Syllabus and Course Introduction

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Parallelism is everywhere

Football

Bird swarm

Galaxy

Traffic

https://mobile.twitter.com/footbal
https://wonderopolis.org/wonder/what-is-a-murmuration
https://www.stevenvanbelleghem.com/blog/a-world-without-traffic-jams/
https://spaceplace.nasa.gov/galaxy/en/

Parallelism enables to speed up

Airport

Port

Factory

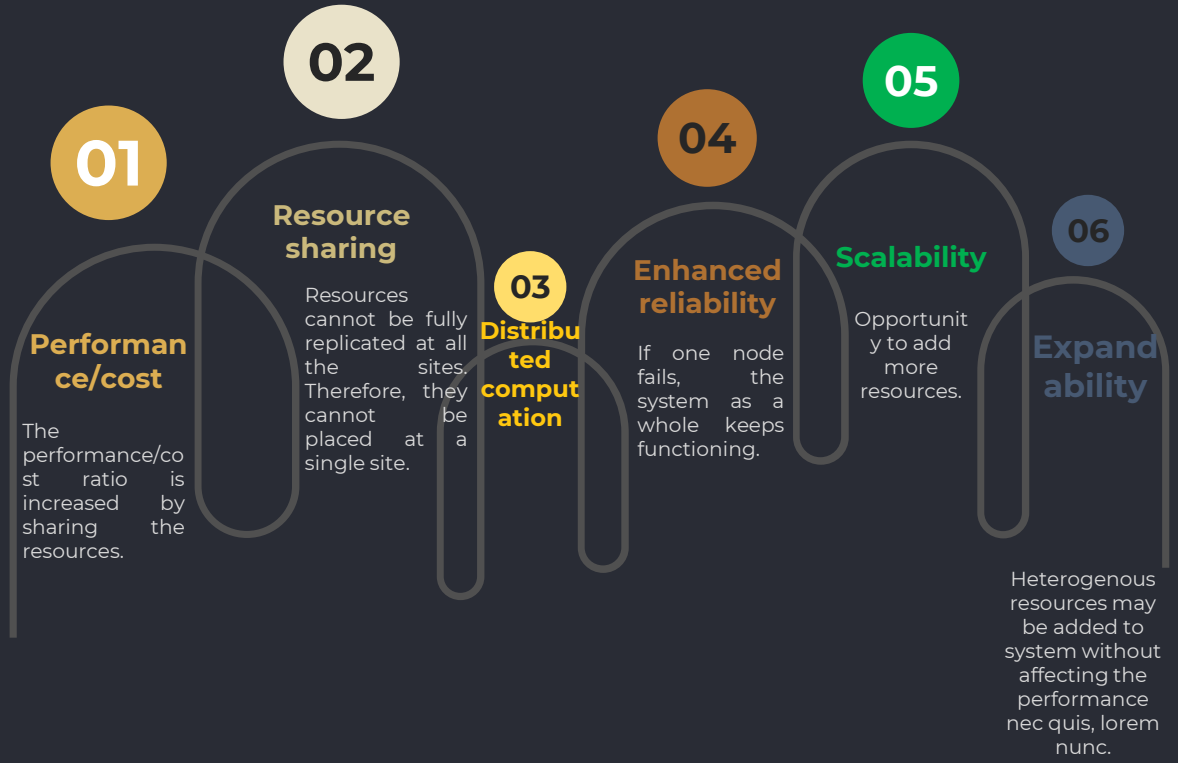
https://vietnamtrips.com/ha-noi/airports-in-hanoi
https://www.bbc.com/news/business-58196477
https://www.business.org/finance/inventory-management/queuing-theory-can-help-business-manage-inventory/

Textbook definition

- A distributed system is a collection of independent computers that appear to the users of the system as a single computer.
  [Andrew Tanenbaum]

- A distributed system is several computers doing something together. Thus, a distributed system has three primary characteristics: multiple computers, interconnections, and shared state.
  [Michael Schroeder]

Motivation


01
Performance/cost
The performance/cost ratio is increased by sharing the resources.
02
Resource sharing
Resources cannot be fully replicated at all the sites. Therefore, they cannot be placed at a single site.
03
Distributed computation
04
Enhanced reliability
If one node fails, the system as a whole keeps functioning.
05
Scalability
Opportunity to add more resources.
06
Expandability
Heterogenous resources may be added to system without affecting the performance nec quis, lorem nunc.

Goals

- To provide HW and SW concerns in modern distributed systems.
- To be informed of distributed systems' main principles: processes, communication, naming, synchronization, consistency, fault tolerance, and security.
- To get familiar with shared memory and distributed memory techniques.
- To understand the critical concepts of virtualization and bare-metal solutions.

Class Schedule, location, office hours

Class Schedule and Location

- Classes will during 08:25-11:15 and 1.00PM-3.45PM (not all days).

Office hours

- Email instructor to schedule a meeting.

Format

Student learning will be evaluated on the basis of the following weighted components:

- Attendance 10%
- Assignments 25%
- Midterm 25%
- Final Exam 40%

Instructor

- Diploma: 2020 HDR (Institut National Polytechnique of Toulouse), 2001 PhD (National Academy of Sciences of Armenia)
- Position in Armenia: Head of Scientific Computing Center
- Positions in abroad: PostDoc at IRIT, France & KFKI, Hungary
- Awards: Armenian President Prize, RINICOM, UK
- Membership: IEEE, RDA, EGI, IDGF, GEANT
- WoS/Scopus: h-index: 9, publications: 50

References

- Distributed Systems: Principles and Paradigms, Andrew Tanenbaum and Maarten van Steen, Prentice Hall

Optional

- Designing Data-Intensive Applications: The Big Ideas Behind Reliable, Scalable, and Maintainable Systems 1st Edition, Martin Kleppmann
- Cloud Computing: A Hands-On Approach Paperback, Arshdeep Bahga, Vijay Madisetti

Assignment

- Cover page: Date, your name, the title of the report, the course
- Font type: Times New Roman
- Font size: 12pt
- Line spacing: double
- Style: Keep your own voice - use the sources to support what you want to present.

Cảm ơn bạn!

DO YOU HAVE ANY QUESTION?

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