Workgroup and Workflow Management Systems - Written Test of Jul 17th, 2006

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) Describe the concept of *expected exception* as defined for the context of a *Workflow Management System*. Provide a taxonomy of expected exceptions according to their triggering event.

space reserved to your answer

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

(2) When a company wants to start the production of a new good in a new plant, the board of administrators selects three external companies and asks them for a suitable analysis concerning the possible impact of the new good on the market. If the provided feedback is positive, the project is started. A team of engineers designs the new good, providing all the details: the board evaluates all these details, possibly asking the engineers for some modifications to the good, till a final approval is obtained.

At the same time, a different team of engineers identifies the suitable location for the plant: the board also evaluates the details about the location, possibly requiring some modifications, till an approval is obtained. Next, the project of the plant is presented to the municipality of the chosen location. The municipality may require some changes, concerning only the plant and its impact on the location and not the good. The company must obtain an approval from the municipality, in order to continue the process. After the approval has been obtained by the local municipality, a similar approval must be obtained from the national government. After the approval has also been obtained from the national government, the construction of the plant can be started. After the construction has been completed, the plant becomes productive and the production of the good starts.

From time to time, but at least once in a year, the board of administrators sends some inspectors, internal to the company, to verify the impacts of the plant on the neighborhood. Should any unexpected aspect be identified, the production is immediately halted till all the measured parameters return inside the normal ranges.

At any time, the local municipality can send external inspectors: should any abnormality be identified, inspectors are entitled to immediately halt the production inside the plant. The production can be resumed only after a commission provides suitable authorizations.

Provide a reasonable schema of the outlined process (process model), according to one of the following modelling formalisms: *WIDE* model, *Workflow Management Coalition* model, Petri nets.

(3) Describe the possible usages of data-mining techniques when applied to workflow data, stating which kind of data are best suited and what conclusions can be inferred.

space reserved to your answer - exercise 3

space reserved to your answer - exercise 2

space reserved to your answer - exercise 2

(4) Consider the and-split and or-split connectors as defined by the *Workflow Management Coalition.* Map these concepts to Petri nets (suggestion: consider the workflow patterns as defined by van der Aalst).

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This part for use by the teacher, only.

Ex. 1	Ex. 2	Ex. 3	Ex. 4	**Total**