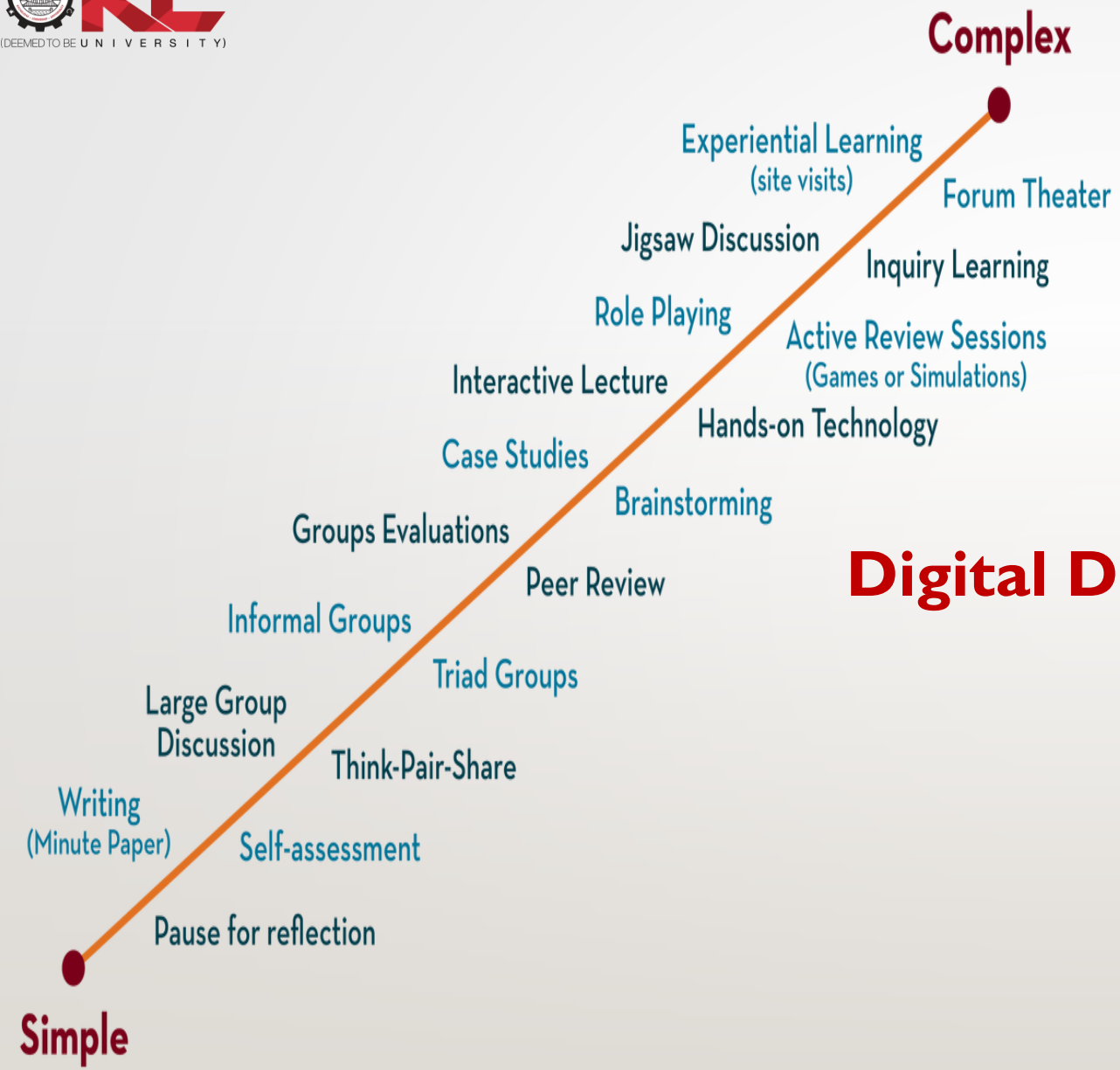


Department of BES-II

Digital Design and Computer Architecture

23EC1202

Topic:

External storage

Session No: 37

AIM OF THE SESSION

To familiarize students with the basic concept of external storage.

INSTRUCTIONAL OBJECTIVES

This Session is designed to:

1. Demonstrate the ability to connect and disconnect external storage devices properly.
2. Describe various types of external storage devices and their characteristics
3. List out the the advantages and use cases of using external storage in a computer system.
4. Describe the concept of external storage in the context of computer architecture.

LEARNING OUTCOMES

At the end of this session, you should be able to:

1. Define the additional storage devices that are physically separate from the main internal storage components of a computer system.
2. Describe storage space beyond the limitations of internal drives, accommodating a growing volume of data.
3. Summarize the important information is preserved in case of hardware failures or other issues.

External Storage

- External storage refers to any storage medium or device that is located outside of the computer's main processing unit and primary memory (RAM).
- It is used to store data and files that are not currently in use or needed for immediate processing. External storage devices are typically connected to the computer via various interfaces such as USB, Thunderbolt, eSATA, or network connections.
- Examples of external storage devices include external hard disk drives (HDDs), solid-state drives (SSDs), USB flash drives, memory cards, optical discs (such as CDs, DVDs, and Blu-ray discs), and network-attached storage (NAS) devices.
- External storage is used to store a huge amount of data because it has a huge capacity (GB, TB) and Non-volatile in nature

External storage devices

External Hard Disk Drives (HDDs)

Description: External HDDs consist of a traditional spinning hard disk enclosed in a portable casing.

Advantages: They offer high capacities at relatively low costs, making them suitable for bulk storage needs.

Use Cases: Ideal for storing large files such as videos, photos, and backups.

Solid State Drives (SSDs)

Description: External SSDs use flash memory technology, providing faster data access speeds and higher durability compared to HDDs.

Advantages: SSDs offer faster read/write speeds, lower power consumption, and resistance to physical shocks.

Use Cases: Suitable for tasks requiring high-speed data transfer, such as video editing, gaming, and running operating systems.

USB Flash Drives

Description: USB flash drives are small, portable storage devices that connect to a computer via a USB port.

Advantages: They are compact, lightweight, and do not require external power sources. They are also relatively inexpensive.

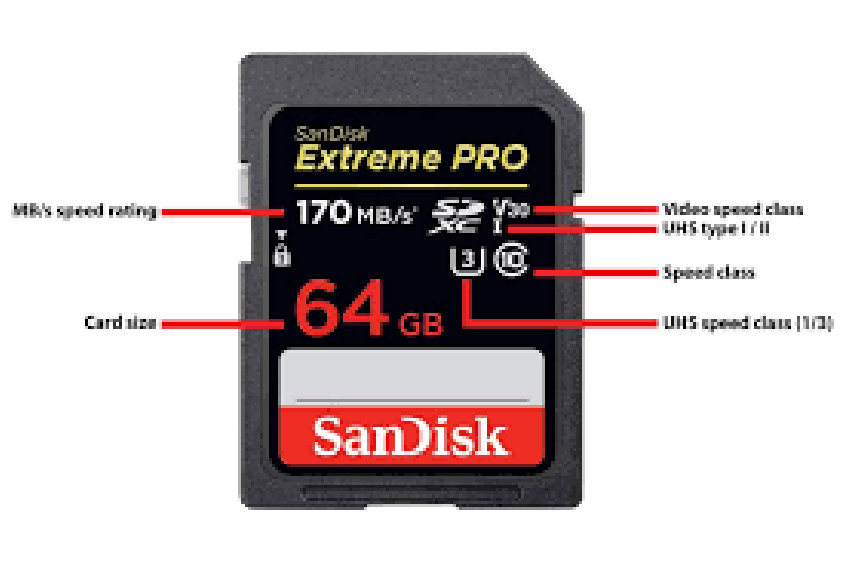
Use Cases: Useful for transferring small to medium-sized files between devices or for storing important documents and software utilities.

Memory Cards

Description: Memory cards are small, removable storage devices commonly used in digital cameras, smartphones, and other portable devices.

Advantages: They are compact, lightweight, and offer high storage capacities relative to their size.

Use Cases: Suitable for expanding the storage capacity of portable devices or transferring data between devices with memory card slots.



Optical Discs

Description: Optical discs, such as CDs, DVDs, and Blu-ray discs, store data using laser technology and can be read by optical disc drives.

Advantages: They offer long-term data retention, are inexpensive, and can be easily duplicated.

Use Cases: Commonly used for storing software installations, multimedia content, and archival data backups.

Magnetic Tape

This uses magnetic recording to store digital data. It consists of a long, narrow strip of plastic coated with a magnetic material, typically made of iron oxide or chromium dioxide. Magnetic tape storage devices, known as tape drives, read and write data to the tape using a magnetic head.

SELF-ASSESSMENT QUESTIONS

1. What is external storage in computer architecture?(b)

(a) Storage located within the CPU…
(b) Storage devices connected externally to the computer
(c) Temporary storage in RAM
(d) Storage exclusively for operating system files

2. Which of the following is NOT a type of external storage (c)

(a) External Hard Disk Drive (HDD) …
(b) USB Flash Drive …
(c) Internal Solid-State Drive (SSD)
(d) Network Attached Storage (NAS)

SELF-ASSESSMENT QUESTIONS

3. What is a common interface for connecting external storage devices?(c)

(a) HDMI
(b) Bluetooth
(c) USB
(d) VGA

4. What is the primary purpose of external storage in computer systems?(c)

(a) Running software applications
(b) Increasing processing speed
(c) Expanding storage capacity
(d) Enhancing graphics performance

TERMINAL QUESTIONS

Short answer questions:

1. List various external storage devices.

Long answer questions:

1. Analyze the role and significance of external storage solutions in computing systems.

REFERENCES FOR FURTHER LEARNING OF THE SESSION

Reference Books:

1. Computer Organization by Carl Hamacher, Zvonko Vranesic and Saftwat Zaky.
2. Computer System Architecture by M. Morris Mano
3. Computer Organization and Architecture by William Stallings

Sites and Web links:

1. https://www.techtarget.com/searchstorage/definition/external-storage

THANK YOU

(DEEMED TO BE UNIVERSITY)

Team – Digital Design & Computer Architecture