

Computer Architecture Lec 5a

Dr. Esti Stein

(Partly taken from Dr. Alon Schclar slides)

Based on slides by:

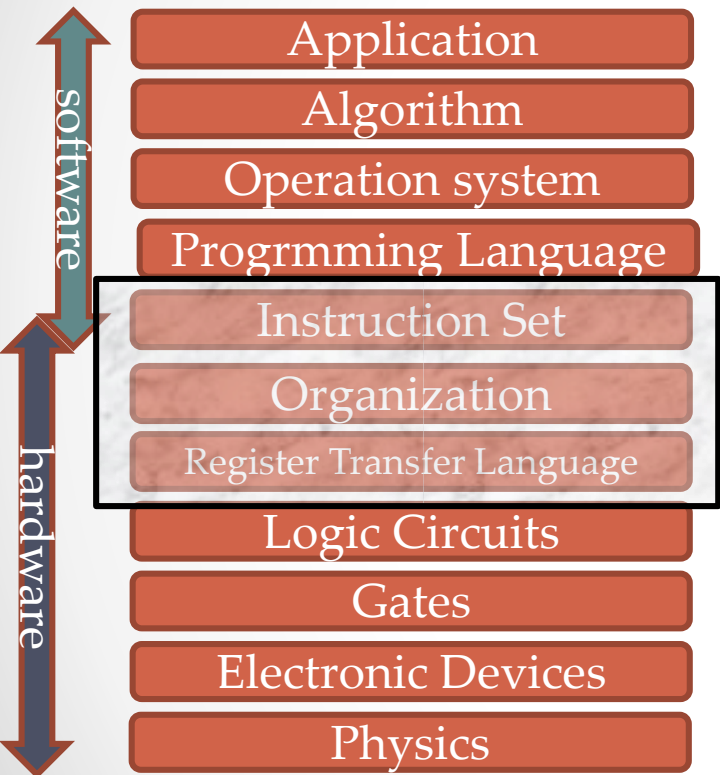
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Korea University of Technology & Education
Department of Information & Communication

Taken from: **M.**

**Mano/Computer Design and
Architecture 3rd Ed.**

General Purpose Digital Computer

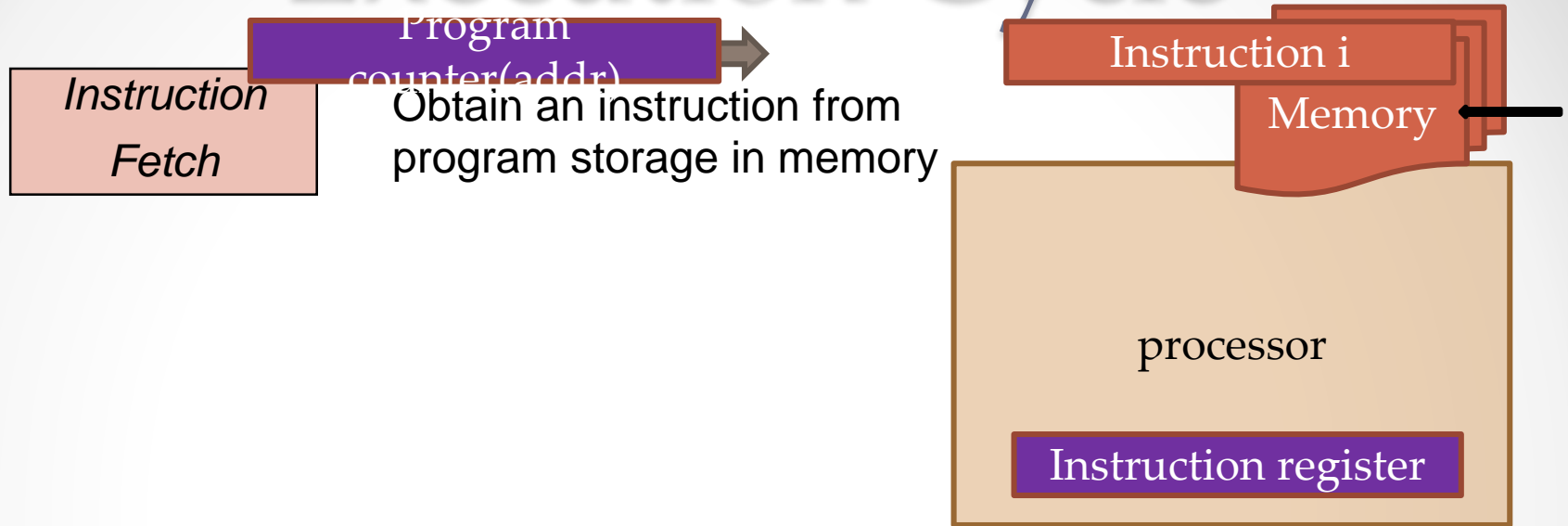


- Capable of executing various microoperations.
- Can be instructed as to what specific sequence of operations to perform.

A Program

- ◆ The user of a computer can control the process by means of a **program**.
- ◆ A program is a set of **instructions** that specify the operations, operand, and the sequence (*control*)
- ◆ A instruction is a binary code that specifies a sequence of microoperations
- ◆ Instruction codes together with data are stored in memory (=Stored Program Concept)
- ◆ The computer reads each instruction from memory and **places it in** IR **control register**. The control then **interprets the binary code** of the instruction and proceeds to **execute it** by issuing a sequence of microoperations.

Execution Cycle



Execution Cycle

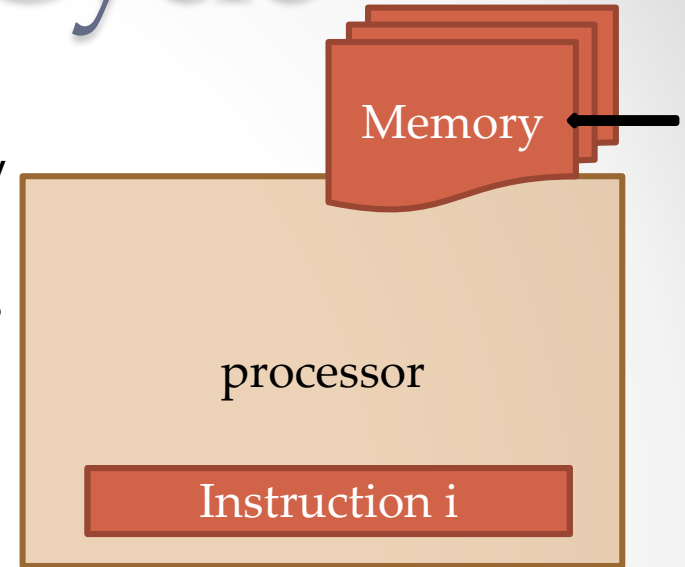
*Instruction
Fetch*



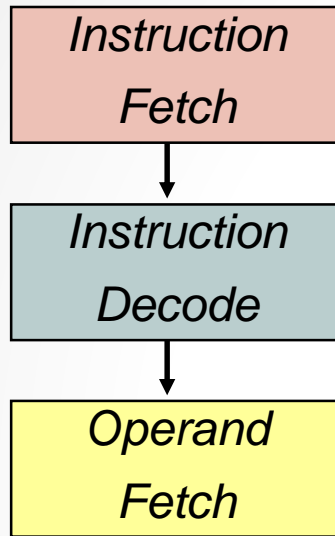
*Instruction
Decode*

Obtain instruction from
program storage in memory

Determine required actions
and instruction size



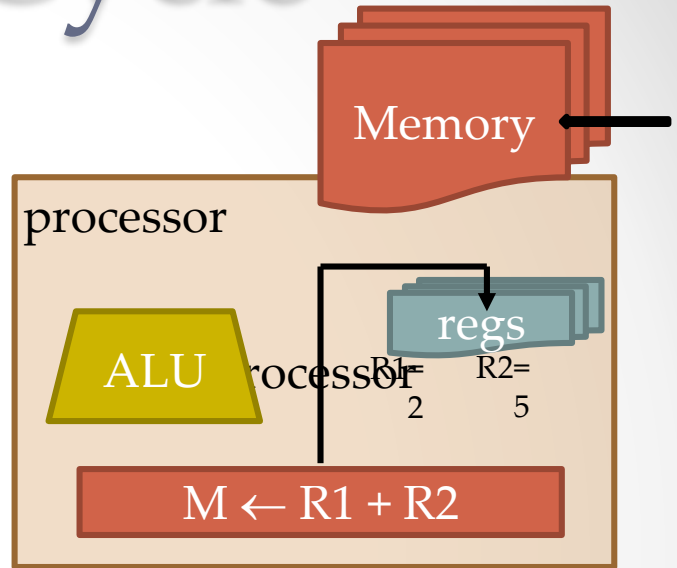
Execution Cycle



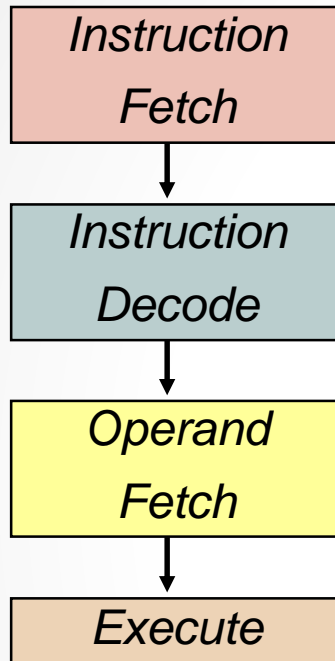
Obtain instruction from program storage in memory

Determine required actions and instruction size

Locate and obtain operand data



Execution Cycle

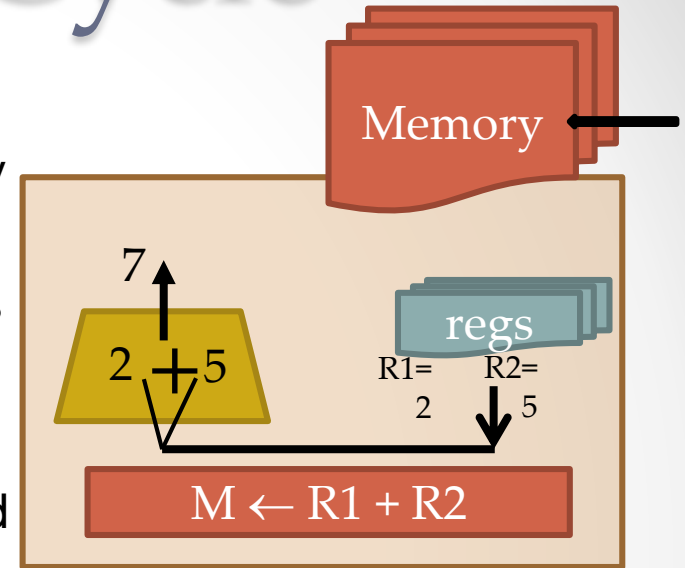


Obtain instruction from program storage in memory

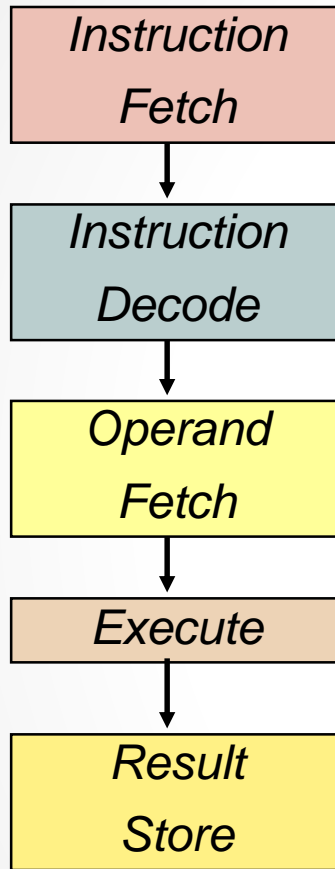
Determine required actions and instruction size

Locate and obtain operand data

Compute result value or status



Execution Cycle



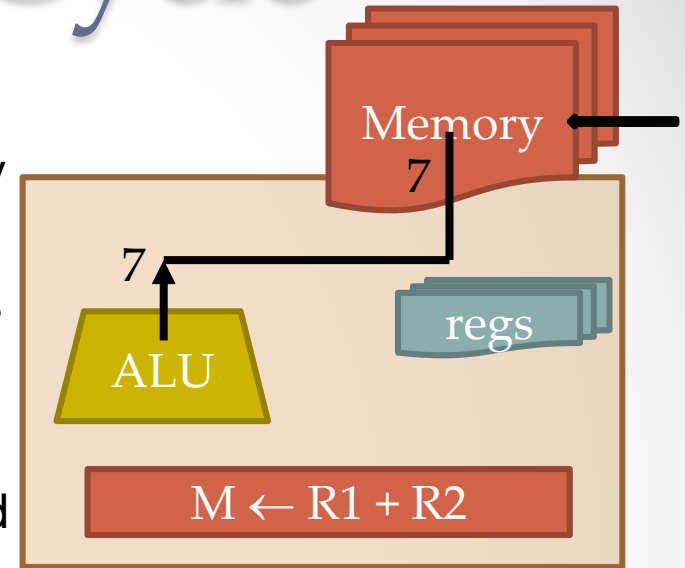
Obtain instruction from program storage in memory

Determine required actions and instruction size

Locate and obtain operand data

Compute result value or status

Deposit results in storage



Execution Cycle

