

Exam requirements

Runtimes for concurrency and distribution

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Modality

- **Individual or collaborative**
 - Max **group size** ≤ 3 individuals
- Topic chosen freely off a fixed set of topics
- Exam work in **three steps**
 1. Study of the **state of the art** around the chosen topic
 2. Selection of an applicable **real-world scenario** of interest
 3. Implementation of scenario-based **Proof-of-Concept** that proves the candidates' understanding of the subject matter
- Exam work's output has two parts
 - **Technical report** (TR) on the candidate's findings
 - **Oral presentation**
 - Both **written in English**
- Admission to oral presentation upon approval of the TR

Technical Report: main components

■ **Problem statement**

- ❑ Scope (boundary)
- ❑ Purpose (technical and scientific expectations)
- ❑ Aspects to be investigated

■ **Work product**

- ❑ Technical choices made in the realization of the PoC
- ❑ Design of the evaluation experiments
- ❑ Results of the evaluation experiments

■ **Self-assessment**

- ❑ Candidate's own critique of own exam work (achievements, failures)
- ❑ Discussion of the perceived **learning outcomes**

Topics

- A. Exploration of **scalability** challenges and solutions in a real-world scenario of choice
- B. Application of **Paxos** or **Raft** algorithms to real-world scenario of choice
- C. Implementation-aware comparison between the fundamentals of **Paxos** and those of Cynthia Dwork's notion of **collective consistency**
- D. Exploration of real-world situations where **eventual consistency** is known to be soundly used
- E. Exploration of **orchestration** challenges in a real-world microservices architecture
- F. *Student's own proposal* (subject to instructor's approval)

Schedule

- No fixed date for the exam
 - Registration date set to the closest official exam session
- Notification of choice of topic
 - By **18:00 hrs, 15 January 2021**
 - With **explicit declaration of estimated delivery time**
- Bonus applied to early delivery
 - **2 points** if by **18:00 hrs on 16 April 2021**
 - **1 point** if by **18:00 hrs on 11 June 2021**
 - Computed on delivery time, redeemed on passing
- Latest submission time
 - By **18:00 on 01 October 2021**