“The IBM’s System 360 was one of the most ambitious projects in the history of the computer industry”[Gifford and Spector'87, April].

This quote describes the innovative and bold nature of the project that created the IBM System 360. The project laid the groundwork for the giant corporation that IBM came to be. The IBM 360 was historically important due to its forward and backward compatibility (family concept and extensive instruction set), clear separation between architecture and implementation, integration of scientific and business efficiency, and extensive use of microprogramming

The goal when creating the IBM 360 was to create a “family concept”, where for the first time a single ISA could be used with older and newer machines in the same family The major risk that IBM took was that they were trading performance for compatibility. Because computers in the IBM 360 line were going to be compatible by using the same ISA, they had to use separate implementations to achieve this. When IBM used the same architecture throughout many different computers that then needed different implementations, a clear separation between architecture and implementation was created. The IBM 360 offered integration of scientific and business programs into a general-purpose machine.

The architecture of the IBM 360 is built around microprogramming, or small programs of microinstructions. By using microprogramming, This way the ISA is consistent, but separate efficient microprogramming techniques between models are the only difference. In order to accomplish this, there needs to be an extensive set of microinstructions that all of the different models of computers could use. Thus, the concept of a CISC (Complex Instruction Set Computing) architecture was created.

The IBM System/360 is a 32-bit machine with byte addressability and support for a variety of data types: byte, halfword (16 bits), word (32 bits), doubleword (double-precision real), packed decimal, and unpacked character strings. The System/360 had alignment restrictions, which were removed in the System/370 architecture.

The internal state of the 360 has the following components:

Sixteen 32-bit, general-purpose registers: register 0 is special when used in an addressing mode, where a zero is always substituted.

* Four double-precision (64-bit) floating-point registers.
* Program status word (PSW) holds the PC, some control flags, and the condition codes.

Later versions of the architecture extended this state with additional control registers.

**z/Architecture**, initially and briefly called [**ESA**](http://en.wikipedia.org/wiki/ESA/390) **Modal Extensions** (**ESAME**), refers to [IBM](http://en.wikipedia.org/wiki/IBM)'s [64-bit](http://en.wikipedia.org/wiki/64-bit) computing architecture for the current generation of IBM [mainframe computers](http://en.wikipedia.org/wiki/Mainframe_computer). IBM introduced its first z/Architecture-based system, the [zSeries](http://en.wikipedia.org/wiki/ZSeries) Model 900, in late 2000. Later z/Architecture systems included the IBM z800, z990, z890, [System z9](http://en.wikipedia.org/wiki/System_z9) and the [System z10](http://en.wikipedia.org/wiki/IBM_System_z10). z/Architecture retains [backward compatibility](http://en.wikipedia.org/wiki/Backward_compatibility) with previous 32-bit-data/31-bit-addressing architecture [ESA/390](http://en.wikipedia.org/wiki/ESA/390) and its predecessors all the way back to the 32-bit-data/24-bit-addressing [System/360](http://en.wikipedia.org/wiki/System/360).

#### IBM System z10 is the latest line of [IBM](http://en.wikipedia.org/wiki/IBM) [mainframes](http://en.wikipedia.org/wiki/Mainframe_computer). The z10 Enterprise Class (EC) was announced on February 26, 2008. On October 21, 2008, IBM announced the z10 Business Class (BC), a scaled down version of the z10 EC. The System z10 represents the first model family powered by the [z10 quad core processing engine](http://en.wikipedia.org/wiki/IBM_z10_%28microprocessor%29) and the first to implement [z/Architecture](http://en.wikipedia.org/wiki/Z/Architecture) 2 (ARCHLVL 3).New Features introduced are Cryptography, Decimal Floating Point, New Instructions, New Architecture Level Set (ALS), z/VM LPAR Support,etc

**Reference**

* <http://en.wikipedia.org/wiki/IBM_System/360>
* http://www.beagle-ears.com/lars/engineer/comphist/ibm360.htm