

# EXAM QUESTION – INPUT AND OUTPUT DEVICES

Tick one box in each row to show whether the item is for input or output

Item	Input	Output
Bar code reader	✓	
Touchpad	✓	
Microphone	✓	
Speakers		✓
RFID	✓	
Plotter		✓

## EXAM QUESTION – INPUT AND OUTPUT DEVICES

If you have a paper photograph that you want to digitise, which of the following would you use?

a. Scanner

b. Joystick

c. Touch screen

## EXAM QUESTION – INPUT AND OUTPUT DEVICES

What is magnetic ink character recognition often used on?

a. Till receipts

b. Cheques

c. Bar codes

## EXAM QUESTION – INPUT AND OUTPUT DEVICES

Describe the advantages and disadvantages of a supermarket using bar code reader and an RFID reader.

Describe two ethical issues associated with the use of a 3D printer.

# STORAGE DEVICES AND MEDIA

Learning objectives:

- Identify optical, magnetic and solid-state storage devices, their associated media and their uses
- Describe the advantages and disadvantages of these devices

- The storage medium is the part that holds the data and the storage device is the machine that lets you store data on the medium, and then read from it.
- There are three different types of storage device, and each type stores the data in a different way.
  - Magnetic storage media - store data magnetically
  - Optical storage media - store data on their surface
  - Solid state storage - storage media with no moving parts, based on electronic circuits and using flash memory.

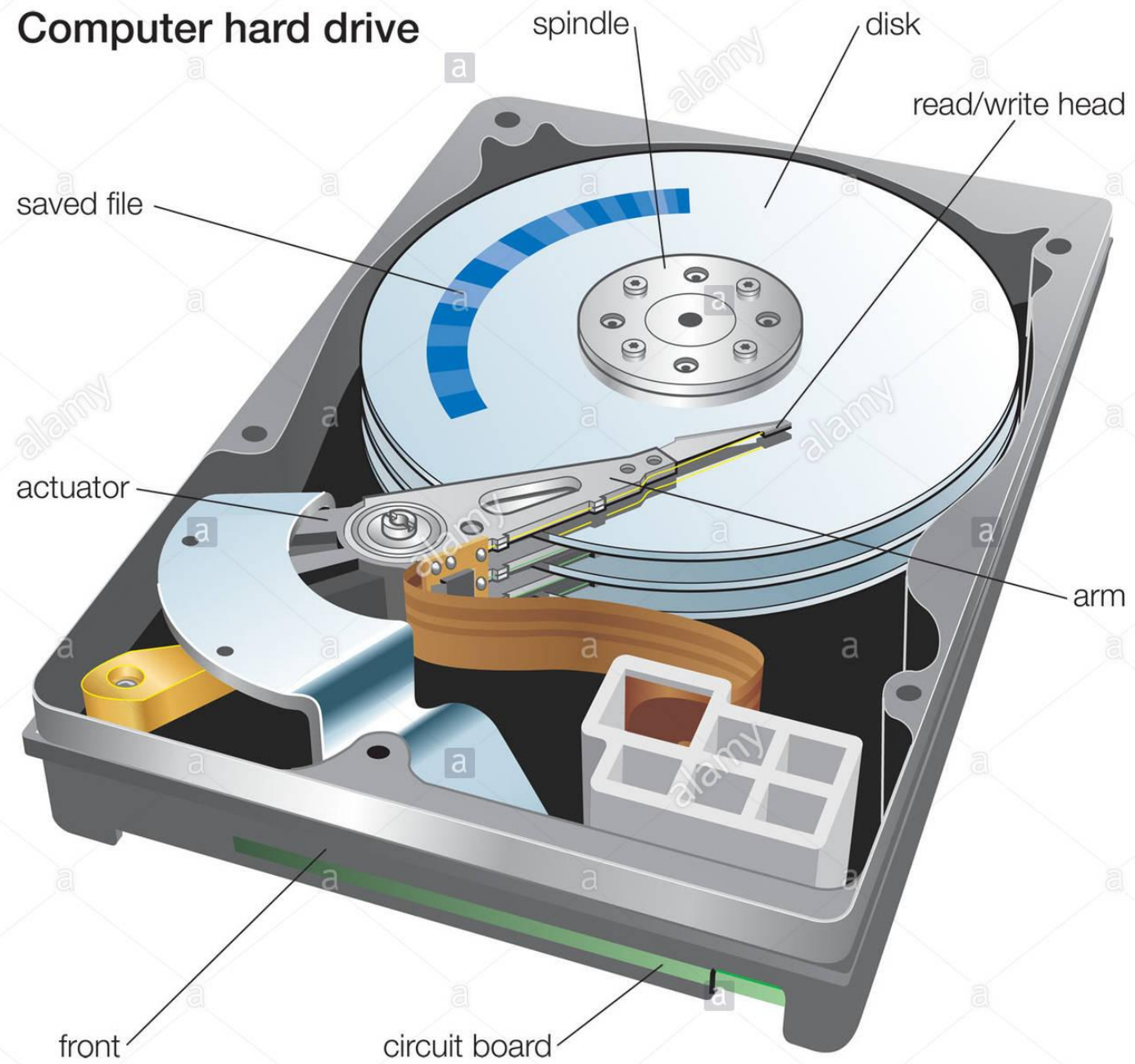


# MAGNETIC STORAGE MEDIA

- Hold data magnetically. The surface of the media is made of magnetic material, and data is written to it by changing the local magnetic polarity to represent either a 0 or a 1. A magnetic device can read the magnetic state of the disk, extracting the 1s and 0s, to retrieve the data from the disk.
- **Fixed hard disks and drives:** main storage on most personal computers. The hard disk is fixed into its drive inside the computer so the hard disk drive tends to refer to both the disk and the drive at the same time.
- Each disk has a device called a read/write head. This can write data onto the disk so that it can be stored, and can read data from the disk when it needs to be used.



## Computer hard drive





# MAGNETIC STORAGE MEDIA

- The advantages of fixed hard disks being used as the main storage are:
  - They can store very large amounts of data
  - Access to the data is fast
  - There is no limit to the number of times the medium can be reused (the data can be deleted and new data written)
- A disadvantage is that fixed hard disks can be fragile, and because they are stored inside the computer's case, data held on them should be backed up to ensure its safety.
- Store three types of data
  - The operating system of the computer
  - The user's applications
  - The user's data

# MAGNETIC STORAGE MEDIA

- **Portable and removable hard disks:** Similar to fixed hard-disks (technology). The only difference is that they are not connected inside the computer case and will usually have a different type of interface to the computer, for instance via USB.
- The advantages of portable drive are:
  - It does not require an external power source, unlike a fixed hard drive
  - If you are on the move it's small enough to carry with you, have a tough outside casing to help to minimize possible damage
  - It can be easily used by multiple PCs for file sharing, particularly for large files
  - It allows scheduled automatic backup of files which is easy to set up, then it won't matter if you forget to backup.
  - It allows for quick archiving of data
- A disadvantage could be that it is not recommended that you switch between Macs and PCs once a disk has been formatted.



# MAGNETIC STORAGE MEDIA

- **Magnetic tape drives and tapes:** Magnetic tapes store data in a similar way to how data is stored on magnetic disks. The only difference is that the data is stored in long line on the tape rather than being scattered over the surface of a disk. The magnetic tape drive is the device that drives the tape around the read/ write heads.





# OPTICAL STORAGE MEDIA

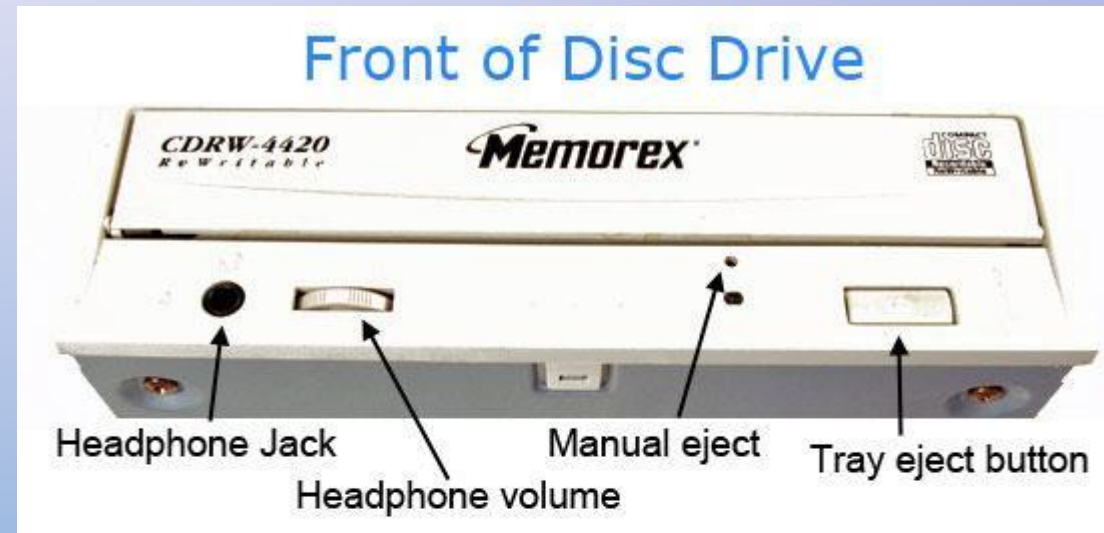
- Store data on their surface by little 'pins' burnt by laser into the surface representing 0s and 1s. The laser can then be shone onto the surface more gently and, where it hits the pits, the reflection is different to that coming from a flat surface. These differences can be used to store digital data.
- A CD (compact disk) can hold quite large files but has limited data storage size. This makes CDs ideal for holding data like music files. However, when the file becomes larger, as for a movie, they may too small.
- For larger files it is necessary to use a DVD (digital versatile disk). DVD looks very similar CD but it can hold much more data than CD.
- Both CD drives and DVD drives use a laser to read and to write the data, but a DVD drive uses a more precise laser.

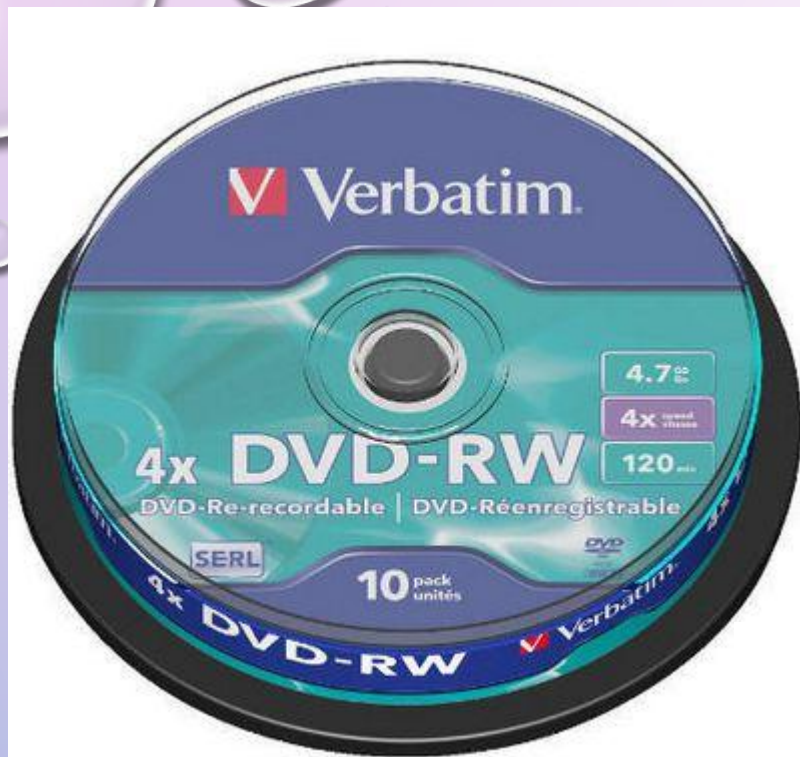


# OPTICAL STORAGE MEDIA

- Don't forget "CD or DVD should always have some letters after them to say what type they are."
- ROM - stands for 'read only memory'; these cannot be written to, only read from.
- R - stands for 'recordable'; these can be written to just once and then can only be read from.
- RW - stands for 're-writable'; these can be written to multiple times.

Blu-ray disks have very much larger storage capacities than other optical storage media and at the same time can perform high-speed transfers. These two advantages mean that it is now possible to record and playback hours of high-definition video. The disadvantage is the cost, which is much higher than that of standard DVDs.





# SOLID STATE STORAGE

- Different from magnetic or optical storage because it has no moving parts and fits directly into the computer. The device and the medium are the same thing.
- This makes them robust than other types of storage. They use similar technology to RAM and ROM memory chips but don't need electricity to maintain the data.
- Memory sticks and pen drives: they are small with a lot of storage space.



Flash memory card



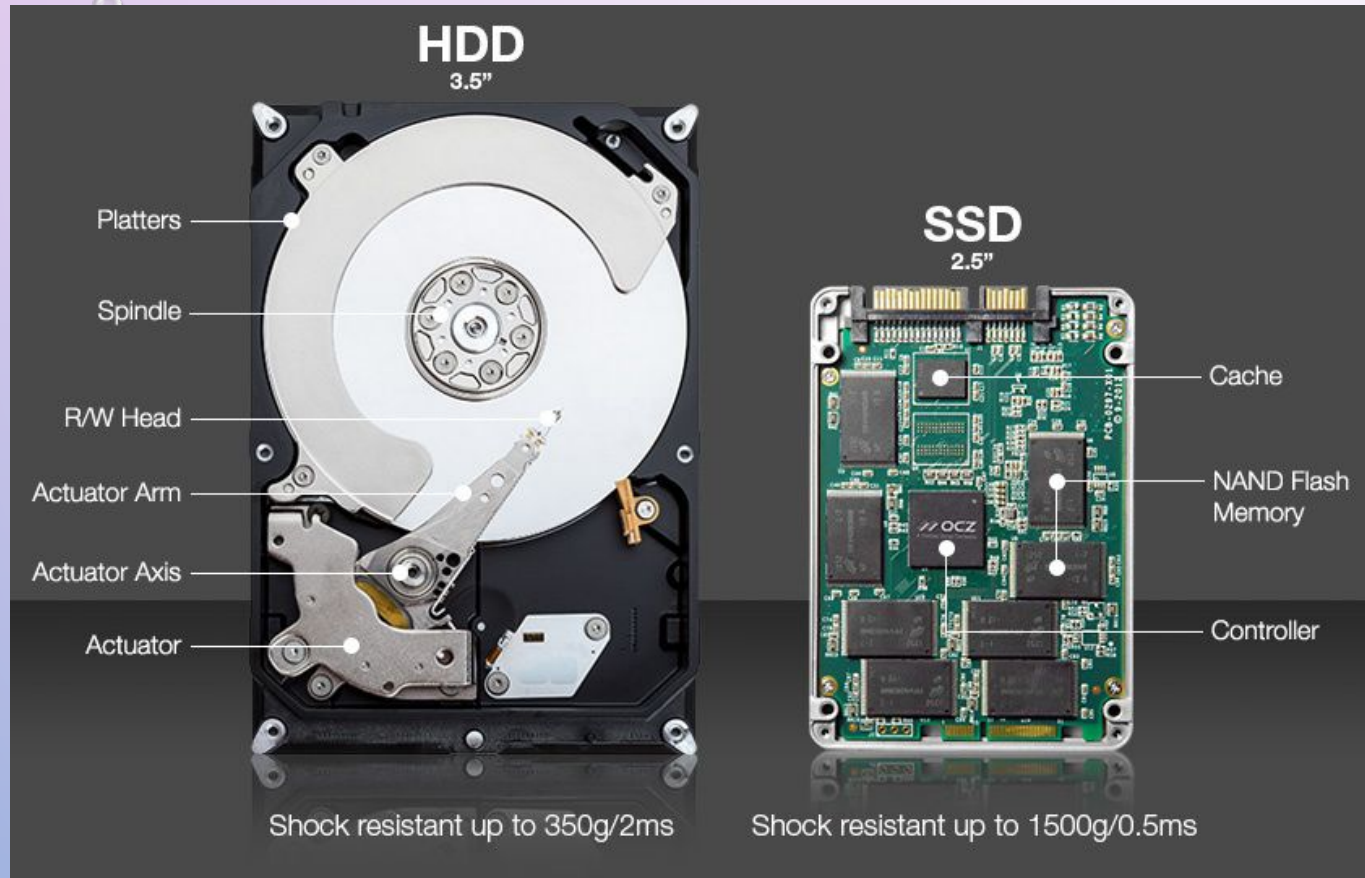
Memory stick / pen drive



- The advantages of memory cards are that they:
  - Have non-volatile memory so there is no danger of data loss if the power source fails.
  - Are solid state, hence are free from mechanical problems or damage
  - Are small; light and compact so are very easily portable
  - Need very little power
  - Are available in many sizes
  - Can be used in different devices such as cameras, computers or mobile phones
- Disadvantages of memory card are that:
  - They can break easily
  - They can be lost, misplaced or smashed
  - Cards may be affected by electronic corruption which can make the entire card unreadable.



# SOLID STATE DRIVE



Modern computers are built with solid state drive instead of hard disk drive.



Read MORE from  
[https://ictlounge.com/html/storage\\_devices\\_and\\_media.htm](https://ictlounge.com/html/storage_devices_and_media.htm)

# AT HOMEWORK

- Student book, page number 39, table and summary.
- Work in exam style questions of chapter 3.