

# Operating Systems

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12 lectures for CST IA

# Course Aims

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- This course aims to:
  - explain the structure and functions of an operating system,
  - illustrate key operating system aspects by concrete example, and
  - prepare you for future courses. . .
- At the end of the course you should be able to:
  - compare and contrast CPU scheduling algorithms
  - explain the following: process, address space, file.
  - distinguish paged and segmented virtual memory.
  - discuss the relative merits of Unix and NT. . .

# Course Outline

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- Introduction to Operating Systems.
- Processes & Scheduling.
- Memory Management.
- I/O & Device Management.
- Protection.
- Filing Systems.
- Case Study: Unix.
- Case Study: Windows NT.

## Recommended Reading

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- *Concurrent Systems or Operating Systems*  
Bacon J [ and Harris T ], Addison Wesley 1997 [2003]
- *Operating Systems Concepts (5th Ed.)*  
Silberschatz A, Peterson J and Galvin P, Addison Wesley 1998.
- *The Design and Implementation of the 4.3BSD UNIX Operating System*  
Leffler S J, Addison Wesley 1989
- *Inside Windows 2000 (3rd Ed) or Windows Internals (4th Ed)*  
Solomon D and Russinovich M, Microsoft Press 2000 [2005]

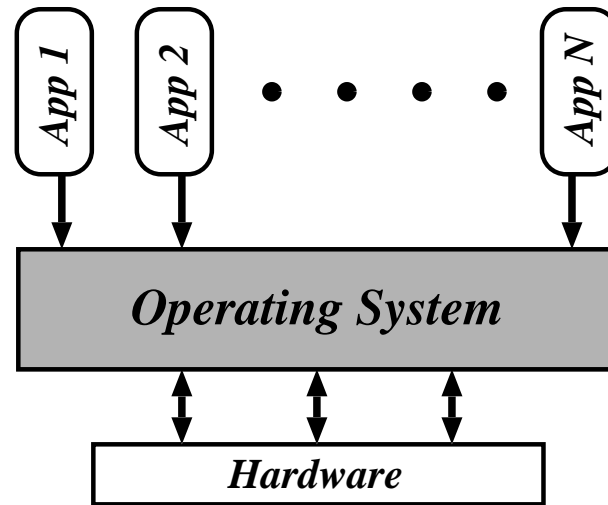
# What is an Operating System?

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- A program which controls the execution of all other programs (applications).
- Acts as an intermediary between the user(s) and the computer.
- Objectives:
  - convenience,
  - efficiency,
  - extensibility.
- Similar to a government. . .

# An Abstract View

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- The Operating System (OS):
  - controls all execution.
  - multiplexes resources between applications.
  - abstracts away from complexity.
- Typically also have some *libraries* and some *tools* provided with OS.
- Are these part of the OS? Is IE a tool?
  - no-one can agree. . .
- For us, the OS  $\approx$  the *kernel*.

**This is a sample, click download link to get the full Tutorial**

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