2. Reading | Answer questions

Read the passage about what an operating system is and answer the questions below.

What is an operating system?

For a computer to run a particular program, many tasks must be performed, ranging from simple tasks such as loading the program into RAM or printing a document to complex ongoing tasks such as virtual memory management. The program that takes care of these details is called the operating system. We can say that the operating system is a collection of programs that manages and controls applications and other software, and coordinates the various hardware components to perform tasks requested by the user. As the definition of the operating system (O.S.) indicates, many parts of it act as a helper to anyone using the computer. On most computers, the O.S. resides on the hard drive when the computer is off, and then on starting up the computer, a copy of the O.S. is transferred to the RAM.

As stated in the definition, an O.S. consists of a collection of programs that helps you communicate with the computer's hardware. It not only makes a computer easier to use, but it also allows the computer to run efficiently. It acts like a smart proactive assistant that moves information around the computer and performs other odd jobs as needed.

Here's a partial list of the numerous activities that the O.S. performs:

1. using the mouse;
2. using the keyboard;
3. printing to a printer;
4. choosing different printers on a network;
5. starting up programs;
6. using modems for communications;
7. finding things for the user;
8. changing colors on the screen, and so on.

The O.S. is the traffic cop of the computer.

Answer questions.

1. What is an operating system?
2. Where does the O.S. reside on most computers?
3. Does the O.S. help only you or also the computer? (Give reasons).
4. Do you remember three or four activities performed by the O.S.?
5. How can you explain that the O.S. is the traffic cop of the computer?

3. Speaking | Oral report

Read the previous passage again and prepare a short oral report on operating system following the guidelines below:

- definition of operating system and its function(s)
- where it resides when the computer is off
- what happens on starting up the computer
- the reason why it acts like a smart proactive assistance
- list some of its numerous activities.

4. Reading | True/False & Summary

Read the text about how an operating system controls hardware and say if the sentences are true or false. Correct the false statements, then summarize the text orally.

How an operating system controls hardware

A platform is defined by two key elements:

- the processor (for example, Intel Pentium 4)
- the operating system (for example Windows)

Generally, software created to run on one platform is not compatible with another platform.

The first operating systems (created in the late 1910s) were originally developed to handle one of the most complex input/output operations: communicating with a lot of disk drives. This is evidenced by the names given to early operating systems, which often contained the acronym DOS, for "disk operating system". Eventually, the O.S. (operating system) evolved into an all-encompassing bridge between your PC and the software you run on it.

Without an O.S., such as Windows, each programmer would have to invent from scratch the way a program displays text or graphics onscreen, how it sends data to the printer, how it reads or writes disk files, and how it implements other functions that mesh software with hardware.

An O.S. creates a common platform for all the software you use. Without an O.S., you might not be able to save files created by two different programs to the same disk because each might have its own storage format. An O.S. also gives you a tool for all the tasks you want to perform outside an application program: deleting and copying files to disk, printing, and running a collection of commands in a batch file.

The O.S. does not work alone. It depends not only on the cooperation of other programs, but also on meshing smoothly with the BIOS and software drivers. The BIOS is made of code contained on chips in a PC. It acts as the intermediary among the hardware, processor, and O.S. Device drivers are like a specialized BIOS; drivers translate commands from the O.S. and BIOS into instructions for a specific piece of hardware, such as a printer, scanner, or DVD-ROM drive. When some parts of the O.S. are loaded from disk, they are added to the BIOS and then joined by device drivers, and all of them carry out routine hardware functions. The O.S. is composed of all three of these components, plus scores of other programs, common code, and data files.

What do we mean by "platform"?

"Platform" defines a standard by which software is developed and hardware is designed.

7. Listening | Complete and summarize

track 08

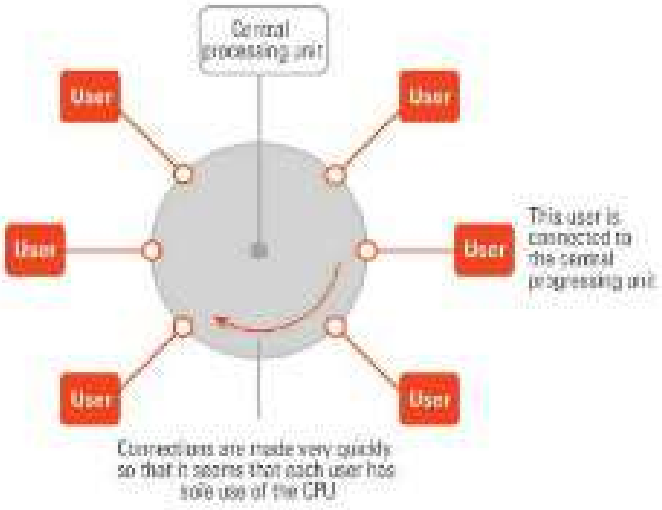
You are going to listen to Mr Parker, an expert on IT, explaining the most important types of operating systems. While listening, complete the passage with the words given in scrambled order. Then summarize it orally.

latest	to share	advantage	humans	on-line	terminals	networks	CPU

Types of operating system

Let's consider the following types of operating system:

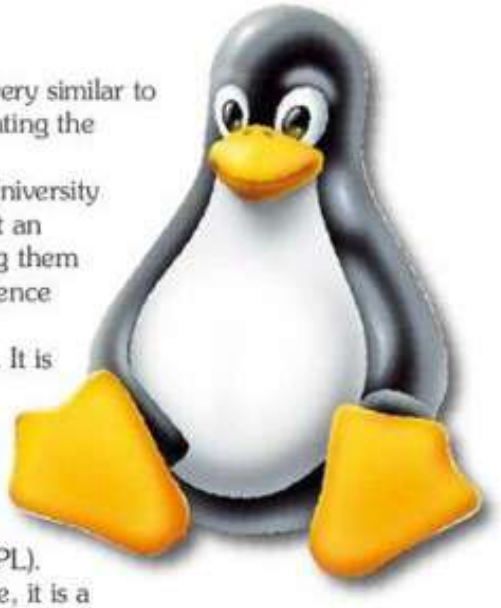
- Multitasking (or multiprogramming): it allows several application programs to be in RAM at one time. Each of them will be allowed (1) ..... time as needed, even though only one of them is currently being used by the person at the keyboard. All of this is controlled by the operating system. We can say that multitasking means the ability of a computer to run two or more programs at the same time. For (2) ..... it would be difficult to do more than one task at once. The computer can, however, for example, print out a document of 30 pages while continuing to use the word processor to type in a new letter. The operating system takes care of the printing and the word processing simultaneously.
- Multiuser (or multi-access): it permits several users to access the same data at the same time. A multiuser operating system needs to be used with most (3) ....., so the technique that allows many users (4) ..... computer resources at the same time is called "time-sharing".
- Real-time processing: it is a system which is automatically updated when a change is made due to a transaction. In the fast world we now live in, it is important that data is kept being up-to-date so real-time systems have to be used. Since in a real-time system the (5) ..... must be connected to the computer, you can see that a real-time system must also be an (6) ..... system.
- Real-time processing is essential for computer control that may include traffic lights, robots, process control (e.g. steel works and chemical processes) and flight simulators. Real-time processing in the business world is computing that involves humans interacting with the computer in a situation in which quick or timely return of results is important. One example from the business world is the automated teller machine (ATM).
- Batch processing: it is a system of collecting all the inputs together and putting them into the computer in one go or "batch". The main (7) ..... with batch processing is that the computer operator can load the data in only one operation; the programs in the computer go through the various processes and the final result (for example, for the production of electricity bills) is a pile of bills to be sent out to costumers and an updated master file with the (8) ..... information added.



3 Operating Systems for Personal Computers

There are many operating systems that you can install on a personal computer, but there are three main ones: Linux, Mac OS and Windows.

Linux



Linux is a family of operating systems whose architecture is very similar to **Unix's**, a **well-known** network operating system implementing the TCP/IP network Internet protocol.
'Linux' is named after Linus Torvalds, a student at Helsinki University who started to write this **free** operating system and who sent an invitation e-mail to a large community of programmers asking them to help in its development. The final X in the name is a reference to the close links between Linux and Unix.
Linux is a **free software** and an open source development. It is not restricted by property code, i.e. no company or individual owns this operating system and anyone is free to make copies and redistribute it. Moreover, Linux is an open source program and people can make changes to its source code to suit their own **needs** and these source code modifications are licensed under a General Public License (GPL).
Not only is Linux a single operating system with a free licence, it is a family OS and it is even possible to choose the most suitable distribution (Ubuntu, Debian, Red Hat...) according to the user's needs.

Mac OS

On 24 January 1984, Apple Computer Inc. introduced the Macintosh personal computer, known as the Macintosh 128K model. The operating system of the early Macintosh was called 'System Software' or 'System', and its **ensuing** series was later renamed Mac OS after System 7. The Macintosh platform is credited with having popularised the concept of the graphical user interface.
Nowadays, the Mac OS X version is the preinstalled operating system on Apple personal computers.
Even if the modern Mac's hardware is not different from another type of PC and the Mac OS X can run smoothly on typical PCs, the Apple licence agreement and the way they limit their software **discourage** people from installing it on a computer other than Apple.
The most important element of this operating system is the **powerful and easy-to-use graphical interface** that allows the user to manage and configure every resource and peripheral without being a computer expert.
The latest versions of Mac OS are closely related to Linux, in fact they are Unix-compatible and they can run Unix applications. Such operating systems with this feature are called 'Posix systems'.

GLOSSARY

well-known: noto, conosciuto
free: gratuito, libero
need: bisogno, esigenza, necessità
ensuing: relativo, derivante
discourage (v.): scoraggiare, dissuadere

Windows

The first independent version of Microsoft Windows – version 1.0, released on 20 November 1985 – was originally going to be called 'Interface Manager', but Rowland Hanson, the head of marketing at Microsoft, convinced the company that the name 'Windows' would be more **appealing** to customers.

Windows 1.0 was not a complete operating system, but rather an 'operating environment' requiring the text-based MS-DOS operating system and extending it with a graphical user interface.

Microsoft had worked with Apple Computer to develop applications for Apple's new Macintosh computer, which featured a graphical user interface. As part of the related business negotiations, Microsoft had licensed certain aspects of the Macintosh user interface from Apple; in a later **lawsuit**, a district court summarised these aspects as 'screen displays'. In the development of Windows 1.0, Microsoft intentionally limited its borrowing of certain GUI elements from the Macintosh user interface, to **comply with** its licence.

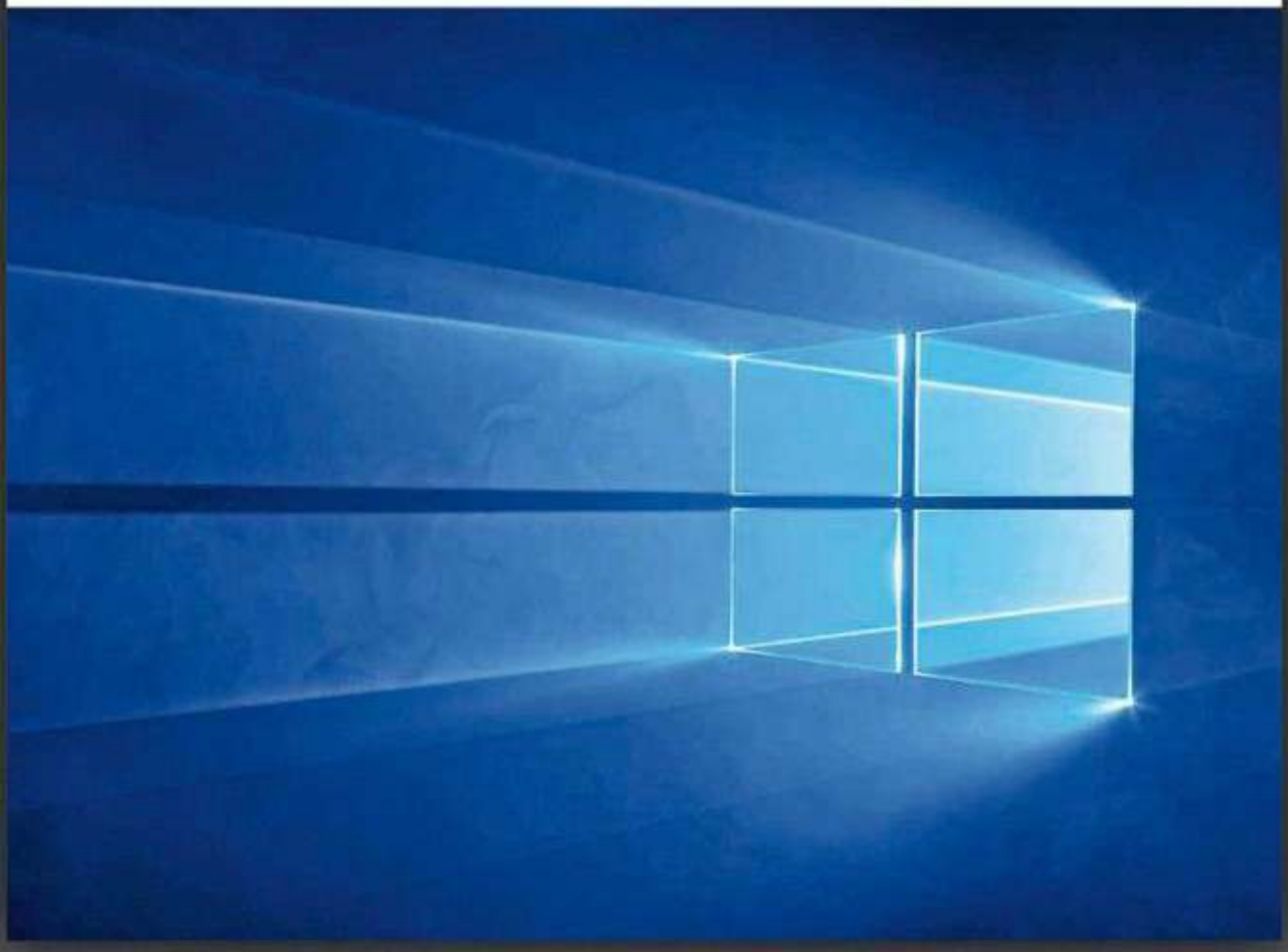
The first version of Windows running on a workstation as a fully operating system and not as an operating environment was **Windows 95** in 1995.

Many versions have been developed since 1995 not only for workstations, but also for servers with network configuration and administration features.

Windows 10 is **currently** installed on personal computers. It is an improved version of Windows 8 which allows the user to choose between a standard graphic interface and the same interface of a Windows Mobile smartphone or tablet. Choosing this second interface is convenient for non-expert users and whenever a computer is equipped with a touch screen.

GLOSSARY

appealing: accattivante, invitante, di interesse
lawsuit: azione legale
comply with (v.): osservare, rispettare
currently: attualmente



READING COMPREHENSION

1. Quickly scan the passage again and take notes on the pros and cons of the OSs mentioned, including their development.

Operating system	Pros	Cons
Linux		
Mac OS		
Windows		

VIDEO  5

2. Watch the video The Story of Linux and fill in the blanks.

This video is about the story of **1.** ....., on the occasion of its 20th anniversary.

Name Linus Torvalds
Occupation Computer science **2.** .....
In those days, he lived in **3.** ..... .

On 8th August **4.** ..... Linus wrote a post that has become one of the most famous entries in computer history, telling about his **5.** ..... .
Later on, this **6.** ..... source project started spreading around the **7.** ....., with a large number of developers contributing to its improvement.
Linus called his OS kernel Linux and chose a penguin as a **8.** ..... .
Torvalds decided to use a penguin because of a little incident at the **9.** ..... .
He also made a crucial decision, choosing the **10.** ..... created by Richard Stallman. This licence allows very important freedoms, such as:

- the freedom to use the software for any **11.** .....;
- the freedom to **12.** ..... the software to suit your needs;
- the freedom to share the software with your **13.** ..... and neighbours;
- the **14.** ..... to share the changes you make.

Linux has had an outstanding success since 1991 and a lot of companies, such as Red Hat and **15.** ....., have adopted it.
The speaker's opinion is that Linux has revolutionised computing and is still doing it: every three months, another version of Linux is **16.** ..... .
The final part of the video shows how Linux is now being used and spread in different fields of our lives, i.e. the Internet, phones, **17.** ....., computers as well as in many devices we use every day.