

2

Operating Systems



2 Operating Systems



- ✓ How many operating systems do you know?
- ✓ Which are the most common operating systems nowadays?



1. Read the text and, in pairs, fill in the blanks choosing the correct words from the list below. Some words are written in bold to help you choose.

◆ hardware ◆ input ◆ data ◆ guest ◆ processes
◆ operating ◆ friendly ◆ users ◆ consoles
◆ intermediary ◆ phones ◆ networked

Information Technology Sector

Operating Systems

Objectives

Functions

An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programmes.

For hardware functions such as (1) _____ **and output** and memory allocation, the operating system acts as an (2) _____ **between** programmes and the computer (3) _____. The application code, however, is usually executed directly by the hardware and frequently makes system calls to an OS function or is interrupted by it. Operating systems are found on many devices that contain a computer – from **cellular** (4) _____ and video game (5) _____ to web servers and supercomputers.

The objectives of an Operating System are to provide:

1. Convenience: an OS makes a computer more **suitable** to use, so it becomes user (6) _____.

2. Efficiency: an OS allows the computer system resources to be used in a well-organized manner.

3. Ability to evolve: an OS should be constructed in such a way to permit effective development, testing and introduction of new functions.

Types of operating systems Single- and multi-tasking

A single-tasking system can only run one programme at a time, while a multi-tasking operating system allows more than one programmes to be running at the same time.

This is achieved by time-sharing, where the available **processor time** is divided between multiple (7) _____.

Single- and multi-user

Single-user operating systems have no facilities to distinguish (8) _____, but may allow multiple programmes to run alongside. A multi-user operating system extends the basic concept of multi-tasking with facilities that identify processes and resources, such as disk space, belonging to multiple users, and the system permits multiple users to interact with the system at the same time.

Distributed

A distributed operating system manages a group of distinct computers and makes them appear to be a single computer. The development of (9) _____ computers that **could be linked and communicate with each other** gave rise to distributed computing. Distributed computations are carried out on more than one machine. When computers in a group work in cooperation, they form a distributed system.



Templated

In an OS, distributed and cloud computing context, templating refers to creating a single **virtual machine image** as a (10) _____ operating system, then saving it as a tool for multiple running virtual machines. The technique is used both in virtualization and cloud computing management, and is common in large server warehouses.

Embedded

Embedded operating systems are designed to be used in embedded computer systems. They are designed to operate on small machines like PDAs with less autonomy. They are able to operate with a limited number of resources. They are very compact and extremely efficient by design.

Real-time

A real-time operating system is a time bound system which has well defined fixed time



constraints. It serves real-time applications that **process** (11) _____ data as it comes in, typically without buffer delays. A real-time operating system may be single- or multi-tasking.

Library

In a library (12) _____ **system**, services such as networking are provided in the form of libraries and composed with the application and configuration code to construct a uni-kernel: a specialized, single address space, machine image that can be deployed to cloud or embedded environments.



http://en.wikipedia.org/wiki/Operating_system

2. True or False?



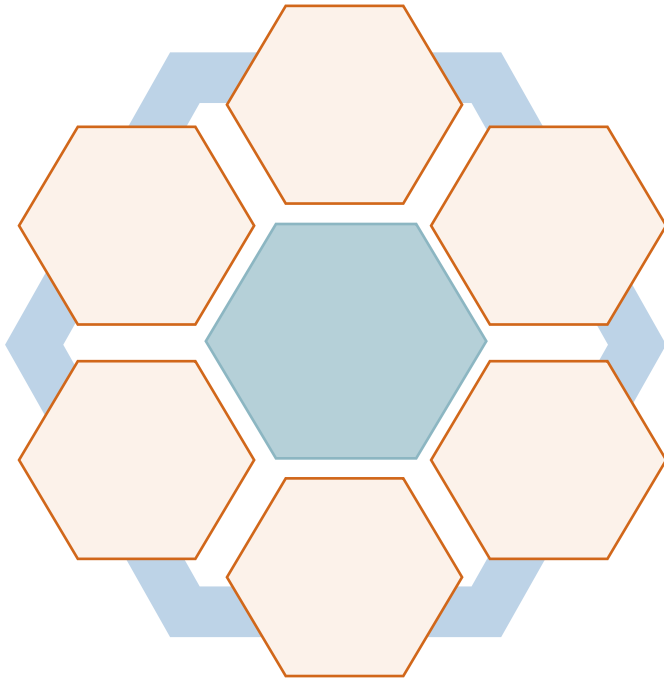
Are the following sentences true (*T*) or false (*F*) according to the text?

		True	False
1.	An operating system is system software for personal computers only.		
2.	Multi-tasking operation is achieved by time-sharing.		
3.	With single-user operating systems you cannot have multiple programmes running in parallel.		
4.	If you want a number of computers to work in a network you need to have a distributed operating system.		
5.	Embedded operating systems are compact and efficient but they operate with a limited number of resources.		

3. Read the text carefully and then choose the correct answers.

1.	What does an operating system do? _____
2.	What kind of devices does an operating system need to work? _____
3.	How is multi-tasking operation achieved? _____
4.	What is the difference between multi-tasking and multi-user operating systems? _____
5.	What does a distributed operating system do? _____
6.	What does "templating" mean? _____
7.	What are the characteristics of embedded operating systems? _____
8.	What is the basic characteristic of real-time operating systems? _____
9.	What is a library operating system? _____
10.	What is a uni-kernel? _____

4. Make a list with the kinds, functions and objectives of operating systems using information from the text or from the internet.



Then, in groups, make a poster or use a diagram like the one on the left to present the various operating systems in class.

Kinds	Functions	Objectives
■	■	■
■	■	■
■	■	■
■	■	■

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5. Do you know the meaning of the following words?
In pairs, match the words (1-10) with the definitions (A-J).



- | | |
|--------------------------|--------------------------|
| 1. _____ system resource | 6. _____ retrieve |
| 2. _____ booting | 7. _____ cloud computing |
| 3. _____ interface | 8. _____ vulnerability |
| 4. _____ device drivers | 9. _____ attack vectors |
| 5. _____ directory | 10. _____ source code |

A	a location/folder for storing files on a computer
B	security weakness in a software programme putting the programme or computer at risk of malicious programmes
C	get stored information from a computer
D	starting up a computer
E	the code used by the programmer to create a software programme
F	technique or means for gaining access to a network server or a computer
G	a programme that enables one or more devices to communicate with the computer's operating system
H	any device/ component connected to a computer system
I	using a network of remote servers to store, manage and process data
J	a connection between two or more components of a computer system exchange (software, hardware, devices, humans).

6. Complete the sentences with the correct word from the following word list. There is one extra option you do not need.

◆ *attack vectors* ◆ *boot programme* ◆ *uptime* ◆ *vulnerability*
◆ *interface* ◆ *source code* ◆ *device drivers* ◆ *directory*

1	Users who are running Linux, Unix, or variants of either operating system can determine the _____ on a computer by running the specific command.
2	The _____ allows the use of icons or other visual indicators to interact with electronic devices, rather than using only text via the command line.
3	_____ scanning tools are computer programmes used to gather information that may be used by an attacker to gain illegal or unauthorized access to a network.
4	In a GUI such as Microsoft Windows, _____ are referred to as folders, therefore being synonymous.
5	Without _____ the computer would not be able to send and receive data correctly to hardware devices, such as a printer.
6	The _____ reads the hard drives boot sector to continue the process of loading the computer's operating system.
7	Linux, which is a highly secure operating system, is rarely threatened by _____.

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7. Complete each blank in the following pairs of sentences with the correct word.



1. **security / vulnerability**
 - a. An Internet browser could have a _____ that crashes the browser or allows someone to read or copy files on your computer when you visit a web page with malicious code.
 - b. _____, which does not always guarantee that data cannot be compromised, is a system or set of steps that helps keep data from prying eyes by utilizing passwords and encryption.



2. **Linux / Microsoft Windows**
 - a. _____, which is a free of charge and open-source operating system, allows access to all the source codes, thus being able to integrate new functions or to find and eliminate programming bugs quickly.
 - b. More proficient users of _____ may be frustrated by oversimplification of system tasks at the expense of fine-grained control over the system itself.



3. **proprietary / open source**
 - a. A(n) _____ programme can be freely modified by anyone, allowing users or organizations to adjust the programme's functionality to their needs.
 - b. Commercial _____ software is targeted to narrower market of end users and its source code is usually a closely guarded secret.

Comparisons

8. Study the words in bold below. What is the function of each language form?
- Convenience: an OS makes a computer **more suitable** to use, so it becomes user friendly.
 - Windows is one of **the easiest** desktop operating systems to use.
 - as the operating system with **the largest** user base, it is the primary target for malicious coders.
9. Study the following tables about the formation of comparative and superlative and fill in the blanks.

Comparisons Adjectives - Adverbs

	positive	Comparative -er + than	Superlative -est + in/of
We use the comparative to compare one person / thing with another.	fast long	fast__ longer	the fastest ___ long___
	nice safe	nicer safer	the nicest the safest
We use the superlative to compare one person / thing with others in the same group.	thin fat	thin__ fatter	the thinnest the fattest
	early happy	earlier happier	___ earl___ the happiest
	realistic comfortable	_____ realistic more comfortable	the most realistic ___ ___ comfortable

	Irregular forms	
	comparative	superlative
good / well	_____	the best
bad / badly	worse	the _____
much / many	more	the most
little	less	the _____
far	farther / _____	farthest / _____

Types of comparison	
as + adjective / adverb + as not as / so (to show that two persons / things are similar / different in some way)	e. g. Safety rules in the previous decade were not so/as strict as the ones in force now.
comparative + and + comparative (to show that something is gradually increasing / decreasing)	e. g. Finding a job seems to be more and more difficult nowadays.
the + comparative ..., the + comparative (to show successive comparison)	e. g. The faster the machine cycle, the faster your computer processes data.
by far + the + superlative (to emphasise an adjective / adverb)	e. g. This is by far the greenest area in our city.

10. Complete the sentences using the correct form of the adjectives/adverbs in brackets. Add any other words are necessary.

1	Microsoft Windows was released _____ (<i>early</i>) the Linux OS.
2	Linux is one of _____ (<i>much</i>) used operating systems in the world.
3	Microsoft Windows is regarded to be as _____ (<i>reliable</i>) Linux.
4	When choosing a computer, speed is definitely one _____ (<i>important</i>) features.
5	The main aim of developers is to ensure that the user gets _____ (<i>good</i>) out of the possibilities of each operating system.
6	When an operating system does not need an antivirus software programme, it is as a result _____ (<i>economical</i>).
7	Windows commands _____ (<i>high</i>) number of desktop users, and therefore it offers _____ (<i>large</i>) selection of commercial software.
8	Some people think that when an operating system is used by _____ (<i>few</i>) users, it is _____ (<i>secure</i>).
9	Gamers usually choose operating systems which do not run well on _____ (<i>old</i>) hardware.
10	_____ (<i>high</i>) the protection it offers, _____ (<i>expensive</i>) a secure operating system can be.

11. Complete the sentences choosing the right item.

1	The Mac vs PC debate is one of the more / the most controversial topics when it comes to computers.
2	Users, who are interested in buying a new computer, always have a dilemma about which brand is better / the best .
3	Undoubtedly, the operating system he chose is by far the safest / safer one.
4	While newer versions of this operating system have made significant improvements in security, they are still not as secure as / than others.
5	Many companies strive to make their product line as sleek and compact as possible. To do so, they continue to farther / further integrate their parts.

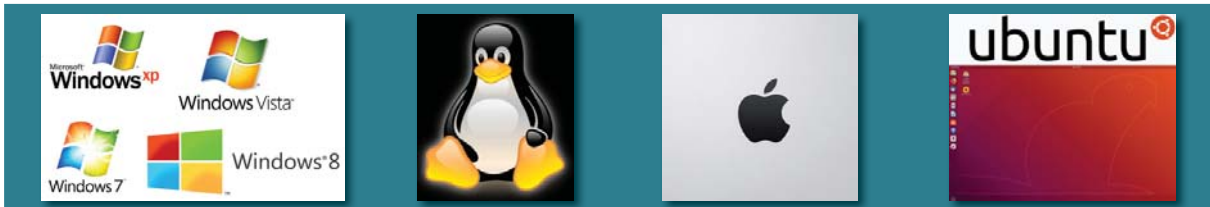
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12. Work with one of your classmates to do the following task:

look at the photos and use the adjectives in the box to compare the operating systems shown.



secure	vulnerable
highly customisable	limited customisation
fast	slow
pricey	free
easy to use	complicated





13. Listen to the dialogue between a man and a woman talking about computer problems, and answer the following questions:

<http://www.oxfordonlineenglish.com/computer-problems>

SUPPORT



1. What exactly is the problem with the woman's computer?

2. Does she use the antivirus programme regularly?

3. What did she find annoying?

4. What does the technician intend to do about the problem?

5. How much will it cost to fix the problem?

6. What do you think the expression "that's a good racket" means?
Does it have a positive or a negative meaning?

7. How long will the technician take to fix the computer?

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14. Listen to the dialogue again and complete the missing words in the following sentences

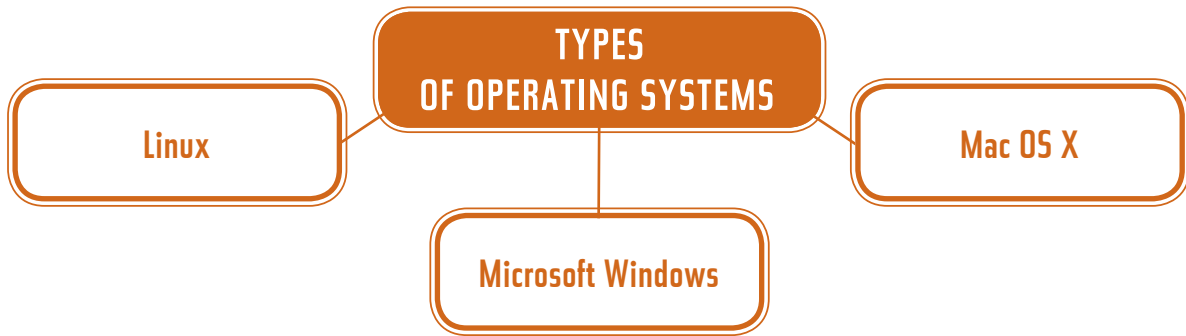
1	What exactly is _____ with it?
2	Do you have antivirus and _____ programmes installed?
3	Warnings kept _____ when I was surfing the Internet.
4	If your computer's been _____ with something, we can try to get rid of it.
5	Others are more difficult - we might have to _____ your hard drive.
6	\$200 if we have to reformat and _____ your operating system.
7	Would you like to _____ it _____?
8	No, no, I need it fixed. When can I _____?





FURTHER PRACTICE

15. A local organisation is willing to donate money to your school so that you can purchase new computers and upgrade the IT laboratory. Your school's principal has asked for your opinion on the issue. Form groups and discuss about the characteristics of each operating system in terms of reliability, security, ease of use etc commending on their advantages and disadvantages.



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16. Imagine that you are employed by a medium-sized business and the business manager has asked you to write a report (140-180 words) about the Operating System in use. Illustrate the major advantages and disadvantages and recommend a different one, if you like



TECHNEWS PROJECT REPORT

To:

From:

Subject:

Date:

The purpose of this report is to

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