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Operating Systems Concept
Session 1

Description

- This course is a study of the concepts of Operating System and the design behind it. At the end of this course students will be able to explain the concepts and design principles modern Operating System. This course is delivered with the aid of video and practice problems.

Computer and Operating Systems Overview
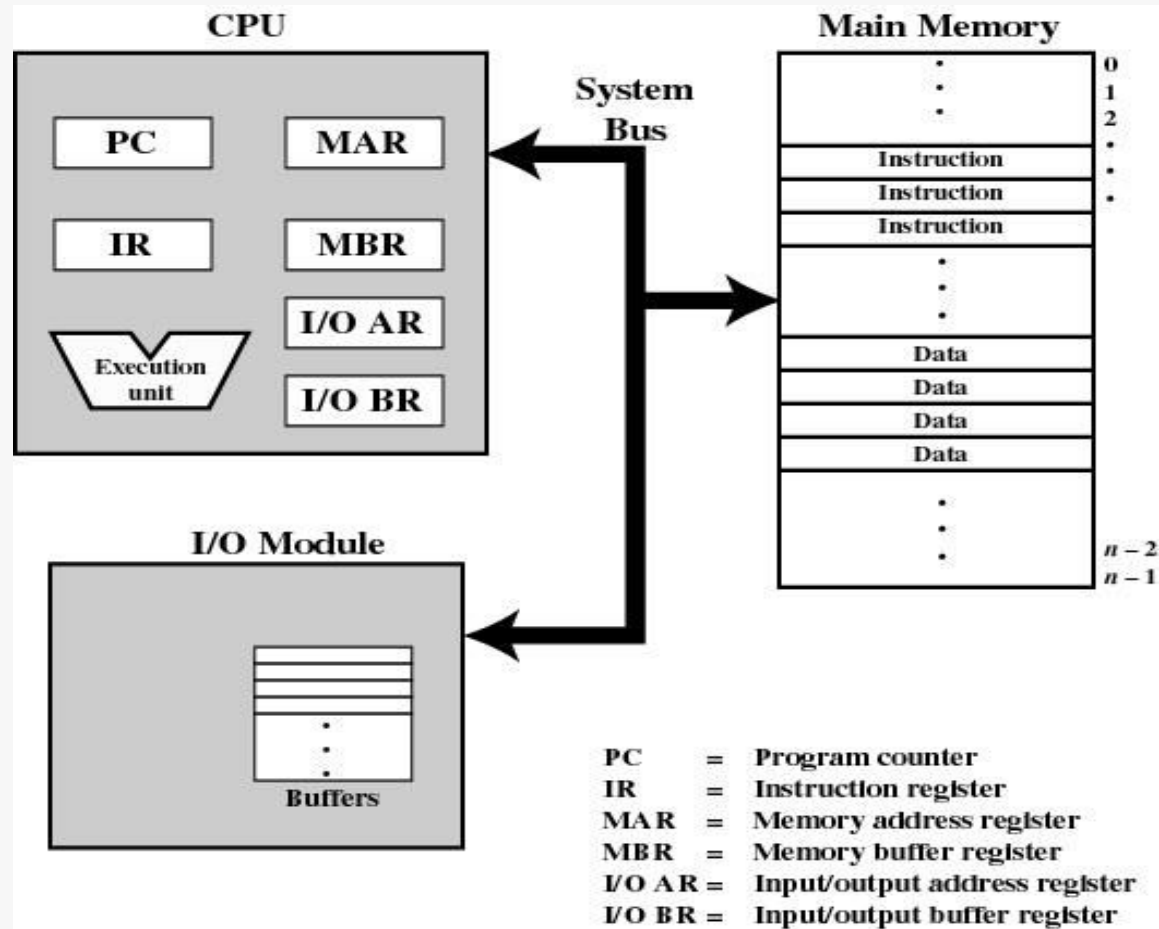
Session 1

Computer Architecture (1)

Figure 1.1 Computer Components: Top-Level View

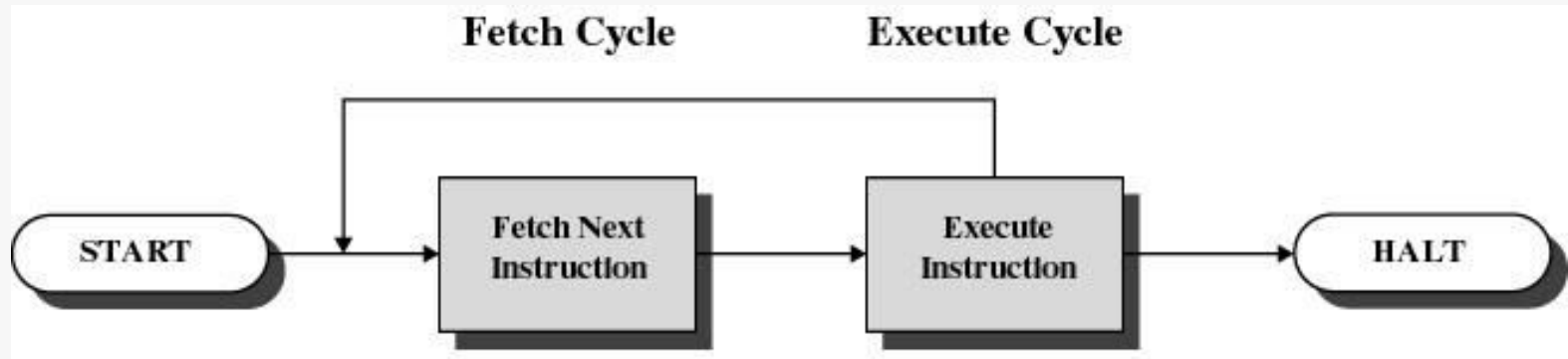# Instruction Cycle

Figure 1.2 Basic Instruction Cycle

Operating System

- What is Operating System
    - A program that controls the execution of application programs
    - An interface between applications and hardware
- Objectives of Operating Systems
- Convenience
    - Makes the computer more convenient to use
- Efficiency
    - Allows computer system resources to be used in an efficient manner
- Ability to evolve
    - Permit effective development, testing, and introduction of new system functions without interfering with service
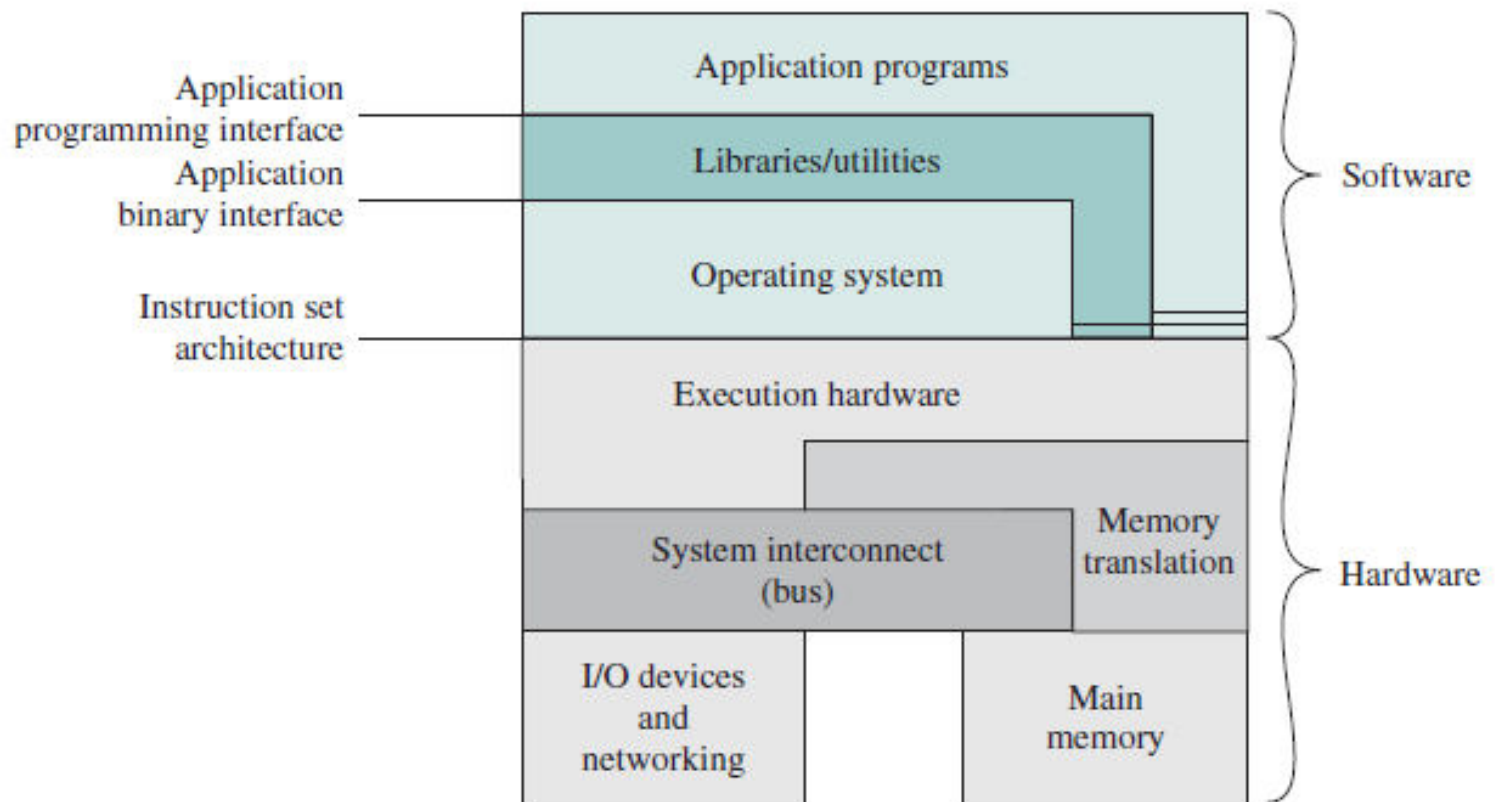
Figure 2.1 Computer Hardware and Software Structure

Operating System Services

- Program Development
- Program Execution
- Access to I/O Devices
- Controlled Access to Files
- System Access
- Error Detection and Response
- System Accounting

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Evolution of Operating System

- Serial Processing
- Simple Batch System
- Multi-programming
- Time Sharing System
- Multi-processor System

Multi-programming Exmple

(a) Uniprogramming

(b) Multiprogramming with two programs
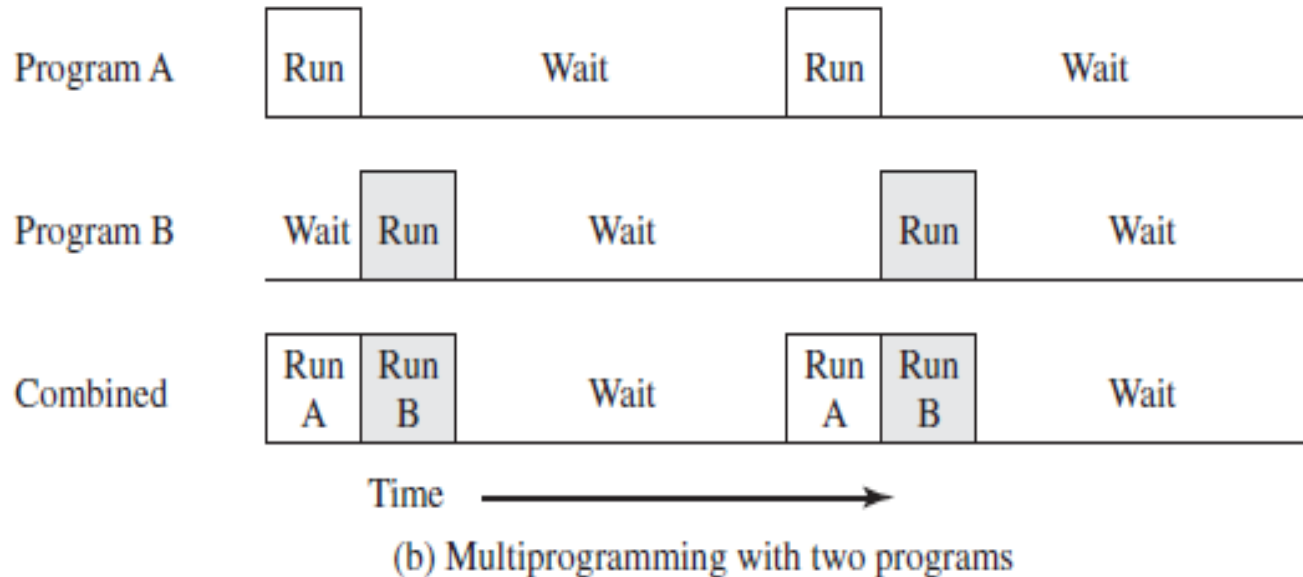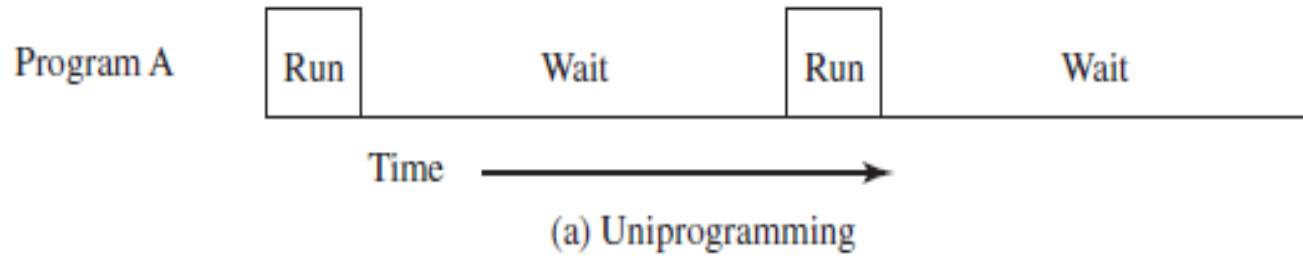
Major Advances in development of Modern Operating System

- Process
- Memory Management
- Protection and Security
- Scheduling and Resource Management

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References

- Stallings, W. (2014). *Operating Systems: Internals and Design Principles*. 8th.
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