Distributed Systems

Coursework

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Coursework

• Up on web page
• Deadline march 24
• Read entire description carefully before starting work.
Simulation of a distributed system

• Used to test performance before deployment
• Requires thinking carefully about
  – What issues affect a distributed computation
  – How to identify matters that can be ignored
    • Since they do not significantly affect the process
    • Or can be addressed easily
  – How to manage issues that can’t be ignored
  – Set assumptions that make basic evaluation easier
  – We may need to just simulate the “effect” of some aspects, not their detail operation
Two parts

• A
  – Implement Chang and Roberts leader election

• B
  – Handle failures
  – Open ended. There is no perfect solution.
Example Assumptions

- There is a good operational network
  - We are just simulating that it delivers messages, not the lower level actions like routing or MAC
- Failure detection
  - We assume failures are detected. i.e. some kind of an accurate failure detection is in operation
  - How that effect is simulated is up to you
- There are other implicit issues and assumptions
  - Time and synchronisation
  - Operation in rounds
  - Termination
  - Etc
- It is your task to consider all these and design a meaningful simulation
Faq

• What if a ring edge does not exist among neighbors defined in file
  – You can assume that all edges required for the initial ring, defined by the order of nodes, are present even if not stated
  – In part B, when nodes fail, this no longer holds, and you have to adapt based on the network.
Piazza

• Forum is up
• This is mainly for your discussion
• I will answer some questions
  – Not all, and not immediately

• Sign up link:
  https://piazza.com/ed.ac.uk/spring2020/infr11022