

Vistula, IT Faculty, 2015

Operating Systems

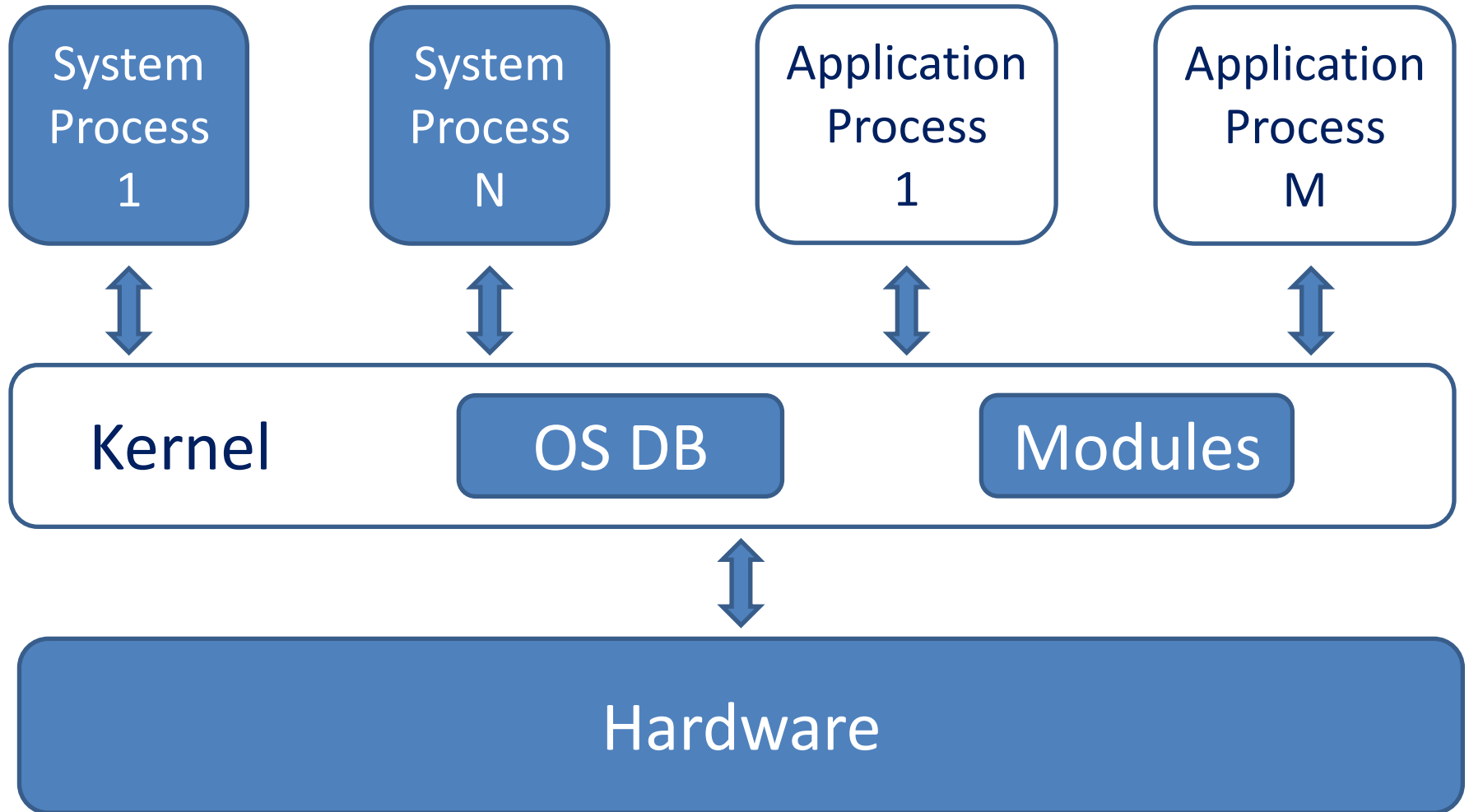
Dmitry A. Zaitsev

<http://daze.ho.ua>

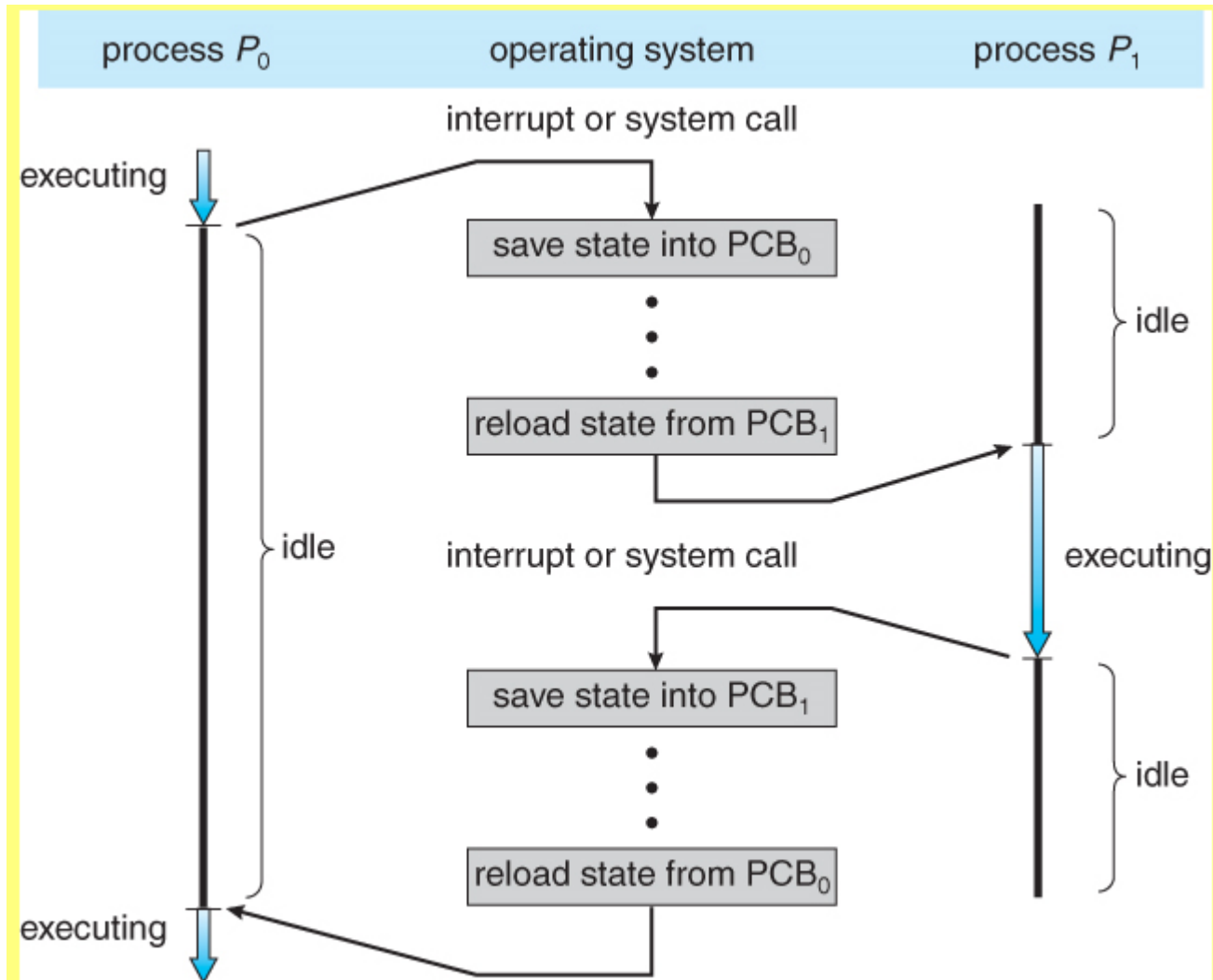
Lecture 2:

Structure of OS. Kernel and Processes

Structure of OS



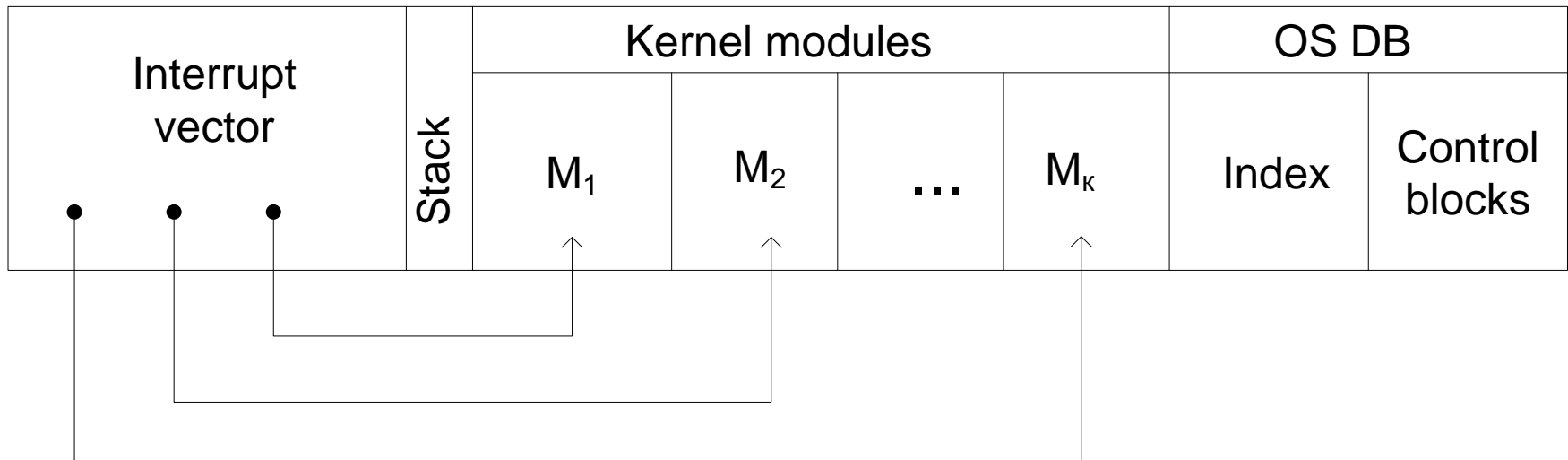
Switching processes



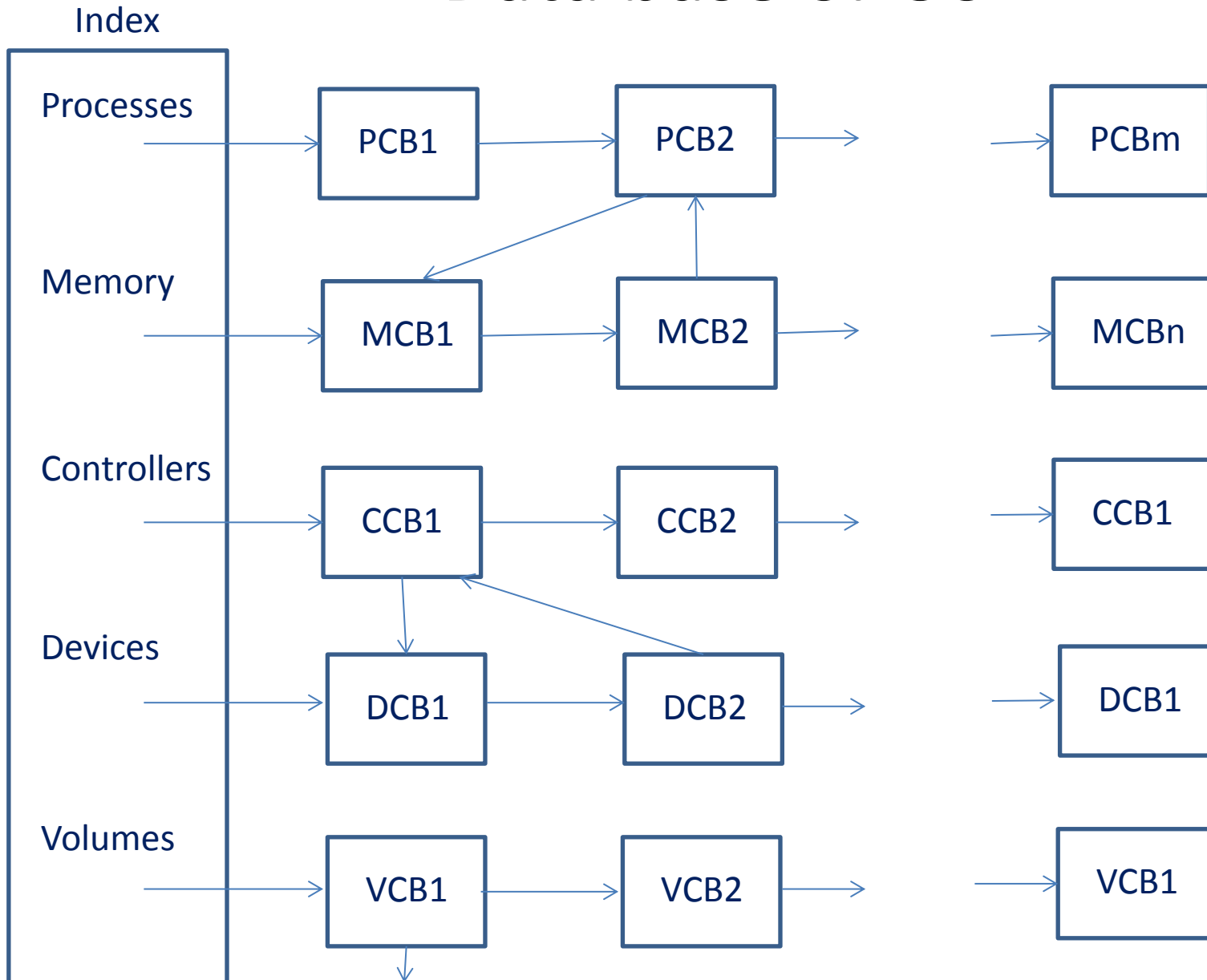
Kernel

A part of OS which is not a process.

A set of interrupt handlers, stack, data base, and pool.

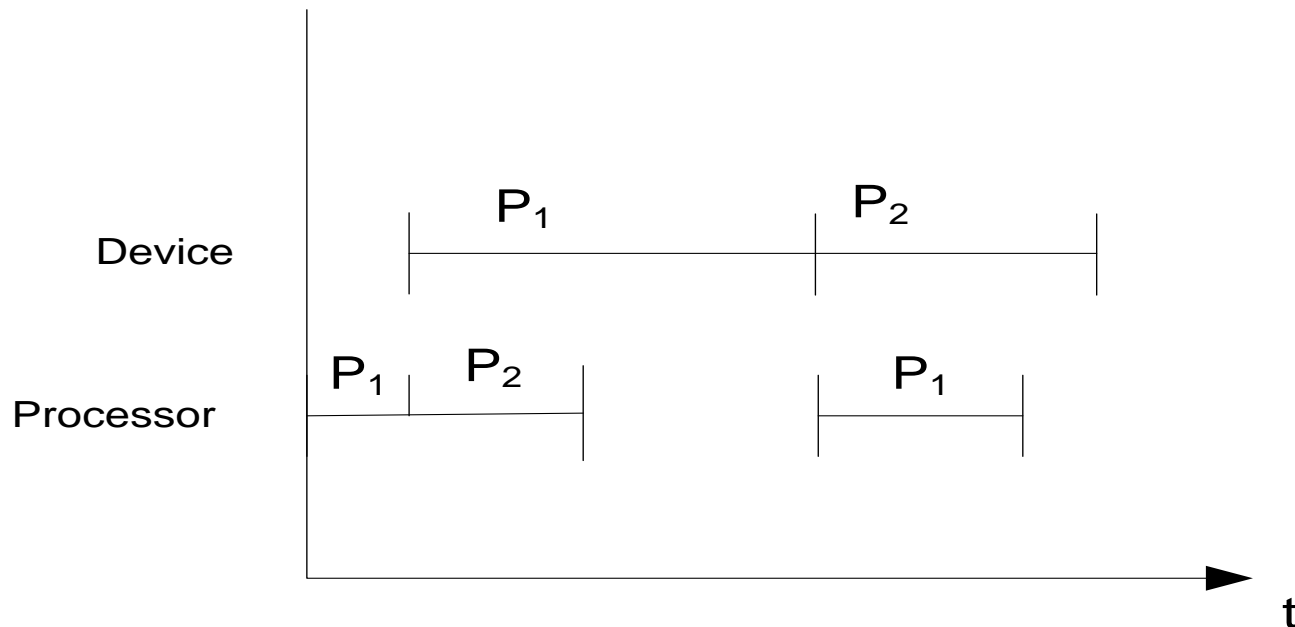


Data base of OS



Multiprogramming

Simultaneous (parallel) work of devices with the goal to increase their utilization

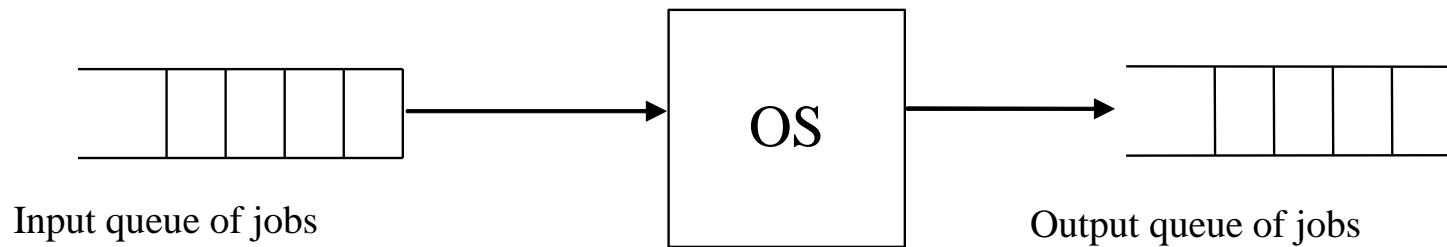


Batch mode

Criterion – maximal utilization of devices

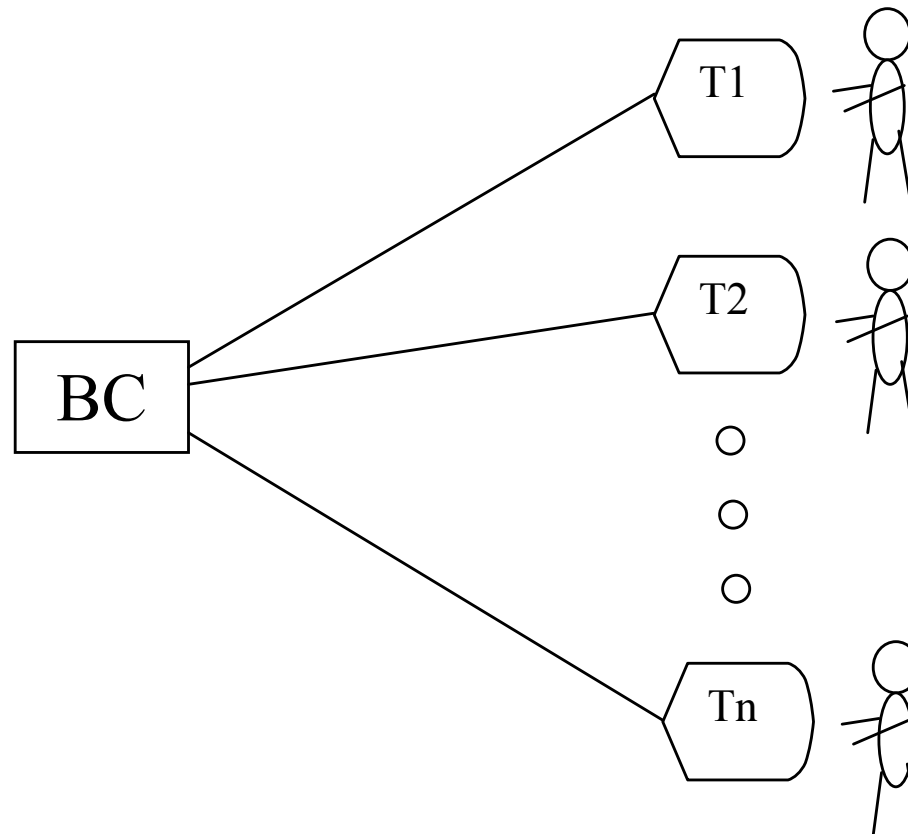
Mixture of jobs

Off-line mode



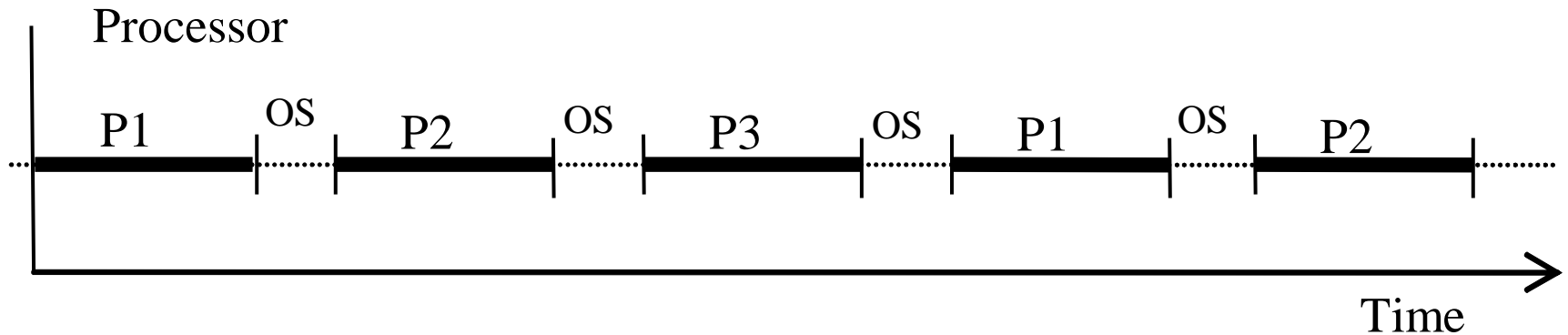
Interactive mode

Criterion – minimal reply time

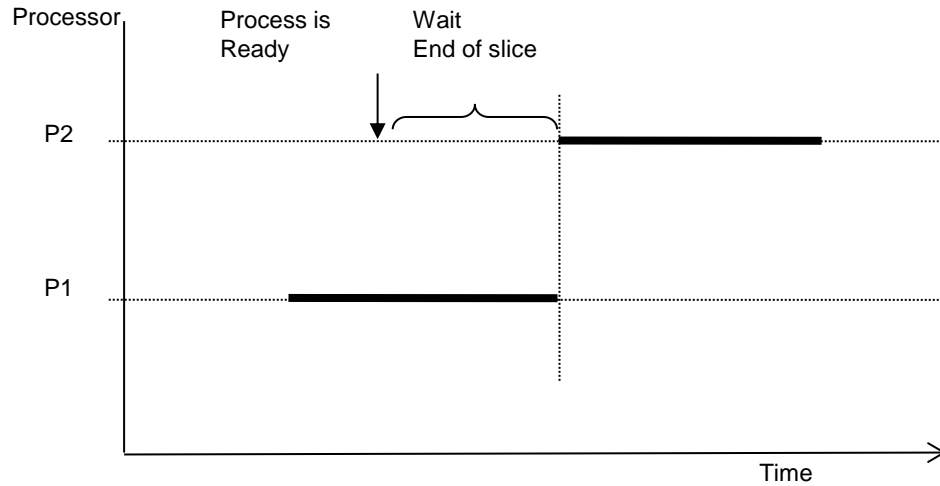


Time slicing

A process occupies processor not longer than a slice of time
Switching of processes via timer interrupt

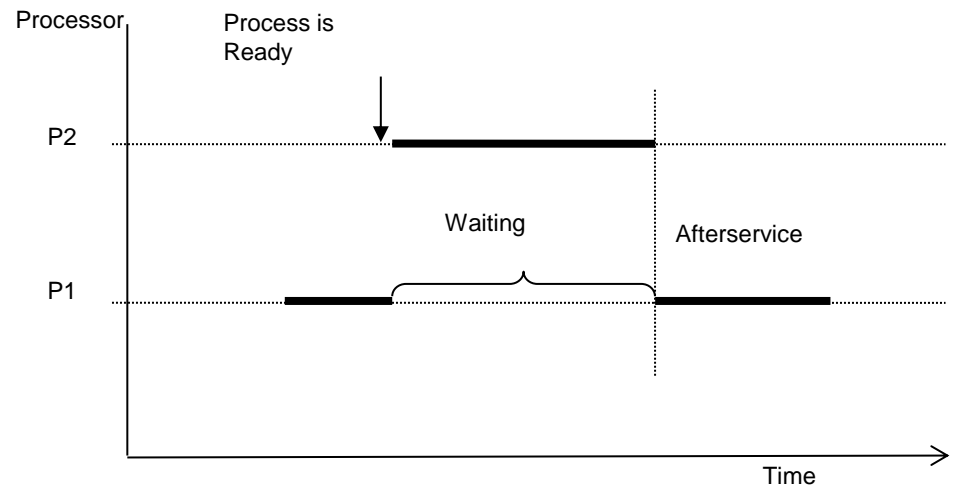


Priorities



Relative

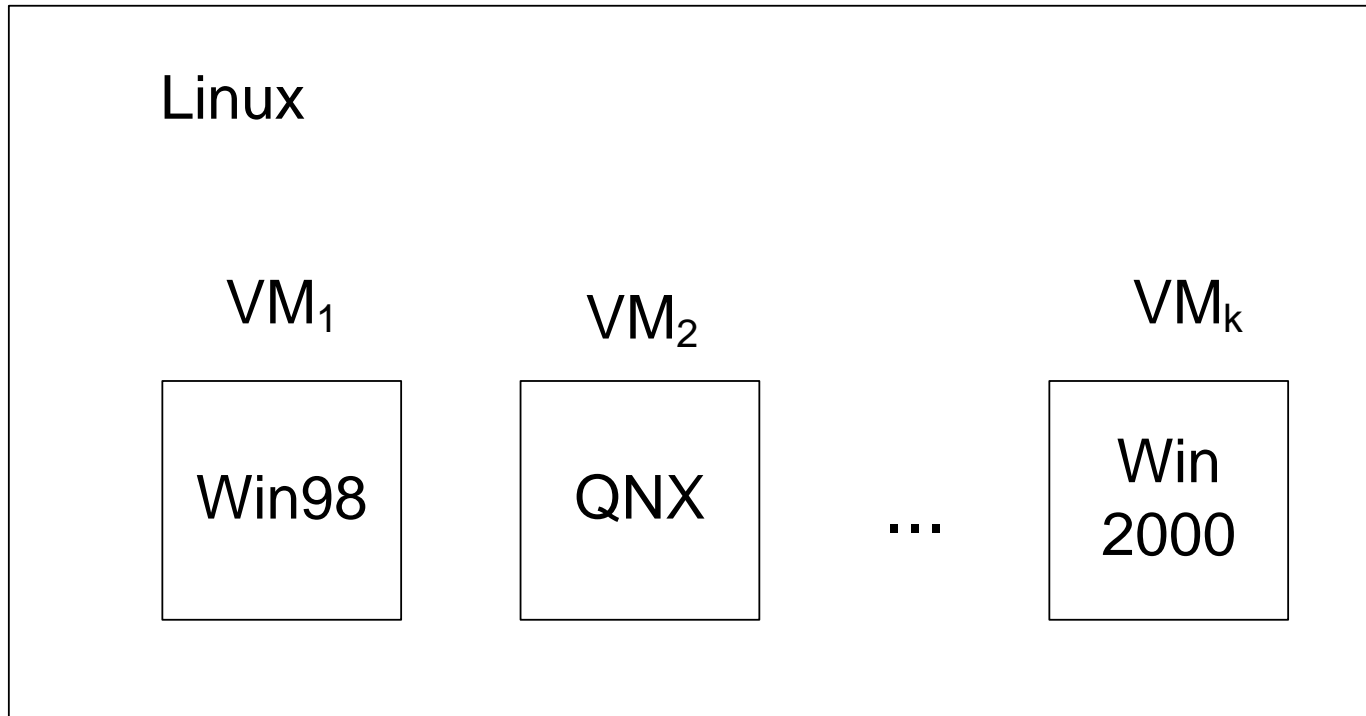
Absolute



Virtual machines

Emulate hardware

Install OS on emulated hardware



Security of OS

- Protect OS
 - Protect Processes
 - Protect Resources
-
- Hardware security support
 - Identification of users
 - Access rights

Overview of modern OS

- Unix – Solaris, AIX, HPUX, IRIX
- Linux – Ubuntu, Fedora, Mandriva
- MS Windows – XP, 7, 8
- MacOS
- Android
- Real time: RT OS, QNX
- Supercomputer: Unicos