

CIS (21-774)
Computer Information Systems
in
Industrial Engineering
 Department of Industrial Engineering
 Sharif University of Technology

Session# 5



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..)

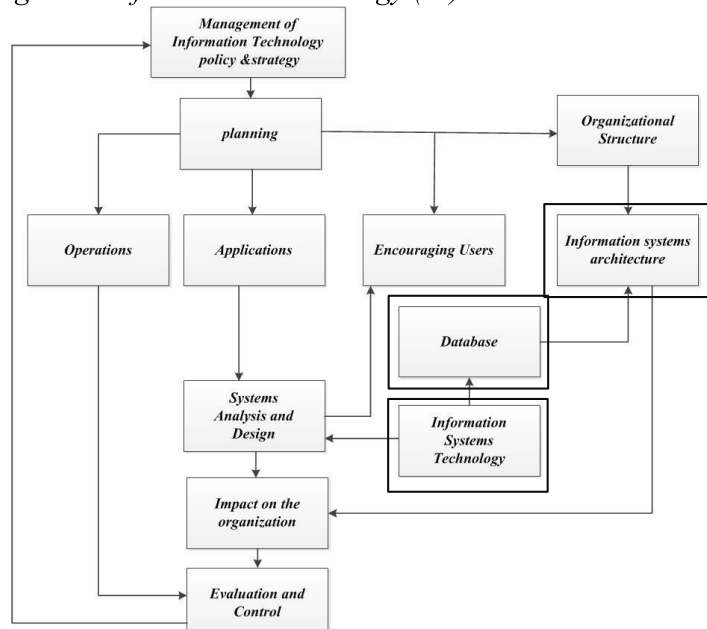
▪ Contents:

- *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*
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 - *Data Warehouses, Data Marts, and Data Centers*
 - *Enterprise Content Management*

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The role of managers in Information Technology (IT)



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Information Technology

- *Software is the key*
 - *Hardware takes software to do anything useful with a computer.*
 - *we defined software as the instructions that tell a computer what actions to take*
- *We generally divide software into two main types: systems software and applications software*
 - *Systems software manages the computer and/or provides a set of standard services to its users.*
 - *A second type of systems software is a programming environment. An environment provides the programmer with a virtual workspace and access to various libraries.*
- *Applications software solves an information processing problem in an organization. The programs constituting the systems we have seen so far are classified as applications software.*

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Information Technology

- *Software is the key*
 - *Over the last 50 years, the trend in programming has been to make it easier to give instructions to a computer.*

SOFTWARE GENERATIONS

Generation		Software
First	1950–1958	Machine language Assembly language
Second	1958–1964	Assembly language Higher-level languages Batch operating systems Dedicated on-line systems Experimental time-sharing
Third	1964–1970	Preponderance of higher-level languages Expansion of packaged systems Operating system mandatory Mixed on-line and batch applications Virtual-memory time-sharing systems
Third-and-one-half	1970–1980	Expanded operating systems Virtual-memory batch systems Batch, on-line, and time-sharing mixed Database and communications packages
Fourth	1980 to present	More application programs Higher-higher level or “fourth-generation” languages Application generators Virtual-memory operating systems for PCs Object-oriented languages Open systems

Information Technology

- *Software is the key*
 - *Higher-level languages make the computer easier to program and extend the use of computers to more individuals.*
 - *FORTRAN (FORmula TRANslation) is designed to facilitate the use of computers by scientists and engineers and is well suited to solving mathematically oriented problems on the computer.*
 - *BASIC is a language very similar to FORTRAN except that it was designed for time-sharing. You can use a variation called Visual Basic to develop applications for Windows 98 on a PC.*
 - *COBOL (common business-oriented language) was developed to facilitate programming for business applications.*
 - *Report program generator (RPG) is suitable for business applications. RPG provides fixed program logic automatically, and programmers work from special RPG coding forms.*

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Information Technology

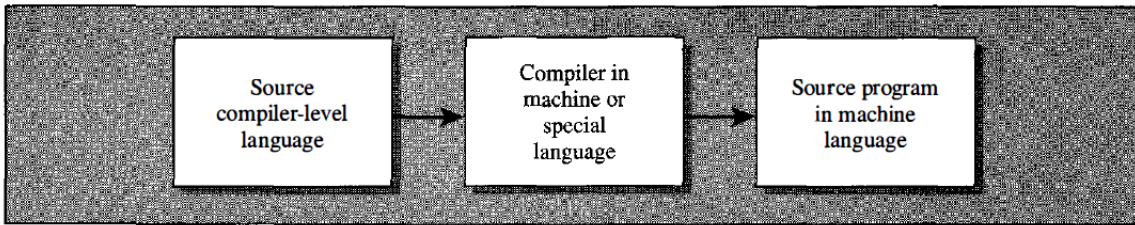
- *Software is the key*
 - *The C language is extremely popular today. This powerful language was developed at Bell Laboratories and is used extensively on minicomputers, workstations, and personal computers for developing systems.*
 - *Object-oriented programming is a relatively new approach to developing software.*
 - *The idea is to create objects that are self-contained modules of code.*
 - *Designers encapsulate a set of data and all valid operations on that data together in an object.*
 - *All of the objects in a class inherit the characteristics of that class. A class is an abstract concept for a group of related objects*

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Information Technology

- *Software is the key*
 - *A higher-level language will often be translated into machine language by a program called a compiler.*
 - *It accepts a program called the source program and translates it into machine language called the object program.*



Information Technology

- *Software is the key*
 - *One of the most important programs today for use on the Internet is a version of C++ called Java that was developed by Sun Microsystems.*
 - *Java is an interpreted program that programmers use to create "applets" (small programs) to be downloaded to client computers connected to the Internet.*
 - *Scripting languages are designed for "gluing" applications together. If adequate components exist, scripting languages let the programmer develop applications more quickly than conventional languages.*

Information Technology

- *Software is the key*
 - *A number of software vendors have developed languages that they advertise as belonging to the "fourth generation."*
 - *These languages are particularly appealing to users who need to access data on corporate computers.*
 - TABLE FILE SALES DAT
 - PRINT NAME AND AMOUNT AND DATE
 - BY REGION BY SITE
 - IF AMOUNT GT 2000
 - ON REGION SKIP - LINE
 - END

Information Technology

- *Software is the key*
 - *Package programs are software programs written by a vendor to be sold to multiple customers.*
 - *One of the reasons for this proliferation is that the technology has matured. There are packages around today in the fourth or fifth (or more) version, improving with each version.*
 - *The other reason packages are gaining in popularity is the requirement to sell personal computer packages.*

Information Technology

- *Software is the key*
 - *A Web browser is a program that provides a client PC with a graphical interface to the Internet.*
 - *This combination of a Web browser and Internet standards makes it possible to create new applications such as those found on an Intranet, and to extend existing transactions processing systems to millions of users.*
 - *Early web browsers supported only a very simple version of HTML.*
 - *The rapid development of proprietary web browsers led to the development of non-standard dialects of HTML, leading to problems with interoperability.*

Information Technology

- *Software is the key*
 - *In the first generation of computers, and for many second-generation installations, the operator of the system had a central role in controlling its use.*
 - *A skilled operator balanced jobs that needed many tape drives with jobs that needed few or no drives so that the large tape job could be set up while the other job computed.*
 - *It became clear that the computer itself could be used to help make operations proceed more smoothly.*
 - *The operating system is concerned with providing your programs with the resources they need to run on the computer.*

Information Technology

- *Software is the key*
 - *Early Systems*
 - *Batch Monitor*
 - *Multiprocessing*
 - *On-line Systems*
 - *The Birth of Time-Sharing*
 - *Considering the operation of early time-sharing systems, only one program is executing at a time because there is only one CPU.*
 - *A program executes for a short time until it is interrupted and "swapped" out of memory onto a secondary-storage device.*

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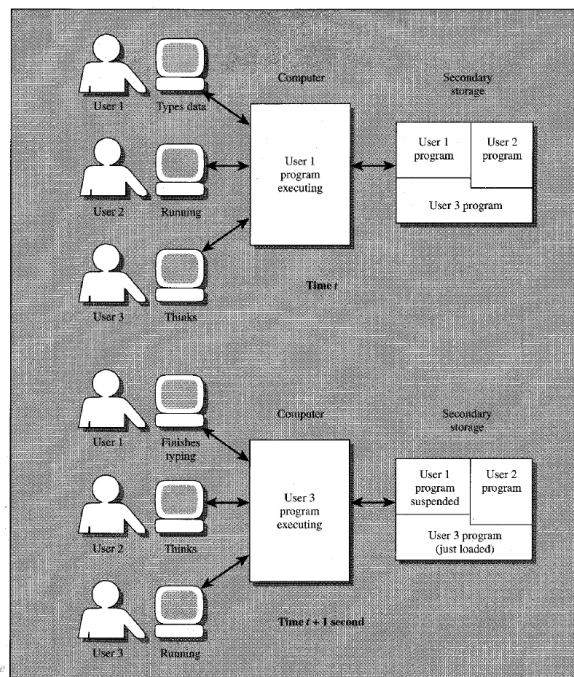
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Information Technology

- *Software is the key*
 - *Another user's program is swapped into primary memory, and execution begins where it stopped when the program was previously swapped out of primary memory.*
 - *In a simple round robin scheme, each user is given a maximum time slice in sequence. A program may be swapped out of primary memory even though it has used less than its time slice if it needs to send output or receive input, since these activities are handled by a data channel*

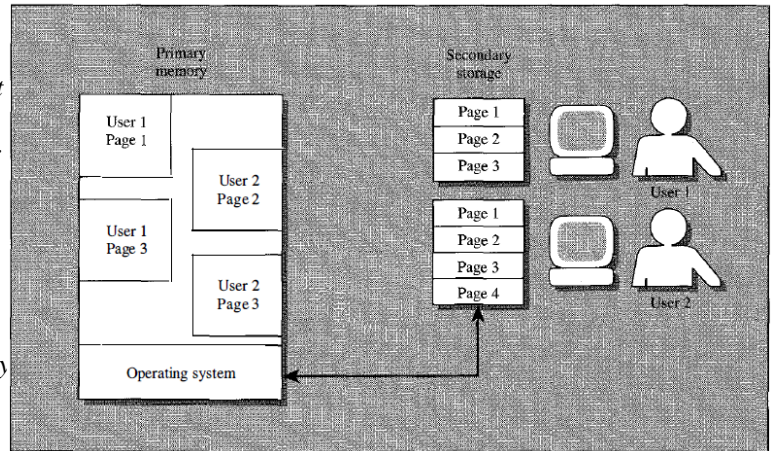
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Information Technology

- *Software is the key*
 - *Time-sharing users often run out of memory. Programmers would like to have limitless memory, or a virtual memory several times larger than physical memory.*
 - *In virtual memory, its data are broken into pages. Only those pages needed in primary memory at any one time are loaded.*



Information Technology

- *Software is the key*
 - *One useful view of an operating system is as a resource manager.*
 - *The operating system consists of a series of managers, and each manager must accomplish the following: monitor resources, enforce policies on resource allocation, allocate the resource, and reclaim the resource.*
 - *The memory manager*
 - *The process manager*
 - *The device manager*
 - *The information manager*

Information Technology

- *Software is the key*
 - *Personal computers also have operating systems, though originally they had fewer features than their mainframe counterparts.*
 - *The highest level in the operating system is the command level, seen by users of the system. The lowest level is BIOS (basic input-output system), part of which is actually in read-only memory.*
 - *Chips with 32-bit processors and 32-bit memory buses are designed with hardware support for virtual memory.*

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