5 Generations of Computers

Generation Duration	1st (1946-1959)	2nd (1959-1965)	3rd (1965-1970)	4th (1970-1981)	5th (1981-onwards)
Major Innovation	Vacuum Tubes	Transistors as Main Component	Integrated Circuit (ICs) as basic electronic component)	LSIC & VLSIC (Microprocessor)	ULSIC (Ultra Large-Scale Integrated Circuit)
Main Memory	Magnetic Drums	RAM and ROM	PROM & DRAM	EPROM & SRAM	EEPROM, SIMM & DIMM
External Storage	Punched cards	Magnetic tapes & magnetic disk	Improve disk (Floppy disk)	Floppy disk & Hard Disk	Modified magnetic & optical disks
Input/Output Devices	Punched cards & paper	Magnetic tape, punched card, paper for output	Keyboard for input and monitor for output	Monitor for output	Keyboard, pointing device, scanner as input & monitor as main output
Languages	Low level Machine Language	Assembly-language, some high level languages (BASIC, COBOL, FORTRAN)	More high level languages	Languages and application software	AI (Artificial Intelligence) Expert Systems
Operating Systems	No operating system, human operators to set switches	Human handles punched card	Complete operating system were introduced	MS-DOS & PC-DOS	GUI based e.g. Windows 95 & Windows NI
Size	Main frame EDVAC, UNIVAC, IBM-701, IBM-650	Main frame Honeywell 400, IBM 7094, UNIVAC 1108	Mini – PDP-9, IBM 360 IBM 370	Micro computer – IBM-PC, Apple, Macintosh,	Very small in size – laptop, notebook, pocket pc
Other Notes	Limited large storage compacity, unreliable, required lots of maint.	"Off/On" – Binary 0 & 1 100 computer languages developed Used for specific purposes	Silicon Chips (semi-conductors) Complicated to manufacture, difficult to maintain	MS-DOS/Microsoft Windows Portable & economical More reliable	Artificial Intelligence Quantum Computer Nanotechnology