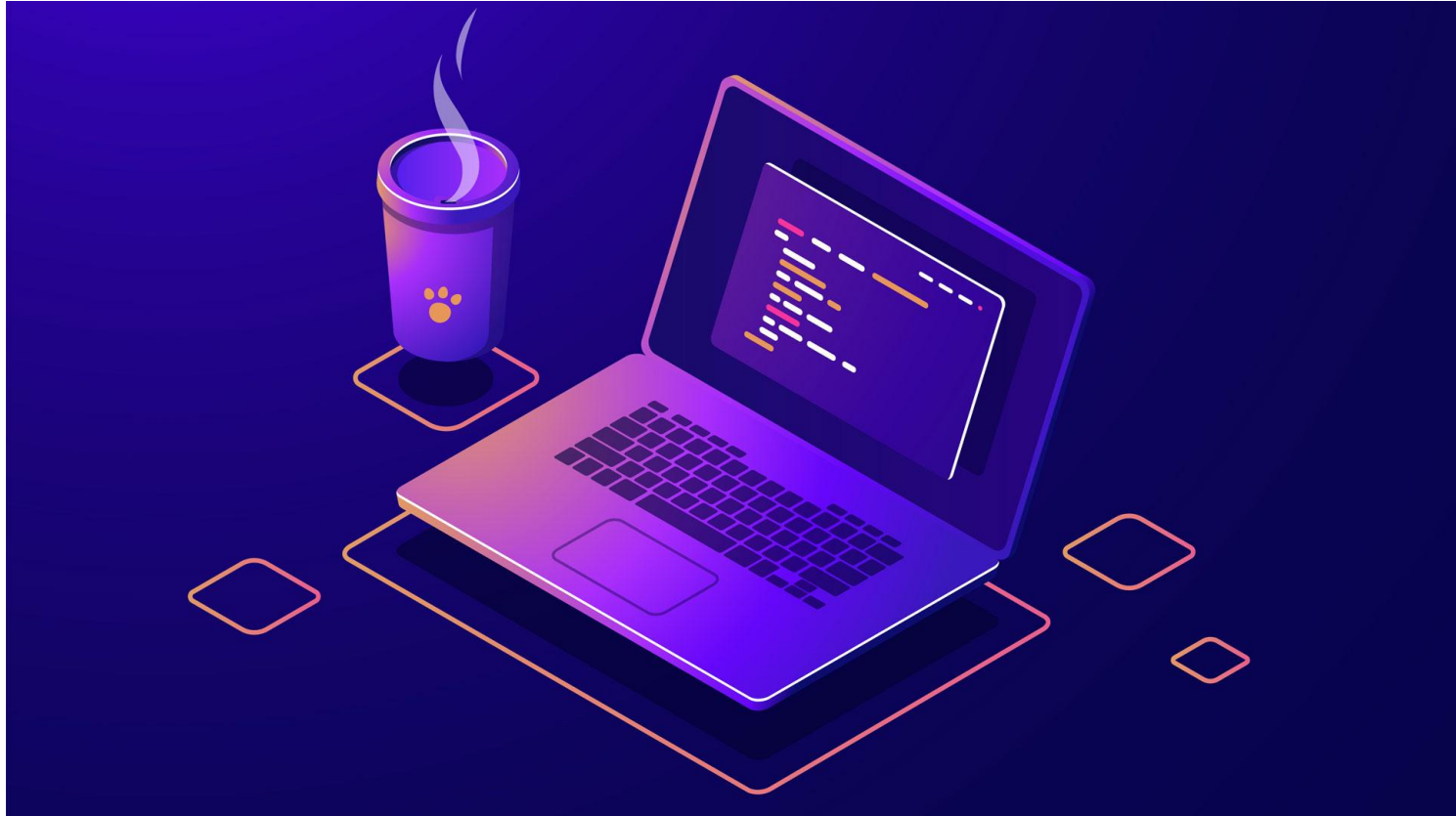


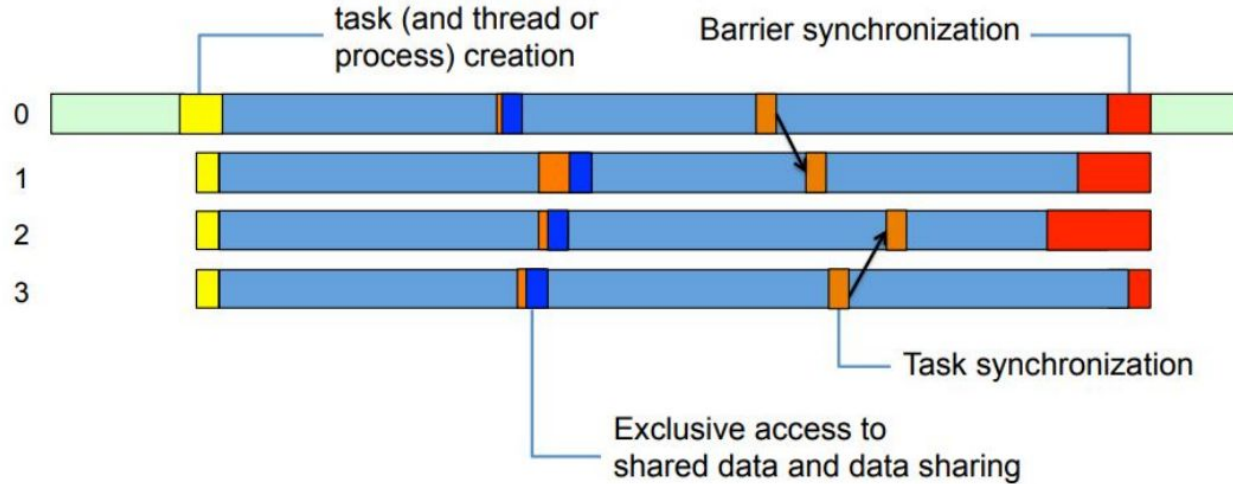
Overhead Sources



Overhead Sources



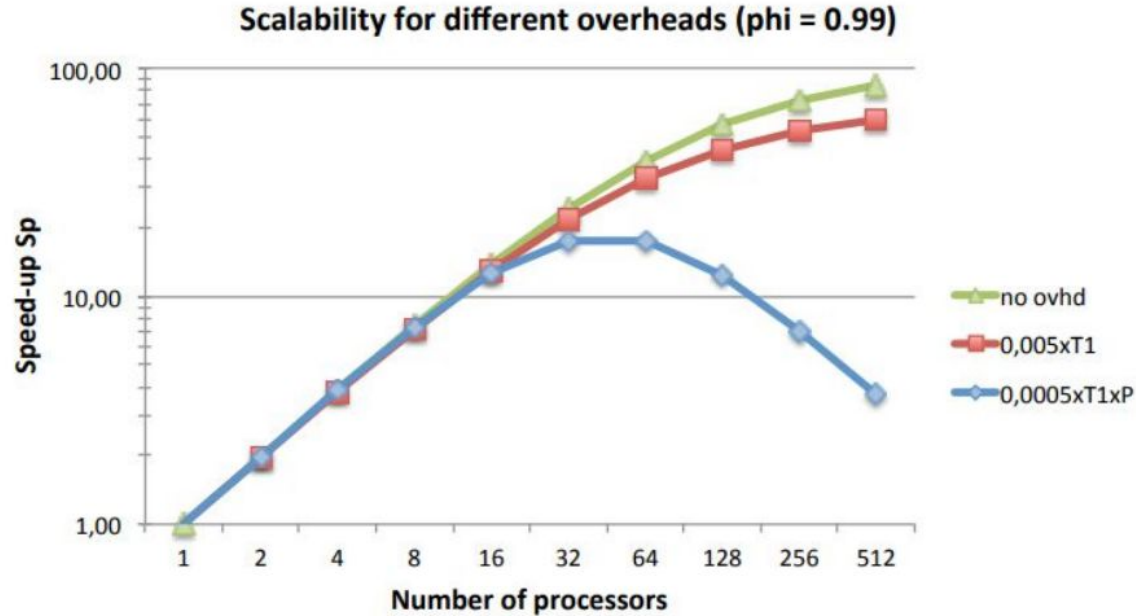
Parallel computing is not for free, we should account overheads (i.e. any cost that gets added to a sequential computation so as to enable it to run in parallel)



Overhead Sources



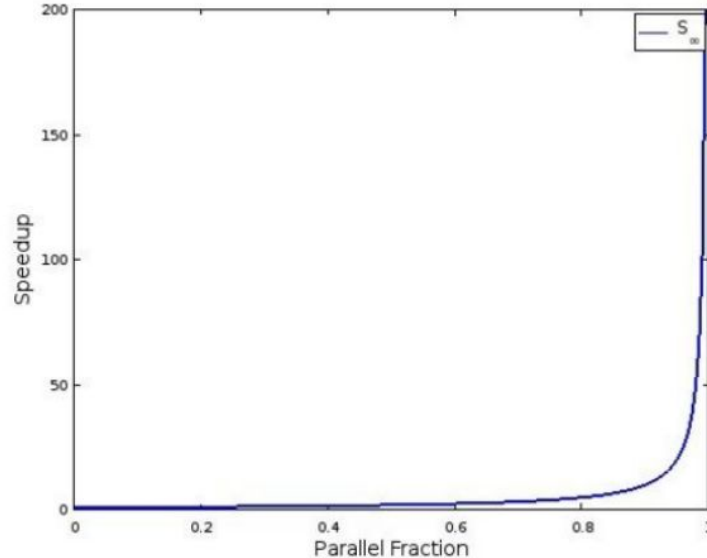
$$T_p = (1 - \varphi) \times T_1 + \varphi \times T_1/p + \text{overhead}(p)$$



Amdahl's Law Conclusion



Amdahl's Law can be overly pessimistic:

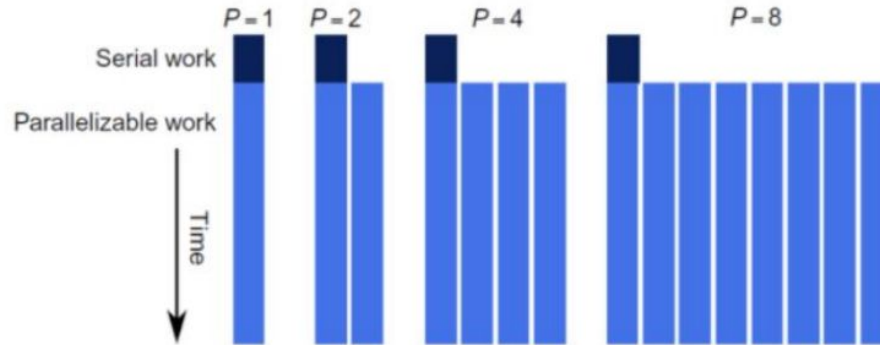


- Parallel processing might not be worthwhile if there is a large amount of inherently sequential code.

In practise



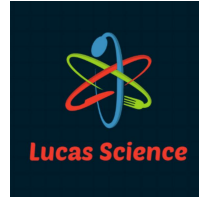
- The goal of applying parallelism is to increase the accuracy of the solution that can be computed in a fixed amount of time.
→ Treat time as constant and let problem size increase with P .
- The serial part grows slowly or remains fixed
→ It's proportion gets reduced as the problem size increases.



- Speedup grows as workers are added and the problem size is increased. (Weak Scaling).

Instructor Social Media

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