MULTI PROCESSOR CONFIGURATIONS

3.1 MULTIPROCESSOR SYSTEMS

Multiprocessor Systems refer to the use of multiple processors that execute instructions simultaneously and communicate using mailboxes and semaphores.

Maximum mode of 8086 is designed to implement 3 basic multiprocessor configurations:

1. coprocessor (8087)
2. closely coupled (8089)
3. loosely coupled (Multibus)

Coprocessors and closely coupled configurations are similar in that both the CPU and the external processor share:
- Memory
- I/O system
- Bus & bus control logic
- Clock generator

3.2 Closely Coupled Configuration:
Example: 8086/8087

Coprocessor cannot take control of the bus, it does everything through the CPU
- 8089 shares CPU=s clock and bus control logic
- communication with host CPU is by way of shared memory
- host sets up a message (command) in memory
- independent processor interrupts host on completion

NOTE: Closely Coupled processor may take control of the bus independently Two 8086’s cannot be closely coupled
Wake up independent processor with OUT instruction

Execute 8086 instructions

Wait for ready or interrupt request

Set up message

Wait for request

Fetch the message

Perform requested task

Notify CPU of completion

Wait for request

8086/8088

Independent Processor (8089)

Source: http://nprcet.org/e%20content/Misc/e-Learning/IT/IV%20Sem/CS%202252-Microprocessors%20and%20Microcontrollers.pdf