AG Heterogene Informationssysteme
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Middleware for Heterogeneous and Distributed Information Systems – Exercise Sheet 13

Wednesday, February 4, 2009 – 10:00 to 11:30 – Room 48-379

Business Process Modeling and (Re-)Engineering

Compu Global Ltd. is a retail company that is organized in three departments, namely the customer services, the billing department, and the warehouse. Customers submit orders to the customer services department. Here, Ann (the typist) enters the data into the company's purchase order system. A member of the billing department (Bob or Catharine) now validates the customer's credit card number using a dedicated tool. If the check fails, Ann is asked to send a letter of refusal to the customer. Otherwise, either David or Emily (the warehouse clerks) is asked to check the inventory database. If the ordered goods are out of stock, Ann sends a letter of refusal to the customer. Apart from that, if the quantity on stock is below some given threshold the warehouse clerk gives the supplier a call to reorder goods (the supplier's business hours are 9:00 am to 4:00 pm). In any case, a billing staff member is asked to prepare a bill using the company's invoice system. Once this is done, the goods are packaged by a warehouse clerk. Afterwards, the billing department charges the customer's credit card and, finally, the packaged goods are dispatched from the warehouse.

1. What is the aim of business process reengineering?

2. Name the *three dimensions of workflow*! What people, systems, objects, and concepts described in the sample scenario belong to each dimension of workflow?

3. Model the control flow of the business process described above! Identify activities, control connectors, and conditions and assemble a control flow graph!

4. Add the flow of data to the control flow graph! (An order form includes the customer's address, the item number and quantity, and the credit card number.)

5. In class, several forms of process optimization based on a static analysis have been discussed. Briefly explain each of them! Which are applicable here? Create an optimized version of the process model!

Workflow Management

The two main building blocks of a workflow management system are the buildtime component and the runtime component. The buildtime component allows defining, testing, and managing all workflow related information while the runtime component drives business processes, i.e. it navigates through process models, invokes suitable applications, and presents users with appropriate workitems.

1. The models created during business engineering are generally insufficient for producing a workflow implementation. What additional information has to be provided to a workflow management system to drive the business process? Use the workflow definition language to specify the sample business process!

2. When a process model is put into production it first needs to be *frozen*. What does freezing mean in this context? Why is it needed? What are the consequences?

3. Assume the (optimized) business process is driven by a workflow management system. Say, at 8:00 o'clock in the morning an order form arrives at the customer services department that contains a valid credit card number and the item number of goods which are low on stock, i.e. a reorder must be placed. What activities are invoked? At what time / in which order are these activities invoked? What mechanism is used to assign work items to staff members and what alternatives exist in this context?

4. Assume that Ann quits her job and Andy (the new typist) is hired. How does the workflow management react to this change? What happens to active workflow instances?

5. Assume that the purchase order business process is revised. The updated process model gives customers the option to pay by bank transfer instead of credit card and both, the control flow and the data flow have been adapted. How does the workflow management react to this change? What happens to active workflow instances?