Computing Timeline — 150 BC to 2025

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This document summarizes historically significant computing machines and milestones from the ancient Antikythera mechanism to contemporary quantum computers. Entries include type, clock/speed (when applicable), memory, software/usage, and short notes. Where values were not standardized or available (especially for mechanical/analog devices), fields are left “N/A” or described qualitatively.

# I. General Computing Timeline (Ancient → Electronic → Personal)

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Year | Type | Clock | Speed | Memory | Software / Use | Notes |
| Antikythera Mechanism | ~150 BC | Mechanical analog (astronomical) | N/A | Gear-train computation | Gear states & dials |  | Recovered from a shipwreck; predicts eclipses, lunar/solar cycles. |
| Babbage Difference Engine (design/parts) | 1820s–1830s | Mechanical calculator | N/A | Polynomial table generation | Decimal wheels (design) |  | Portions built later to the original plans. |
| Babbage Analytical Engine (design) | 1837 (design) | Mechanical programmable (concept) | N/A | Conceptual general-purpose | ‘Store’ for 1,000×50-digit numbers (design) |  | Ada Lovelace’s notes anticipated programming methods. |
| Zuse Z1 | 1938 | Mechanical binary, programmable | ~1 Hz (mechanical stepping) | Floating-point arithmetic | 64 words × 22-bit (mechanical) |  | Home-built; many parts mechanical/fragile. |
| Zuse Z3 | 1941 | Electromechanical relay computer | ~5–10 Hz (relay) | ~3–4 ops/sec (typical relay) | 64 words × 22-bit |  | Often cited as first working programmable, fully automatic digital computer. |
| Atanasoff–Berry Computer (ABC) | 1939–1942 | Electronic (special-purpose) | 60 Hz (timing from mains/drum) | Solves linear equations | ~3,000 bits capacitive |  | Not stored-program; not general-purpose. |
| Harvard Mark I (IBM ASCC) | 1944 | Electromechanical (relay/shaft) | ~50 ft shafts; 3–6 Hz eqv. | Add ~0.3 s; mult ~6 s | 72 registers; 23-digit |  | Automatic sequence-controlled calculator. |
| Colossus | 1943–1945 | Electronic digital (codebreaking) | kHz-range pulse logic | 5,000+ chars/sec scanning | Paper tape + registers |  | Programmable via switches/plugs; not stored-program general machine. |
| ENIAC | 1946 | Electronic digital (decimal) | ~100 kHz cycling unit | ≈5,000 adds/sec; 385 mult/sec | 20 accumulators (10-digit) + tables |  | Rewired for programs; later modified for stored-program loading. |
| Manchester Baby (SSEM) | 1948 | Electronic digital (stored-program) | ~1 MHz pulse/CRT timing (var.) | Ran first stored program (June 1948) | Williams-Kilburn tube: 32×32 bits |  | First stored-program computer. |
| UNIVAC I | 1951 | Electronic digital | 2.25 MHz pulses | ≈1,900 ops/sec | 1,000 words (12-char) delay lines |  | Early commercial computer; famous for 1952 US election forecast. |
| IBM 305 RAMAC | 1956 | Electronic digital (business) | N/A | First HDD system | Core + IBM 350 HDD (~5 MB) |  | Introduced random-access disk storage. |
| IBM 1401 | 1960 | Transistorized business computer | ≈87 kHz | Card/tape I/O | 1.4K–16K chars core |  | Mass-market data processing. |
| DEC PDP‑8 | 1965 | Minicomputer (12‑bit) | ~1.5 MHz (1.5 μs cycle) | ~0.33 MIPS (typ.) | 4K×12‑bit (to 32K) |  | Affordable minicomputer; labs/edu/industry. |
| Kenbak‑1 | 1971 | Early personal (TTL logic) | ~1 MHz (SSI TTL) | Front-panel entry | 256 bytes |  | Often called the first personal computer (commercial). |
| Altair 8800 | 1975 | Personal (S‑100, 8080) | 2 MHz (Intel 8080) | Front-panel I/O; teletype via cards | 1–64 KB |  | Sparked the home computer revolution. |
| Apple II | 1977 | Personal (6502, 8‑bit) | ~1.0 MHz | Text/graphics; cassette/disk | 4–64 KB |  | Popular home/edu; first spreadsheet. |
| Commodore 64 | 1982 | Home computer (6510) | ~1.0 MHz | VIC‑II + SID multimedia | 64 KB RAM |  | Best-selling single model line (millions). |
| IBM 5150 (IBM PC) | 1981 | Personal (8088, 16/8‑bit) | 4.77 MHz | Optional 8087 FPU | 16–640 KB |  | Defined open PC architecture. |
| Macintosh 128K | 1984 | Personal (68000) | 7.83 MHz | GUI; 400 KB floppy | 128 KB RAM |  | Iconic GUI mainstreaming. |
| Apple PowerBook 100 | 1991 | Laptop (68000) | 16 MHz | Mono LCD 640×400 | 2–8 MB |  | Established modern laptop layout. |
| Windows 95 PC (typical) | 1995 | Personal PC (x86) | 386DX 12–16 MHz min; Pentium 75–133 MHz common | 32‑bit desktop OS | 4–16 MB RAM |  | Mainstream 32‑bit consumer OS. |
| iMac G3 | 1998 | All‑in‑one (PowerPC G3) | 233 MHz (orig.) | USB; no legacy ports | 32 MB base (exp.) |  | Reimagined consumer Mac line. |
| Dell Dimension (circa 2006) | 2006 | Desktop (Core 2 Duo) | ~1.86–2.4 GHz | Dual‑core | Up to ~4 GB DDR2 |  | Representative mid‑2000s PC. |
| MacBook Air (Late 2010) | 2010 | Ultraportable (Core 2 Duo) | 1.86–2.13 GHz | SSD standard | 2–4 GB |  | Popularized thin‑and‑light SSD laptops. |

Ancient mechanisms, electromechanical machines, and personal computers.

# II. Quantum Computing Milestones

Because “first quantum computer” depends on definition (algorithm demonstrated vs. universal gate model vs. annealer), this section lists commonly recognized early milestones with brief specifications. Values like coherence times vary by implementation and are omitted when not central to the cited milestone.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year | Device / Team | Technology | Qubits | Notable Demonstration / Capability | Notes |
| 1998 |  | Liquid‑state NMR (ensemble) | 2 |  | Early physical realization of a quantum algorithm. |
| 1998–1999 |  | Liquid‑state NMR (ensemble) | 3 |  | Scaling demonstration with ensemble readout. |
| 2001 |  | Liquid‑state NMR | 7 |  | Proof‑of‑principle; not scalable in this form. |
| 2009 |  | Trapped‑ion / superconducting advances | Few |  | Representative of maturing chip‑scale approaches. |
| 2011 |  | Quantum annealing | 128 (annealing qubits) |  | Not universal gate model; specialized. |
| 2016–2020s |  | Superconducting / trapped‑ion | 10s–100s+ |  | Rapidly evolving; cloud access common. |
| 2025 (state of the art, high level) |  | Superconducting, trapped‑ion, photonic, neutral‑atom | 10^2–10^3 (device‑dependent) |  | Specifications vary by vendor and are updated frequently. |

Selected milestones and representative specs.

*Credit: Compiled with assistance from ChatGPT • This summary is intended for overview/reference use.*