


CSE 231, 1st Day

Fall 09, Dr. Bill Punch

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What to cover today

- Who am I
- Who are you (10-80-10 rule)
- Why are we here
- How hard is this (can I do this, why is this so hard)
- What can I expect (cheating, group work, experiments, start early, ask questions)
- Syllabus
- Hey, we're doing Python now!
- Computer Stuff

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Who am I?

- Bill Punch, Associate Professor Computer Science.
 - Undergrad in BioChemistry (worked 3 years in a research lab)
 - minor in philosophy (OK, kind of warped me)
 - Ph.D., *The* Ohio State University
 - Prof here at MSU since Fall 1989
 - Area of research, Genetic Algorithms (application of evolutionary principles to solving problems)
 - Presently director of MSU High Performance Computing Center

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More of me

- 3 kids, 2 in college (so I know the deal from both sides)
- various hobbies:
 - squash (like racquetball, more running)
 - glassblowing (new hobby, lots of fun but hot and lots of work)
- I like technology and what it does for/to us. You'll hear more about that.


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Who are you

~200 students strong in the two lecture sections of CSE 231, split into 10 sections.

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Accounting	3	Electrical Engineering	6	Mathematics	7
Anthropology	1	Engineering - No Preference	7	Mechanical Engineering	4
Astrophysics	1	English	2	Media & Comm Tech	1
Biochem&Molecular Biol/Biotech	4	Entomology	1	Media Arts & Technology	5
Biochemistry & Molecular Biol	5	Finance	7	Medical Technology	3
Biochemi/Biotechnology	1	Geographic Information Science	2	MicroI & Mol Genetics	1
Biosystems Engineering	1	High School Guest	1	Microbiology	2
Cell & Molecular Biology	1	History	1	No Preference	7
Chemical Engineering	5	Human Biology	1	Philosophy	1
Chemical Physics	1	International Relations	1	Physics	12
Chemistry	3	Intr Stdy Soc Sci-Health	1	Political Science	1
Computational Math	2	Intr Stdy Soc Sci-Hm	1	Premedical	2
Computer Engineering	15	Kinesiology	3	Professional Writing	2
Computer Science	52	Lifelong Education	2	Psychology	1
Criminal Justice	2	Lyman Briggs	1	Statistics	1
Economics	8	Materials Sci and Engineering	1	Supply Chain Management	2
Education	1			Urban and Regional Planning	1
				Grand Total	197

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FS09, 231, Year

33% Freshman
31% Sophomore

66% underclassman

Class_Code	Total
1	66
2	62
3	35
4	29
D	1
DD	1
L	3
(blank)	
Grand Total	197

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FS09, Eng vs others

Turns out to be about 47% Engineering students (including Eng. No Pref) and 53% not engineering

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What I can guess about you

- Told as a beginning professor about a rule of students, which I call the 10-80-10 rule.
- Like many pieces of advice, I appreciate it now better than I did then.
- The numbers are not as important the basic 3 class layout.

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1st 10%

10% of you probably don't need an instructor

- you have either had programming already or are motivated enough, or just naturally talented in programming, so that you could do this yourself with just a little help here and there.

Great, let me help as I can.

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2nd 10%

10% don't want my help

- for whatever reasons, there are people in the class who don't have the time, or the interest, to put in the time necessary to make it through the class

I'll help if I can, but the decision is yours

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The 80%

I'm here for you.

- You are interested, you are hardworking but this is new material and you need a guiding hand to get through it.

That's my job.

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Drop Rate, Spring 2005

- around 21% dropped
- another 5% failed
- so 26% dropped or failed

- at some schools the drop/fail rate is 50-60%



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Drop rate, spring 2007

- Getting better. For the spring of 07:
 - started with 194 (first day)
 - ended with 187 grades
 - of those grades, 9 "grade suicides", 10 failed the course
 - so $7+9+10 = 30/194$, about 16%



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Drop rate, Fall 2008

- Not as good FS08 semester. Go figure.
 - started with 237 (first day)
 - ended with 211 grades
 - of those grades, 14 "grade suicides", 13 failed the course
 - so $26+14+13 = 43/237$, about 22%



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Not as bad as it looks

- Many people just don't like their grade and commit "grade suicide". They don't take the final because they know that a grade of 1.5 or less can be repeated. So they fail now in the hopes of a better grade later.
- Better to just get it done now!



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Spring 2005 1st day Survey

- 60% of 4.0 grades answered "never programmed before CSE231"
- 80% of 3.0 grades answered "at least some programming before CSE231"



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Why are we here

- This is the first programming course for computer science and computer engineering majors
- Its emphasis is on learning how to program, with a view towards becoming proficient at programming.
- Not a survey, the real thing



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Computing is not just for majors!

- We know, and many of you know, that learning computing is not just for majors anymore
- We are particularly interested in making this class “useful” to other majors in their respective careers
- more on this later

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Why is this hard?

- I cannot precisely explain why it is hard, only that it is indeed hard.
- Typically quote is “Never have I worked so hard and gotten so low a grade”

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An analogy

Let us say that you have signed up to study French poetry (how about Marot) in the original

You have two problems:

- you don't speak French
- you don't know much about poetry

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Clement Marot 1496-1544

- *Ma mignonne*
- *Je vous donne*
- *Le bon jour,*
- *Le séjour*
- *C'est prison.*
- *Guénson*
- *Recouvrez,*
- *Puis ouvrez*
- *Votre porte*
- *Et qu'on sorte*
- *Vitement,*
- *Car Clément*
- *Le vous mande.*
- *Va, friane*
- *De ta bouche,*
- *Qui se couche*
- *En danger*
- *Pour manger*
- *Confitures;*
- *Si tu dures*
- *Trop malade,*
- *Couleur fade*
- *Tu Prendras.*
- *Et perdras*
- *L'embonpoint.*
- *Dieu te doint*
- *Santé bonne,*
- *Ma mignonne.*

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Crappy-literal translation

- *My sweet/cute [one] (feminine)*
- *I [to] you (respectful) give/bid/convey*
- *The good day (i.e., a hello, i.e., greetings).*
- *The stay/sojourn/visit (i.e., quarantine)*
- *[It] is prison.*
- *Cure/recovery/healing (i.e., [good] health)*
- *Recover (respectful imperative).*
- *[And] then open (respectful imperative)*
- *Your (respectful) door,*
- *And [that one] (i.e., you (respectful)) should go out*
- *Fast[ly]/quick[ly]/rapid[ly].*
- *For/because Clément*
- *It (i.e., thusly) [to] you (respectful) commands/orders.*
- *Go (familiar imperative), fond-one/enjoyer/partaker*
- *Of your (familiar) mouth,*
- *Who/which herself/himself/itself beds (i.e., lies down)*
- *In danger;*
- *For/in-order-to eat*
- *Jams/jellies/confectionery.*
- *If you (familiar) last (i.e., stay/remain)*
- *Too sick/ill,*
- *[A] color pale/faded/dull*
- *You [familiar] will take [on].*
- *And [you (familiar)] will waste/lose*
- *The plumpness/stoutness/portliness (i.e., well-fed look).*
- *[may] God [to] you (familiar) give/grant*
- *Health good,*
- *My sweet/cute [one] (feminine).*

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Decent Trans, S.Jamar

- *My sweet dish,*
- *You I wish*
- *A good day.*
- *Where you stay,*
- *Is a jail.*
- *Though so pale,*
- *Leave your bed,*
- *Regain red,*
- *Open your door*
- *Stay not, poor*
- *Child; gain strength*
- *And at length,*
- *Steve does urge,*
- *Please emerge.*
- *Then go eat*
- *Jam so sweet.*
- *Lying ill*
- *Means you will*
- *become too thin -*
- *Merely skin*
- *Cov'ring bone;*
- *Regretted tone.*
- *Eat again,*
- *Avoid the fen.*
- *God grant thee*
- *Be healthy.*
- *This I wish,*
- *My sweet dish.*

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How does this apply

You have two related problems:

- the “syntax” of French is something you have to learn
- the “semantics” of poetry is something you have to learn

You have two problems you have to solve at the same time.



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Programming, Syntax and Semantics

- You have to learn the “syntax” of a particular programming language
 - many details about the language, how to debug and use it
- You have to learn about “problem solving” and how to put it down on “computer”.
- There probably is no better way. It’s hard!



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Computers & problem solving?

This is both the problem and difficulty of computers.

- The promise (perhaps the hope) of computers is that, somehow, we can embed our own thoughts in them. To some extent we can!
- The problem is the incredible difficulty of doing so, and the stringent requirements, the real rigor, required to put simple “thoughts” into a working program.



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Focus of Computer Science

There are two foci for computer science

- Learning the difficult task of truly “laying out” a problem-solving task
- Providing tools to make this process as easy (though it will never be “easy”) as possible.

Your focus should be on problem-solving, and adding rigor/focus to your ability to do problem-solving.



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About the Course

- Previous programming experience is not expected. Most students have never written a program.
- Calculus is a co-requisite (remember, rigor in problem-solving)
- Familiarity with Windows is useful (labs are in Windows) but Python runs everywhere!



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Material

Course material is available on the Web at <http://www.cse.msu.edu/~cse231> .

Discussion forums and updates on angel: <http://angel.msu.edu>

Use the web site and angel! No more paper, everything you need to know is one of those two places



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Text

- No "official" text. We will provide you with material as the class goes on
- Plenty of online material (see web pages)
- Course Pack, online (don't bother buying)



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Labs

- There are required, weekly laboratory exercises. (They will be available on line, if you want to start early.)
- In order to pass the course, a student needs credit on 12 of the labs.
- Grading on labs is credit/no_credit.
- Collaboration on labs is ***encouraged***.



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Computer Projects

- There will be 11 computer projects -- roughly one per week, and constitute 45% of the course grade.
- Think of this as homework, to be done only by you!!!
- **Late computer projects are not accepted.**
- A few computer projects may be collaborative with a partner.



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Project Teams

We hope to assign a couple of projects with teams of two

- ONLY in specified projects
- Partner will be in same lab section
- No two projects can have the same partner



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Collaboration on Projects

- Under no circumstances should you share your project code with another student.
- If you share your project code with another student, you can count on getting a zero: experience shows that a student who "simply wants to **look at** your project code" will either copy parts of it or pass it on to another student who copies it.
- Protect yourself, students steal scrap outputs, temp files on the computer (and how can I tell).



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Analogy

Plagiarism rules in writing classes:

- copying lines of code is similar to copying sentences;
- copying blocks of code is similar to copying paragraphs;
- copying a whole project is similar to copying a whole paper.

None of the above is acceptable.



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MOSS

- MOSS (Measure Of Software Similarity) is a nation-wide resource for automatically determining the similarity of Python code
- On each assignment we submit all assignments comparing each against all others
- The logical structure of the program is compared
 - so things like name changes and rearranged code do not fool it
- MOSS returns a list with most similar first which the instructors then examine by hand. MOSS highlights the similar portions to make our job easier.



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Class Participation

- We will do class “exercises” to emphasize the points being made on some days.
- These will be paper and pencil exercises, but they are an opportunity to see what you know, and don’t know.
- Chance to mimic the exam situations



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Examinations

- Two midterms and a final exam constitute 50% of the course grade: exam dates are in the syllabus.
- Sample exams are on-line.
 - They are multiple choice.
 - Bring a picture ID and pencil.
 - Bring one page of notes (8.5x11 both sides)



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Midterm times

Exams are always in 1345 EB during regular class hours. Present schedule is:

- Thur, Oct 8
- Thur, Nov 12



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Grades

- 45%: Computer Projects
- 50%: Exams
- 5%: Class participation
- To receive a non-zero grade a student needs to do ALL the following:
 - credit on 12 laboratory assignments
 - at least 50% of computer project points
 - at least 50% of exam points



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Exam score breakdown

- 1st Exam: 150 pts (15% overall, 30% exam score)
- 2nd Exam: 150 pts
- Final: 200 pts (20% overall, 40% exam score)



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Grading Scale

4.0	900 - 1000 points
3.5	850 - 899 points
3.0	800 - 849 points
2.5	750 - 799 points
2.0	700 - 749 points
1.5	650 - 699 points
1.0	600 - 649 points
0.0	0 - 599 points



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Adjustments, or "The Curve"

We do not curve individual test/projects! Rather, we do the following. In the past the 3.0/3.5 boundary was placed near the sum of exam medians plus 450, i.e. a student who was at the median on exams and had perfect projects was near the 3.0/3.5 cut. If the final grades are not in line with this, we adjust the final grade



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Labs, attendance is important!!

Students who miss more than two labs will have their final grade reduced by 0.5 for each lab missed after two.



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Calendar

The course calendar (syllabus, on the class website) indicates topics and readings for the whole semester.



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On-Campus Computing

- All students taking CSE courses get an account on CSE computers which they can access remotely or in the CSE labs on the third floor of Engineering.
- The CSE computing labs are open 7x24 and your account is active on all the machines in all the labs.
- Login name is the same as Pilot, but the password is different. Set during Lab.



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On-Campus Help Room

- A CSE 231 help room is provided. Help room hours will be posted by the second week.
- The help room is overcrowded the day projects are due so do not expect extensive help at the last minute.



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Angel, and forums

- Make sure you use Angel!
- Angel has forums for discussion about various topics, but most importantly updates on the projects.
- It is checked and updated often
- **You** are responsible to check for updates on Angel!



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Some Tips

As I said, some are willing to listen to tips on how to succeed, others prefer their own way. I offer the following tips having been teaching programming for 19 years (programming for 26).



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Tip 1, think before you code

Everybody wants to sit down in front of the computer and work it out as you go. Everybody wants to (including me), just don't do it.

Work it out on paper first, organize yourself before you write code.



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Tip 2, be a scientist

If the only programs you write are the 11 projects, you didn't get your money's worth

Write lots of small programs to test out ideas. If you get a problem you can't fix, write a small program to isolate it.



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Tip 3, start early

Everybody is busy, it's the first week back, there's plenty of things to do, but if you wait till the last minute to write these programs, *you will do poorly.*

Get an early start, try some things out, take your time. *Panic is an enemy of clear thought.*



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Tip 4, Use the Example Programs

Try out the examples and **change them to see what happens.** They are good examples to experiment with.

If you have a problem you can't solve, check them for possible solutions.



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Tip 5, Use the python window

The python window has lots of help. Use it.
Can't remember what a name is, try it.
Interactively working with the python window
is very helpful.

Try things out, see what it does



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Why Python?

FS07 we changed the first course, cse 231,
to be Python (the remaining CSE sequence
will still be C++).

Why?



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Why Python (1): Simpler

- Python is a “simpler” language than C++
- Simpler means:
 - Fewer alternatives (one way to do it)
 - Better alternatives (easier to accomplish common tasks)
- This allows us to focus less on the language and more on problem solving



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Why Python(2): Interactive

- C++ requires an intermediate step before you can run a program, compiling.
- Python allows you to type program statements into the python window and see results immediately
- Better for experimenting (which you need to do)



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Why Python(3): User base

- While we want to (and will) teach the fundamentals of computer science, we want what you learn to be “useful”
- Python is used in many areas to solve problems related to that field. Many packages are available to help for a particular area



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Why Python (4): Useful

- C++ is a good language, especially for majors. It teaches a level of detail that is needed
- Python is more generally “useful”, you can do things with it quickly. If you only take this course in CS, you will learn something fundamental and practical.



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Bottom Line

Having finished this course, we want you to have the following thought in your subsequent college career.

“Hey, I’ll just write a program for that”

Python allows this to happen.



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What about other CS courses

- If you are a major, then C++ will be taught to you, mostly in CSE 232 but other places as well.
- Learning a language like Python will not hurt you. In fact, it will likely help you as it plays a role that C++ often does not, and the mix of the two is very powerful.



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CSE 232 Experiment

- SS08 232 had a mix of Python and C++ students from 231
- Gave **exactly** the same final from SS07 where everyone took 231 in C++. Thus same topics covered
- Absolutely no difference in performance from the 231-Python vs 231-C++ students, or from SS08 vs SS07 students
- Python doesn't affect 232-C++ performance!



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Questions?



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