

CS162
Operating Systems and
Systems Programming
Lecture 2

History of the World Parts 1–5
Operating Systems Structures

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Review: What does an Operating System do?

- **Silerschatz and Gavin:**
 - **“An OS is Similar to a government”**
 - **Begs the question: does a government do anything useful by itself?**
- **Coordinator and Traffic Cop:**
 - **Manages all resources**
 - **Settles conflicting requests for resources**
 - **Prevent errors and improper use of the computer**
- **Facilitator:**
 - **Provides facilities that everyone needs**
 - **Standard Libraries, Windowing systems**
 - **Make application programming easier, faster, less error-prone**
- **Some features reflect both tasks:**
 - **E.g. File system is needed by everyone (Facilitator)**
 - **But File system must be Protected (Traffic Cop)**

Review: Virtual Machine Abstraction

Application

Virtual Machine Interface

Operating

System

Physical Machine Interface

Hardware

- **Software Engineering Problem:**
 - Turn hardware/software quirks \Rightarrow what programmers want/need
 - Optimize for convenience, utilization, security, reliability, etc...
- **For Any OS area (e.g. file systems, virtual memory, networking, scheduling):**
 - What's the hardware interface? (physical reality)
 - What's the application interface? (nicer abstraction)