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Abstract

## WORKFLOW APPLICATION AND WORKFLOW ENGINE

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Workflow is computerized facilitation or automation of a business process, in whole or part. It is a kind of technology that makes software more flexible by abstract control logic from concrete manipulation. There are lots of researches on Workflow technology from different aspects, and specifications of workflow system and engine are established by international organizations like Workflow Management Coalition (WfMC) and Object Management Group (OMG). These specifications establish a solid foundation to build a workflow application. Though workflow technology has been developed more than ten years, there is still great space to develop in this area. And though it has been used widely, many people still don't know how to develop a workflow application.

To do some researches on workflow, we must be familiar with it first. In this paper, I first give a case study on how to establish a web-based workflow application. We build a system to support a government procedure of applying for small restaurant license. I begin from the very beginning, from requirement analysis to system design and implementation. Step by step I clearly introduce the procedure for workflow application development. During the introduction of system development, I explain how to map activity diagram to workflow process definition, how to choose different tools in workflow application development, how to define workflow processes, how to use an available workflow controller to develop workflow application and how to run a workflow application. During the introduction of system development, I propose a

workflow application structure for web-based workflow application which will facilitate the development and modification of workflow application. I also build a workflow application framework to support the development of such web-based workflow application. At last, I abstract some general considerations for the workflow application development based on our development procedure.

After this case study, I have a further discussion about the workflow controller. I first introduce the control logic in current workflow controller, and find that it is not very fit for some situations. So I propose two kinds of workflow controllers: one kind of controller is small and could be generated automatically which is used to control specific process; the other is an objective-driven workflow controller which will generate process by itself using available activities according to user's objective. I gave a method for the automatic controller generation and three algorithms for objective-driven workflow process generation and scheduling.