

CS 4410
Operating Systems

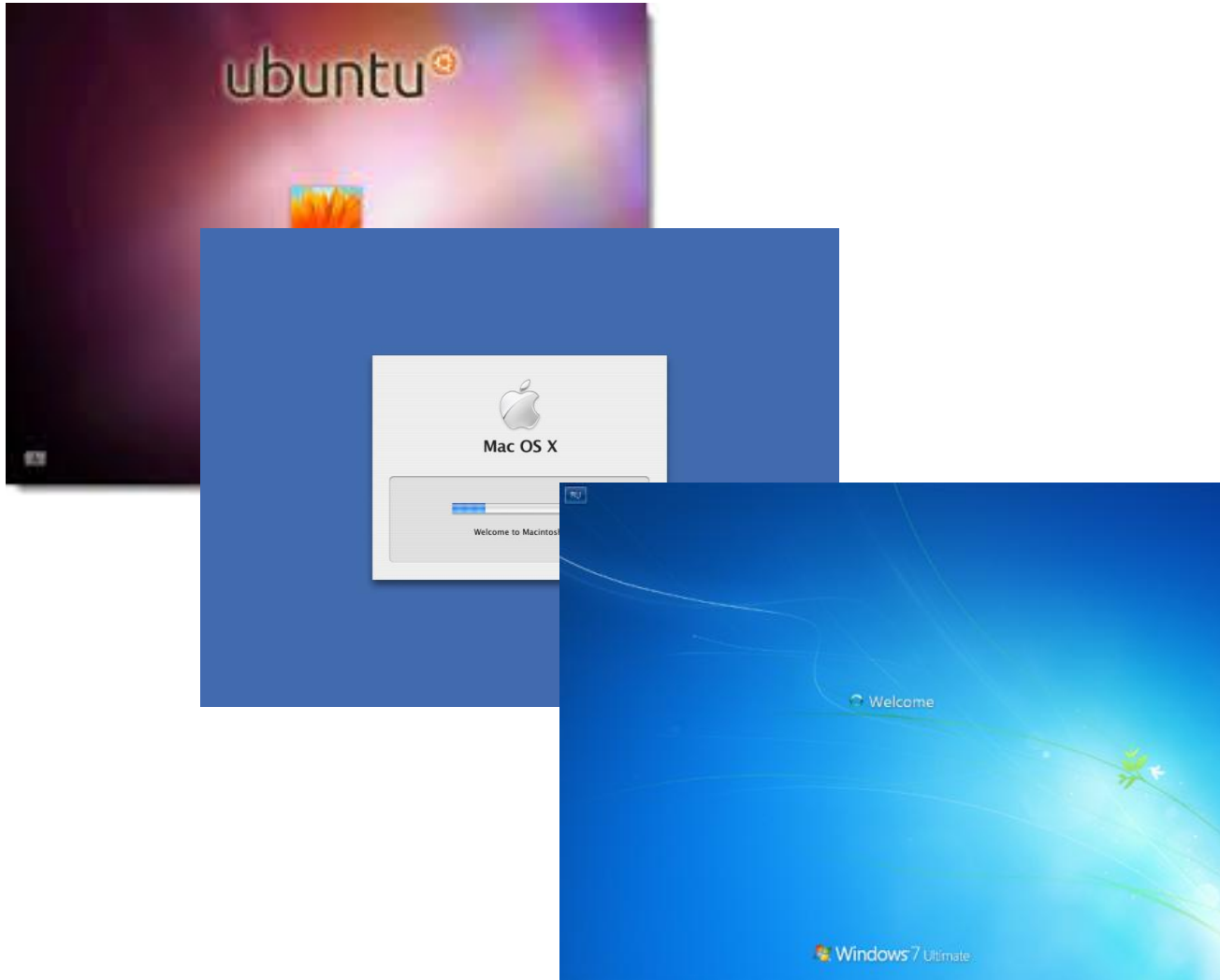
Introduction & Logistics

Summer 2016
Cornell University

Welcome!

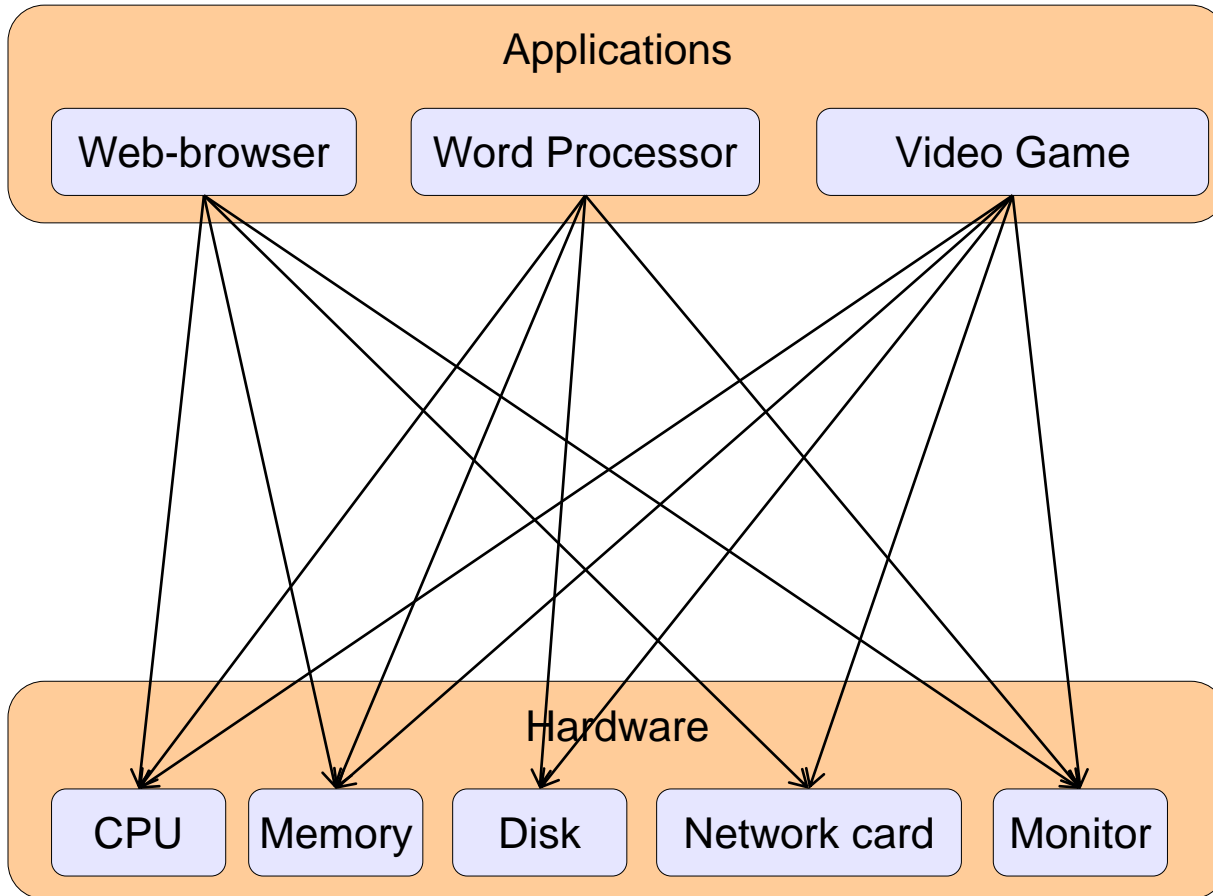


Welcome!

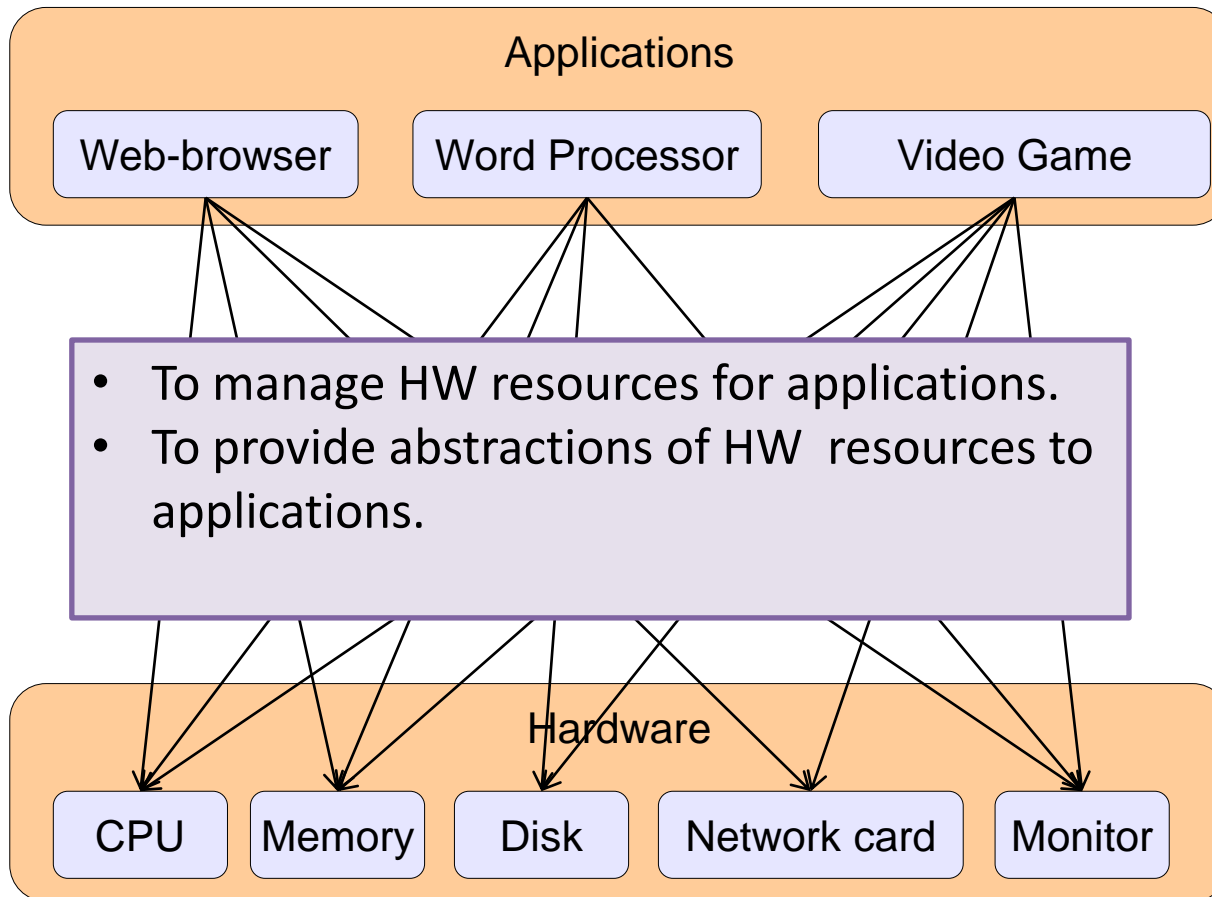


Why are we here?





Why do we need Operating Systems?



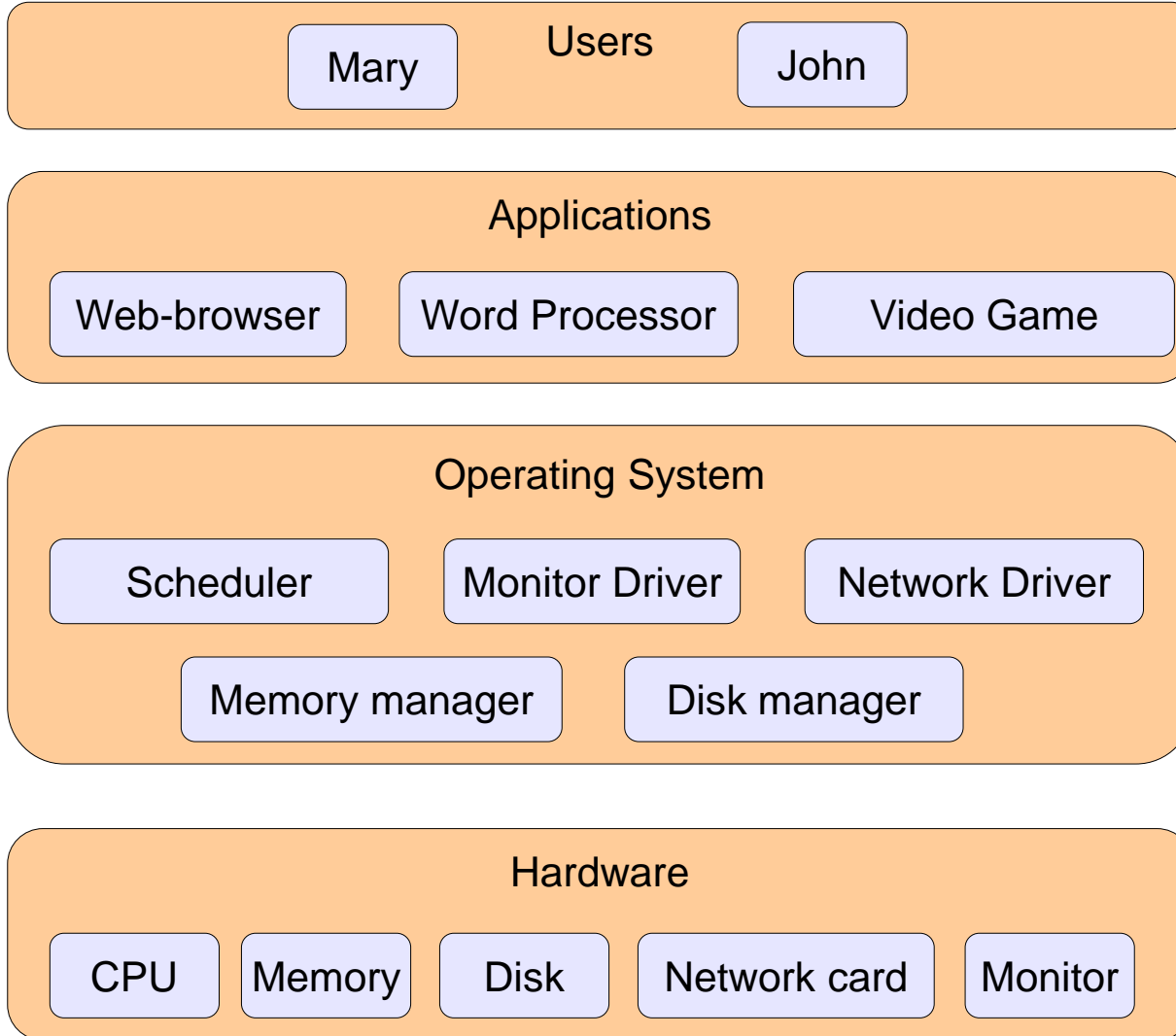
Why learn Operating Systems?

- Apply OS ideas to other contexts.
- Better understanding of computer systems.
- Learn open problems.

What is an Operating System?

- A *program* that manages the computer hardware.
- An operating system (OS) provides an abstract interface on top of hardware that is more convenient than the raw hardware interface.

What is an Operating System?



Operating systems may be huge (),
but they are based on simple, intuitive *ideas*.

An OS exists in:

- Personal computer
- Smartphone
- Wearable devices
- Car
- Servers
- MRI machines
- ...

A modern OS exists in:

- Personal computer
- Smartphone
- Wearable devices
- Car
- Servers
- MRI machines
- ...

But not everywhere!

- It is not always needed.
- It is not always reliable enough.

Evolution of OS

Support for:

Time ↓
One program at a time.
Multiple programs at the same time.
Interactivity with the user.

From 9 operating systems in 1950s to
 operating systems in 2010s!

In this course, we will learn how an OS:

- enables interaction between user and hardware,
- manages hardware resources, focusing on:
 - processor,
 - memory ,
 - storage, and
 - network.

References

- <http://sigops.org/sosp/sosp15/history/>
- <http://denninginstitute.com/pjd/GP/GP-site/welcome.html>
- <https://ecommons.cornell.edu/handle/1813/40564>

Logistics

- Webpage: <http://www.cs.cornell.edu/courses/CS4410/2016su/>
- Instructor: Elisavet Kozyri
- Teaching Assistant: Kevin Sekniqi
- Office hours: Every day! Great for answering questions!
- Email: For short clarifications.
- Prerequisites:
 - Programming experience
 - Computer architecture: CS3410/ECE3140

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- Course Objectives:
 - Emphasis on ideas, not on technical details.
 - We will not build an operating system.
 - We will understand main principals used in most operating systems.
- Course format:
 - Interactive lectures.
 - Weekly assignments.
 - Synchronized with lectures
 - Theoretical + practical
 - Individual and within deadlines!
 - Weekly in-class exams.

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- Final Exam
 - August 16th, Bard Hall 140
- Course Reading
 - Operating Systems: Principles and Practice
- Slides: become ready shortly before the corresponding lecture.
- Follow the schedule of the course on the webpage, for:
 - slides, readings, and assigned exercises.
- CMS
 - All students should have received an invitation.
- Class Attendance

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- Grading
 - from A+ to F
 - non-curved, approximately:
 - 10% at instructor's discretion (participation, etc)
 - 40% assignments
 - 20% in-class exams
 - 30% final exam
 - **Remember:** The target is the knowledge, **not** the grade!
- Academic Integrity

Coming up:

- Tomorrow's lecture:
 - HW-OS and OS-App interface
- Get familiar with Python 2.7
- HW1:
 - Released tomorrow
 - Due on Monday, 10pm
- No in-class exam for next week.
 - First in-class exam on Monday, July 18th.