
Master of Computer Applications

CAPOL403R01: Computer Organization & Architecture

Unit II: Lecture 4 - Part 1

Processor structure and function

Dr. D. MURALIDHARAN
Assistant Professor
School of Computing
SASTRA Deemed to be University

Processors Organization

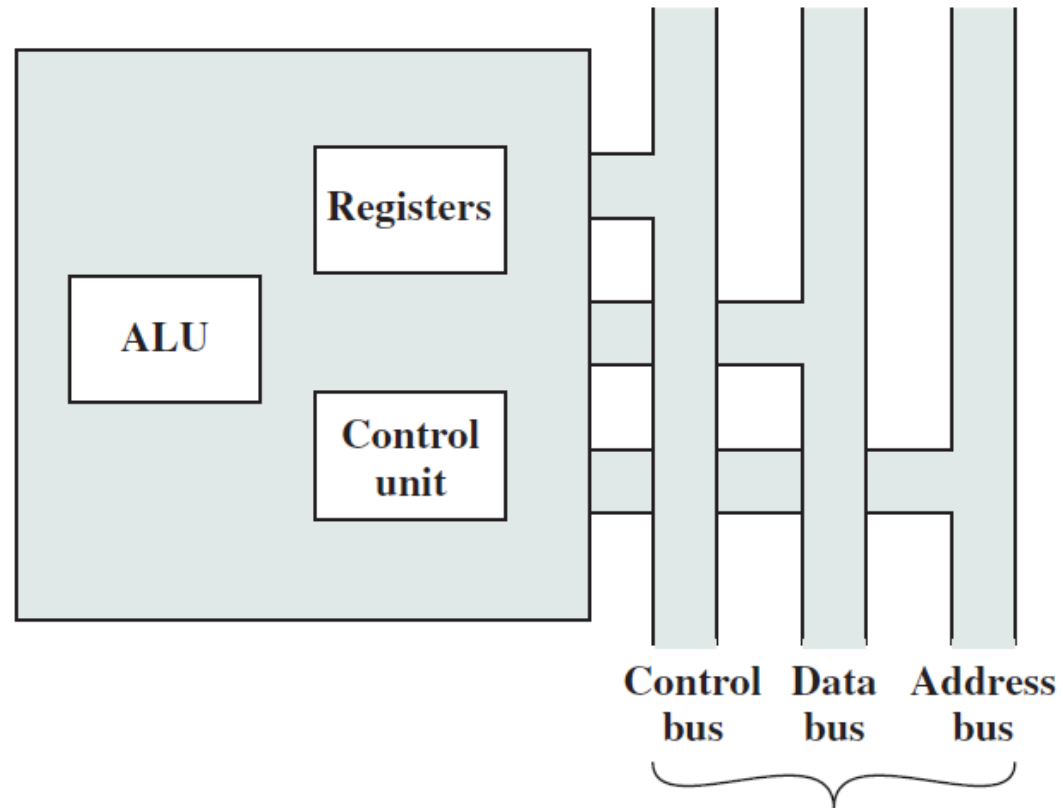
- Functions of Processor

- Fetch instruction
- Interpret instruction
- Fetch data
- Process data
- Write data

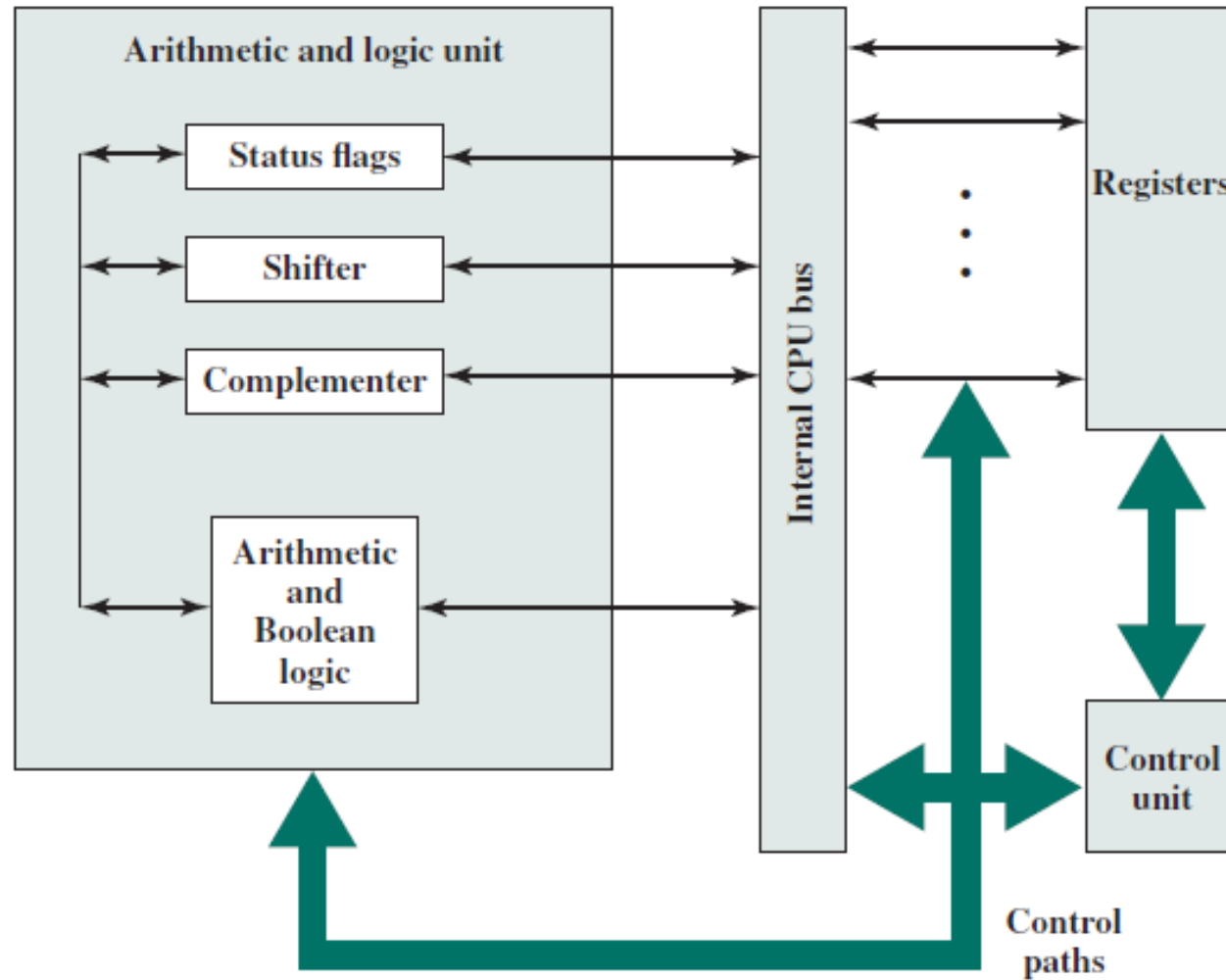
- Requirement

- Space for temporary data
- Space to remember the current instruction address
- Space for few instructions

CPU with system bus



Internal Structure of CPU



Register Organization

- User visible registers
 - General purpose
 - Data
 - Address
 - Condition codes
- Status and control registers
 - Program counter
 - Instruction register
 - Memory address register
 - Memory buffer register

Register organization...

- Program Status Word

- Sign
- Zero
- Carry
- Equal
- Overflow
- Interrupt enable / disable
- Supervisor

AX	Accumulator
BX	Base
CX	Count
DX	Data

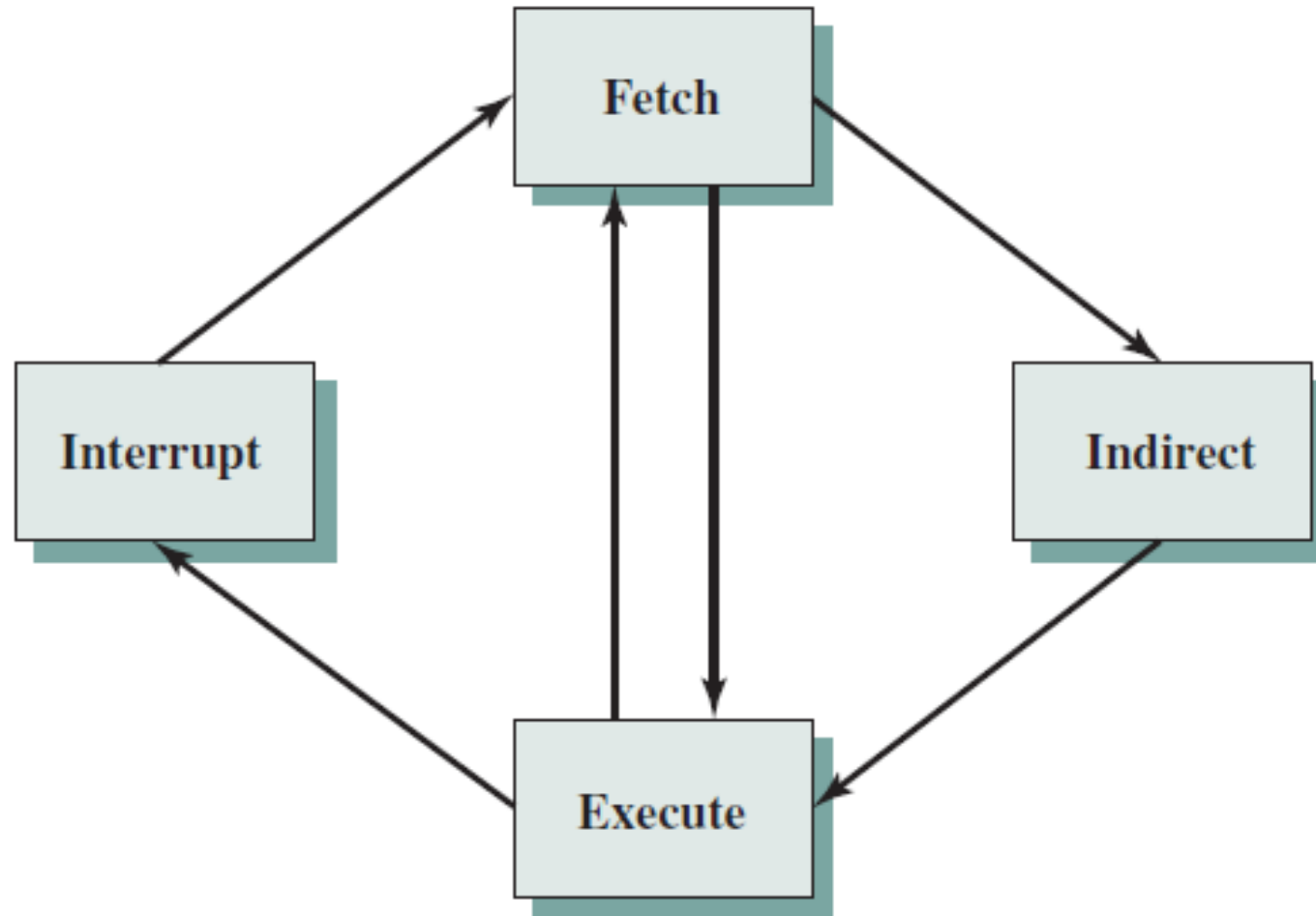
CS	Code
DS	Data
SS	Stack
ES	Extract

SP	Stack ptr
BP	Base ptr
SI	Source index
DI	Dest index

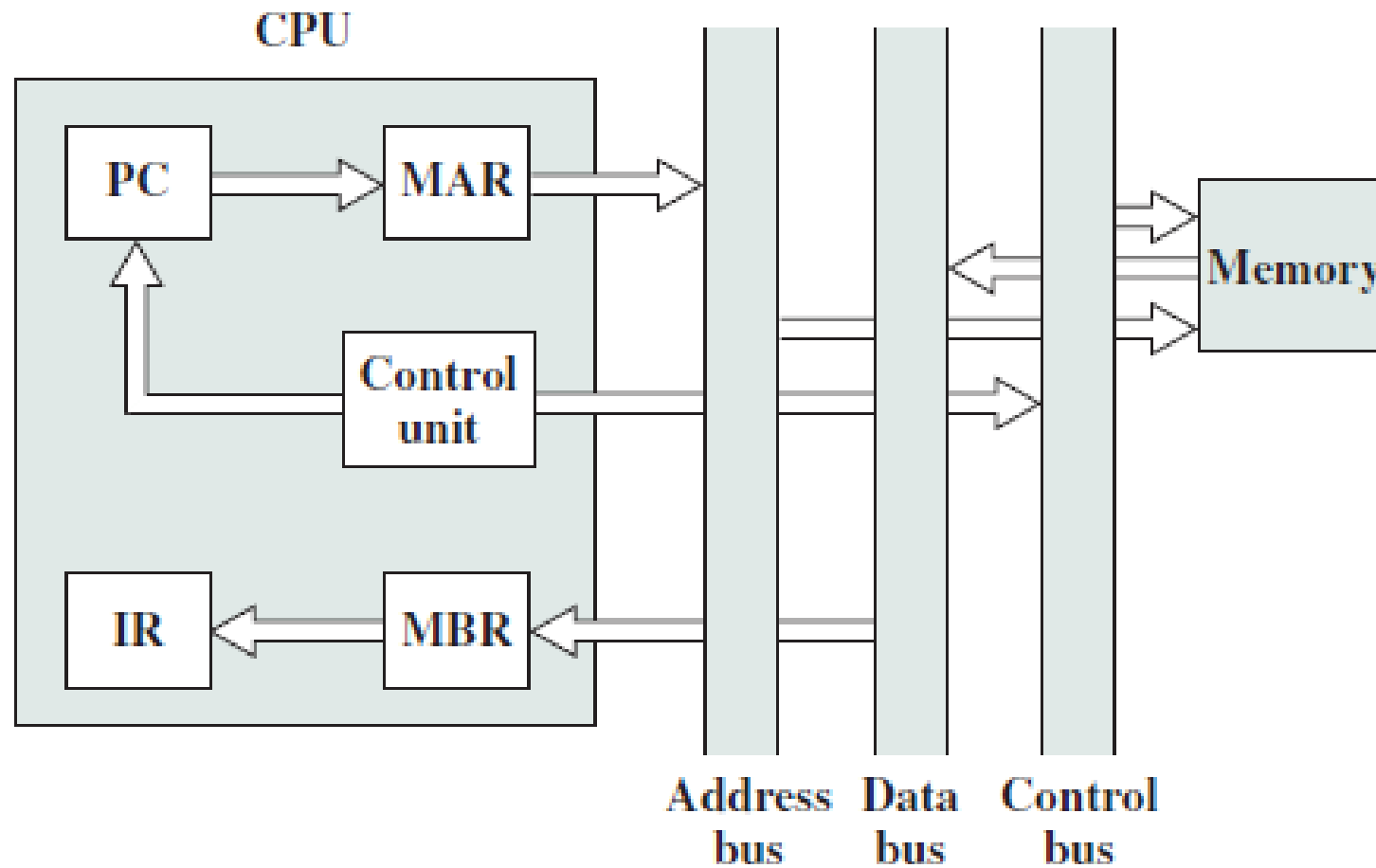
Flags
Instr ptr

8086 Register Organization

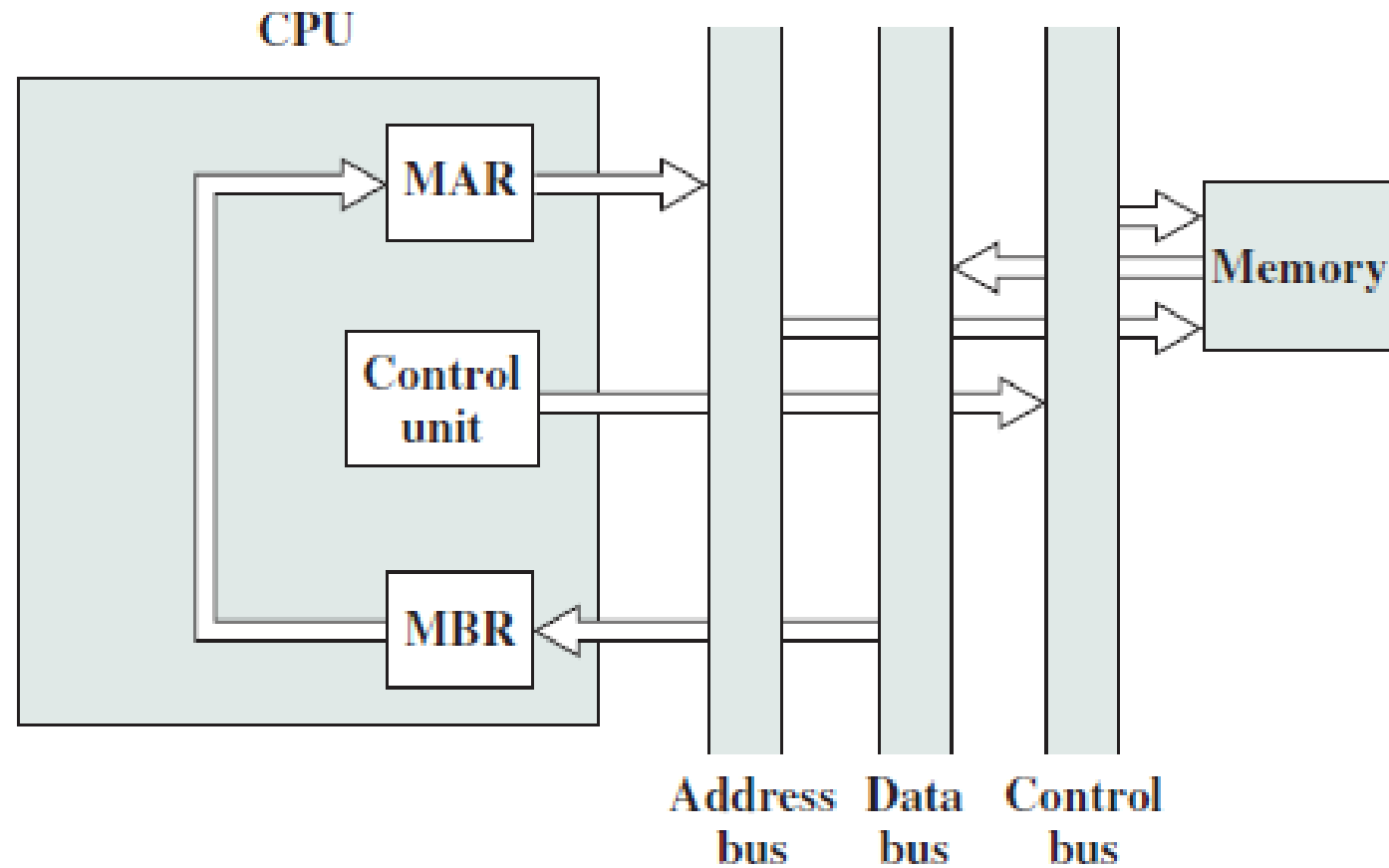
Instruction Cycle



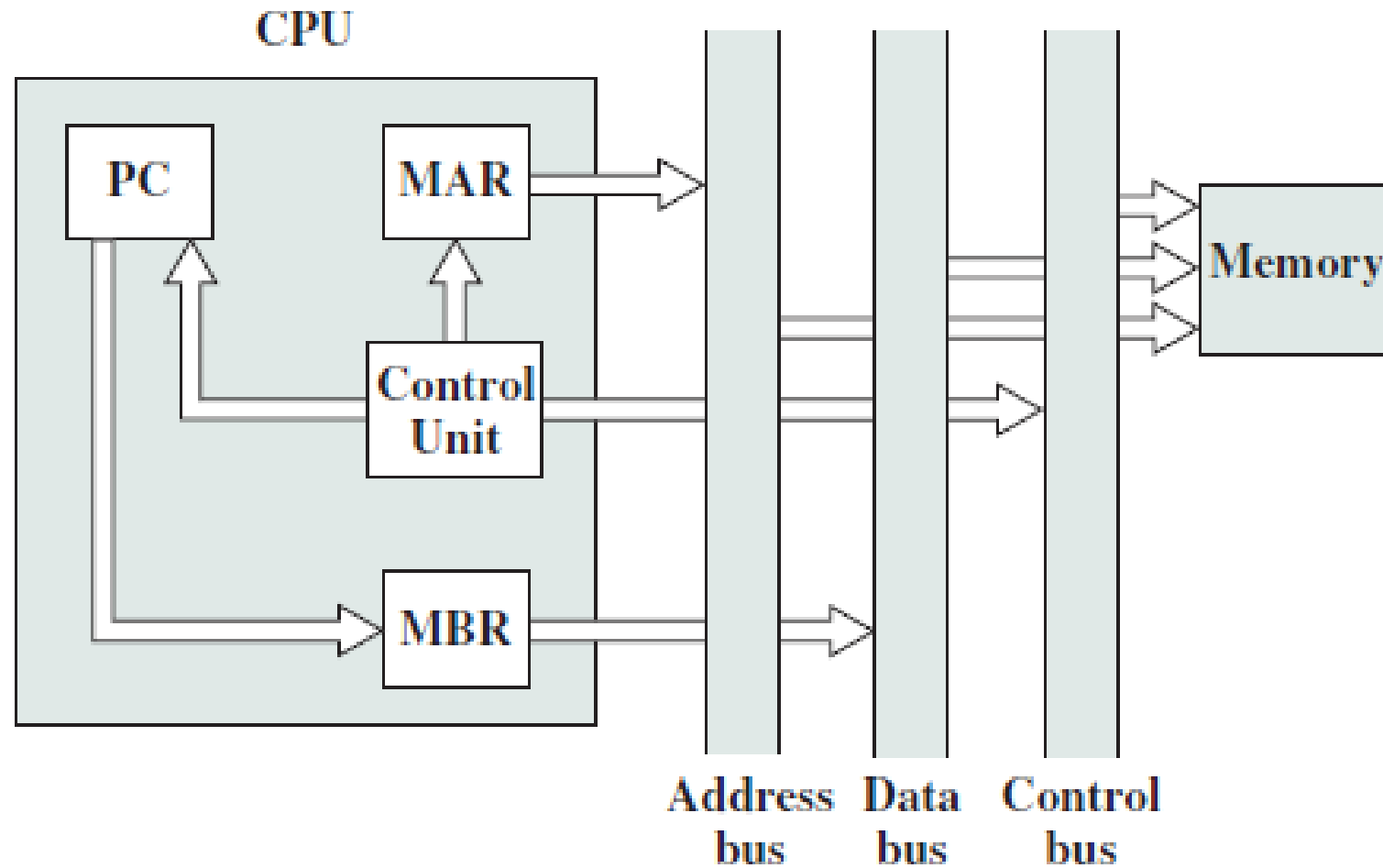
Fetch Cycle



Indirect cycle



Interrupt cycle



Instruction cycle state diagram

