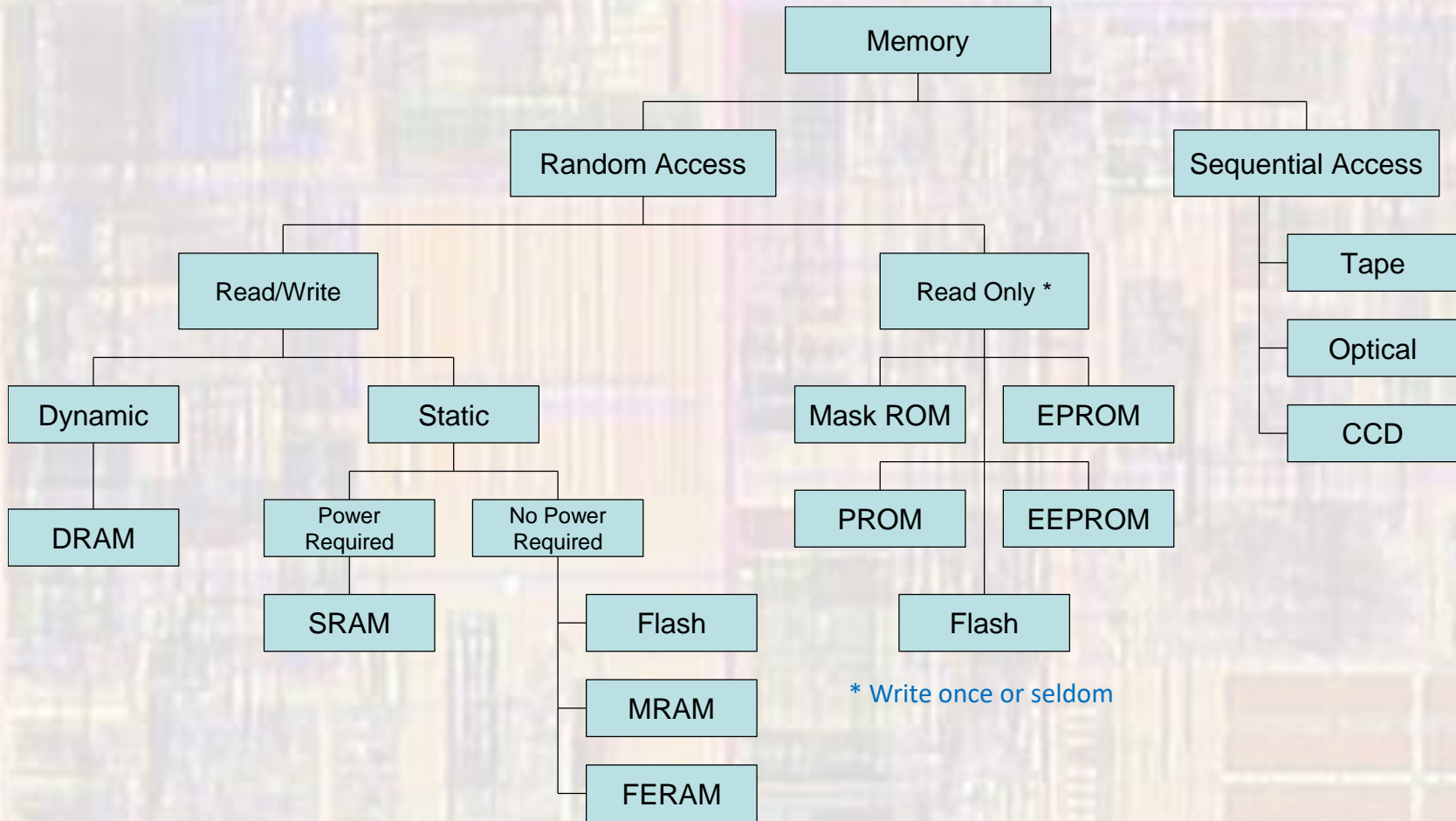


Memories

Last updated 9/19/23

Memories

- Memory Taxonomy



Memories

- Memory Taxonomy

- Key Attributes

- Sequential vs. Random Access

- Sequential – must traverse the memory to the location you want

- Audio cassette tape

- Random Access – can directly access the location you want

- Track selection on a CD/DVD

- Read only vs. Read/Write

- Read only – data stored permanently in the memory

- Commercial Blu-ray

- Read/Write – data can be modified

- DVD – R/W

Read only memories are commonly referred to as ROM even though they may be Random Access

Read/Write memories are commonly referred to as Random Access Memories (RAM)

Memories

- Memory Taxonomy

- Key Attributes – cont'd

- Volatile vs. non-Volatile

- Volatile – loses its value when power is removed

- Current location in a paused video

- Non-volatile – retains its value even when no power is supplied

- Thumb drive

- Static vs. Dynamic

- Static – retains its value as long as power is supplied

- Current location in a paused video

- Dynamic – loses its value over time if nothing is done to protect it

- even though power is applied**

- Air in a soccer ball (with a pump attached but not operating)

Memories

- Memory Taxonomy

- Key Measures

- Density

- amount of storage space

- Speed

- Read or Write speed
 - Can be different for first access vs. follow on accesses

- Power

- Static – powered up but not doing anything
 - Dynamic – reading or writing

- Cost / bit

Memories

- Memory Taxonomy
 - Terminology **WARNING – WARNING - WARNING**
 - b – bit
 - B – Byte

Memories

- Memory Taxonomy
 - Terminology **WARNING – WARNING - WARNING**
 - K, M, G, T have special meaning in digital technology
 - sometimes replaced with Ki, Mi, Gi, Ti
 - 1Mb can mean either 1,048,576 bits
or 1,000,000 bits

Binary					
Value		IEC		JEDEC	
1024	2^{10}	Kibit	kibibit	Kbit	kilobit
1024^2	2^{20}	Mibit	mebibit	Mbit	megabit
1024^3	2^{30}	Gibit	gibibit	Gbit	gigabit
1024^4	2^{40}	Tibit	tebibit		-
1024^5	2^{50}	Pibit	pebibit		-
1024^6	2^{60}	Eibit	exbibit		-
1024^7	2^{70}	Zibit	zebibit		-
1024^8	2^{80}	Yibit	yobibit		-

src: wikipedia

You must determine the meaning in any given situation

Memories

- Memory Taxonomy
 - Terminology **WARNING – WARNING - WARNING**
 - 16Gb Flash drive when checked on your PC may read 14.9Gb
 - Its really a 16,000,000,000b flash drive