

Processors

Chapter 6

CPU: Microcode, Protection, And Processor Modes

Topics

- Introduction
- A central processor
- CPU complexity
- Modes of execution
- Backward compatibility
- Changing modes
- Privilege and protection

Topics

- Multiple levels of protection
- Microcoded instructions
- Microcode variations
- The advantage of microcode
- Making microcode visible to programmers
- Vertical microcode
- Horizontal microcode
- Example horizontal microcode

Topics

- A horizontal microcode example
- Operations that require multiple cycles
- Horizontal microcode and parallel execution
- Look-ahead and high performance execution
- Parallelism and execution order
- Out-of-order instruction execution
- Conditional branches and branch prediction
- Consequences for programmers
- Summary

