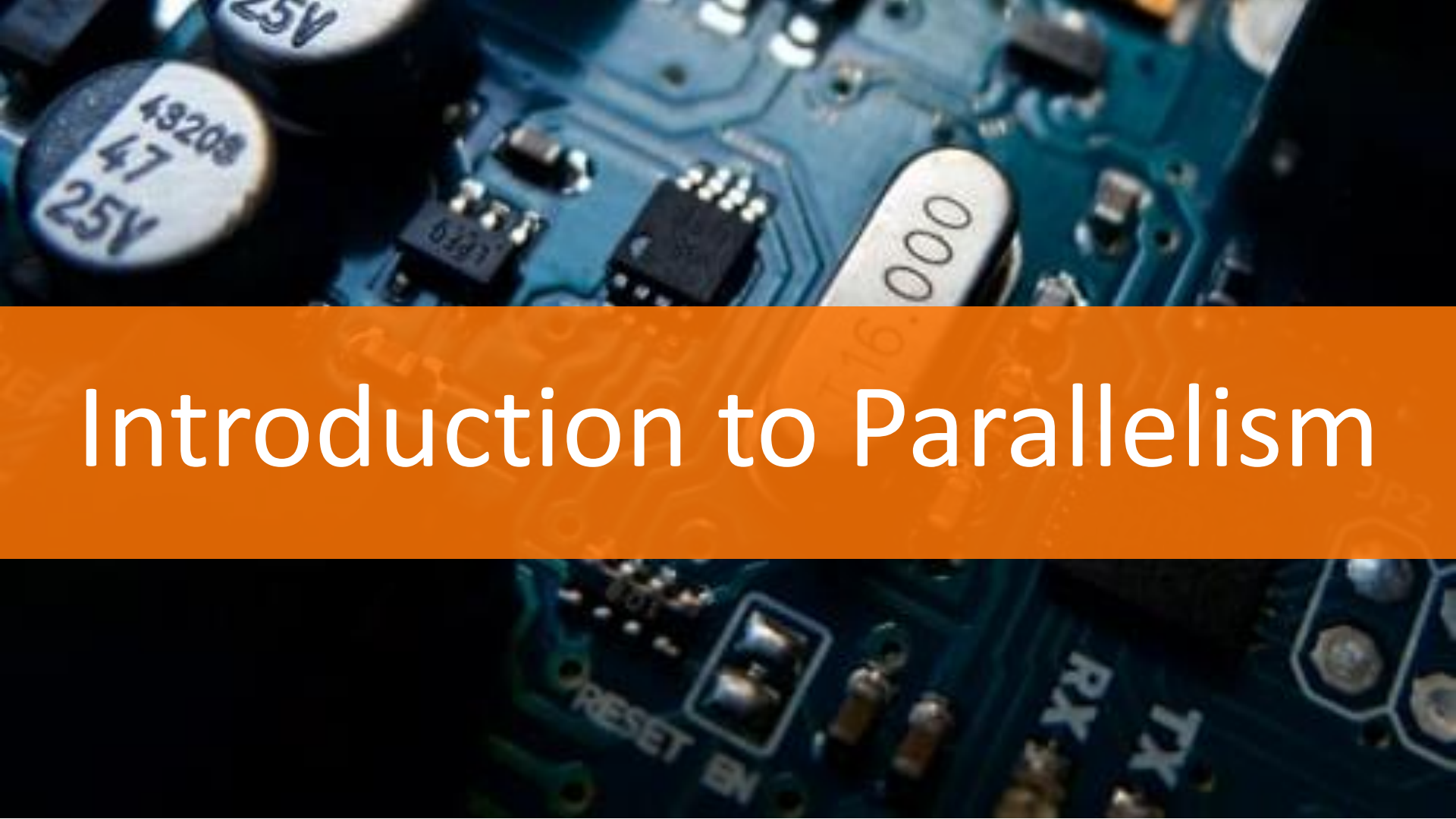
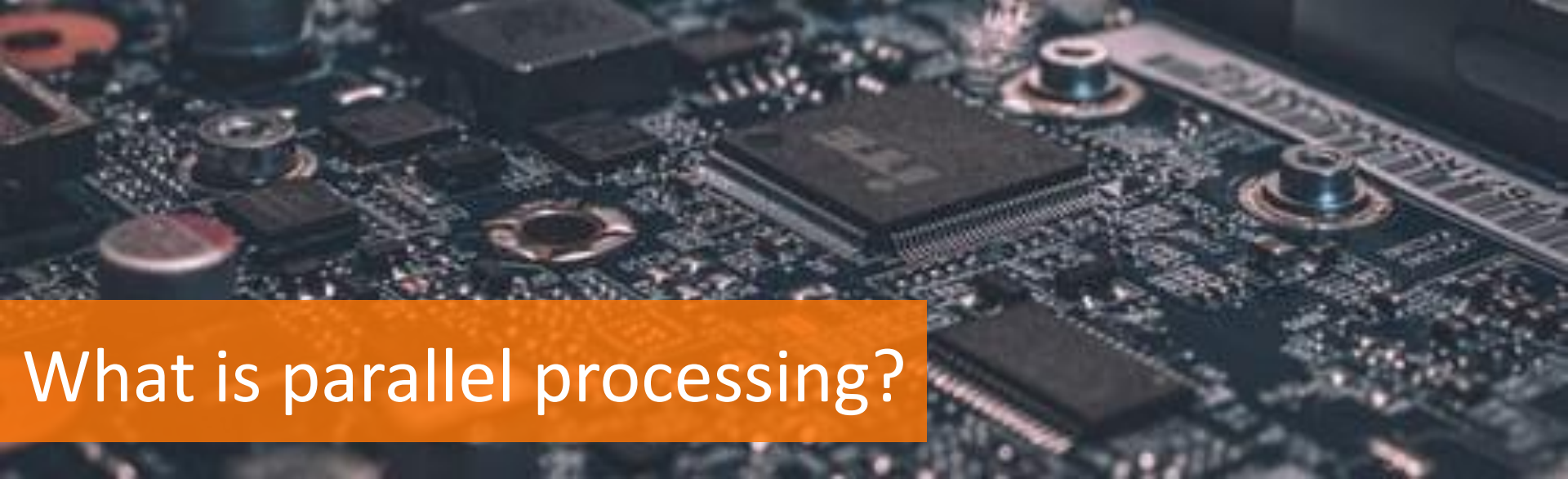
PEMROSESAN PARALEL

CCE60218

Teknik Komputer



Introduction to Parallelism



What is parallel processing?

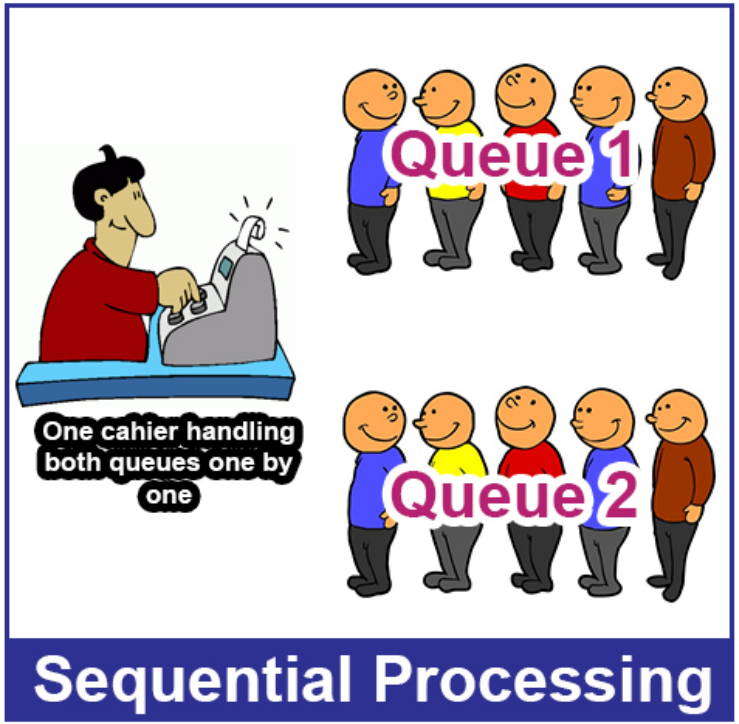
Serial Processing

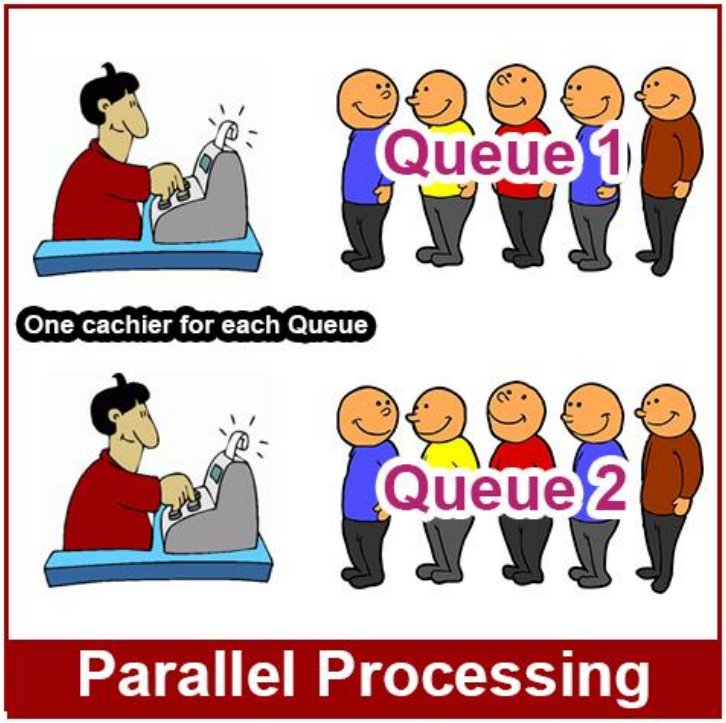
A processing in which one task is completed at a time and all the tasks are run by the processor in a sequence. In real time example, people standing in a queue and waiting for a railway ticket.

Parallel Processing

A type of processing in which multiple tasks are completed at a time by different processors. In real time example, there are multiple queues of people standing to get railway tickets.

Serial & Parallel

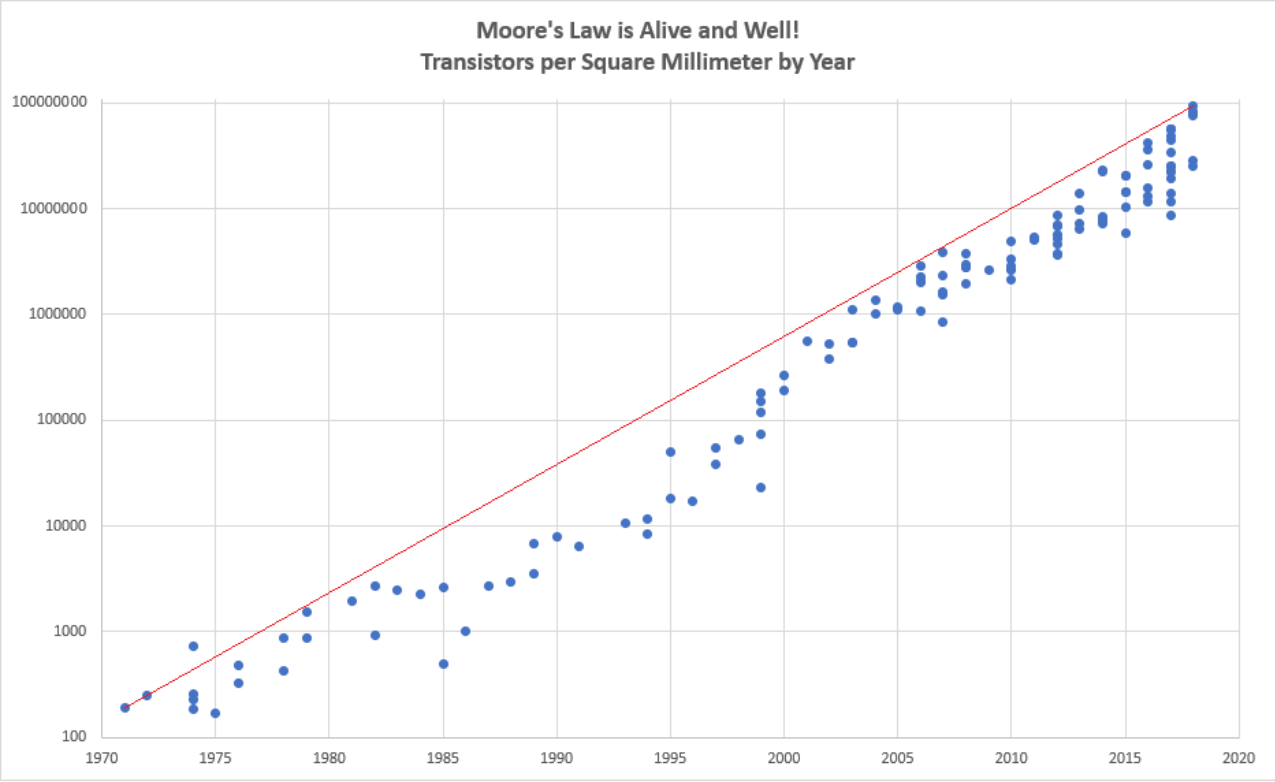




Parallel processing motivation

- The role of parallelism in accelerating computing speeds has been recognized for several decades.
- Its role in providing multiplicity of data paths and increased access to storage elements has been significant in commercial applications
- The scalable performance and lower cost of parallel platforms is reflected in the wide variety of application.

The computational power argument



The computational power argument

- If one is to buy into Moore's law, the question remains – how does one translate transistors into useful OPS (operations per second)?
- The logical recourse is to rely on parallelism, both implicit and explicit.
- Most serial (or seemingly serial) processors rely extensively on implicit parallelism.
- We focus on this class, for the most part, on explicit parallelism.

The memory/disk speed argument

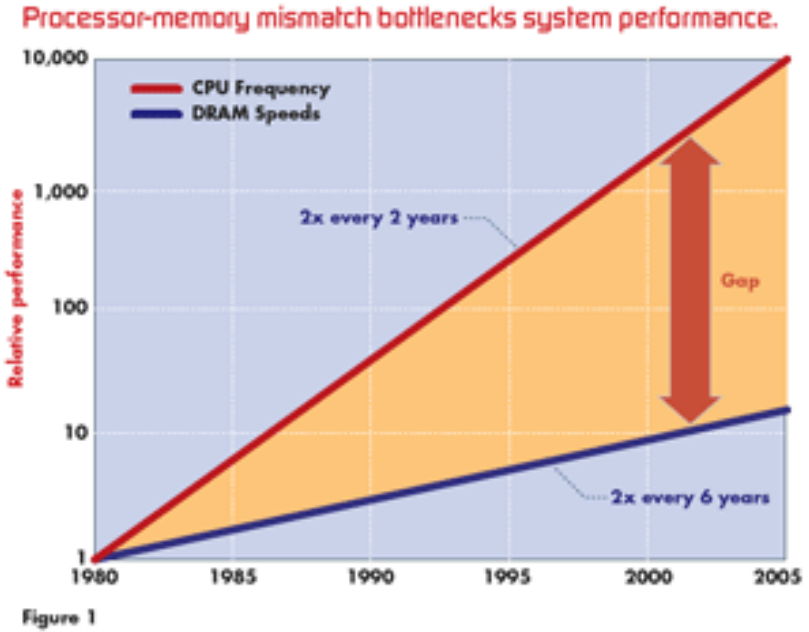


Figure 1

- While clock rates of high-end processors have increased at roughly 40% per year over the past decade, DRAM access times have only improved at the rate of roughly 10% per year over this interval.
- This mismatch in speeds causes significant performance bottlenecks.
- Parallel platforms provide increased bandwidth to the memory system.

Scope of Parallel Computing Application

- Parallelism finds applications in very diverse application domains for different motivating reasons.
- These range from improved application performance to cost considerations

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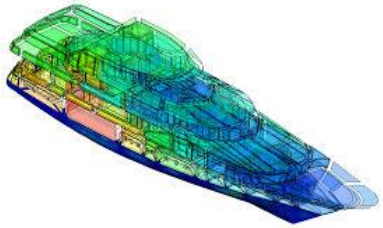
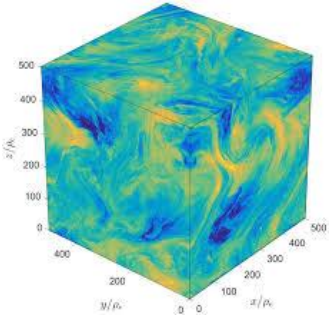


Scientific



Commercial

Computer System

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