

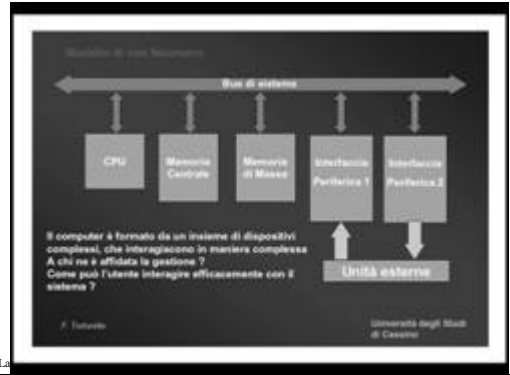
# Sistemi Operativi e Macchine Virtuali

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Laboratorio di Informatica

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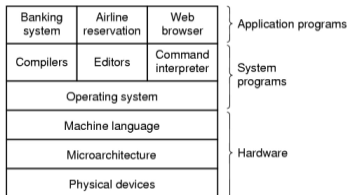
## La Macchina Reale



La

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## Cosa è un Sistema Operativo (Operating System)



- Un sistema di calcolo è costituito da:
  - Hardware
  - Programmi di sistema
  - Programmi applicativi

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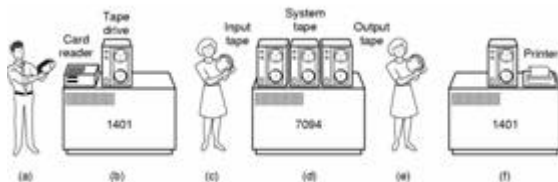
## Cosa è un Sistema Operativo (Operating System)

- E' una macchina estesa
  - Cella la complessità della macchina
  - Mostra all'utente una *Virtual Machine* più facile da usare
- E' un gestore di risorse
  - Distribuisce ai programmi tempo di risorsa
  - Distribuisce ai programmi spazio di risorsa

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## Breve storia dei S.O. (1)



### Early batch system

- bring cards to 1401
- read cards to tape
- put tape on 7094 which does computing
- put tape on 1401 which prints output

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## Breve storia dei S.O. (2)

- First generation 1945 - 1955
  - vacuum tubes, plug boards
- Second generation 1955 - 1965
  - transistors, batch systems
- Third generation 1965 – 1980
  - ICs and multiprogramming
- Fourth generation 1980 – present
  - personal computers

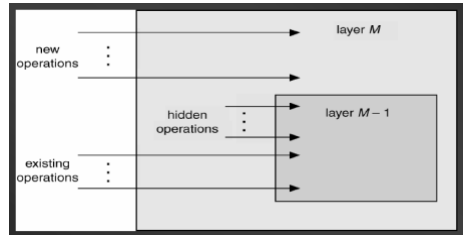
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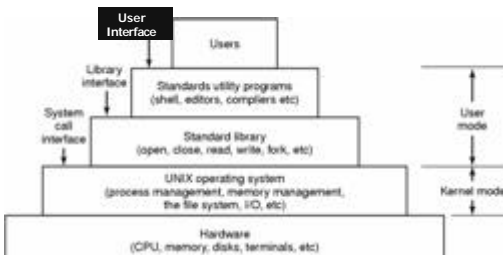
## The Operating System Zoo

- Mainframe operating systems
- Server operating systems
- Multiprocessor operating systems
- Personal computer operating systems
- Real-time operating systems
- Embedded operating systems
- Smart card operating systems

## Virtual Machine (Macchina Virtuale)



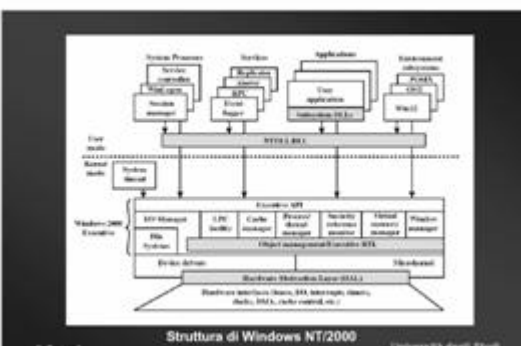
## Esempio: la famiglia UNIX



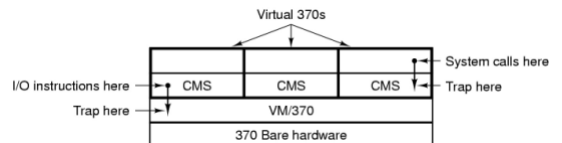
## Esempio: la famiglia UNIX

System calls				Interrupts and traps		
Terminal handling	Sockets	File naming	Map- ping	Page faults	Signal handling	Process creation and termination
Raw tty	Cooked tty	Network protocols	File systems	Virtual memory		
	Line disciplines	Routing	Buffer cache	Page cache		Process scheduling
Character devices	Network device drivers		Disk device drivers			Process dispatching
Hardware						

## Esempio: la famiglia di S.O. Microsoft



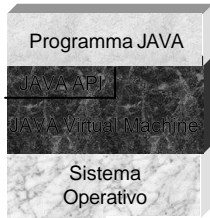
## Le Virtual Machine (VM) più in generale: un'idea "antica"



## Structure of VM/370 with CMS - 1970 (Conversional Monitor System)

Le Virtual Machine (VM) più in generale: Java

### La Piattaforma



Le Virtual Machine (VM) più in generale: VMWare

