CIS (21-774)
C̲omputer I̲nformation S̲ystems
in
Industrial Engineering

Department of Industrial Engineering
Sharif University of Technology

Session# 9

Course Description (Continued..)

- *Contents:*
  - *The role of managers in Information Technology (IT)*   *(3 sessions)*

  - *Organizational Issues*   *(3 sessions)*

  - *Information Technology*   *(9 sessions)*

  - *Operational and enterprises systems*   *(4 sessions)*

  - *Exciting directions in systems*   *(3 sessions)*

  - *E-Business and E-Commerce*   *(3 sessions)*

  - *Issues for senior management*   *(2 sessions)*

Course Description *(Continued..)*

- *Contents:*
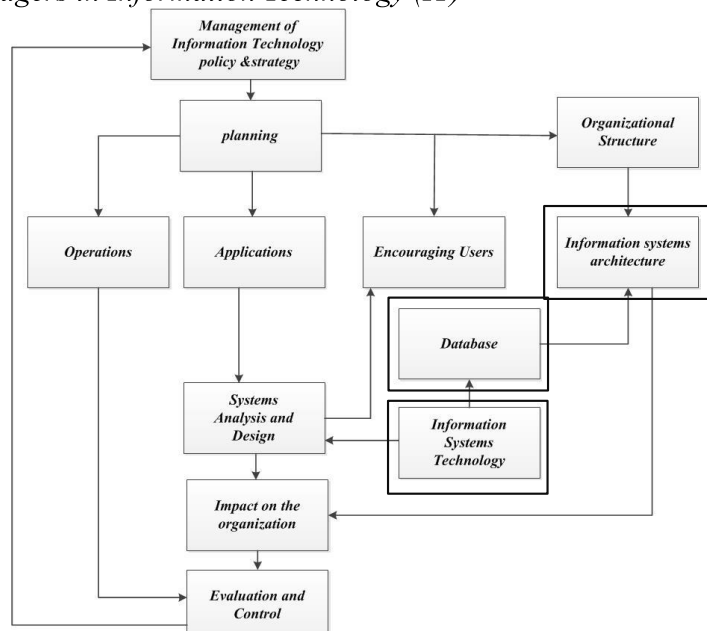 - *Information Technology*   *(9 sessions)*
    - *Fundamentals*
      - *The components of a personal computer*
    - *Software*
      - *Managerial concerns*
      - *The Contribution of Higher-Level languages*
      - *The Web Browser and Internet standards*
      - *The operating system*
    - *Database management*
      - *File elements*
      - *Enter database management software*
      - *Database in systems design*
      - *Data Warehouses, Data Marts, and Data Centers*
      - *Enterprise Content Management*

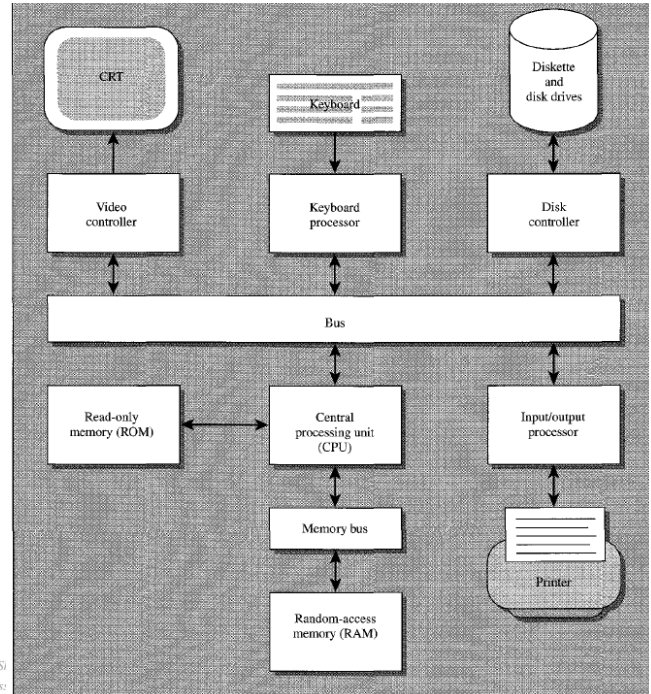## *The role of managers in Information Technology (IT)*

Information Technology

- *Fundamentals*
  - *The components of a personal computer*
    - *The heart of the computer is the central processing unit or CPU, which contains the logic that controls the calculations done by the computer.*

    - *The Bus is a communications device, really a connection among various parts of the computer*

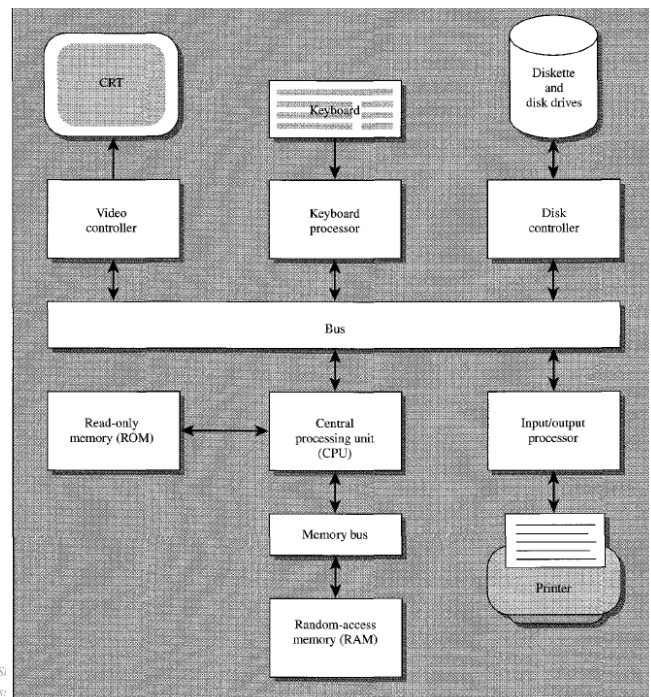*Department of Industrial Engineering, Si*
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Information Technology

- *Fundamentals*
  - *The components of a personal computer*
    - *Primary memory of the computer holds two kinds of information.*

    - *We have an input-output (I/O) processor, which is dedicated to controlling devices such as printers*

    - *Read-only memory stores instructions used by the computer*

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Information Technology

- *Fundamentals*
  - *CPU*
    - *The control unit manages the CPU*

    - *The Bus interfaces the cache memory on the chip with random access memory chips (RAM).*

    - *The code cache is a portion of very fast memory on the CPU chip.*

    - *The data cache is also fast memory for keeping small amounts of data for faster access than is available from RAM memory chips.*

    - *The instruction location counter always points to the next instruction in a program to be executed*
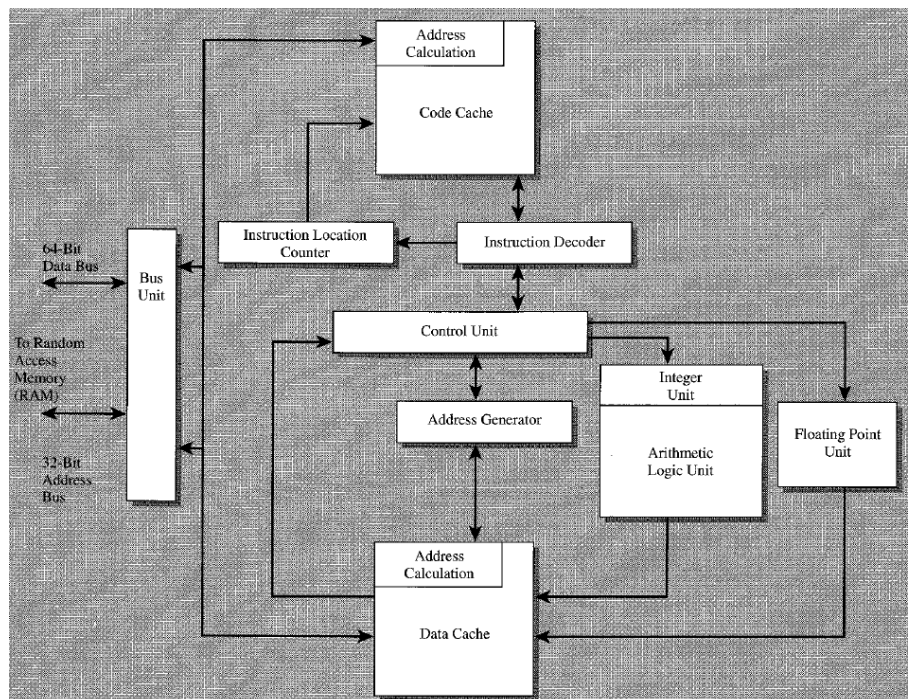
Information Technology

- *Fundamentals*
  - *CPU*

Information Technology

- *Fundamentals*
  - *CPU*
    - *The instruction decoder determines what each instruction means*

    - *The address generator computes the address in memory for these data.*

    - *The integer unit performs integer arithmetic, and the floating-point unit performs floating-point arithmetic.*

    - *The arithmetic and logic unit (ALU) performs logical operations such as comparisons between two numbers.*

Information Technology

- *Fundamentals*
  - *What makes a chip perform*
    - *Clock speed*

    - *Data path*

    - *Computation*

    - *Memory size*

    - *Floating-point arithmetic*

    - *Number of transistors per chip*

    - *Pipe lined execution*

Information Technology

- *Fundamentals*
  - *What Techniques Increase Speed*
    - *Cache memory*
      - *When the computer reads from the disk, the cache memory is filled with the data requested and with extra data nearby.*

    - *A pipelined computer breaks down instructions into many small steps like an assembly line. Each of these steps or stages is handled by a separate circuit.*

    - *The Pentium chip features two integer execution units, each fed by its own instruction pipeline, also called superscalar architecture*

Information Technology

- *Fundamentals*
  - *What Techniques Increase Speed*
    - *Many of today' s PC applications depend on graphic features, so manufacturers have turned their attention to the video controller and its role in the computer.*

    - *Graphics accelerator cards are video controllers that actually have a processor chip and a large amount of memory (say, a megabyte or more) to offload the display task from the CPU*

Information Technology

- *Fundamentals*
  - *Input/output*

POPULAR INPUT-OUTPUT DEVICES

Both input and output	Input devices	Output devices
PC	Keyboard	Printers
Terminal	Mouse	Laser
	Scanning	Inkjet
	Image	Voice
	Optical Character Recognition	Graphics
	Bar code	
	Touch screen	
	Voice	

Information Technology

- *Fundamentals*
  - *Input/output*
    - *Barcoding*
    - *Bar coding is an extremely popular way of entering data into a computer. We encounter a form of bar coding in grocery stores equipped with checkout scanners. These devices use a laser to read the universal product code (UPC)*

    - *Other types of bar codes are used extensively in the manufacturing industry.*
      - *In a highly automated factory, parts are marked with bar codes. The codes direct the flow of the part through the factory and may even indicate to a machine what operations to perform on it.*

Information Technology

- *Fundamentals*
  - *Input/output*
    - *Optical character recognition (OCR)*
    - *An OCR software package reads the image and converts the characters in the image to ASCII.*

    - *To recognize letters or characters, the OCR software compares the input with a series of stored characters attempting to find the best match.*

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