get in.
Go to some quiz section on Thursday
CSE (the Computer Science and Engineering
Department) has undergraduate advisors in
Sieg 114.
See them for all registration advice and
signatures (but not entry codes)
See them for information about becoming
a major
See them if you get discouraged and want
to drop

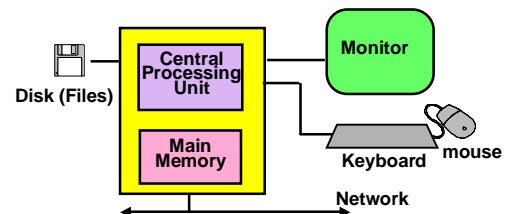
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What is a Computer?



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Computers in the 60's

As big as a truckload of bricks
Weighed as much as a truckload of bricks
Cost as much as a truckload of **gold** bricks

Today: "better ones in toys and toasters"

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If Cars Had Improved Like Computers...

A Cadillac would cost \$0.50
Do 0 to 60 in 3 milliseconds
Go to the Moon and back on a tank of gas
Fit in your pocket

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Is The Revolution Over?

Moore's law: # of transistors per chip doubles every 18 months.
Intel Pentium II had 7.5 million transistors
Intel Pentium III has 28 million transistors
100-500 million transistors per chip easily foreseeable
Much faster clock speeds, throughput in the future
Advances also in memory, magnetic (disk) and optical (CD) storage, networking, etc.
Yet prices aren't rising!

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What about software?

Major software-based products literally unimaginable 10 - 15 years ago
desktop publishing, Internet browsers, 3-D games, Web audio and video, e-commerce
Big improvements in
handwriting and speech recognition
computer animation, graphics, vision
digital consumer products
cell phones, CD-ROM and DVD, etc.

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Why Are We Here Today?

Computers are changing the way **everything** is done
Computers will continue to change our lives
Programming is a key enabling technology

That's the Big Picture.

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What Is a Program?

A **program** is a set of instructions that the computer is supposed to execute to solve some problem.

Computers are **general purpose** devices.

I.e., just about **useless** (without a program)

A program transforms a computer into a **special-purpose** device, capable of solving a specific problem.

Footnote: "software" = programs

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Languages

Computer hardware (a "machine") carries out instructions written in a **machine language**

1's and 0's – very hard for people to understand

A **high level language** is a notation that humans can understand and use more easily

A **compiler** translates a high level language to a machine language that can be executed

Machine Language - 1940's

Fortran, Lisp - 1950's

Cobol, Algol, APL, PL/I - 1960's

Basic, Pascal, C - 1970's

Smalltalk, C++, Modula, Ada, Prolog - 1980's

Java 1990's

CSE 142

Computer Programming I

UW Catalog Description:

Basic programming-in-the-small abilities and concepts. Highlights include procedural and functional abstraction with simple built-in data type manipulation. Basic abilities of writing, executing and debugging programs.

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C Programming Language

The course is taught using the C Programming Language

Emphasis of course on fundamental concepts which are language independent.

C and C++ are widely used but do present hurdles for novice programmers

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What is Programming Like?

It's really hard to describe!

Many similarities to solving "word problems" in math

Translate a problem description into a formal solution

Symbol manipulation an integral part

Some people describe it as "puzzle solving"

A mix of high-level creativity and low-level picky details

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Problem Solving and Program Design

Clearly **specify** the problem

Analyze the problem

Design an **algorithm** to solve the problem

Implement the algorithm (write the program)

Documentation essential

Test and verify the completed program

The test-debug cycle

Maintain and update the program

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Why Are You Here?

"I know computing is important, and I need basic expertise."

"I'm just curious."

"I have this computer and I want to do X but I can't get software that does X."

"It's a requirement for my major."

"I want a career in computing."

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Should you be here??

If you already know the contents of this course and C...

You **can** go directly to CSE 143 (142 credit available if you do well in 143)

Go there *today* to check it out: Guggenheim 224, 2:30 pm MWF

This course may be boring but will still be time-consuming. You'll have to do things "our way."

If you stay, please participate!

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Should you be here??

If you are a complete novice to programming...

Prior programming experience is NOT required!

But...programming a computer is very different from simply using one.

Being comfortable or even expert with computer applications is not the same as programming!

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Course Organization

Lectures 3 times a week

Quiz section once a week

Programming projects

In the lab or at home (with proper equipment)

Individual effort (not group projects)

Normally, Sunday night electronic turnin

deadline, with paper copy due Monday

Two midterm exams

Final exam – Wednesday, March 14, 2001

May be a time change from original schedule!

Other activities: non-programming HW, quizzes

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Quiz Section

Quiz section: once a week

Review, questions, exercises, quizzes and more

Designated sections

"low-background": for students without previous programming experience

"high-background": for students with considerable experience

All sections have identical assignments, tests, and grading criteria

Can request section swap in Wed. lecture

Please memorize your student ID#, quiz section ID and your TA's name!

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Final Exam (Comprehensive)

Wednesday, March 14, 2001

Times and rooms, but not the day, are likely to be different from the on-line Time Schedule (will be announced when we know the details)

With permission you can move to the exam period other than the one you are scheduled for.

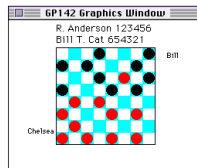
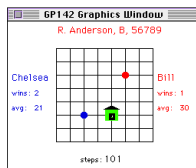
If you have a problem with **both** times contact course administrator as soon as times are announced.

It will not be possible to take the final on any other day.

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Homework Can Be Fun

Examples from previous quarters...



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What To Expect

Grades:

Class average just below 3.0

Always some 4.0's, always some 0.0's

Is this a tough course?

Contents are **challenging**

Projects can be **time-consuming**

Cramping won't work -- must keep up

Fun?

Absolutely!

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The UW Drop Policy

Historically, 10%-15% of CSE 142 enrollees dropped the course

Most drops were after the 10th day under the old drop policy

It's very hard to judge how challenging this course is by its first two weeks

Unfortunately, you must drop by 10th day !

Once per year you get a "free" drop.

Also possible to change status to noncredit until week 7 of the quarter.

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Advice

Keep up with the course **day-by-day**

Seek help early and often:

TA, instructor office hours

Lab consultants (IPL)

Undergrad advisors in Sieg 114

Some special tutoring is available

Consider joining a "low-background" section if you're new to programming

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Course Staff

Here to help you succeed!

Instructors

You can go to either instructor's office hours

TA's

Teach sections & grade homework

You can go to any TA's office hours

Lab staff

Operator (front-desk)

CSE 142 Consultants

Course administrator: Special arrangements, fix bookkeeping problems, claim abandoned work, etc.

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Textbook and materials

Text: "Problem Solving and Program Design in C" - Hanly and Koffman

3rd edition (2nd edition ok with minor adjustments)

"self-check" and "quick-check" exercises highly recommended (answers in book)

Course Packets

Slides (based on last quarter's), reference material

Many students bring this to every lecture to take notes (recommended)

Buy at: Professional Copy & Print, 4200 U. Way

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CSE142 Web Site

<http://www.cs.washington.edu/education/courses/142>

Messages from class mailing list (read often)

Homework projects

Instructions

Downloading

Turn-in

Lecture schedule and current reading

Lecture slides

Tips, hints

Office hours

Exam information, lab schedules, etc. etc.

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Mailing Lists & Newsgroups

Announcements, tips, hints, place to ask questions and get answers

uwash.class.cse142.* newsgroups for general discussions

"cse142-announce" mailing list for announcements from course staff

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IPL: Intro Programming Lab

Mary Gates Hall (MGH) 334

Pentium PC's running Windows

Microsoft Visual C++ Version 6.0

Web browsers

Electronic mail

CSE142 consultants (posted hours)

Visit today!

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If you compute at home...

Stay connected with Web and e-mail

Get a compiler - MSVC++ 6.0 recommended

UW Bookstore has the "Standard" edition for <\$50.

Windows 95/98/NT/2000+MSVC is our "official" platform

some support for others

Do first project in IPL

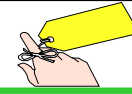
just to become familiar with it

Help on computing at home is on 142 web site

Expect a few headaches (but worth it!)

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Tutorials



Optional tutorials, this week
Hands-on sessions in the IPL to get you familiar with the system

Windows 95/98/NT, Web browser, basic MSVC,

...

Meant for people unfamiliar with the software

No advanced stuff

Can do assign. 0 (esp. part B) during tutorial

Seating: 1st come, 1st served

Length: about 1 hour

Location: IPL, MGH

Time: Today & Thur @3:30, Fri @2:30, Sun @3:00
(check the web for any changes)

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Homework # 0

Due in 2 parts: This Friday(!) and Sunday/Monday

Read Chapter 1 and handouts.

Go to IPL and start learning the system.
Be sure and read section 1.2 before going to lab.

Start playing with the other software tools.

There's **lots** to read during the quarter:
Start going & keep going!

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Final Thoughts

Fill out section swap form and hand it in as you leave *if* you want to switch between high-low-regular background section *at your currently scheduled time*

Remember tutorials in the IPL

Today & Thursday @3:30
Friday 2:30 Sunday 3:00

Get started!!

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