Workgroup and Workflow Management Systems-Written Test of Feb. 8th, 2011

Family name ——————— First name ——————— Politecnico ID # ———

Master Course in ————————————
Please, fill in this sheet carefully. All answers must be provided on this sheet, which must be returned at the end of the test. No additional sheet will be considered[1].

Rules. The examination is passed if the student obtains at least 13 points out of a total of 25 points available for this test, and the grand total of obtained points, including those obtained with a presentation or a project, is greater than or equal to 18. Use of books, handbooks, lecture notes is not permitted: only the sheets provided by the teacher can be used. All the questions must be answered, at least partially: tests in which even one question has not been answered will not be evaluated. Duration of the test: 2 hours.

Exercises

(1) Define some reasonable criteria according to which one could measure the *complexity* of a process model, i.e. of the schema of a process.

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[1]**Remark**. Complete specifications whenever needed. Clarity and order will be taken into account for the evaluation.

(2) The stock exchange market enables one to sell or buy stocks of companies regularly listed in the market. For every action (sell/buy), there is a counterpart (buy/sell): the stock exchange market is just a big, automated superstore where everyone sells and buys stocks.

In order to support exchange tasks in coupling sellers and buyers for trading, and to help fixing the price of the stocks, the *Best-eTrade* company developed an electronic system. First, the buyer opens an account providing personal data, login and pwd, and transferring an initial amount. The system then deposits the amount to a trading account that is listed under the user identification name. When the buyer logs onto the system, he/she can place an order by selecting the company's name and the number of stocks to sell or to buy. The seller can sell only the stocks already in his/her account: the buyer can buy stocks up to the total amount currently available. From now on, the system informs the seller/buyer about the current fixing of the selected stock and waits for a confirmation. The system then uses the network to put the order on the *Nasdaq* (external) system and on all the relevant trading external networks: these actions are done in parallel.

The *Nasdaq* system, or any other trading system, looks for someone who is willing to buy/sell the number of stocks of the required company and, instantaneously, executes the trading transaction between the buyer and the seller. As a result, the trading operation is classified as "success" or "failed". If "failed", the system provides feedback forms for both seller and buyer, in which some justifications are delineated: an external system is in charge to analyze them and classify both buyer and seller for *Nasdaq* system proposes. In the "success" case, the trade information is then sent to a clearinghouse where the information is processed. Next, the shares are removed from the seller's account and loaded in the buyer's account. Finally, the process ends.

Provide a reasonable schema of the outlined process(es), according to the modeling formalisms of WIDE. Please, suitably model all the *pre-conditions* and *post-conditions* of every task.

(3) With respect to the process described in Exercise 2, provide an example of a *business* transaction - and the related compensating transaction - considering when the trading information is sent to the clearinghouse.

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space reserved to your answer - exercise 3
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(4) Define the main criteria according to which a process is "workflowable". Why is that concept so relevant?

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This part for use by the teacher, only.

Ex. 1	Ex. 2	Ex. 3	Ex. 4	**Total**
4	12	5	4	25