**GENERATIONS OF COMPUTER**

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| **GENERATION** | **BASIC TECHNOLOGY** | **KEY CHARACTERISTICS** | **MEMORY** | **PROCESSING SPEED** | **USAGE** |
| FIRST GENERATION  (1940-1956) | vacuum tubes,  machine & assembly language | Bulky in size,  Unreliable,  Costly,  Consumed huge amount of power,  Generated huge amount of heat which caused damage | input through punch cards and output on print out,  electromagnetic relay memory,  magnetic drums | Runs in milli seconds,  Could solve only one problem at a time | ENIAC(1946),  UNIVAC(1951) |
| SECOND GENERATION  (1956-1963) | Transistors;  High level program languages like COBOL, FORTRAN, etc**.** | Faster,  smaller,  more reliable,  cheaper,  easier,  high amount of heat generation and consumption of energy | Input through punch cards and output on printouts,  Magnetic core memory,  Magnetic tapes and discs | Used in micro seconds | First computer developed for atomic energy industry |
| THIRD GENERATION  (1963-1971) | Integrated circuits, SSI and MSI technology,  Transistors combined with silicon chip (semiconductor),  Standardized high level program | Fast, small, reliable, cheaper, energy efficient, easier to upgrade | Larger magnetic core memory,  Larger capacity tapes and discs,  User interacted with computer through keyboard, monitor and was with an OS | Used in nano seconds | Computer for the first time became accessible to mass audience |
| FOURTH GENERATION  (1971-PRESENT) | Microprocessors,  1000’s of IC’s on a single chip | Cheap,  small,  reliable,  easy,  mainframe systems for general purpose, commercial | Semi conductor memory,  Larger capacity hard disks,  Magnetic tapes and floppy disks | Used in beyond pico seconds | In 1981, IBM introduced first computer for home users,  In 1984, apple introduced macintosh |
| FIFTH GENERATION  (PRESENT AND FUTURE) | IC’s and ULSI technology,  Use artificial intelligence,  Some applications are running currently like voice recognition | Portable, more powerful, easy totally general purpose, cheaper, reliable | Large capacity main memory and hard disk  Internet based applications  Optical disks as secondary memory devices | Processing speed very high | The goal is to develop devices that respond to natural language input and capable of self- organization |