6.2 Types of Memory

Two types of memory

- **ROM** – **R**ead **O**nly **M**emory
- **RAM** – **R**andom **A**ccess **M**emory
  - Random Access Memory means that the time required to read or write data at a specific address is about the same as at any other address. It takes the same amount of time to access any address in the memory.
  - Our text suggests that RAM is a misnomer and RAM should, instead, be named read-write memory to better describe its function.

ROM

- Can be written only once (Please note the exceptions below.)
- Retains its contents after power is removed.
- Employed to store programs that do not require alteration including
  - Bootstrap (power-on sequence) programs – critical information necessary to operate the system, such as the program necessary to boot the computer
  - Calculators
  - Printers
  - Appliances
  - Toys
  - Automobiles
- Types of ROM
  - ROM
  - PROM – Programmable Read-Only Memory
    - Constructed of semiconductor fuses that are blown to create a zero or a one.
  - EPROM – Erasable Programmable Read-Only Memory
    - Can be erased using ultraviolet light
  - EEPROM – Electrically Erasable Programmable Read-Only Memory
    - Flash memory (USB Memory)

Two types of RAM

- **Dynamic RAM – DRAM**
  - Constructed of tiny capacitors that leak charge.
  - Because DRAM decays over time it must be recharged.
  - When a DRAM memory cell is being recharged, it cannot be accessed making DRAM **slower** than SRAM.
  - More economical than Static RAM
  - Used to build main memories
- **Static RAM – SRAM**
  - Constructed of D flip-flops
  - Retains its contents as long as power is supplied.
  - Faster and more expensive than Dynamic RAM
  - Used to build caches