Learning Aims

The nature of applications

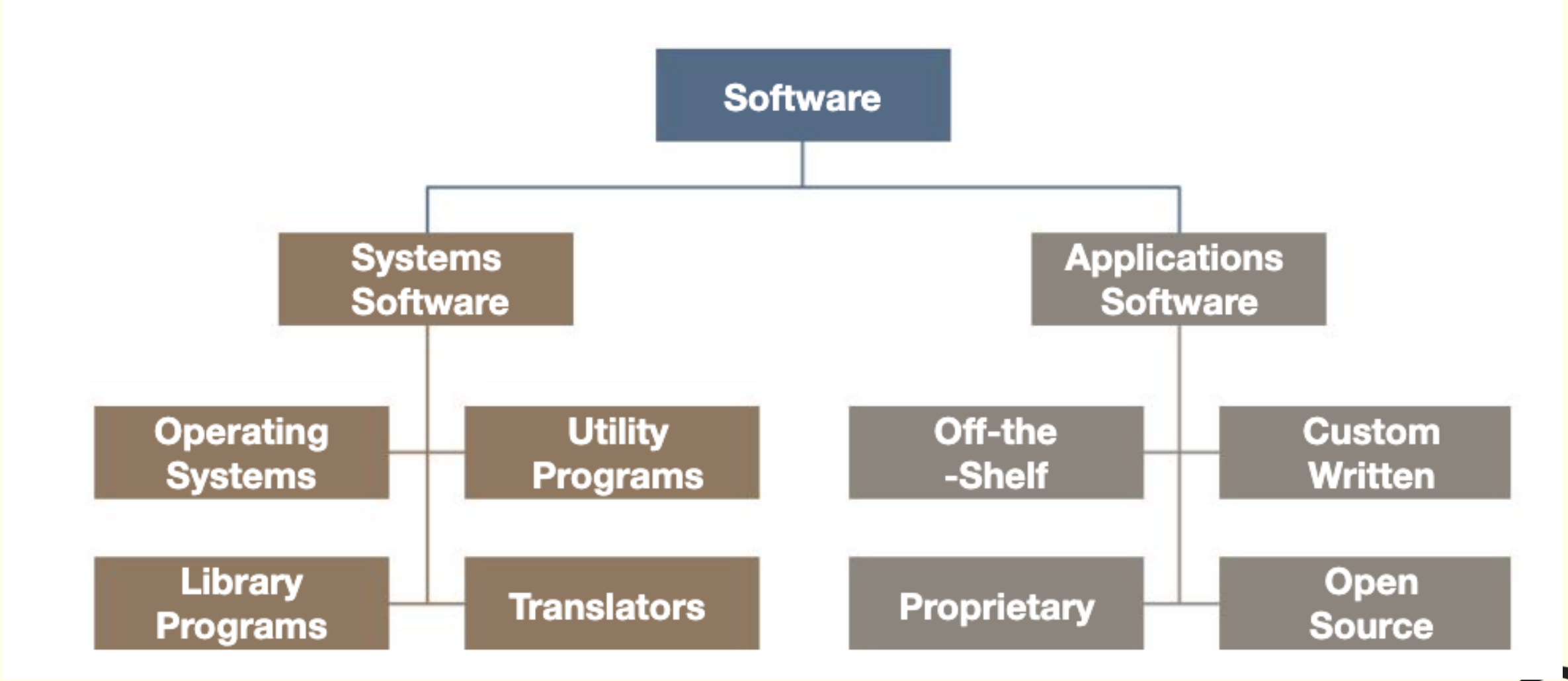
- Distinguish between systems software and applications software
- Describe what is meant by a utility program and give examples
- Be able to justify a suitable application for a specific purpose
- Distinguish between open source and closed source software

Key words

- Application software
- Utility programs
- System software
- Operating system
- Defragmentation
- Compression

- Back up
- Updating
- Virus checker
- General-purpose
- Special-purpose
- Custom-written (bespoke)software

Categories of software



Application software refers to programs designed to perform specific tasks for the user.

Examples include:

- spreadsheet software
- word processors
- image editors
- database software
- desktop publishing software

Systems software

System software is the software needed to run the computer's hardware and application programs.

This includes:

- Operating system
- Utility programs
- Libraries and programming language translators.

Application software

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Applications software

Applications software can be categorised as:

- General-purpose
- Special-purpose
- custom-written (bespoke) software.

General-purpose software	Special-purpose software
For example, word-processor, spreadsheet or graphics package, can be used for many different purposes. For example, a graphics package may be used to produce advertisements or animations, manipulate photographs, draw vector or bitmapped images.	Performs a single specific task or set of tasks. Examples include payroll and accounts packages, hotel booking systems, fingerprint scanning systems, browser software and hundreds of other applications.

Types of Application Software:

- **Productivity Software**: Examples include word processors (e.g., Microsoft Word), spreadsheets (e.g., Excel), and presentation software (e.g., PowerPoint).
- **Specialized Software**: Designed for specific tasks like graphic design (e.g., Adobe Illustrator), video editing (e.g., Final Cut Pro), or scientific analysis (e.g., MATLAB).
- **Web-based Applications**: Software that runs on web browsers (e.g., Google Docs, online banking apps).
- **Mobile Applications**: Apps designed for mobile devices (e.g., WhatsApp, Instagram).

Importance of Different Types of Application Software:

- **Business Context**: Productivity software is crucial for businesses to create documents, analyse data, and prepare presentations. For example, spreadsheets allow businesses to model financial data, which is essential for decision-making.
- **Creative Industries**: Specialised software like Adobe Photoshop or AutoCAD is indispensable in creative fields for tasks such as graphic design and architectural drafting.
- **Education**: Educational software, such as interactive learning platforms or simulations, plays a vital role in modern education.
- **General User Context**: Web-based applications are widely used for convenience and accessibility, allowing users to perform tasks without the need for locally installed software.

Benefits

Impact on Efficiency: Application software improves user efficiency by automating complex tasks, reducing manual effort, and enhancing productivity.

Adaptability: The rise of mobile and web-based applications shows the importance of accessibility and the ability to work from anywhere.

Specialisation vs. Versatility: While specialized software is critical in niche areas, versatile productivity software is broadly applicable across various fields.

Selecting an application

How would you select suitable software for a particular purpose? You might use some of the following criteria:

- Does it provide all the necessary functionality?
- Does it run on the available hardware?
- Is it available “off the shelf” or will it have to be specially written?
- How much will it cost?
- Is it well-used, tried and tested?

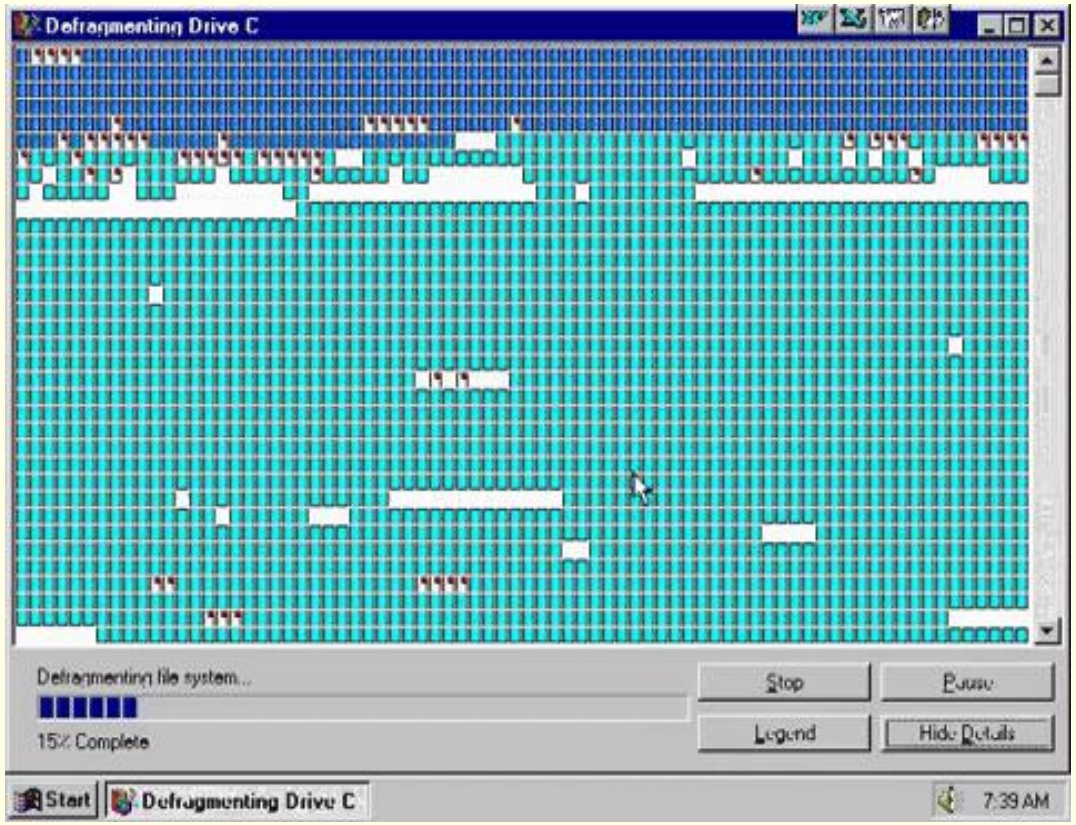
Utility programs

Utility software is system software designed to optimise the performance of the computer or perform tasks such as:

- backing up files
- restoring corrupted files from backup
- compressing or decompressing data
- encrypting data before transmission
- providing a firewall

Utility software are programs that are usually used to **monitor, manage and maintain** the computer. Also to manage the security.

Disk defragmentation

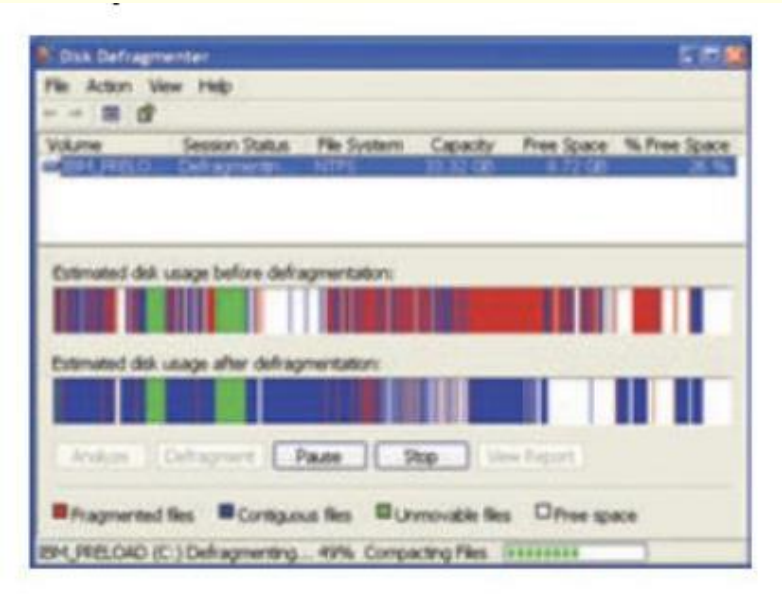


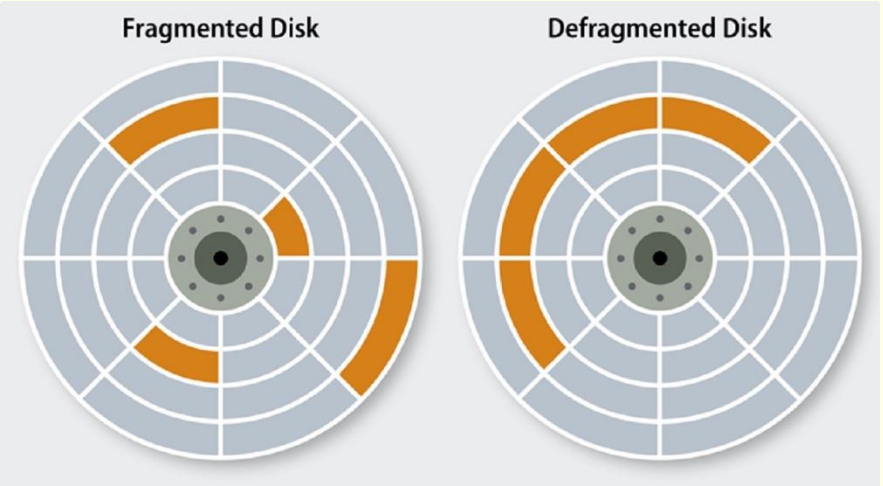
Watching this endlessly say "disk contents changed, restarting" was classed as entertainment in 1995.

Before we even look at what defragmentation is, it is ***essential*** to understand this one, simple fact: Defragmentation applies **only** to hard disk drives. Solid State Drives (SSD's) store data in a different way and **should never be defragmented!**

Disk defragmentation

- A disk defragmenter is a program that will reorganise a magnetic hard disk 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 quicker. The software utility Optimise Drives, previously called Disk Defragmenter, runs automatically on a weekly schedule on the latest versions of Windows.
- You can also optimise drives on your PC manually.





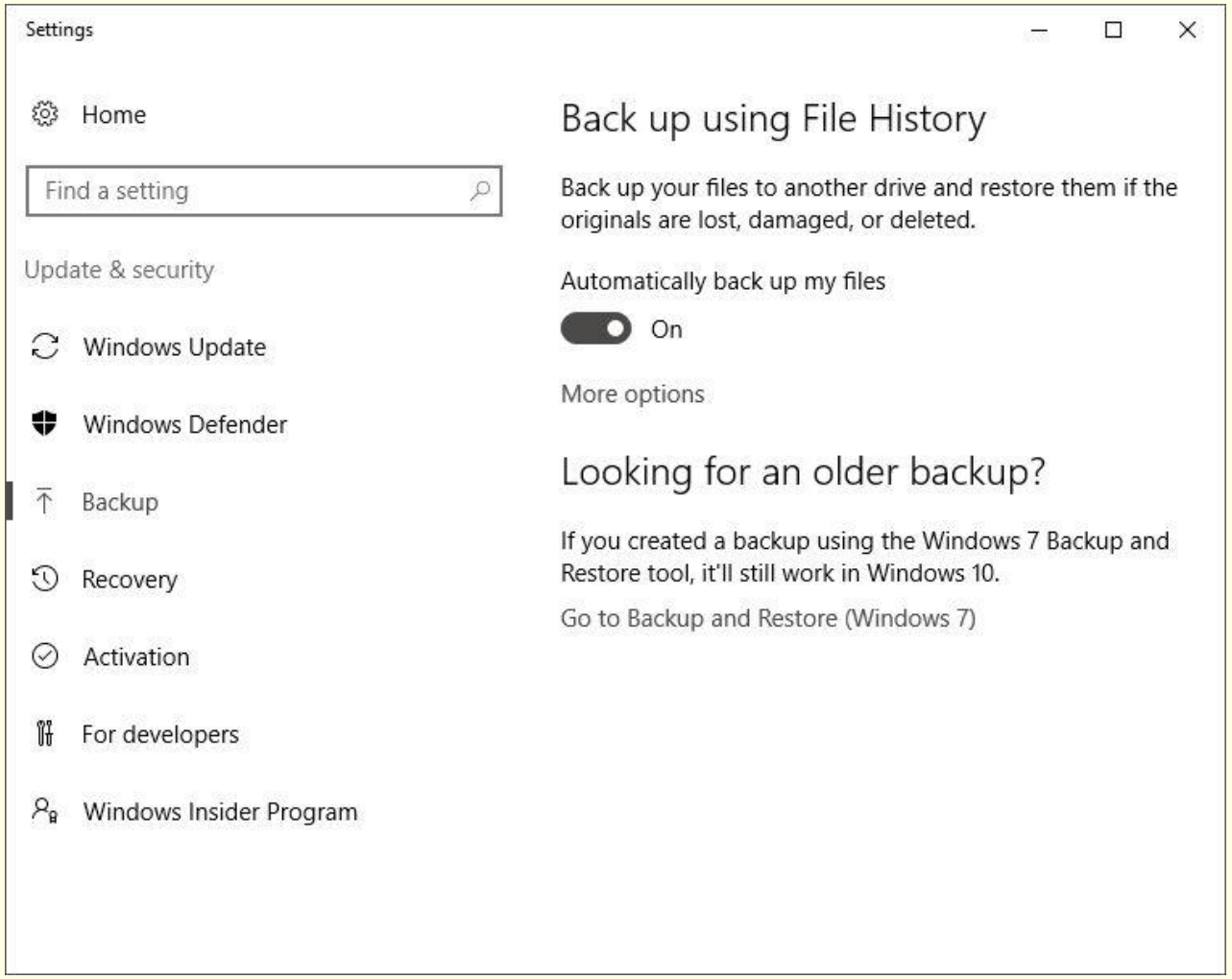
Automatic backup

Several free automatic backup utilities are available for personal and commercial use.

An automatic backup utility will allow the user to specify

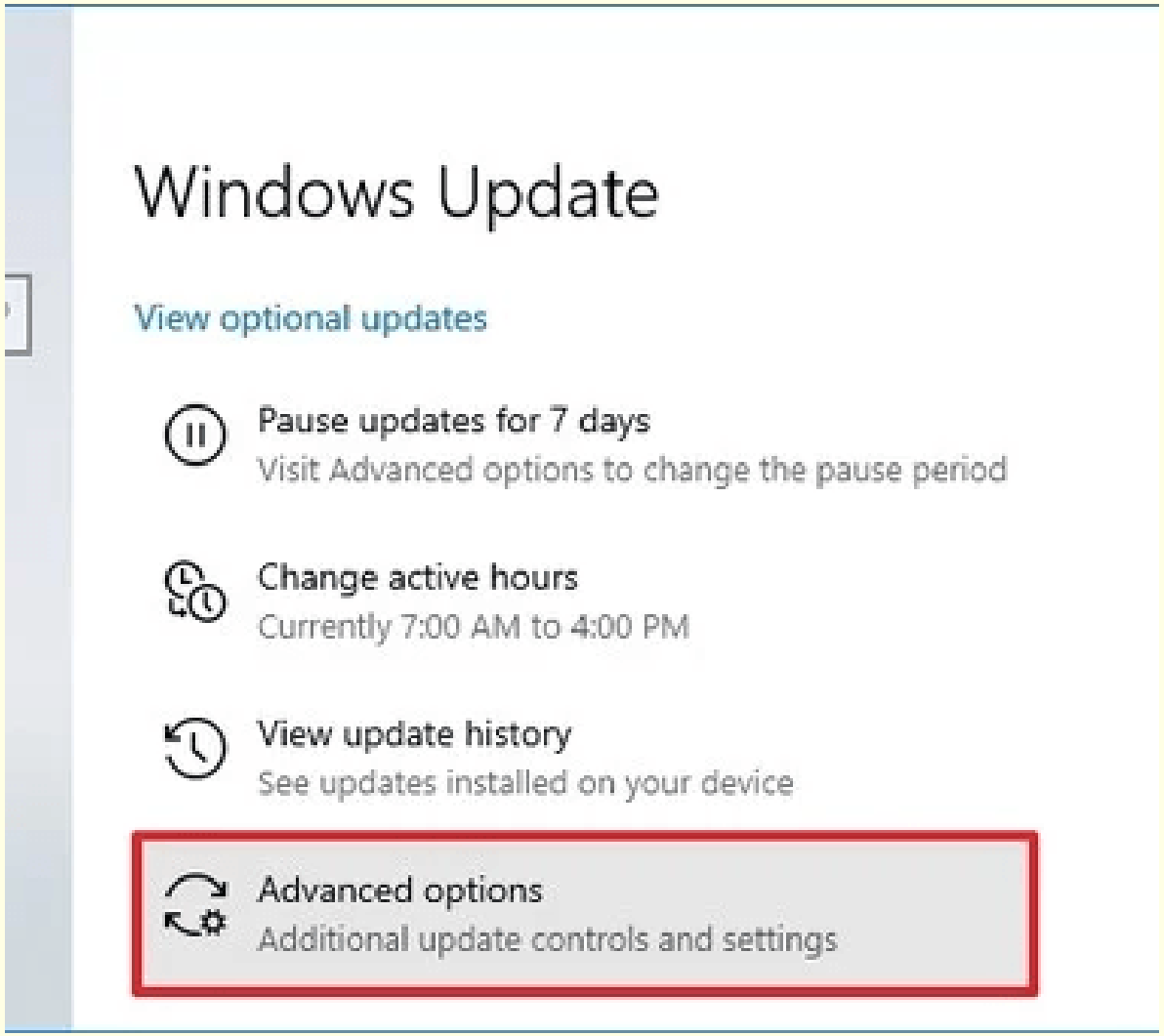
- Where you want to store the backup (the destination)
- What you want to backup (the sources)
- How you want to run the backup (using full backup that zips the files, or mirror backup that doesn't zip them)
- When you want to run the backup (you can schedule it to run automatically or run it manually)
- You can then run the backup manually (typically by using a function key) or schedule it to run automatically.

(See for example http://www.fbackup.com/)



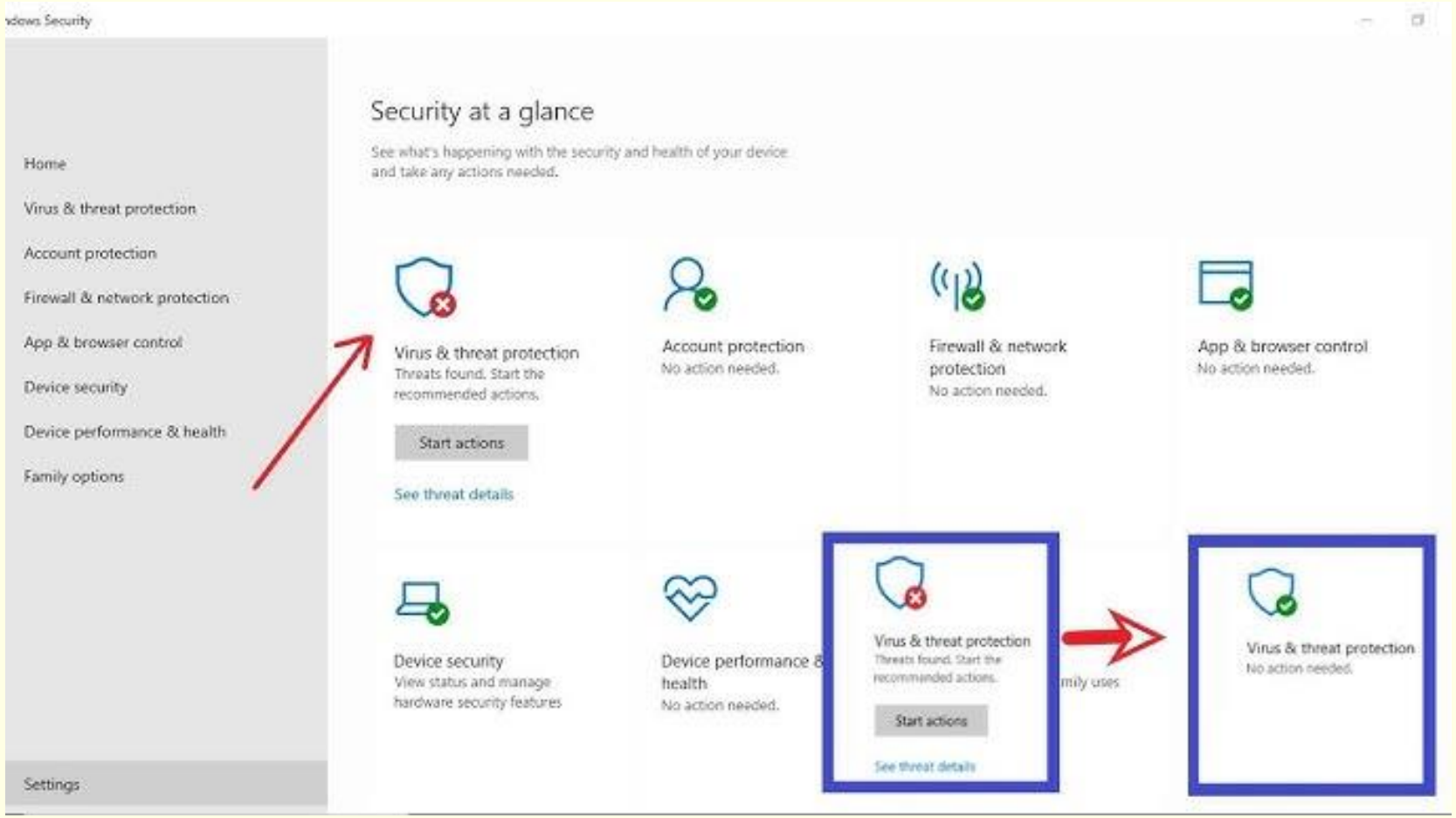
Automatic updating

- An automatic update utility makes sure that any software installed on the computer is up-to-date.
- For any software already installed on the computer, the automatic update utility will regularly check the Internet for updates.
- These will be downloaded and installed if they are newer than the version already on the computer.
- Firewalls and antivirus software must be updated regularly as new viruses and threats are constantly being devised and discovered.
- Application software should also be updated as there will be bug fixes and improvements that become available to people with a licence for that package.



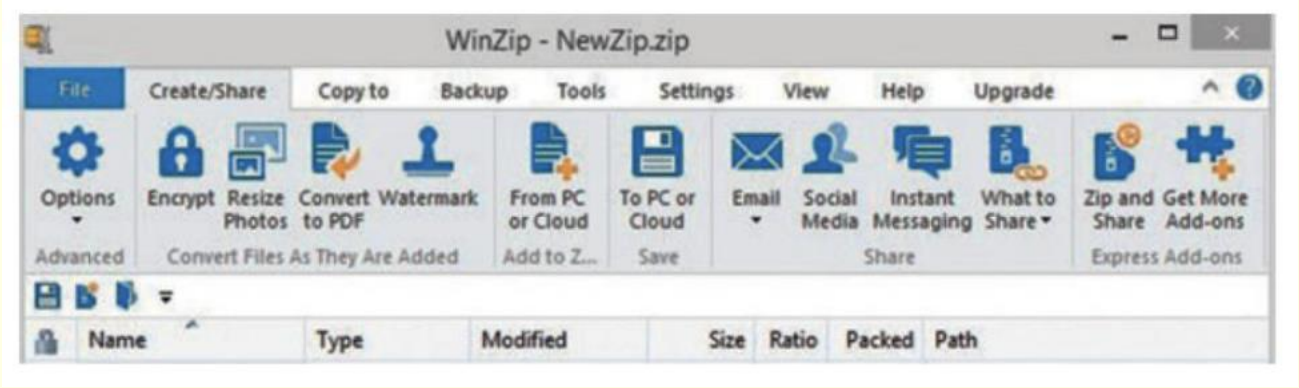
Virus checker

A virus checker utility checks your hard drive and, depending on the level of protection offered, incoming emails and internet downloads, for viruses and removes them. Windows comes with built-in virus protection called Windows Defender.



Compression software

- Several utility programs are supplied as part of the operating system.
- These include utilities to copy, move and delete files, create, move and delete folders, provide screensavers.
- Other utility programs such as WinZip for compressing and sharing files have to be purchased from independent suppliers.
- Zipped or compressed files can be transmitted much more quickly over the Internet. Sometimes there is a limit to the size of a file which can be transmitted – if you have a 15Mb photograph, you will not be able to email it to a friend if there is a 5Mb limit on the attachments they can receive.
- Even if they can receive the file, it may take several minutes to download if they do not have a broadband connection.



Worked Example

Operating systems usually come with utility software pre-installed.
Give two examples of utility software, explaining the purpose of both.

[4]

How to answer this question:

- You need to name two different examples of utility software and the purpose of each:
  - **Backup software:** creates system snapshots and will restore them on demand
  - **Disk defragmentation**: reorganises the hard disk so that files are better organised
  - **File compression**: reduces file size to consume less hard disk space or for faster transfer over a network
  - **Disk cleanup**: finds and removes duplicate or corrupted files, freeing up hard disk space
  - **File encryption**: Encodes files before transfer, will decode files that have been received
- For each utility, include why it's helpful in your answer

Example answer that gets full marks:

1. Disk defragmentation is a utility that will better organise files on the hard disk so that the operating system can access them more efficiently. Better organised files will lead to a smoother operation of the system.
2. File encryption software will encode the contents of a file into a non-readable format. If files containing sensitive data are lost or stolen, the contents will be protected from misuse.

Acceptable answers you could have given instead:

1. Disk cleanup will scan the hard disk for duplicate files and remove them.
2. Backup software will allow users to restore a system to a previous point.

Off the shelf vs bespoke software

Software may be bought "**off-the-shelf**", ready to use, or it may be specially written by a team of programmers for 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.

Off the shelf	Bespoke software
Less expensive since the cost is shared among all the other people buying the package	More costly and requires expertise to analyse document requirements
May contain a lot of unwanted features, and some desirable but non-essential features may be missing	Features customised to user requirements and other features can be added as needs arise
Ready to be installed immediately	May take a long time to develop
Well documented, well-tested and error-free	May contain errors which do not surface immediately

Open source vs closed sourced software

Open Source software	Closed source or proprietary software
• Software is licensed for use but there is no charge for the licence. • Anyone can use it. • Must be distributed with the source code so anyone can modify it. • Developers can sell the software they have created. • Any new software created from Open Source software must also be "open". • This means that it must be distributed or sold in a form that other people can read and also edit. • NB: This is different from Freeware (free software) which may be free to use but the user does not get access to the source code. Freeware usually has restrictions on its use as well. • Open Source software tends to be more organic – it changes over time as developers modify source code and distribute new versions. • There isn't a commercial organisation behind the software so there probably won't be a helpline or regular updates, just a community of enthusiastic developers.	• Sold in the form of a licence to use it. • Restrictions on how the software can be used, for example the licence may specify only one concurrent user, or it may permit up to say, 50 users on one site (site licence). • The company or person who wrote the software will hold the copyright. The users will not have access to the source code and will not be allowed to modify the package and sell it to other people. • This would infringe the copyright (Copyright, Designs and Patents Act). • The benefit of using proprietary software is the support available from the company. • There will be regular updates available and technical support lines, training courses and a large user base.