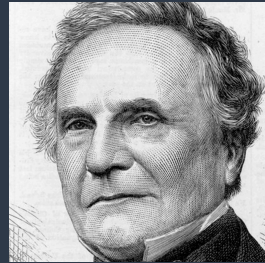


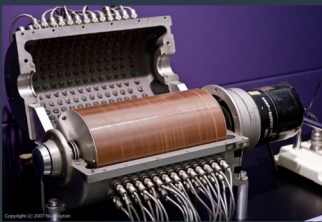
HISTORY OF MEMORY

TaNek Russell and Elizabeth Ventura

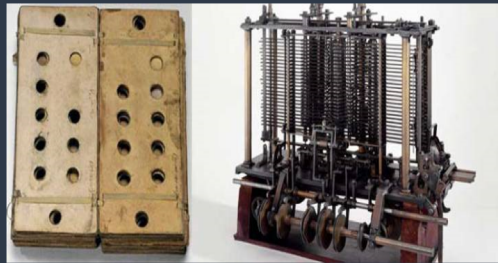
- 1837: Charles Babbage
 - Father of computer
 - Analytical Engine – punch cards
- 1932: Gustav Tauschek
 - Drum memory
- 1942: John Atanasoff
 - Atanasoff-Berry Computer (ABC)



Charles Babbage



Drum Memory



Analytical Engine

- 1946-1947: Freddie Williams & Tom Kilburn
 - Developed Williams-Kilburn tube
- 1949: Maurice Wikes
 - Constructed Electronic Delay Storage Automatic Calculator (EDSAC)
- 1949/1951: Jay Forrester
 - Patented magnetic-core memory, early type of RAM
- 1951: UNIVAC
 - Introduces UNISERVO, the first tape storage device for commercial computer



Williams-Kilburn Tube



UNIVAC

- 1952: IBM 726 Magnetic Tape
 - Inexpensive mass storage of information
- 1953: Jay Forrester
 - Whirlwind Core Memory
 - First computer to use magnetic core memory
- 1955: Konrad Zuse
 - Z22 seventh computer model
 - First to use magnetic storage memory
- 1956: IBM RAMAC 305
 - First computer system based on the new technology of the hard disk drive



Magnetic Tape



Whirlwind Core Memory



IBM 305 RAMAC - 1956

- 1962: Atlas Computer
 - Concept of virtual memory
- 1962: Card Random Access Memory (CRAM)
 - Used for secondary storage
- 1962: IBM 1311 Disk Storage Drive
 - IBM's First Disk Drive
- 1964: IBM 2315 disk cartridge
 - Announced
 - Used with IBM 1800 and 1130 computers
- 1964: IBM 2321 Data cell drive
 - stored up to 400MB



IBM 1311 Disk Storage Drive

- 1964: IBM Transform Read Only Storage (TROS)
 - preceded solid-state ROM chips, and each bit of this read-only memory for microcode was a little magnetic transformer
- 1965: IBM 2314 Direct Access Storage Facility
 - Improvement over 2311 disk storage
- 1965: Victor 3900 Desktop Calculator
 - Six 100-bit MOS shift registers
 - Immature MOS- unreliable parts
- 1966: Signetics 8-bit RAM
 - For SDS Sigma 7 mainframe computer
 - earliest use of dedicated semiconductor memory devices in computer systems



IBM TROS

- **1968: IBM "Minnow" floppy disk drive**
 - read-only floppy disk drive designed to load microcode into the controller for the "Merlin" (IBM 3330) Direct Access Storage Facility
- **1969: Apollo Guidance CPRORM**
 - Launched into space – Apollo 11 mission
- **1970: IBM semiconductor memory**
 - Introduces the System 370 Model 145 mainframe computer
 - First all semiconductor memory computer
- **1971:**
 - Intel 1103 Memory Chip
 - Introduction of the 1 KB



IBM "Minnow" Floppy disk drive



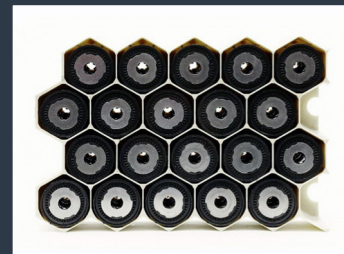
Intel 1103 Memory Chip

- **1973: IBM 3340 Data Module**
 - Based on Winchester technology
 - Last storage system with removable disk



IBM 3340

- **1974: IBM 3850 Mass Storage**
 - held 4,720 cartridges, stored 236 GB, and was 20 feet long



IBM 3850

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