CSMC 412

Operating Systems

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Set ID

Operating System as Decision Maker

- All resource management decisions are taken by the OS
- What information does it have to base those decisions on?
  - It has to collect and keep that information
  - Make sure that the information is not corrupted
  - Update as necessary
  - Use it
- Where to keep information about entities under its control?
  - Control Blocks

Information Based Decision Making

- A decision requires information
- The information available to the decision maker
  - Designed as a part of the system design
  - In the address space of the executing unit taking the decision- OS
- Have to recognize independent action units
  - A unit that continues to operate once triggered
    - CPU
    - Clock
    - Disk
    - Disk controller
    - …
- Every Action has to be triggered from external source at some point.

ID.3

Using Information in Decisions

- Access information
- Decide
- Initiate action
- Modify information

Can information Change during this period?

- Shared memory vs messages

ID.4

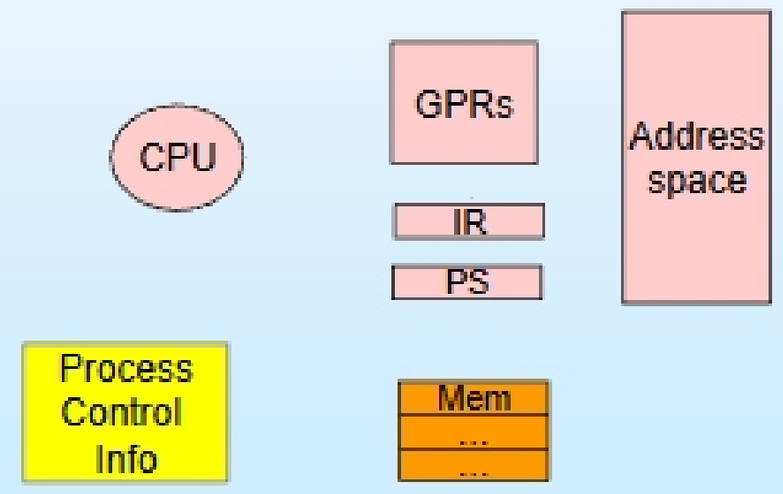
Concurrent Executions

- When there are concurrent executions the actions of one process can be affected by the action of another process at any stage of execution –
  - Unless appropriate protection measures are taken
- One way of protection
  - Isolate independent processes
    - But they do share resources – would that cause conflicts??
- Cooperating processes
  - Have to communicate/share
  - Thus they interact

ID.5

Example

- A program in execution



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