

5 System Software — Part 1

Name: _____ Class: _____ Date: _____

Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

English	中文	Write it 3 times (English)		
operating system	操作系统	_____	_____	_____
process	进程	_____	_____	_____
virtual memory	虚拟内存	_____	_____	_____
device driver	设备驱动	_____	_____	_____
utility program	实用程序	_____	_____	_____
translator	翻译器	_____	_____	_____
compiler	编译器	_____	_____	_____
interpreter	解释器	_____	_____	_____
assembler	汇编器	_____	_____	_____

Recall

At IGCSE you used computers every day. Bring this with you:

- The operating system is the main software that runs the machine.
- You ran programs (applications) on top of it.

At AS we list what the operating system does, and meet the programs that translate code — the software that makes all other software possible.

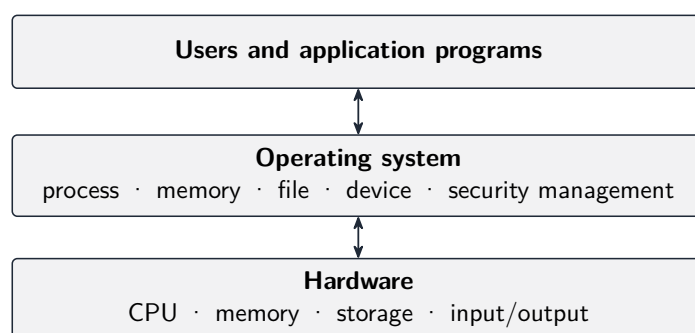
New ideas

Read these first. Each idea has a short worked example. Then do the Practice.

■ 1 The operating system

The **operating system** 操作系统 manages the computer's hardware and software so that programs can run. Its jobs include:

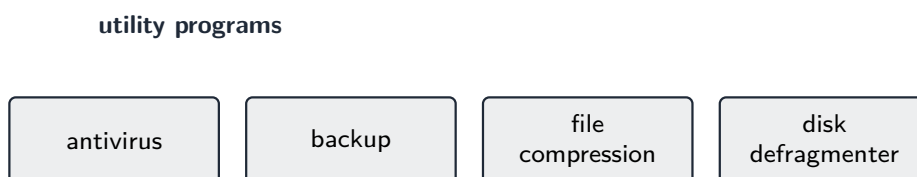
- managing each running program (a **process** 进程);
- managing memory, including **virtual memory** 虚拟内存 (using disk space as extra RAM when memory is full);
- talking to each piece of hardware through a **device driver** 设备驱动.



Worked example. When you open a photo editor, the OS gives it memory, loads it from disk, and lets it use the screen and mouse through device drivers — the program never has to know the hardware details itself.

■ 2 Utility programs

A **utility program** 实用程序 is a small tool that keeps the system healthy — antivirus, backup and file compression are common examples.

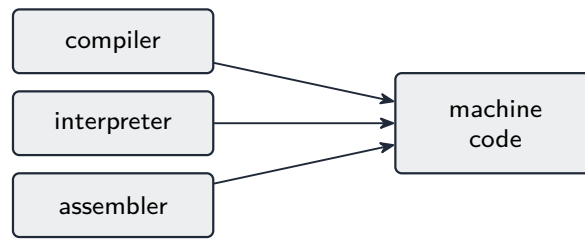


Worked example. A backup utility copies your files to another disk on a schedule, so a crash or theft does not lose your work.

■ 3 Translators

Code you write must be turned into machine code by a **translator** 翻译器:

- a **compiler** 编译器 translates the whole program at once, then it can run on its own;
- an **interpreter** 解释器 translates and runs one line at a time;
- an **assembler** 汇编器 turns assembly language into machine code.



Worked example. Python usually uses an interpreter (runs line by line, easy to test as you go); C uses a compiler (translated once into a fast program that runs on its own).

Watch out: an interpreter does *not* leave behind a machine-code file you can keep — it translates the code again every time the program runs.

Practice

5.1 Give one example of a utility program. [1]

5.2 State what an assembler translates, and into what. [1]

5.3 State two jobs done by the operating system. [2]

5.4 Explain what virtual memory is. [2]

5.5 State one difference between a compiler and an interpreter. [2]

5.6 Explain one advantage of using an interpreter while you are still writing and testing a program. [2]

5.7 Challenge. A finished program will be sent to customers who must not see the source code and who want it to run fast. Would you give them a compiled or an interpreted version? Give a reason. [2]
