

زبان تخصصی مهندسی کامپیوتر

درس پنجم:

The Heart and Soul of a Computer

Part I- Writing Development: **Enumerators**

- در نوشتن یک متن، گاهی اوقات نیاز است که مراحل مختلف انجام یک کاری را به ترتیب شرح دهیم. برای ذکر این مراحل میتوان از کلماتی چون Step, Stage, Phase استفاده کرد.

The first,

The second
(The next)

The third
(The next)

The last

Step

Stage

Phase

Part II-Vocabulary

Generate (V)

تولید کردن ، نتیجه دادن

- give rise to, lead to, result in

Ballistic (n)

علم حرکت اجسام پرتاب شونده،

- The science of projectiles and firearms.

Summon up (V)

احضار کردن ، به ذهن آوردن

- to bring (a memory, feeling, image, etc.) into the mind: *Visiting his old house summoned up memories of his childhood.*

Typical (adj)

نمونه ، معمولی

- constituting or having the nature of a type

Scrap (V)

- **discard or remove from service**

دور انداختن، کنار گذاشتن، اوراق کردن

Permanent (adj)

- **Lasting or intended to last**

دائمی

Manage (v)

- **to handle or direct with a degree of skill.**

مدیریت کردن

Husband (v)

to manage prudently and economically.

اداره کردن (همراه با تدبیر و صرفه جویی)

Vendor (n)

- **A person or company offering something for sale.**

فروشنده دوره گرد

Part III– Reading

OPERATING SYSTEMS

Section 1: Pre-reading Questions

- Do you know about the history of how computer was invented?
- What are the functions of the operation system?
- What is the difference between Mac and Windows operation system?

Section 2: Reading Passage

1. History

In the 1940s, electronic digital systems had no operating systems. Electronic systems of this time were programmed on rows of mechanical switches or by **jumper wires** on **plug boards**. The aim of these systems was to **generate ballistic** tables for the **military** or control the printing of **payroll** checks from data on punched paper cards. After programmable general-purpose computers were invented, machine languages (consisting of strings of binary digits 0's and 1's on punched paper tape) were introduced and speeded up the programming process.



سیم برای بستن مدار - برد (صفحه) اجرای مدار - نظامی - لیست پرداخت

The purpose of early computers was to perform a series of single tasks like a calculator. Basic operating system features were developed in the 1950s, such as **resident** monitor functions that could automatically run different programs in **succession** to speed up processing. Operating systems did not exist in their modern and advanced forms until the early 1960s. Hardware features were added to enable the use of runtime libraries, **interrupts**, and parallel processing. When personal computers became popular in the 1980s, operating systems were famous for them and were used on larger computers.

مقیم - متوالی - وقفه

2. Operating system powered computers

When you turn on your computer, it is nice to think that you are in control. There is the **trusty** computer mouse, which you can move it anywhere on the screen, **summon up** your music library or Internet browser very fast. Although it is easy to feel like a director in front of your desktop or laptop, there is a lot going on inside, and the Real Man in control behind the **curtain** handling the necessary tasks is the operating system.

Most desktop PCs or laptops come pre-loaded with Microsoft Windows, while Macintosh computers come pre-loaded with Mac OS X, and many computer servers use the Linux or UNIX operating systems. The operating system is the first thing loaded onto the computer, and without the operating system, a computer is useless.

قابل اعتماد - پرده

More recently, operating systems have started to pop up in smaller computers such as smart phones. The computers used in these little devices are powerful enough that they can now actually run an operating system and applications. The computer in a **typical** modern smart phone is now more powerful than a desktop computer built 20 years ago, so this **progression** makes sense and is a natural development. One of the reasons operating systems are made out of portable code rather than **permanent** physical circuits is that they can be changed or modified without having **scraped** the whole device. The purpose of an operating system is to organize and control hardware and software so that the device operates in a **flexible** but **predictable** way.

پیشرفت - انعطاف پذیر - قابل پیش بینی

However, not all computers have operating systems. The computer that controls the **microwave oven** in your kitchen, for example, does not need an operating system. It has one set of tasks to perform, very **straightforward** input to expect (a numbered keypad and a few pre-set buttons) and simple, never-changing hardware to control. For a computer like this, an operating system would be unnecessary **baggage**, driving up the development and manufacturing costs significantly and adding complexity where none is required. Instead, the computer in a microwave oven simply runs a single hard-wired program all the time.

For other devices, an operating system creates the ability to: (a) serve a variety of purposes; (b) **interact** with users in more **complicated** ways; and (c) **keep up** with needs that change over time. Now that we realize the importance of the operating system in computers, the next section focuses on the functions of the operating system.

اجاق مایکروویو - سر راست ، ساده - کوله بار - تعامل - پیچیده - همراه بودن

3. Operating system functions

At the simplest level, an operating system goes through two steps: First, it **manages** the hardware and software resources of the system. In a desktop computer, these resources include the processor, memory, disk space and more (on a smart phone, they include the touch screen, the address book, the battery and the network connection). Second, it provides a stable, **consistent** way for applications to deal with the hardware without knowing all the details of the hardware.

The first step, managing the hardware and software resources, is very important, as various programs and input methods **compete** for the attention of the Central Processing Unit (CPU) and **demand** memory, storage and Input/Output (I/O) bandwidth for their own purposes. In this capacity, the operating system plays the role of the good parent, making sure that each application gets the necessary resources while playing nicely with all the other applications, as well as **husbanding** the limited capacity of the system to the greatest good of all the users and applications.

The second step, providing a consistent application interface, is especially important if there is to be more than one of a particular type of computer using the operating system, or if the hardware making up the computer is ever open to change. A consistent Application Program Interface (API) allows a software developer to write an application on one computer and has a high level of **confidence** that it will run on another computer of the same type, even if the amount of memory or the quantity of storage is different on the two machines.

Even if a particular computer is unique, an operating system can ensure that applications continue to run when hardware **upgrades** and updates occur. This is because the operating system - not the application - **is charged with** managing the hardware and the distribution of its resources. One of the challenges **facing** developers is keeping their operating systems flexible enough to run hardware from the thousands of **vendors** manufacturing computer equipment. Today's systems can **accommodate** thousands of different printers, disk drives and special peripherals in any possible combination.

اعتماد به نفس، اطمینان - ارتقاء - مسئول بودن - مواجه شدن - وفق دادن ، همراهی کردن

4. Types of operating systems

Within the **broad** family of operating systems, they are generally categorized into four types based on computers, and they control the sort of applications they support. The categories are:

A) Real-time operating system (RTOS) - Real-time operating systems are used to control **machinery**, scientific **instruments** and industrial systems. RTOS has very little user-interface capability, and no end-user utilities, since the system will be a "**sealed box**" when delivered for use. A very important part of an RTOS is managing the resources of the computer so that a particular operation executes similarly, any time it occurs. In a complex machine, the available system resources make a part move more quickly but it may be **catastrophic** as the system is busy and does not move at all.

وسیع، گسترده - ماشین آلات - ابزار، ادوات - جعبه بسته شده - مصیبت وار

B) Single-user, single task - As the name **implies**, this operating system is designed to manage the computer so that one user can effectively do one thing at a time. The Palm OS for **palm** handheld computers is a good example of a modern single-user, single-task operating system.

C) Single-user, multi-tasking - This is the type of operating system most people use on their desktop and laptop computers today. Microsoft's Windows and Apple's Mac OS platforms are both examples of operating systems that will let a single user have several programs in operation at the same time. For example, it is **entirely** possible for a Windows user to be writing a note in a word processor while downloading a file from the Internet and printing the text of an e-mail message all at the same time.

D) Multi-user - A multi-user operating system allows many different users to take advantage of the computer's resources simultaneously. The operating system must make sure that the requirements of its various users are balanced, and that each of the programs they are using has sufficient and separate resources so that a problem with one user does not affect the entire community of users. Unix, VMS and mainframe operating systems, such as MVS, are examples of multi-user operating systems.

اشاره داشتن - كف دست - بطور كامل

Part IV- Reading comprehension

Mark each statement as T (True), F (False), or NG (Not Given) to the information in the reading comprehension passage.

1. The operation system has been a part of even the earliest digital systems.
2. Personal computers were introduced in 1960s.
3. The computer mouse was invented right after the emergence of an operation system.
4. All computers have the operation system to control their operations.
5. The central processing unit controls the hardware and software resources.
6. A software developer can write an application on a system with API's.
7. Three types of operating systems are discussed in this unit.
8. The aim of multi-user operating system is to allow many people to use their desktop computers and laptops easily.