Algorithms for Distributed Systems

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The grade for this course is determined by

- 4 exercises and
- 1 individual project to be presented in class.

1 Exercise 1: I/O Automata

Deadline: November 9

Formulate the distributed termination detection algorithm described by Dijkstra's paper as an I/O automaton. Please comment the individual state transitions in natural language.

The deliverable of this exercise is a written report to be handed out to me in class.

2 Exercise 2: DAJ

Deadline: November 16

Implement the distributed termination detection algorithm described by Dijkstra's paper using the DAJ system.

Use for each node a pseudo-random number generator to determine when/where a node sends messages and when it becomes idle. Choose the parameters such that the system terminates in a reasonable amount of time but also at least one unsuccessful detection run takes place.

The deliverable of this exercise consists of a package (.zip or .gz file) sent to me per email containing

1. the well-structured and well-documented source code,
2. the compiled class file(s), and
3. an HTML page into which the program is embedded as an applet with a description of the algorithm.