SECOND GENERATION COMPUTERS

[](http://1.bp.blogspot.com/_Zx0SO3YqO2g/TCGo5P6JawI/AAAAAAAAAA8/sdLBzI2Fep4/s1600/Transistor.jpg)

SECOND GENERATION COMPUTERS  
  
During the period of 1956 to 1963 second generation of computers were developed. The second generation computers emerged with development of Transistors. The transistor was invented in 1947 by three scientists J. Bardeen, H.W. Brattain and W. Shockley. A transistor is a small device made up of semiconductor material like germanium and silicon. Even though the Transistor were developed in 1947 but was not widely used until the end of 50s. The transistor made the second generation computers faster, smaller, cheaper, more energy-efficient and more reliable than their first-generation computers. Even though the transistor used in the computer generated enormous amount of heat which ultimately would lead to the damage of the computers but was far better than vacuum tubes.  
Second generation computers used the low level language i.e. machine level language and assembly languagewhich made the programmers easier to specify the instructions. Later on High level language programming were introduced such as COBOL and FORTRAN. Magnetic core was used as primary storage. Second generation computer has faster input /output devices which thus brought improvement in the computer.  
CHARACTERISTICS  
1) Transistors were used in place of vacuum tubes.  
2) Second generation computers were smaller in comparison with the first generation computers.  
3) They were faster in comparison with the first generation computers.  
4) They generated less heat and were less prone to failure.  
5) They took comparatively less computational time.  
6) Assembly language was used for programming.  
7) Second generation computers has faster input/output devices.  
  
IBM 7000, NCR 304, IBM 650, IBM 1401, ATLAS and Mark III are the examples of second generation computers.

**IBM 700 :-** The **IBM 700/7000 series** is a series of large-scale ([mainframe](https://en.wikipedia.org/wiki/Mainframe_computer)) computer systems that were made by [IBM](https://en.wikipedia.org/wiki/International_Business_Machines) through the 1950s and early 1960s. The series includes several different, incompatible processor architectures. The 700s use [vacuum tube](https://en.wikipedia.org/wiki/Vacuum_tube) logic and were made obsolete by the introduction of the [transistorized](https://en.wikipedia.org/wiki/Transistor_computer) 7000s. The 7000s, in turn, were eventually replaced by [System/360](https://en.wikipedia.org/wiki/System/360), which was announced in 1964. However the 360/65, the first 360 powerful enough to replace 7000s, did not become available until November 1965. Early problems with [OS/360](https://en.wikipedia.org/wiki/OS/360) and the high cost of converting software kept many 7000s in service for years afterward.

**NCR 304 :-** The **NCR 304**, announced in 1957, first delivered in 1959, was [National Cash Register (NCR)](https://en.wikipedia.org/wiki/NCR_Corporation)'s first [transistor](https://en.wikipedia.org/wiki/Transistor)-based [computer](https://en.wikipedia.org/wiki/Computer). The 304 was developed and manufactured in cooperation with [General Electric](https://en.wikipedia.org/wiki/General_Electric), where it was also used internally.

**IBM 650 :-** The **IBM 650 Magnetic Drum Data-Processing Machine** is one of [IBM](https://en.wikipedia.org/wiki/IBM)'s early [computers](https://en.wikipedia.org/wiki/Computer), and the world’s first [mass-produced](https://en.wikipedia.org/wiki/Mass_production) computer. It was announced in 1953 and in 1956 enhanced as the **IBM 650 RAMAC** with the addition of up to four disk storage units. Almost 2,000 systems were produced, the last in 1962. Support for the 650 and its component units was withdrawn in 1969.

The 650 was a [two-address](https://en.wikipedia.org/wiki/Memory_address), [bi-quinary coded decimal](https://en.wikipedia.org/wiki/Bi-quinary_coded_decimal) computer (both data and addresses were decimal), with [memory](https://en.wikipedia.org/wiki/Computer_memory) on a rotating magnetic [drum](https://en.wikipedia.org/wiki/Drum_memory). [Character](https://en.wikipedia.org/wiki/Character_(computing)) support was provided by the input/output units [converting punched card alphabetical and special character encodings to/from a two-digit decimal code](https://en.wikipedia.org/wiki/Character_(computing)#Character_encoding). The 650 was marketed to business, scientific and engineering users as well as to users of [punched card machines](https://en.wikipedia.org/wiki/Unit_record_equipment) who were upgrading from [calculating punches](https://en.wikipedia.org/wiki/Unit_record_equipment#Calculating), such as the [IBM 604](https://en.wikipedia.org/wiki/IBM_604), to computers. Because of its relatively low cost and ease of [programming](https://en.wikipedia.org/wiki/Computer_programming), the 650 was used to pioneer a wide variety of applications, from modeling submarine crew performanceto teaching high school and college students computer programming

**IBM 1401**  **:-** The **IBM 1401** is a [variable wordlength](https://en.wikipedia.org/wiki/Variable_word_length_computer) [decimal computer](https://en.wikipedia.org/wiki/Decimal_computer) that was announced by [IBM](https://en.wikipedia.org/wiki/IBM) on October 5, 1959. The first member of the highly successful [IBM 1400 series](https://en.wikipedia.org/wiki/IBM_1400_series), it was aimed at replacing [unit record equipment](https://en.wikipedia.org/wiki/Unit_record_equipment) for processing data stored on [punched cards](https://en.wikipedia.org/wiki/Punched_card) and at providing peripheral services for larger computers. The 1401 is considered to be the [Model-T Ford](https://en.wikipedia.org/wiki/Ford_Model_T) of the computer industry, because it was mass-produced and because of its sales volume. Over 12,000 units were produced and many were leased or resold after they were replaced with newer technology. The 1401 was withdrawn on February 8, 1971.

**Atlas Computer** **:-** The **Atlas Computer** was a joint development between the [University of Manchester](https://en.wikipedia.org/wiki/Victoria_University_of_Manchester), [Ferranti](https://en.wikipedia.org/wiki/Ferranti), and [Plessey](https://en.wikipedia.org/wiki/Plessey). It was a second-generation machine, using [discrete](https://en.wikipedia.org/wiki/Discrete_device" \o "Discrete device)[germanium](https://en.wikipedia.org/wiki/Bipolar_junction_transistor#Germanium_transistors) [transistors](https://en.wikipedia.org/wiki/Transistor).

The first Atlas, installed at Manchester University and officially commissioned in 1962, was one of the world's first [supercomputers](https://en.wikipedia.org/wiki/Supercomputers), and was considered to be the most powerful computer in the world at that time. It was said that whenever Atlas went offline half of the United Kingdom's computer capacity was lost. Two other Atlas machines were built: one for [British Petroleum](https://en.wikipedia.org/wiki/BP) and the [University of London](https://en.wikipedia.org/wiki/University_of_London), and one for the [Atlas Computer Laboratory](https://en.wikipedia.org/wiki/Atlas_Computer_Laboratory) at Chilton near [Oxford](https://en.wikipedia.org/wiki/Oxford).

A derivative system was built by Ferranti for [Cambridge University](https://en.wikipedia.org/wiki/University_of_Cambridge). Called the [Titan](https://en.wikipedia.org/wiki/Titan_(computer)), or Atlas 2, it had a different memory organisation and ran a [time-sharing](https://en.wikipedia.org/wiki/Time-sharing) operating system developed by Cambridge University Computer Laboratory. Two further Atlas 2s were delivered: one to the [CAD](https://en.wikipedia.org/wiki/Computer-aided_design) Centre in Cambridge (later called CADCentre, then [AVEVA](https://en.wikipedia.org/wiki/AVEVA)), and the other to the [Atomic Weapons Research Establishment](https://en.wikipedia.org/wiki/Atomic_Weapons_Establishment) (AWRE), Aldermaston.

The University of Manchester's Atlas was decommissioned in 1971. The final Atlas, the CADCentre machine, was switched off in late 1976. Parts of the Chilton Atlas are preserved by [National Museums Scotland](https://en.wikipedia.org/wiki/National_Museums_Scotland) in Edinburgh; the main console itself was rediscovered in July 2014 and is at [Rutherford Appleton Laboratory](https://en.wikipedia.org/wiki/Rutherford_Appleton_Laboratory) in Chilton, near [Oxford](https://en.wikipedia.org/wiki/Oxford).

**Mark III** **:-** The **Harvard Mark III**, also known as **ADEC** (for **A**iken **D**ahlgren **E**lectronic **C**alculator) was an early computer that was partially electronic and partially electromechanical. It was built at [Harvard University](https://en.wikipedia.org/wiki/Harvard_University)under the supervision of [Howard Aiken](https://en.wikipedia.org/wiki/Howard_Aiken) for the [US Navy](https://en.wikipedia.org/wiki/United_States_Navy).

Commands I used to upload on github :-

1. git init

2. git remote add origin <https://github.com/co18307/history-of-computers-2nd-generations.git>

3. git add .

4. git commit -m “first commit”

5. git push origin master