

# Assignment-01

- **What is Moore's Law?**

**ANS:** Moore's Law refers to Moore's perception that the number of transistors on a microchip doubles every two years, though the cost of computers is halved. Moore's Law states that we can expect the speed and capability of our computers to increase every couple of years, and we will pay less for them. Another tenet of Moore's Law asserts that this growth is exponential.

Moore's law is an observation and projection of a historical trend and not a physical or natural law. Although the rate held steady from 1975 until 2012, the rate was faster during the first decade. In general, it is not logically sound to extrapolate from the historical growth rate into the indefinite future. For example, the 2010 update to the international Technology Roadmap for semiconductors predicted that growth would slow around 2012, and in 2015 Gordon Moore foresaw that the rate of progress would reach saturation

Following factors can be considered as physical limitations that have prevented Moore's law from continuing to be true:

- Smaller transistors switch faster.
- Dynamic power consumption is reduced by voltage scaling.
- As transistors increase, power demand increases, which is directly proportional to heat (basically increases heat).
- Exponential increase in density would lead to exponential increase in speed.
- Transistor's need a minimum voltage to switch, and voltage reduction has lower limits due to noise.
- Voltage scaling does not prevent power leakage.