

Dynamic Human Workflow handling by PL/SQL

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Abstract

Human task assignment is a predominant operation in organizational problem-solving process which can rapidly change from situation to situation. Current workflow handling systems are less-adaptable and less-customizable regardless of whether the workflows are manual or automated. This study introduces a series of algorithms written in SQL to handle human task workflows by executing XML based objects.

The given solution consists of entity objects which can either be a single person or a group of people. The two types of entity objects were connected to each other by the relationships. The relationships from one entity to another entity will hold the actions that the first entity can perform. Based on the action taken by one entity will decide the proceeding path of the workflow. These entity objects consist with a property called status which can be true, false, or null which represents whether it is available for the execution or not.

SQL scripts were developed to handle the workflow components written in XML format which will provide a better opportunity to gather information of each entity and relationship objects through Graphical User Interfaces. As the first step of the SQL script, it will convert the XML data into a SQL table format which provide a better way to handle the information gathered.

Backward Process is used whenever a component is being executed, previous components from that level will be checked for status values and it will set status false whenever finds a component without any status value. This process will prevent the execution of unwanted branches of the workflow and speedup the execution process because only the components with true or null as the status value will be considered in the execution time.

Reset Workflow is used to reset status values of the objects from directed object onwards when the path of the workflow directs to a previous level of the workflow. It will make sure that previously taken actions will not effect on the next execution cycle.

Execute an Action method will handle the actions taken corresponding to a certain object. It will decide the proceeding path of the workflow hierarchy according the action taken. Then it invokes the “execute next component” method to move along in the selected path.

Execute next component method will check all the other objects related to the object which used to invoke the method. It will execute all the logical operations based on the action taken by an entity in order to decide the proceeding path of the workflow.

Method given in the study was tested by integrating to an existing system where it showed the capability of executing complex workflows accurately. Contrary to manual workflow engine, this architecture is efficient and effective in business process as it can increase the performance of organizational workflow allocation. Instead of using a separate application, this solution can be integrated with an existing system since it is very adaptable and customizable. Approach to handle scheduled tasks can be identified as a major future aspect for the study where the performance can also be improved in future.

Keywords: *Organizational workflow, Automated workflow engine, SQL procedures*