Operating System and its Functions

Lecture №3
Subject:
ICT

The goal of lecture

- Examine the purpose and functions of operating systems.
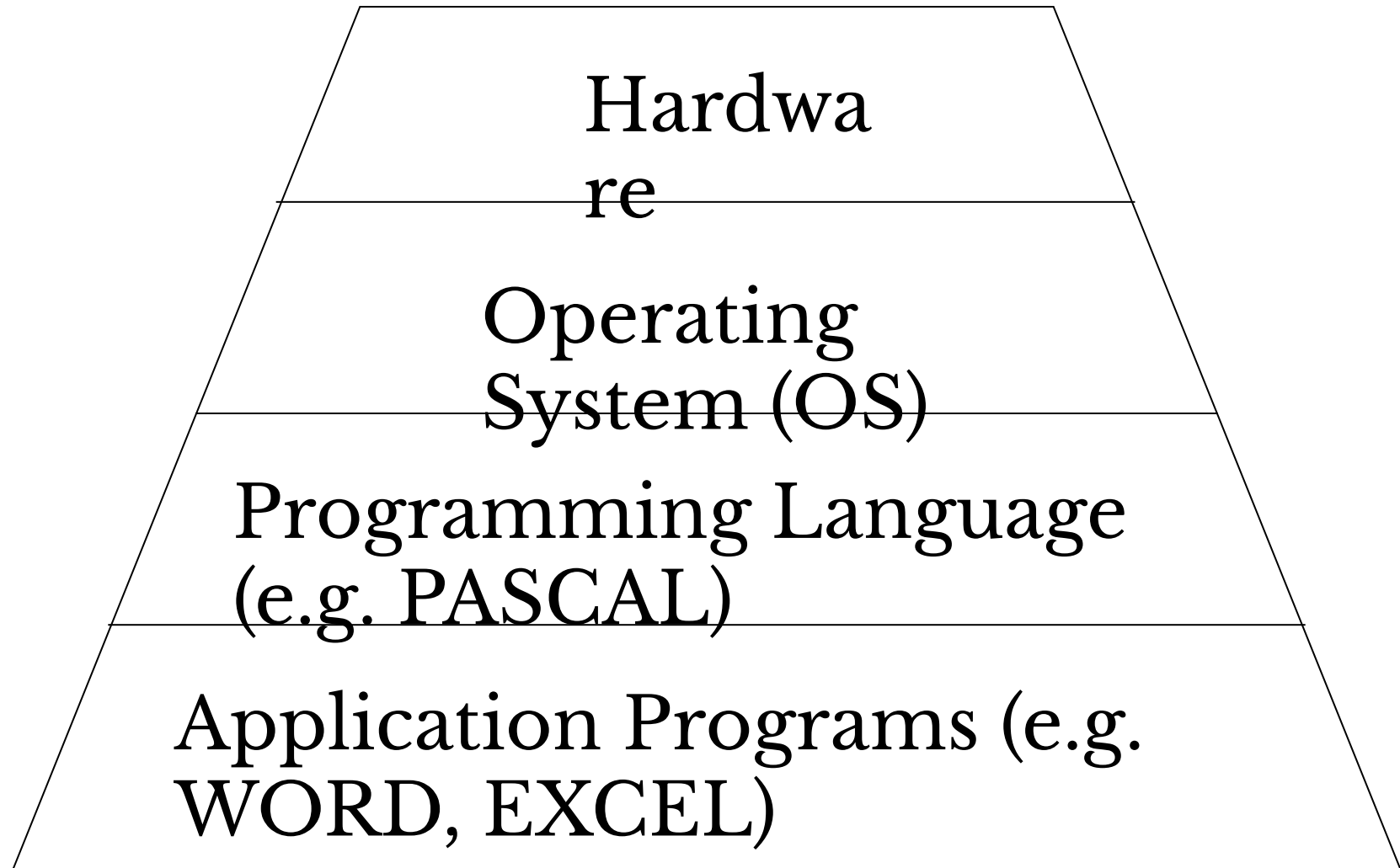
Lesson plan

- Architecture of Computer System
- Operating System and its Functions
- Common Operating Systems and Their Differences

Main terms of lesson

English	Русский
Device configuration	Конфигурация устройств
File management	Управление файлами
Memory management	Управление памятью
Process management	Управление процессами
Command Inerpreter	Интерпретатор команд
load	Загрузка
Protection	Защита
Allocate	Распределение
Deallocate	Перераспределение
Space	Место
Available	Доступно

Architecture of Computer System

Hardware

Operating System (OS)

Programming Language (e.g. PASCAL)

Application Programs (e.g. WORD, EXCEL)

Windows   Linux   Ubuntu   Mac OS X iOS   Android

- -An Operating system(OS) is a program that manages the computer hardware.

- -It also provides a basis for Application Programs and acts as an <u>intermediary</u> between computer <u>User</u> and computer <u>Hardware</u>

6

Windows   Linux   Ubuntu   Mac OS X   Android
                                                 iOS

→ An Operating System (OS) is a program that manages the computer hardware.

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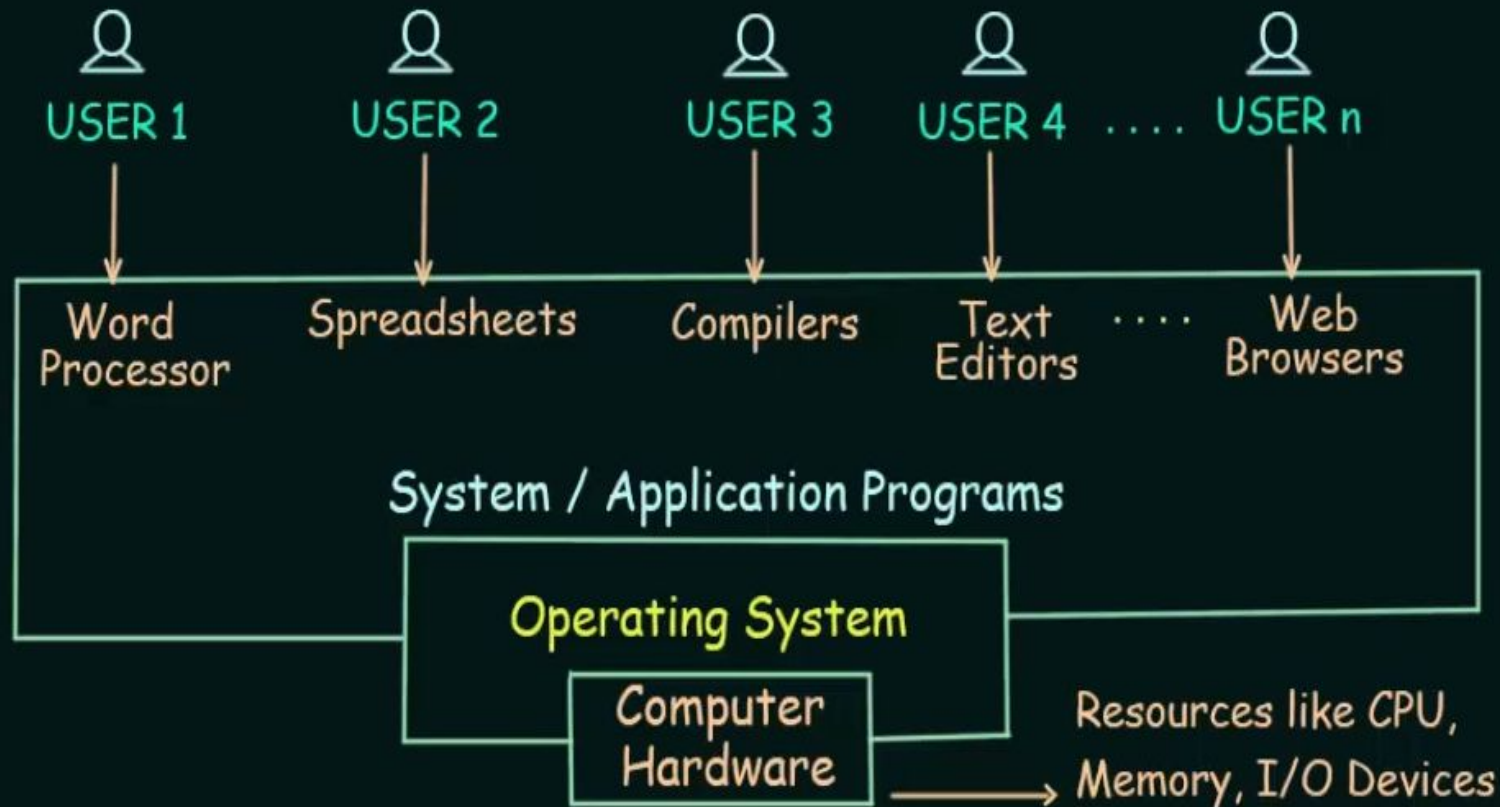
System Software, Application Software and Driver Programs

- System Software- Performs essential operation tasks
  - Operating system
  - Utility programs
- Application Software - Performs specific tasks for users
  - Business application
  - Communications application
  - Multimedia application
  - Entertainment and educational software
- Driver Programs (Device Driver)
  - small program that allows a specific input or output device to communicate with the rest of the computer system

3 type of programs

- user / application programs
  - programs used by the users to perform a task
- system programs
  - an interface between user and computer
- driver programs
  - communicate I/O devices with computer

Operating System

- a collection of programs which control the resources of a computer system
- written in low-level languages (i.e. machine-dependent)
- an interface between the users and the hardware
- when the computer is on, OS will first load into the main

Basic functions of the operating system

Operating System

Device configuration

Controls peripheral devices connected to the computer

File management

Transfers files between main memory and secondary storage, manages file folders, allocates the secondary storage space, and provides file protection and recovery

Memory management

Allocates the use of random access memory (RAM) to requesting processes

Interface platform

Allows the computer to run other applications

Functions of Operating system

- Process Management
- Memory Management
- File Management
- Security management
- Command Interpreter

1.Process management

- **By process management OS manages many kinds of activities :-**
  - All process from start to shut down
  - Creation and deletion of user and system processes.

2. Memory Management

- **The major activities of an operating regard to memory-management are:-**
  - ☐ Decide which process are loaded into memory when memory space becomes available.
  - ☐ Allocate and deallocate memory space as needed.

3.File Management

- **The file management system allows the user to perform such tasks:-**
  - Creating files and directories
  - Renaming files
  - Coping and moving files
  - Deleting files

4.Security Management

- **By security management OS manages many tasks such as:-**
  - Alert messages
  - Dialogue boxes
  - Firewall
  - Passwords

5.Command Interpreter

- A command interpreter is an interface between system and the user. There are two types of user interface:-
  - Command line
  - Graphical user interface

Contd......

- With a **command line user interface** the user interact with the OS by typing command to perform specific tasks

- With a **graphical user interface** the user interacts with the OS by using a mouse to access windows icons and menus

Other function of Operating System

- best use of the computer resources
- provide a background for user's programs to execute
- display and deal with errors when it happens
- control the selection and operation of the peripherals
- act as a communication link

Common Operating Systems and Their Differences

- Network Operating System
  - UNIX / Linux / MS Windows2000 Server

- Desktop Operating System
  - MS Windows 9X/Me / Mac OS / DOS

- Mobile Operating System
  - Palm OS and Pocket PC

Examples

- Common operating systems
  - WINDOW
    - used in IBM compatible microcomputers
  - UNIX
    - multi-user, multi-tasking OS used in minicomputers and microcomputers
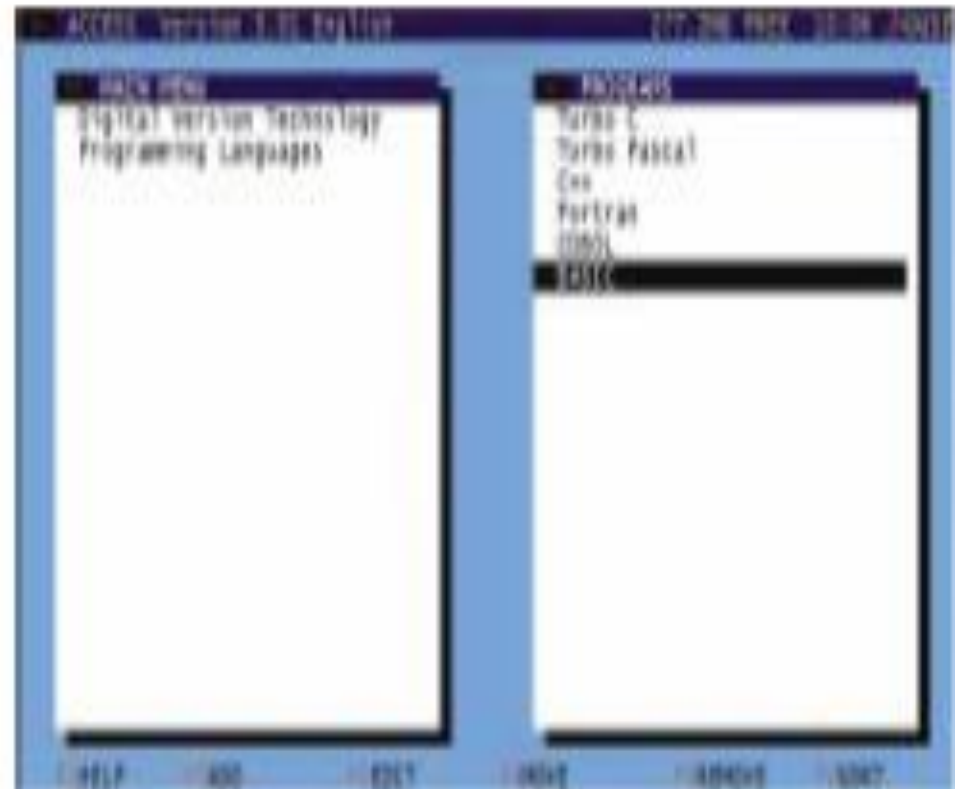 - VAX/VMS

DOS interface

Disk Operating System (DOS)

- a part of operating system to control disk operation
- 2 parts
  - small system data
    - keep track of key information of the disk
  - data area
    - where data file is stored

Different Types of Operating System

UNIX	DOS	Mac OS	MS Windows	Linux	Palm OS/Pocket PC
Multi-user, multi-tasking	Single-user, single-tasking	Single-user, multi-tasking	Single-user, multi-tasking	Multi-user, multi-tasking	Single-user, multi-tasking
Command-line user interface	Command-line user interface	GUI	GUI	Command-line user interface, GUI	GUI
UNIX has serveral versions but they lack interoperability.	DOS has been replaced by MS Windows OS.	Mac OS has easy-to-use GUI.	The first true MS Windows OS is MS Windows 95.	Linux is an open-source software.	They are specifically designed for PDA.
Network OS	Desktop OS	Desktop OS	Desktop OS	Network OS	Mobile OS

Some Examples of Operating System

SIW

- Human-computer interaction.
- The user interface, as a means of human-computer interaction. Interface Usability.
- Types of interfaces: a command line interface, text-based, graphical user interface.
- Physical and mental characteristics of the user. Stages of development of the user interface.