

Chapter 12: Multiprocessor Architectures

Lesson 02:

Flynn Classification of parallel processing architectures

Objective

- Be familiar with *Flynn classification of parallel processing architectures*
- SISD, SIMD, MISD, MIMD

Basic multiprocessor architectures

Flynn Classification

- SISD (single instruction and single data stream)
- SIMD (single instruction and multiple data streams)
- MISD (Multiple instructions and single data stream)
- MIMD (Multiple instructions and multiple data streams)

SISD

- No instruction parallelism
- No data parallelism
- SISD processing architecture example— a personal computer processing instructions and data on single processor

SIMD

- Multiple data streams in parallel with a single instruction stream
- SIMD processing architecture example— a graphic processor processing instructions for translation or rotation or other operations are done on multiple data
- An array or matrix is also processed in SIMD

MISD

- Multiple instruction streams in parallel operating on single instruction stream
- Processing architecture example— processing for critical controls of missiles where single data stream processed on different processors to handle faults if any during processing

MIMD

- Multiple processing streams in parallel processing on parallel data streams
- MIMD processing architecture example is super computer or distributed computing systems with distributed or single shared memory

Summary

We Learnt

- SISD, SIMD, MISD, MIMD four classifications of parallel processing architectures

End of Lesson 02 on
**Flynn Classification of parallel processing
architectures**