

Classification of software

Software can be broadly classified into system software and application software

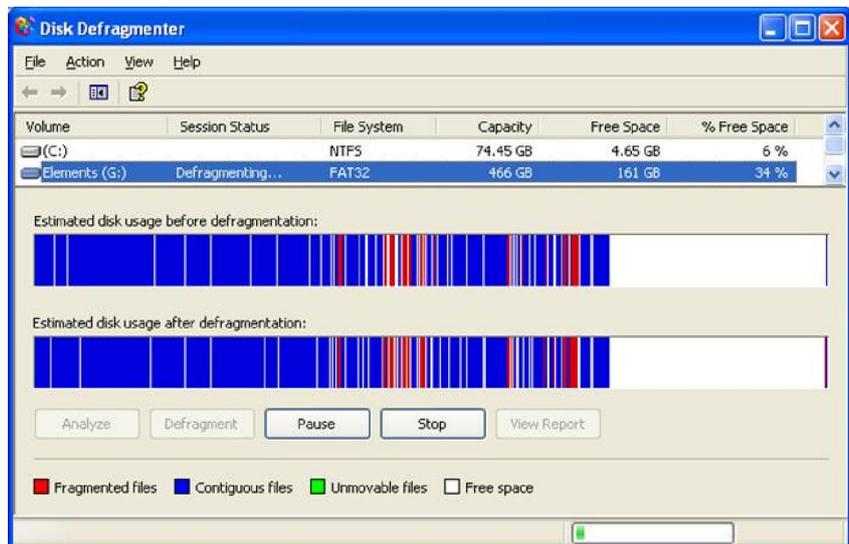
System software

System software is the software needed to run the computer's hardware and application programs. This includes the operating system, utility programs, libraries and programming language translators

Utility programs

Word bank		
tasks	performance	hard disk
optimise	quicker	utility programs
removes	operating system	drives

Utility software is system software designed to the of the computer or perform such as backing up files, restoring corrupted files from backup compressing or decompressing data, encrypting data before transmission, providing a firewall, etc. For example, a disk defragmenter is a program that will reorganise a so that files which have

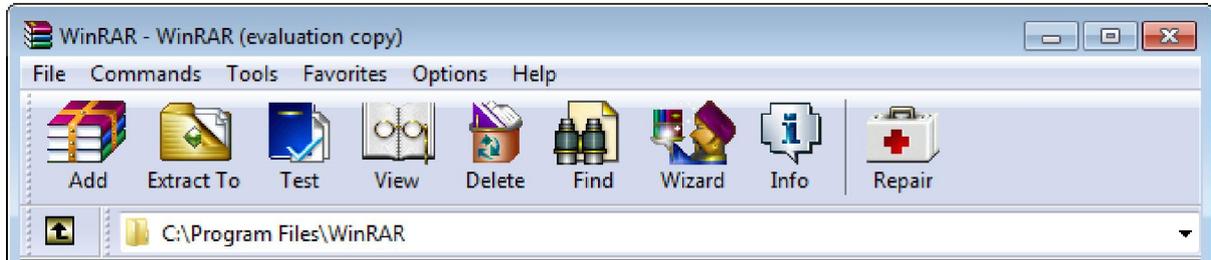


been split up into blocks and stored all over the disk will be recombined in a single series of sequential blocks. This makes reading a file The software utility optimises, previously called Disk Defragmenter, runs automatically on a weekly schedule on the latest version of windows. You can also optimise drives on your PC manually.

A virus checker utility checks your hard drive and depending on the level of protections offered, incoming emails and internet downloads, for

viruses andthem. Windows 8.1 comes with built in virus protection called Windows Defender.

Several such as the disk defragmenter, software uninstaller, backup and restore programs and screensavers are supplied as part of the Other utility programs such as WinZip for compressing and sharing files have to be purchased from independent suppliers



Libraries

Word bank		
.dll	libraries	compiled
program	ready-compiled	functions

Library programs are programs which can be run when needed, and which are grouped together in software libraries. In Windows these often have aextension. Mostlanguages have their ownof pre-writtenwhich can be invoked in a defined manner from within the user's

Translators

Word bank		
compilers	interpreters	assemblers
translate	programmer	machine code

Programming language translators fall into three categories:,and All of themprogram code written by aintowhich can be run by the computer.

Application software

Word bank		
general	booking	use
graphics	specific	programmers
tasks	features	bug-free

Application software consists of programs that performuser-orientate It can be categorised aspurpose, special-purpose or custom-written (bespoke) software.

General-purpose software such as a word-processor, spreadsheet or graphics package, can be used for many different purposes. For example, apackage may be used to produce advertisements, manipulate photographs, draw vector or bit mapped images.

Special-purpose software performs a single specific task or set of tasks. Examples include payroll and account packages, hotelsystems, finger print scanning systems, browser software and hundreds of other applications. Software may be bought “off-the-shelf”, ready toor it may be specially written by a team offor a particular organisation, If, say a hotel wants to buy some visitor booking software, they may be able to find a ready-made package that is quite suitable, or they may want a bespoke software package that will satisfy their particular requirements. It will almost certainly be cheaper to buy a ready-made package, even if it contains a lot ofwhich they will never use, since the cost is shared among all the other people buying the package. It will also have the advantages that it is ready to be installed immediately, and is likely to be well-documented, well-tested and

Exercises

1a. Software can be classified as either system or application software. What is meant by
i) System software?

ii) Application software?

Name:		Date		Class:	
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b. Give an example of each type of software.

2. A company sells widget via an online web store. The process of updating the website and processing sales involves many different types of software. Below is a list of software:

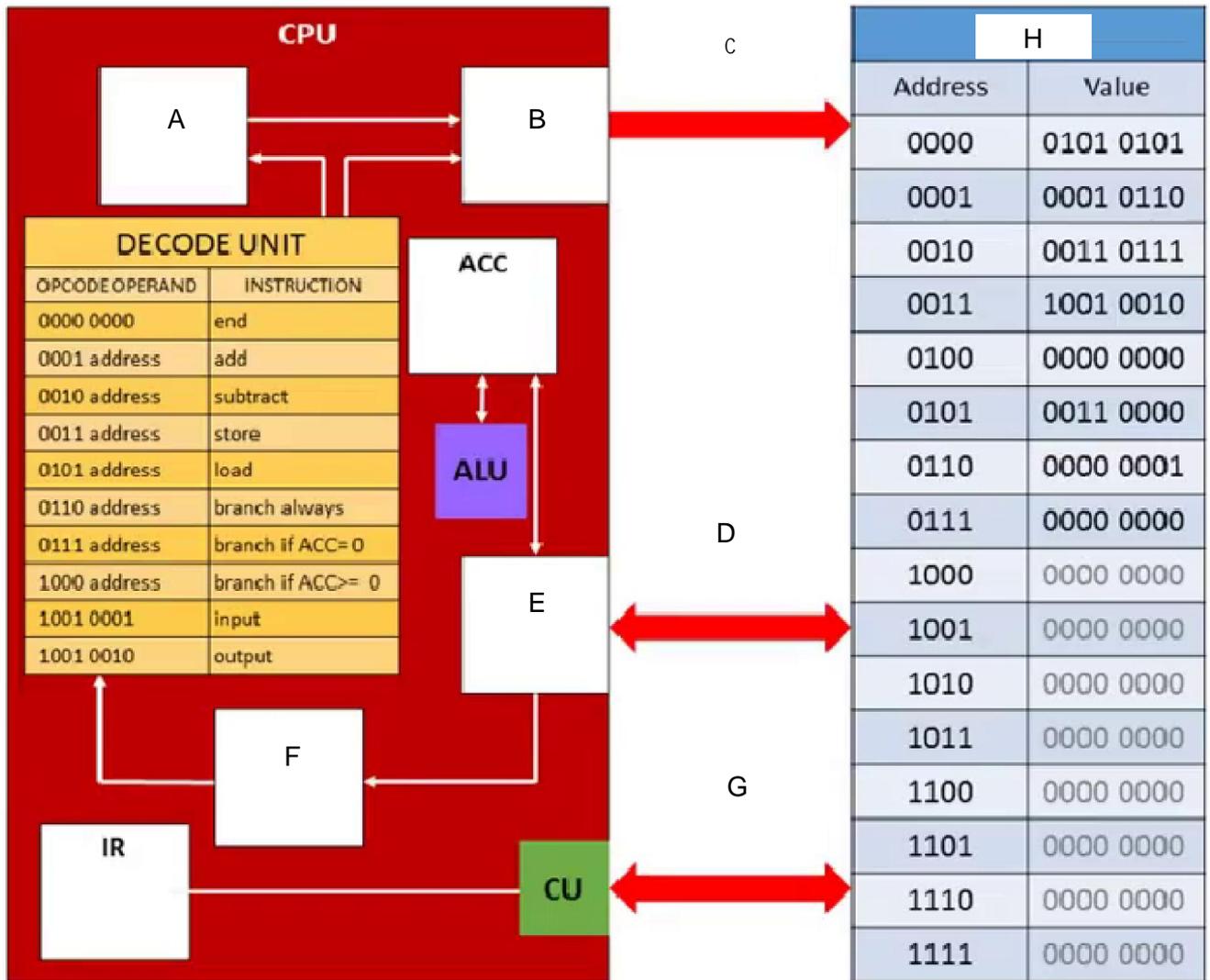
Operating system, Utility software, Special-purpose software, General purpose application software, Bespoke software

Complete the table below by writing one software category beside each use. You should not use a category more than once.

Software	Category
Firewall software installed on the web server	
Store's own online ordering system designed for their products and systems	
Graphics software to crop product images suitable for uploading to the site	
Online payment verification software	

3. Give two reasons why a company might choose to purchase a special purpose software package rather than a suite of programs written specifically for their needs

Please label A to H.



H	
Address	Value
0000	0101 0101
0001	0001 0110
0010	0011 0111
0011	1001 0010
0100	0000 0000
0101	0011 0000
0110	0000 0001
0111	0000 0000
1000	0000 0000
1001	0000 0000
1010	0000 0000
1011	0000 0000
1100	0000 0000
1101	0000 0000
1110	0000 0000
1111	0000 0000

- A:
- B:
- C:
- D:
- E:
- F:
- G:
- H:

1. What is meant by the term stored-program concept?

Software

Hardware is useless on its own unless we have some programs to run on it. Software is the general term used to describe all of the programs that we run on our computers. These programs contain instructions that the processor will carry out in order to complete various tasks.

This covers an enormous range of possibilities from standard applications, such as word processors, spreadsheets and databases, to more specific applications, such as web-authoring software and games. It also includes programs that the computer needs in order to manage all of its resources, such as file management and virus-checking software. As users, we tend to be aware of the software that we use on a regular basis, yet this is only one part of the software that is on our computers.

The range of software is so great now that some classification is needed in order to make sense of it all. A first level of distinction is made between application software and system software.

KEYWORD

Application software: programs that perform specific tasks that would need doing even if computers didn't exist, e.g. editing text, carrying out calculations.

Application software

Application software refers to all of the programs that the user uses in order to complete a particular task. In effect, it is what users use their computers for. People do not buy computers for the sake of it, they buy them because they have a need to do something: write essays, email, manage a business, create web pages, etc. To carry out any of these, application software is needed that has the necessary features.

There is a wide range of application software available and, in most cases, a number of different applications to choose from that complete the same task. For example, you need application software to access web pages on the Internet – it is called a browser. There are three main ones to choose from: Internet Explorer, Google Chrome and Mozilla Firefox; and many more less well known ones. All of them do the same thing although there are subtle differences between them.

System software

Whereas application software is what we use our computers for, system software covers a range of programs that are concerned with the more technical aspects of setting up and running the computer. Many aspects of system software are invisible to the user which means that they will not even realise that they have system software on their computer. System software exists to support the applications software.

There are four main types: utility programs; library programs; compilers, assemblers and interpreters; and operating system software.

Utility programs

This covers software that is written to carry out certain housekeeping tasks on your computer. They are normally supplied with the operating system though they can be purchased separately. **Utility programs** are often made available as free downloads. Utility programs are designed to enhance the use of your computer and programs though your computer will still work without them.

KEYWORD

Utility programs: programs that perform specific common task related to running the computer, e.g. zipping files.

KEYWORD

Library programs: code, data and resources that can be called by other programs.

KEYWORDS

Translators: software that converts programming language instructions into 0s and 1s (machine code). There are three types – compilers, assemblers and interpreters.

Compiler: a program that translates a high-level language into machine code by translating all of the code.

Assembler: a program that translates a program written in assembly language into machine code.

Interpreter: a program for translating a high-level language by reading each statement in the source code and immediately performing the action.

Operating system software: a suite of programs designed to control the operations of the computer.

Virtual machine: the concept that all of the complexities of using a computer are hidden from the user and other software by the operating system.

A common example of a utility program is compression software which allows you to compress files, making them much smaller. Other examples include anti-virus software, back-up software and registry cleaners.

Library programs

Library programs are similar to utility programs in that they are written to carry out common tasks. The word library indicates that there will be a number of software tools available to the users of the system.

Whereas some utility programs are non-essential, library programs tend to be critical for the applications for which they were built. For example, the Windows operating system uses Dynamically Linked Library (DLL) files, which contain code, data and resources. These are similar to executable files and are loaded dynamically by Windows as they are required. There are hundreds of DLL files that carry out a wide range of actions including controlling dialog boxes, managing memory, displaying text and graphics and configuring device drivers.

The Python programming language also has an extensive library that contains built-in modules that provide various standard system functions and solutions. For example, the library contains code modules for handling common data types, displaying fonts and graphics and performing mathematical and functional operations.

Translators: compilers, assemblers and interpreters

Translators are software used by programmers to convert programs from one language to another. There are three types: **compilers**, **assemblers** and **interpreters**. At some point, every piece of software, whether it is application software or system software, has to be written by a programmer. A program is simply a series of instructions written by a programmer that the computer's processor must carry out.

In order to write software, programmers use programming languages which allow them to write code in a way that is user-friendly for the programmer. However, the processor will not understand the programmers' code, so it has to be translated into machine code, that is, 0s and 1s. Compilers, assemblers and interpreters are used to carry out this translation process. There is more detail on how these work in Chapter 29.

Operating system software

An operating system is a collection of software designed to act as an interface between the user and the computer and manages the overall operation of the computer. It links together the hardware, the applications and the user, but hides the true complexity of the computer from the user and other software – a so-called **virtual machine**.

When you are using a computer you are obviously aware of the applications software you are using, whether it is an Internet browser, a spreadsheet or a game of some sort, but you are much less aware of the software that is running in the background. The systems software is dominated by the operating system (OS).

The OS in a modern computer is very large. For example, Microsoft Windows 8 needs a minimum of 1 GB of RAM and 16 GB of hard disk space