Moore's Law

Moore's Law is an observation made by Gordon Moore in 1965.
It states that the density, i.e. the number of transistors on integrated circuit, will roughly get doubled in every 2 years.

The observation made by Moore was more or less accurate till mid 2000s due to excellent research done in the field of computer hardware.

But nowadays, transistor density has reached a saturation point known as **Power Wall.**

Power Wall

As we increase transistor density in ICs, more power is consumed.
With increase in power consumption, the amount of heat generated also increases.
Fans present in processor can only remove certain amount of heat using air cooling technique. If heat generated increases a certain threshold then circuit would melt.

Power = α * CFV2

P is directly proportional to square of voltage.
Dennard Scaling stated the power consumption will decrease if voltage is reduced as transistor becomes smaller.
However, voltage can't go too low because of noise factor.
So Dennard scaling must stop

Now ICs contains multiple cores and programs run in parallel or concurrently in single core.