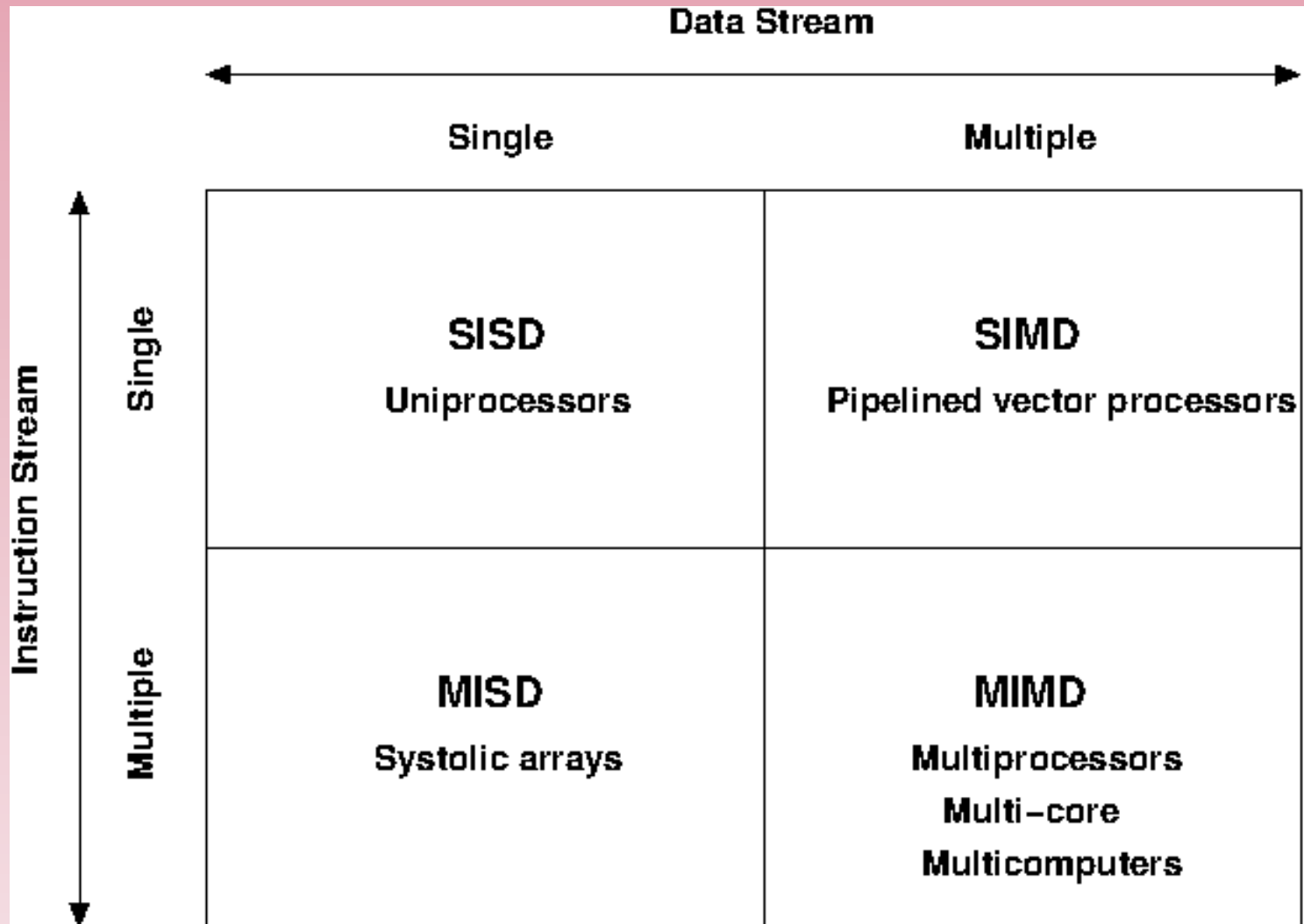


**Processor
Architecture/Presentation on
Flynn's Classification**

Flynn's Taxonomy

- Flynn's Taxonomy uses two basic concepts: Parallelism in instruction stream, and parallelism in data stream.
- A n CPU system has n program counter, so there are n "instruction stream" that can execute in parallel.
- A data stream can be used as a sequence of data, and there exist 4 possible combinations.

Flynn's Classification

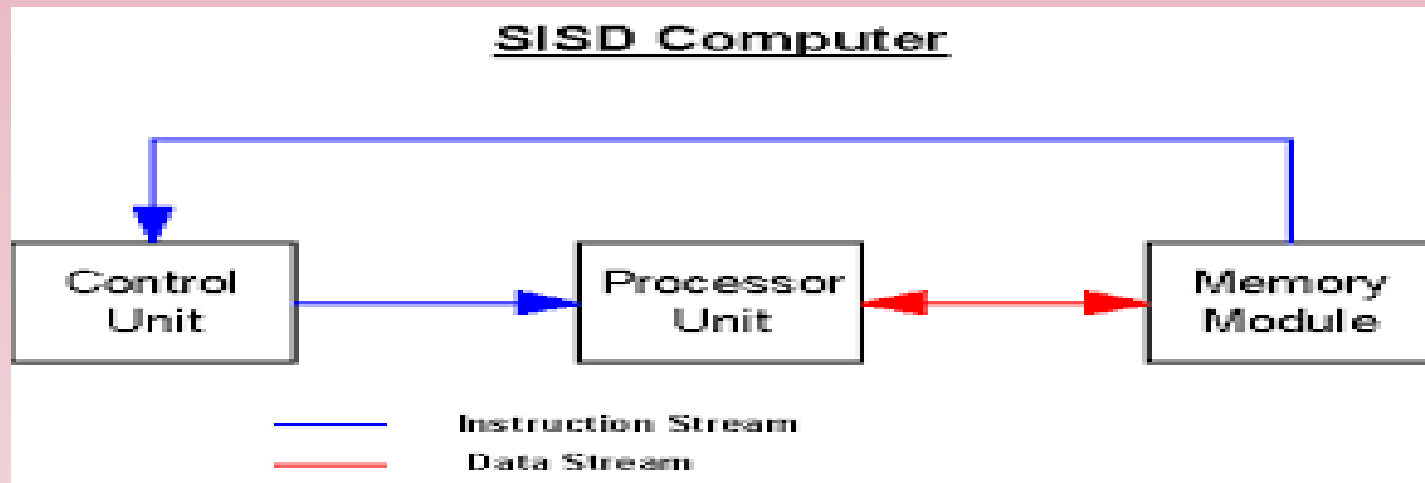


Flynn's Classification

Insrtuction Set	Data Streams	Name	Examples
1	1	SISD	Von Neumann Machine
1	Multiple	SIMD	Vector Super Computer
Multiple	1	MISD	Arguably None
Multiple	Multiple	MIMD	Multiprocessor, Multicomputer

SISD(Single Instruction Single Data)

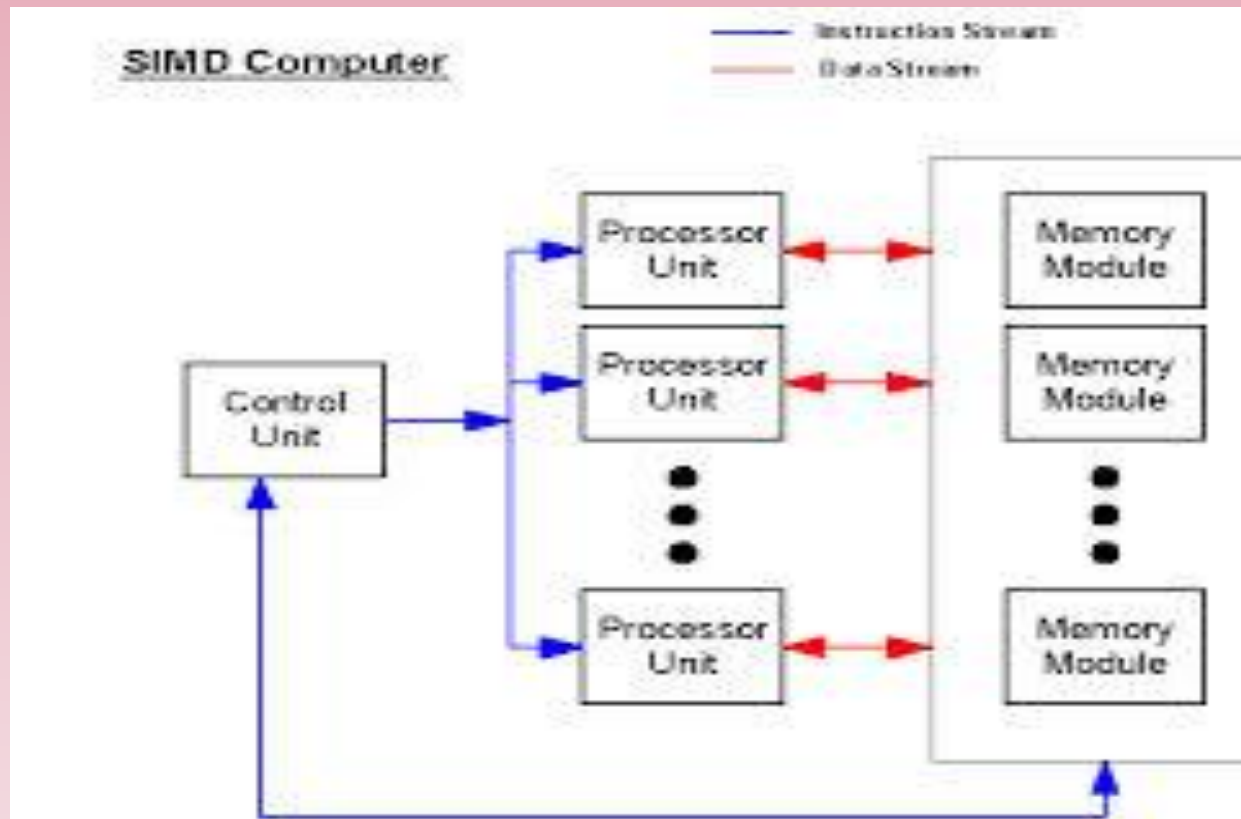
- A processor that can only do one job at a time from start to finish.



SIMD(Single Instruction Multiple Data)

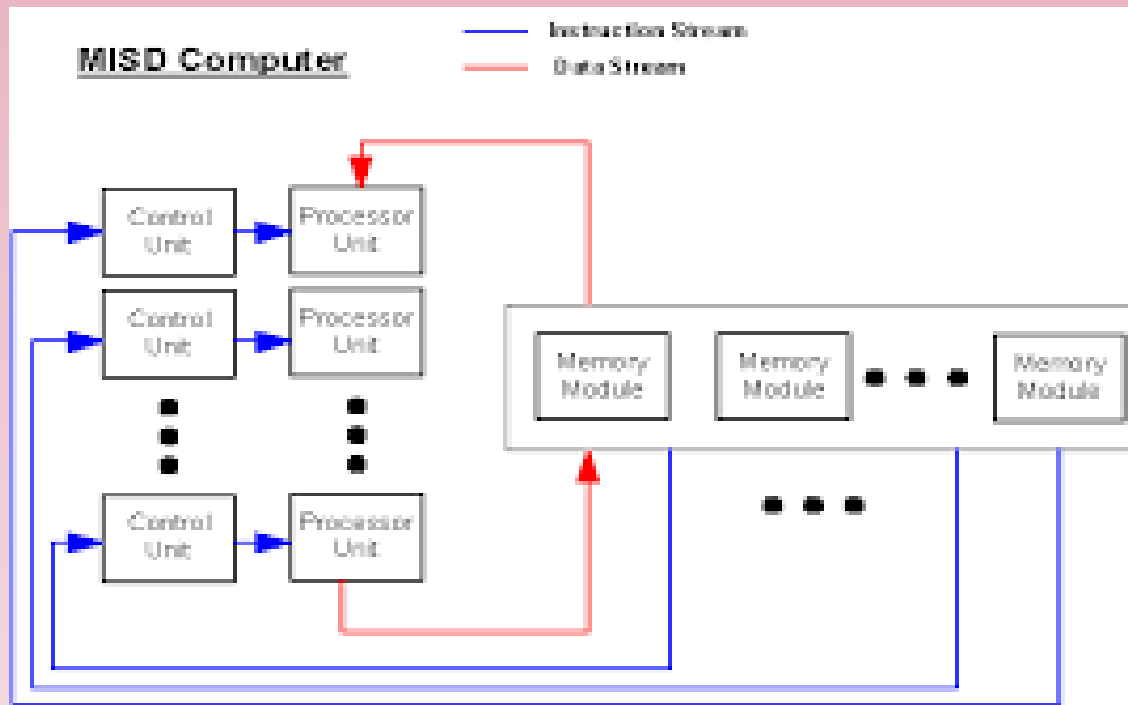
- Single CU and multiple PEs
- CU fetches an instruction from memory and after decoding, broadcasts control signals to all PEs.
- That is, at any given time, all PEs are Synchronously executing the same.
- Instruction but on different sets of data; hence the name SIMD

SIMD(Single Instruction Multiple Data)



MISD(Multiple instructions single data)

- A rare type, since data throughput is limited.



MIMD(Multiple instruction Multiple Data)

- A MIMD is a true multiprocessor
- In contrast to SIMD, a MIMD is a general-purpose machine.
- When all the processor in MIMD are running the same program, we call it Single Program Multiple Data(SPMD) computation.
- The SPMD model is widely used by many parallel platforms.

MIMD(Multiple instruction Multiple Data)

