Fundamentals of Computer Organization

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Computer Organization and Design

Block Diagram of Digital Computer:
- Components: Input unit, Output unit, Memory, ALU, Control Unit.

Instruction Codes and Registers:
- **Instruction Cycle:** Fetch, Decode, Execute.
- **Memory Reference Instructions:** Load, Store, Add, Subtract.

Input-Output and Interrupt Mechanism:
- **Interrupt Handling:** Vectored Interrupts, Priority Interrupts.

ALU Design and Execution of Instructions:
- Arithmetic Logic Unit (ALU) operations.
- Execution of a complete instruction cycle.

Control Design:
- **Hardwired Control:** Uses fixed logic circuits.
- **Microprogrammed Control:** Uses stored control words.

Pipelining:
- **Basic Concept:** Parallel execution of instructions.
- **Types of Hazards:** Data hazards, Instruction hazards.

Parallel and Vector Processors:
- Parallelism in execution to enhance speed and performance.