

CS4103 Distributed Systems

Richard Connor

Formal Practical (Programming) Coursework Description

Value: 60% of the coursework component

Deadline: as stated on MMS (19th March 21:00, but always check with MMS!)

The purpose of the coursework is to implement the Paxos protocol among a set of parallel Java processes, and to demonstrate it in action via a printed log. The Java code should be set within the template code provided, carefully following the instructions given for this. Detailed instructions for this are provided on studres in 4103/Coursework.

Assessment

The coursework will be assessed on the following criteria:

1. An implementation of the Paxos protocol within the template provided
2. Well formatted, commented, and documented code
3. A report explaining how you implemented the protocol, including example traces showing some different outcome of your system, and including a discussion of strengths and limitations in (a) your implementation and (b) the protocol itself. (Please submit traces as an appendix of the report.)

Deliverables

Hand in via MMS according to date specified there

- a single document in PDF format containing your report on the project.
- a single zip file containing all of your Java code (just submit classes you have edited or added to the template implementation)

Word limit

There is no formal word limit for the report, however these should be concise and are not expected to be more than, for example, 1500 words (not including traces!) The report probably should not include code.

Marking

See the standard mark descriptors in the School Student Handbook:

http://info.cs.st-andrews.ac.uk/student-handbook/learning-teaching/feedback.html#Mark_Descriptors

Examples on this scale:

A “competent” attempt could for example show evidence of the correct and successful implementation of the protocol, along with a trace of it in action to show the interleaving of processes and a report explaining how you achieved this.

A “good” attempt might include well-written code along with traces demonstrating different outcomes of the protocol, possibly including some simulated unreliability in the message-passing protocol, and a discussion of how well this is handled by the protocol.

An “excellent” attempt might include evidence of different outcomes occurring in more challenging circumstances, such as simulated processor failure, and a discussion explaining these circumstances.

An “exceptional” attempt might include an attempt to overcome failure to reach consensus by allowing the Proposers to make more than a single proposal if they become aware consensus has not been reached, along with appropriate discussion in the report.

Lateness

The standard penalty for late submission applies (Scheme A: 1 mark per 24 hour period, or part thereof):

<http://info.cs.st-andrews.ac.uk/student-handbook/learning-teaching/assessment.html#lateness-penalties>

Good Academic Practice

The University policy on Good Academic Practice applies:

<https://www.st-andrews.ac.uk/students/rules/academicpractice/>