

**** All Homework**

1. Concepts of Computer Architecture

- **Meaning of Computer Architecture and Transparency**
- **The relation of Computer Architecture, Computer Organization and Computer Implementation**
- **CA Classification (FLYNN)**
- **CA Design Principles, Amdahl's Law**
- **Computer Performance (CPI、MIPS、Sp)**
- **Hierarchy of Computer Architecture**
- **Performance Evaluation Result Processing Method**

2. Instruction System

- **Software compatibility**
- **Data Type and Data Representation**
- **Custom Data Representation**
- **Huffman Coding and Huffman Extension Coding**
- **Instruction System Encoding Method**
- **Program Locate Mode**
- **The Origin of RISC and The Main Technology of RISC**

3. Memory System

- **Memory System Characteristics (Locality, Consistency, Inclusiveness)**
- **Methods for Increasing Memory Bandwidth**
- **The Difference of Cache and VM**
- **Cache-Memory Addressing Mapping Mode (Full Associative, Direct Associative, Set Associative)**
- **Replacement Policy**
- **Cache Write Operation Policy, Cache Performance (Hc, Sp, T)**
- **Hc Effect Factors**
- **Memory Protection**

4. Pipelining Technology

- **One-Stage Overlap, Pipelining Classification**
- **Pipelining Performance Indicators (T_p , η , S_p)**
- **Pipelining Hazard (Structural, Data, Control)**
- **MIPS Architecture and Pipeline Framework**
- **Pipelining Interrupt Processing**
- **Non-linear Pipelining Scheduling**
- **Superscalar, Super pipelining, VLIW**
- **Vector Processing Method, Vector Processor Structure**
- **Vector Parallel Processing and Vector Link Technology**

5. Parallel Processor and Multiprocessor

- **Parallelism**
- **Technical ways to improve the parallelism of the computer system**
- **Classification of Array Processor**
- **Interconnect Function**
- **Single-Level Interconnect Network Structure**
- **Multiple-Level Cube Interconnect Network and Multiple-Level Omega Interconnect Network**