SurTech

DR. SUDHIR CHANDRA SUR INSTITUTE OF TECHNOLOGY & SPORTS COMPLEX

Stored Program Organisation

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Roll: 46 **Sec:** A **Sem:** 3rd **Year:** 2nd

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Educational Initiatives

Introduction

- **What is Stored Program Organization?**

  Definition: The concept of storing program instructions and data in the same memory.
  Importance: Allows for more flexible and efficient processing of tasks.

Historical Context

- **Early Computers**
  - Overview of pre-stored program computers (e.g., ENIAC)
  - Limitations and challenges

The Stored Program Concept

- **Key Idea**
  - Instructions and data are both stored in memory.
- **Advantages**
  - Simplified design
  - Easier to modify programs

Basic Computer Architecture

- **Components**
  - CPU (Central Processing Unit)
  - Memory (RAM)
  - Input/Output Devices
- **Functionality**
  - How instructions are fetched, decoded, and executed

Memory Organization

- **Memory Hierarchy**
  - Registers
  - Cache
  - Main Memory (RAM)
  - Secondary Storage (HDD/SSD)
- **Program and Data Storage**
  - How programs and data are stored and accessed in memory

Instruction Cycle

- **Fetch-Decode-Execute Cycle**
  - Fetch: Retrieving the instruction from memory
  - Decode: Interpreting the instruction
  - Execute: Performing the operation

Simple Computer Execution

- **Diagram of Instruction Execution**
  - Show a basic example with a simple program

Modern Enhancements

- **Evolution of Stored Program Concepts**
  - Multi-core processors
  - Virtual Memory
  - Caching mechanisms

Comparison with Other Architectures

- **Von Neumann vs. Harvard Architecture**
  - Von Neumann: Shared memory for instructions and data
  - Harvard: Separate memory for instructions and data

Practical Applications

- **Real-World Examples**
  - How stored program organization impacts modern computing
  - Examples of devices and systems using this architecture

Challenges and Future Trends

- **Challenges**
  - Memory bottlenecks
  - Security concerns
- **Future Directions**
  - Advances in memory technology
  - Emerging computing paradigms

Summary

- **Recap of Key Points**
  - Importance of stored program organization
  - Key components and processes
  - Future trends

Conclusion

In conclusion, understanding stored program organization is fundamental for anyone seeking to grasp the inner workings of computers. Its impact on the evolution of technology is undeniable, and its principles continue to shape the digital world we live in.

Thank You