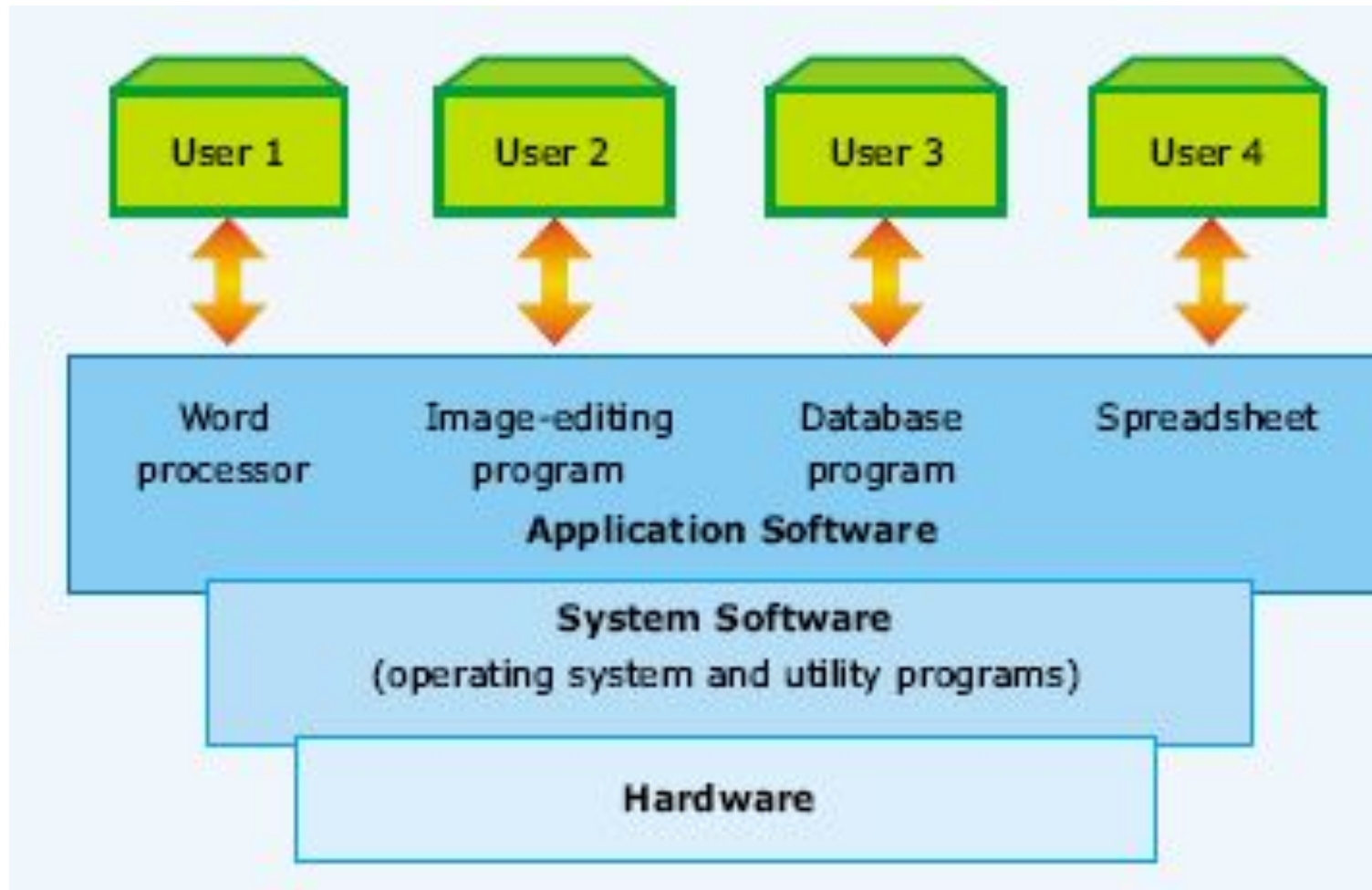


Operating System

Hierarchy of computer software



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 memory

What is OS?

- Operating System is a software, which makes a computer to actually work.
- It is the software the enables all the programs we use.
- The OS organizes and controls the hardware.
- Examples: Windows, Linux, Unix and Mac OS, etc.,

Basic functions of the 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

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 between users
- system protection

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
(используется в IBM совместимых микрокомпьютерах)
 - UNIX
 - multi-user, multi-tasking OS used in minicomputers and microcomputers

DOS interface

```
C:\>dir

Volume in drive C has no label
Volume Serial Number is 0F10-129C
Directory of C:\

DIRBLOG.DAT      BOOTLOG.TXT      FRMLOG.TXT      (SOURCE)      SETLOG.TXT
DIRMANG.COM      IO.SYS           HD000.SYS       DIRSQL         SETUPLOG.TXT
[KBANDS]        NETLOG.TXT       COMPIL.SYS      ROOTLOG.PW    [PROGRAM-1]
[SYSTEM.IST]    AUTOEXEC.NAL    [UNZIP.PSD]    [TBP]         [INETPUB]
FRONTPG.LOG     SCANDISK.LOG     [MP]           [DYNADOC]     [PHOOO-1]
PACADRM.SYS     OS078047.BIN    OS28775L.BIN   [PRDR]       OS004485.BIN
[JSDMG-1.D]     [DHMSI-1]       [P]            WEB1.DOC      [DESRA-1]
[GLOSSARY]      [XX]

    20 files(s)      8,548,884 bytes
    17 dir(s)       272,877,920 bytes free

C:\>
```



GUI



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 several 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

Types of OS:

Operating System can also be classified as

- **Single User Systems**
- **Multi User Systems**

Single User Systems:

- Provides a platform for only one user at a time.
- They are popularly associated with Desktop operating system which run on standalone systems where no user accounts are required (настольные операционные системы, которые работают на автономных системах, в которых нет учетных записей пользователей).
- Example: DOS

Multi-User Systems:

- Provides regulated access for a number of users by maintaining a database of known users (Обеспечивает регулируемый доступ для нескольких пользователей, поддерживая базу данных известных пользователей).
- Refers to computer systems that support two or more simultaneous users (Относится к компьютерным системам, которые поддерживают два или более пользователей одновременно).
- Another term for *multi-user* is *time sharing*.
- Example: Unix

Good Operating System

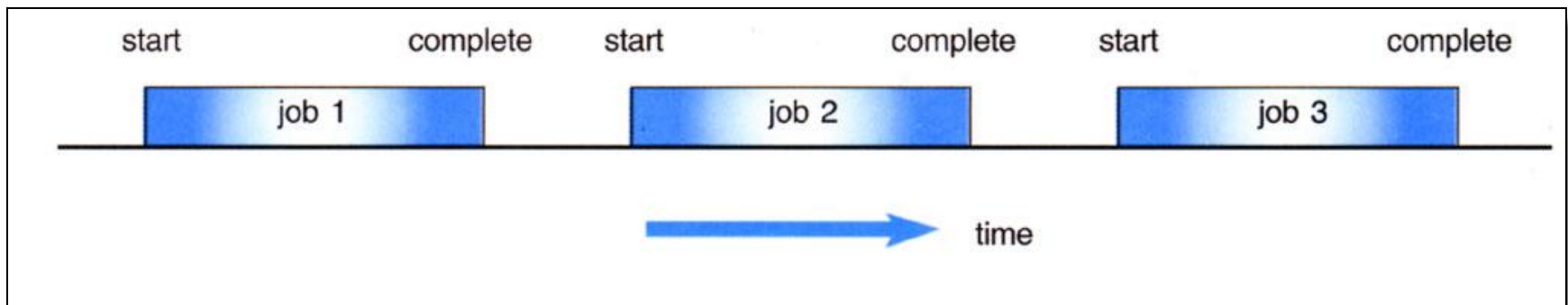
- efficient
 - time spent to execute its programs should be short
- small in size
 - memory occupied should be as small as possible
- reliable (надежный)

Type of Operating System

- Batch processing
- Real time processing
- Time sharing processing

Batch processing

- Jobs, together with input data, are fed into the system in a batch (входные данные, подаются в систему в пакетном режиме).
- The jobs are run one after another.
- No job can be started until previous job is completed



Real time processing

- immediate response is needed (немедленного реагирования).
- For example
 - anti-missile defense system (в противоракетной обороне)
 - airplane landing control system (система управления посадки самолета)

Time sharing processing

- Each user is given a time slice to interact with the CPU (Каждый пользователь получает время, чтобы взаимодействовать с процессором).
- The size of the time slice will depend on the system.
- Each user is served in sequence.