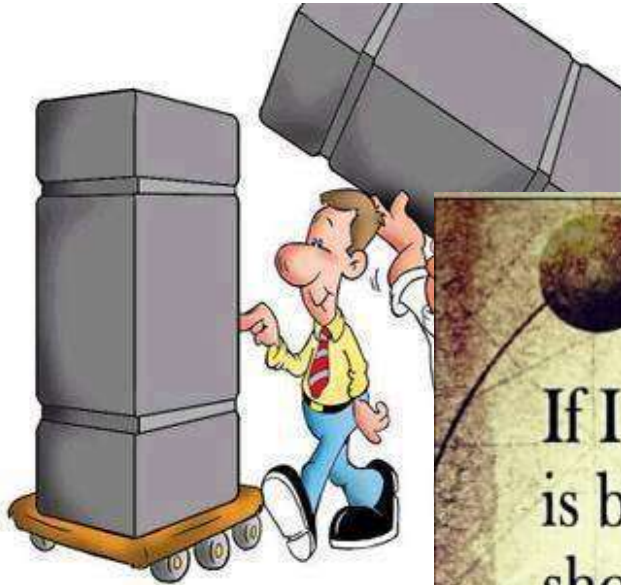


EECS 398 :: 003, 004, 005 – Computing for Computer Scientists

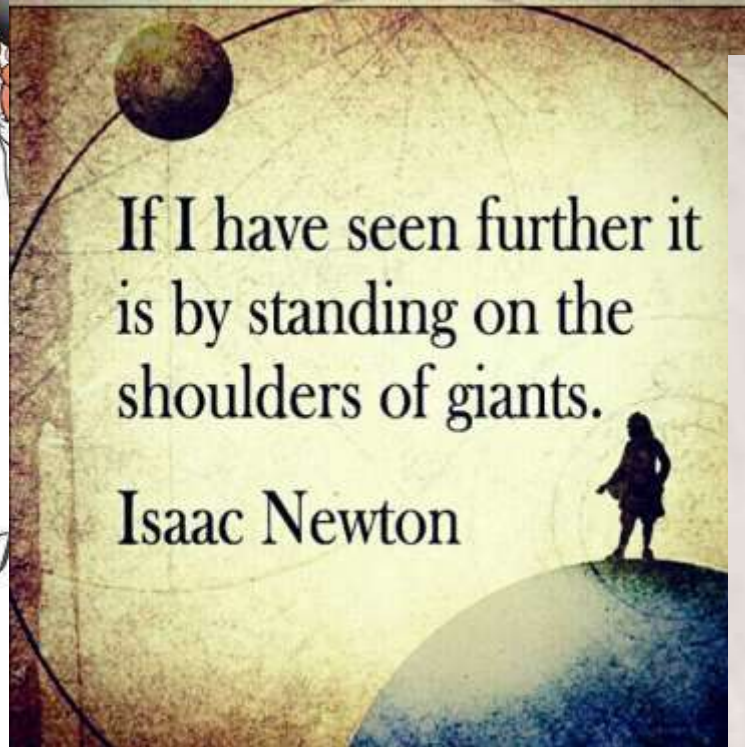
Winter 2016

<http://c4cs.github.io>

What this class is about



*Work Smarter
Not*



If one is to stand on the shoulders of giants, one must first climb up their backs, and the greater the body of knowledge, the harder this climb becomes.

What this class is about

This is not “Tools for Computer Scientists”

Though we will teach you a lot of cool tools

The goal is to give you the ability to pick up, learn, and use tools effectively

This class is *NOT* a set of tutorials

Task: Write, compile, and run “Hello World”

1. Log in to a CAEN machine in Linux
2. Press the “windows” key to open the application launcher and then type “gedit”
3. Now copy-paste the following block of code into the window:
1. Open your favorite text editor and write a basic “Hello World” program

```
#include <stdio.h>
int main() { printf(“Hello World\n”); return 0; }
```

1. Type “Ctrl-s” or click the “save” icon, save the file as “myprogram.c” in your home directory.
2. Press the “windows” key again and type “terminal”
3. In the window that appears, type “gcc myprogram.c -o myprogram”
4. Now type “./myprogram”
2. Compile and run your program

Lectures give you the “what” and the “why”,
homeworks are a self-guided tour on the “how”



This is a very individual class

- Nothing in this class is hard...
 - The second time you do it



This class is unlike any other class in engineering, especially CSE

- Collaboration *discouraged*
 - At least until after you are done
- It will benefit **you** only if **you** do the work
 - It's only 1-credit...

Course Resources

Everything starts from the course homepage:



cTools only has a link to the course homepage



<http://c4cs.github.io>

Syllabus, announcements, office hours, assignments, etc



Q&A, Help forum



Assignment submission, grading, and re-grades

You should have received accounts for both of these, if not e-mail c4cs-staff@umich.edu



Private Piazza Questions Only Please

Questions are private by default

May be useful as “digital office hours”

piazza

Q&A, Help forum

Course Meeting Times and Locations

Section 003 1571 GGBL, Friday 1:30-2:30

Section 004 1571 GGBL, Friday 2:30-3:30

Section 005 1013 DOW, Friday 11:00-12:00

In general, you may attend any section, however if the classrooms become overfull, we will have to ask that you attend the section you are officially registered for.

	Mon 1/11	Tue 1/12	Wed 1/13	Thu 1/14	Fri 1/15
10am					
11am			11:30 - 12:30 OH: Alex UGLI Basement by the CAEN		11:00 - 12:00 Lecture (ppannuto) 1013 DOW
12pm					
1pm		1:30 - 3:00 OH: Alex EECS Atrium by the Db Cafe		1:30 - 3:00 OH: Alex EECS Atrium by the Db Cafe	1:30 - 2:30 Lecture (mmdarden) 1571 GGBL
2pm	2:00 - 3:00 OH: David CSE Atrium				2:30 - 3:30 Lecture (ppannuto) 1571 GGBL
3pm				3:00 - 5:00 OH: Max BBB Atrium	3:30 - 4:30 OH: Alex BBB Atrium
4pm					

If this looks like a screenshot of a website, that's because it is.

Because all information is on the course homepage

<http://c4cs.github.io/#times>

Two Lecturers – Both Awesome



Pat Pannuto



Marcus Darden

Looking for contact info? You guessed it, course website: <http://c4cs.github.io>

Six IA's – Even Awesomer



Max Smith



David Snider



Waleed Khan



Matt Terwilliger



Alex Chojnacki



Mo Hussein

Is this another screenshot of that super-awesome, has-all-the-information, course website?

Why yes, yes it is.

<http://c4cs.github.io>

Lots of Office Hours

Assignments will require trial and error

	Mon 1/11	Tue 1/12	Wed 1/13	Thu 1/14	Fri 1/15
10am					
11am					11:00 - 12:00 Lecture (ppannuto) 1013 DOW
12pm			11:30 - 12:30 OH: Alex UGLI Basement by the CAEN		
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3pm				3:00 - 5:00 OH: Max BBB Atrium	2:30 - 3:30 Lecture (ppannuto) 1571 GGBL
4pm					3:30 - 4:30 OH: Alex BBB Atrium
5pm		5:00 - 6:00 OH: David CSE Atrium	5:00 - 6:00 OH: Max BBB Atrium	5:00 - 6:00 OH: David CSE Atrium	
6pm				6:00 - 7:00 OH: Alex BBB Atrium	
7pm					

Speaking of assignments... Grading and the like

- Attendance (25%)
 - Answer question at the beginning of each lecture
 - Correct: 2pts, Incorrect: 1pt, No Answer: 0pts
 - Max is $13 \times 2 = 26$ pts (spring break optional)
- Homeworks (25%)
 - Target: 1-4 hours of work / week
 - Graded on a {0, 1, 2} scale (all, some, or none)
 - Max is $12 \times 2 = 24$ pts (no spring break, no last week)
- Advanced Exercises (25%)
 - Goal: Guided way to learn more about a topic you think is cool
 - Graded on a {0, 1} scale (all or none)
 - Each homework has (at least) one, must pick at least 3 of 12
- Final Exam (25%)
 - Time and date TBA ASAP (sorry..., Friday-only lecture made it weird)

Looking for more details, questions? <http://c4cs.github.io/#grading>

Speaking of assignments... Grading and the like

- Attendance (25%)
 - Answer question at the beginning of each lecture
 - Correct: 2pts, Incorrect: 1pt, No Answer: 0
 - Max is $13 \times 2 = 26$ pts (spring)
- Homeworks (25%)
 - Target: 12 (1 per week)
 - You can learn more about a topic you think is cool
 - {0, 1} scale (all or none)
 - Each homework has (at least) one, must pick at least 3 of 12
- Final Exam (25%)
 - Time and date TBA ASAP (sorry..., Friday-only made it weird)

Last chance for administrative questions

Looking for more details, questions? <http://c4cs.github.io/#grading>

Pre-Req: You have your own computer

CAEN machines are **NOT** sufficient for this class

If you don't have your own computer...

- Dog ate it
- TSA confiscated it on your flight home
- Drunk roommate confused it for a frisbee

The CSE department will give you a loaner laptop for the semester for free

Contact Don Winsor: don@umich.edu

Speaking of assignments... What's on tap for this week?

- In this class, we want you to explore, to



- We also don't want to cause any trouble for all the other classes you're taking...

Wouldn't it be great if you had another computer, just for this class?

That's a good idea. Let's do that.

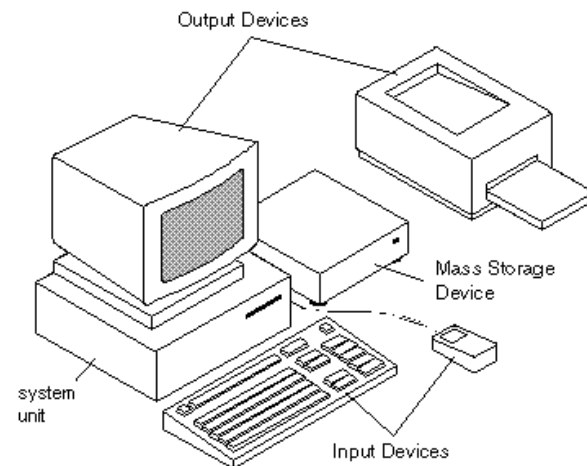
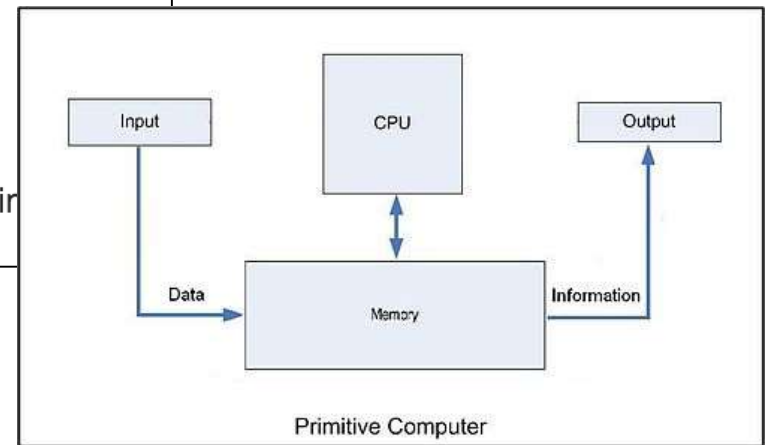
Enter the Philosophers: What is a computer?

com·put·er

/kəm'pyoʊdər/

noun

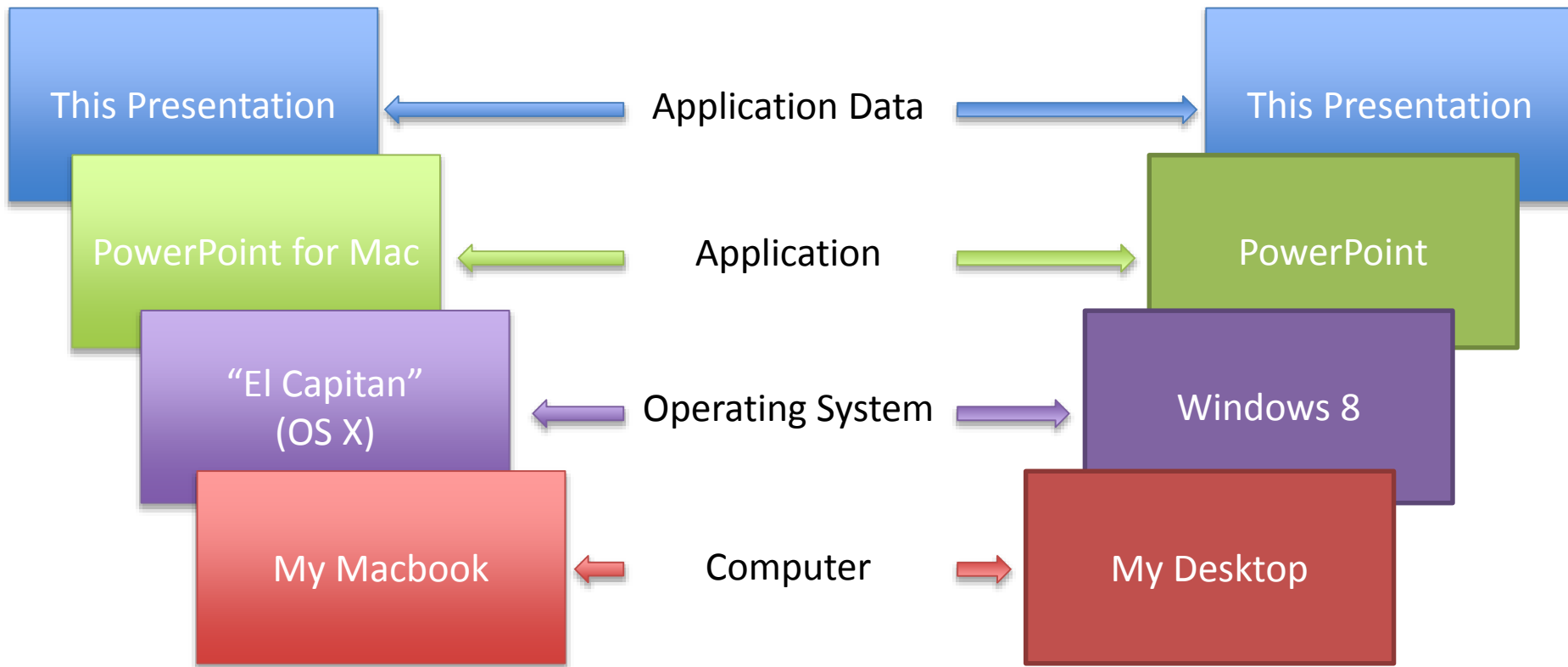
an electronic device for storing and processing data, typically in binary, according to instructions given to it in a variable program.



Aside: My Google Image search for "what is a computer" was really disappointing, 90's clip art, really?

What does a computer do?

Runs programs, such as



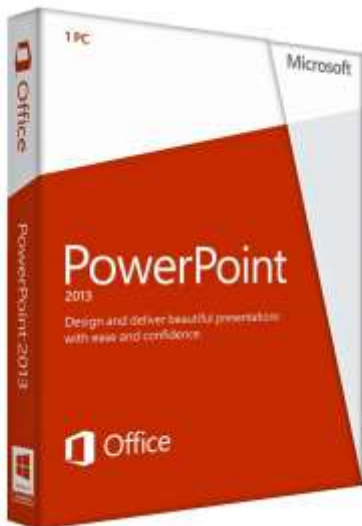
Computing is all about abstractions



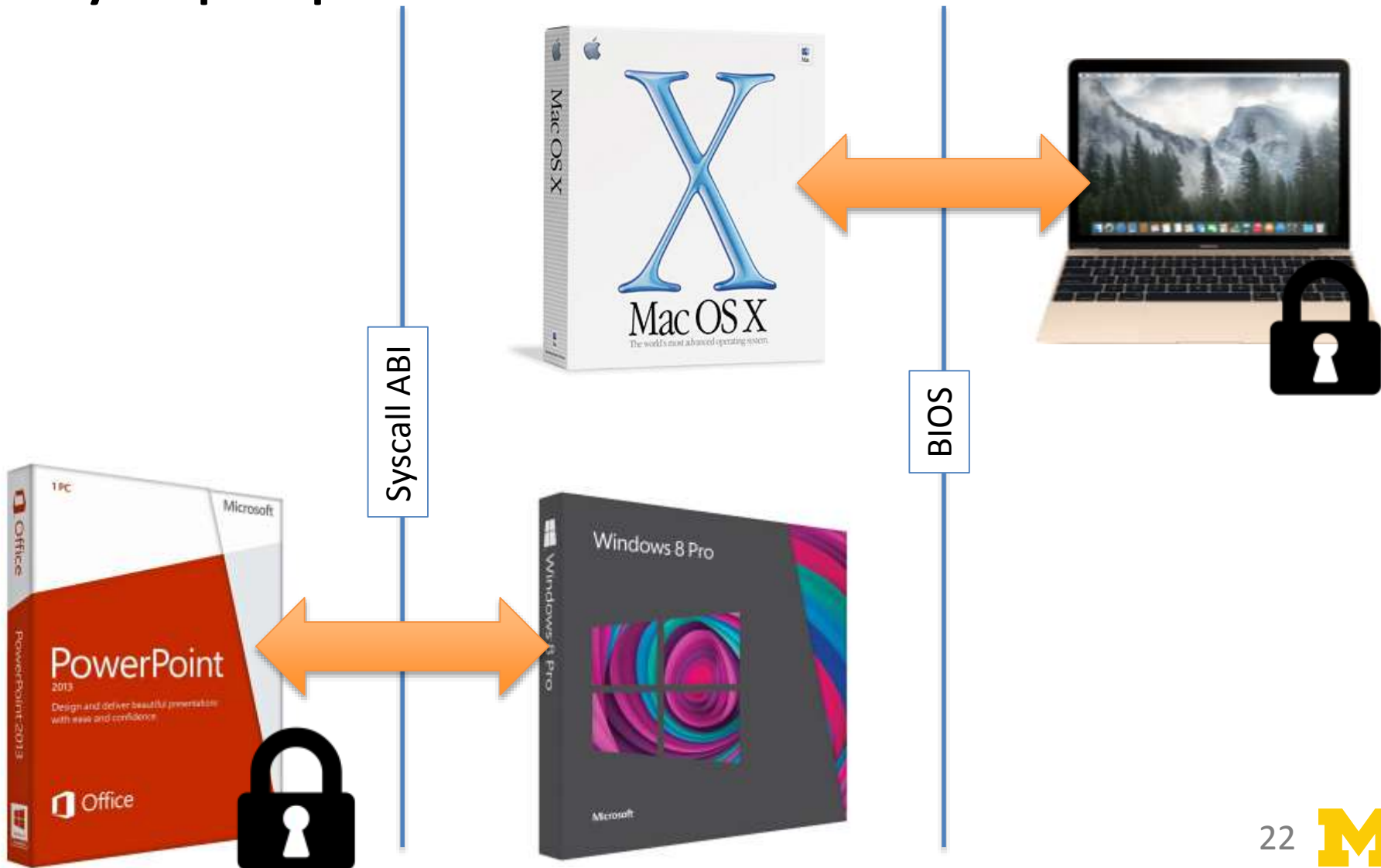
Syscall ABI



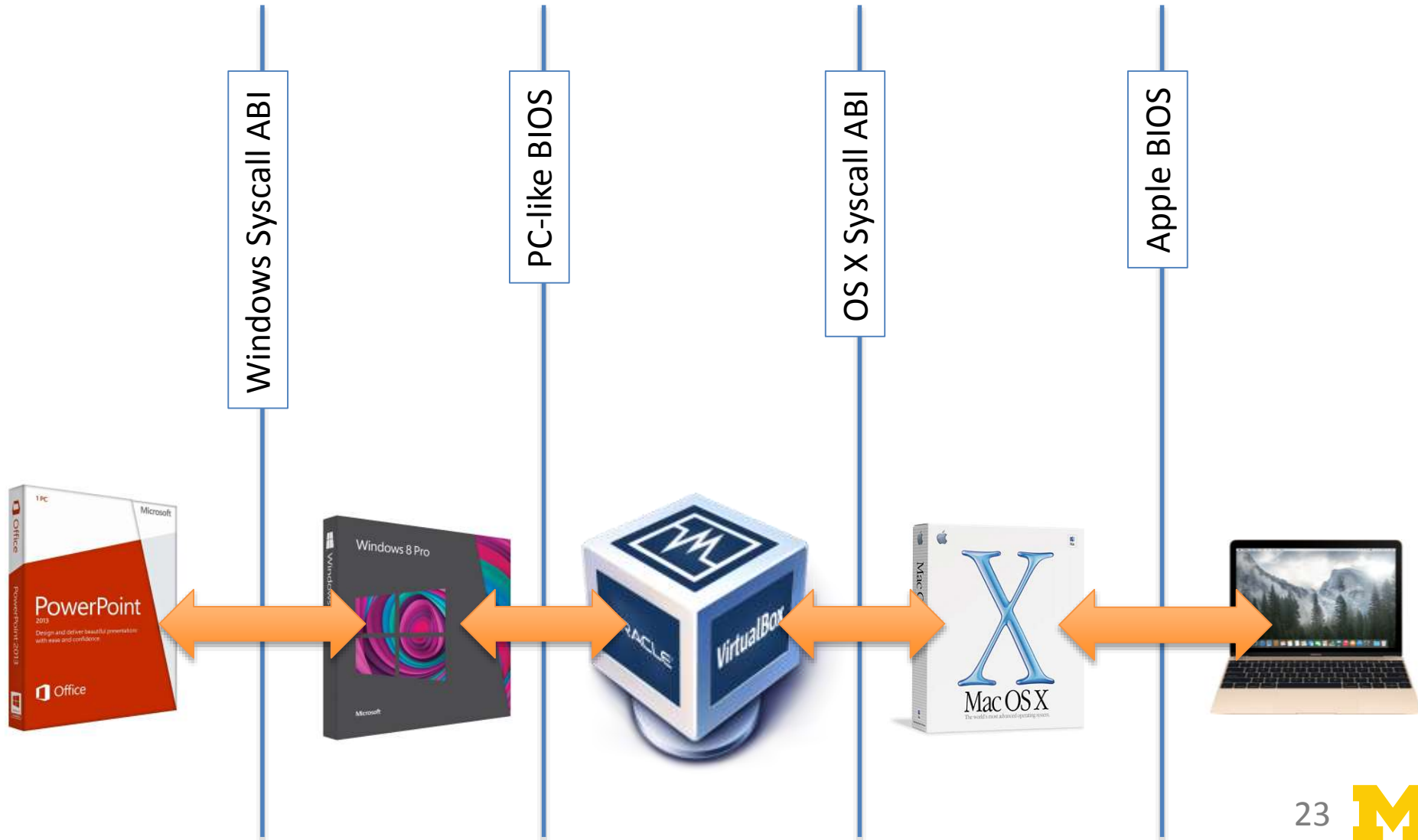
BIOS



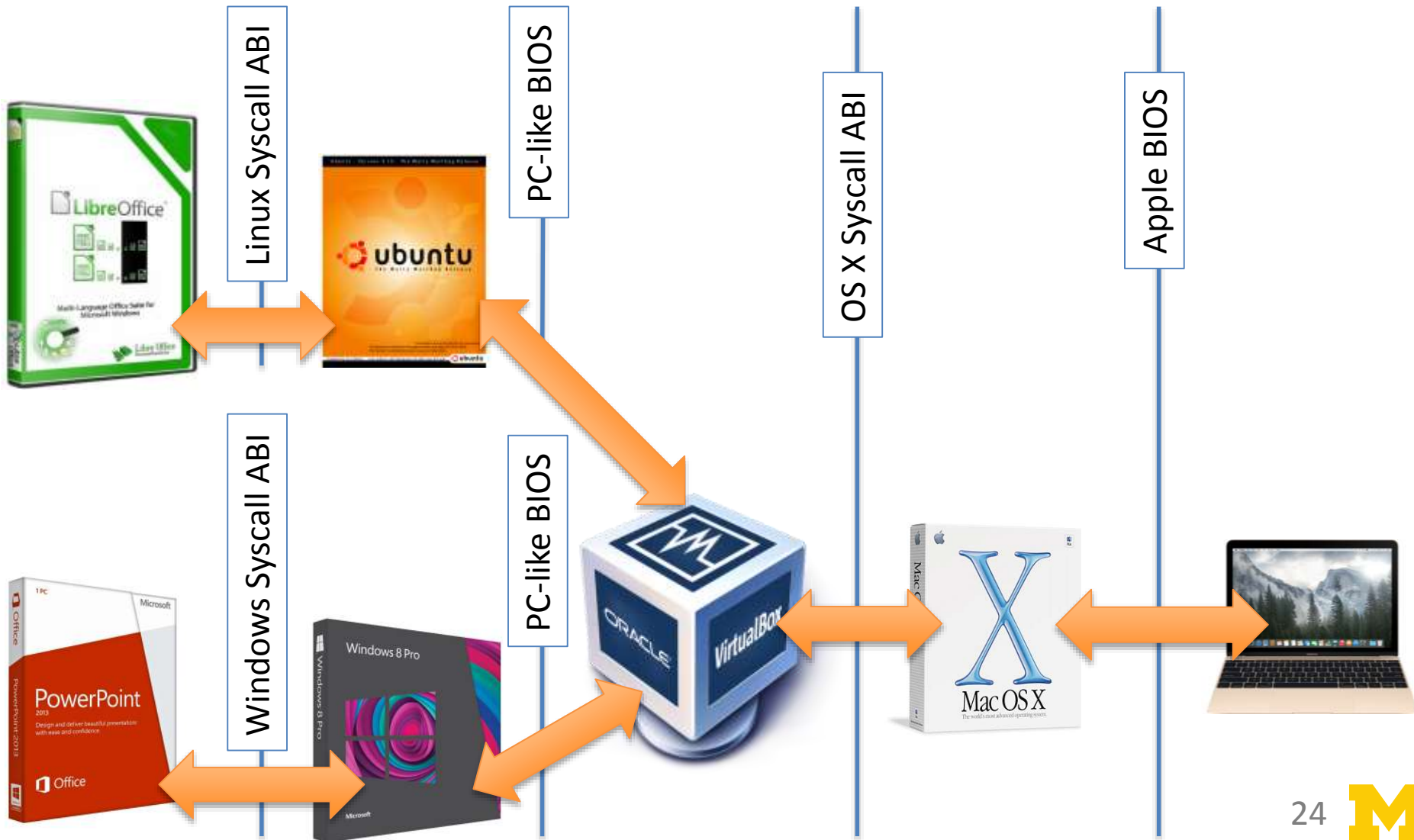
Can I run PowerPoint for Windows on my laptop?



A “Virtual Machine” is a program that pretends to be computer hardware



And a “Virtual Machine Manager” can create many virtual machines on one physical machine



Virtual Machines...

- Are software programs that “look like” hardware
- Power much of the modern Internet
 - “The Cloud” is warehouses full of thousands of machines pretending to be hundreds of thousands of machines
 - AWS
 - Google Cloud Compute
 - Azure

There has been a LOT of work in VMs over the years

- Caveat: This overview cut many corners
 - Think this stuff is cool?
 - EECS 482 is for you
 - Perhaps also EECS 373
- We will use a VM for everything in this course
 - Consistent “machine” for 450 students
 - Safe space for you to experiment
- Check out some links on the course homepage if you’re interested in fancier things

Some final thoughts

- This will be the only all-powerpoint lecture of the year
- This is a brand new class
 - That we opened to 450 people...
 - Patience will be necessary at times
 - **Feedback is good**