Database Viewer using Web Dynpro Java

Applies to:

SAP NetWeaver 04s.

Summary

This article will explain in step by step about how to read the database contents in Web Dynpro and also about dynamic creation of view elements and context attributes.

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Introduction

This article explains in step by step about how to read the database contents in Web Dynpro for java and also about dynamic creation of view elements and context attributes for the corresponding database table. By following these steps, you can have your own database viewer which will be similar to ABAP transaction SE16, i.e Underlying database is abstracted to the UI which is achieved through JDBC standards.

Code and view layouts mentioned in this article could be optimized based on your need.

Prerequisites

Access to SAP NetWeaver AS Java and SAP NetWeaver Developer Studio installed in your system

Step by Step Solution for Building Database Viewer:

1. Create Web Dynpro Project

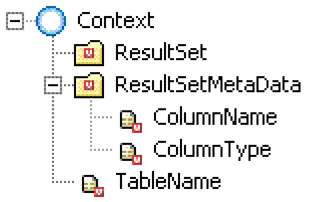
Open SAP NetWeaver Developer Studio. Click on New-> Web Dynpro Project. Name the project as "DBViewer".

2. Create Web Dynpro Application, Component, Window

Open the created project. Right Click on Application and click on "Create Application". Name the application as "DBViewer" and specify the package details. Click on Next. Choose the option "Create a new Web Dynpro component" . Deselect the option of creating new view and accept default values.

3. Create Contexts in Component Controller

Open the Web Dynpro Component Controller DBViewer. Open the Context Tab. Create node named "ResultSet" and another node named "ResultSetMetaData". Create two attributes named "ColumnName" and "ColumnType" under "ResultSetMetaData" node. Create attribute named "TableName" under Root context as in the following figure.



3.1 Create Method for Retrieving Database Table Contents in Component Controller

Open the Methods tab of Component Controller and create a method named "RetrieveData".

Open the implementation of this method and paste the following code.

```
      IWDMessageManager messageMgr = wdComponentAPI.getMessageManager();
      wdContext.nodeResultSet().invalidate();
      wdContext.nodeResultSetMetaData().invalidate();



      // find if ResultSet has dynamic attribtues
      boolean hasAttr = false;
      for (Iterator iter =
    wdContext.nodeResultSet().getNodeInfo().iterateAttributes();
    iter.hasNext();) {
            hasAttr= true;
            break;
      }
      // if ResultSet has some dynamic attributes, remove them first
```

```
  if(hasAttr == true)
  {
        wdContext.nodeResultSet().getContext().reset();
  }

try {

  // Get the database connection
    InitialContext dbInitContext = new InitialContext();
    Properties sysProperties =  System.getProperties();
    String sysname = sysProperties.getProperty("SAPSYSTEMNAME");
    String dbName = "jdbc/" + "SAP" + sysname + "DB";
    DataSource dataSource = (DataSource) dbInitContext.lookup(dbName);
    Connection conn = dataSource.getConnection();
    String tableName = wdContext.currentContextElement().getTableName();
    String SelectStmt = "Select * from" .concat(" " + tableName);
    // Prepare the SQL statements
    PreparedStatement stmt = conn.prepareStatement(SelectStmt);
    // Execute the Query
    ResultSet resultSet = stmt.executeQuery();
    // Get the result set metadata
    ResultSetMetaData resultMetaData = resultSet.getMetaData();
    // resultMetaData contains DB Column details

    int numColumns = resultMetaData.getColumnCount();

    // Create an element of ResultSetMetadata for every table column
(attribute)
    // Create a dynamic attribute for the context of ResultSet Node for
every table column
    String[] attributes = new String[numColumns];
    for (int columnIndex = 1; columnIndex <= numColumns; columnIndex++) {
          IResultSetMetaDataElement element =
wdContext.nodeResultSetMetaData().createResultSetMetaDataElement();
          String columnName = resultMetaData.getColumnName(columnIndex);
          String columnType = resultMetaData.getColumnTypeName(columnIndex);
          element.setColumnName(columnName);
          attributes[columnIndex-1] = columnName;
```

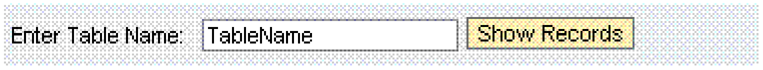
```
                element.setColumnType(columnType);
                // Adding dynamic attribtue to ResultSet Node

wdContext.nodeResultSet().getNodeInfo().addAttribute(columnName,"java.lang.S
tring");
                wdContext.nodeResultSetMetaData().addElement(element);
         }


         // Loop through every record of DB Table and create an element in
ResultSet Node
       while(resultSet.next())
         {
                IResultSetElement element =
wdContext.nodeResultSet().createResultSetElement();
                for (int recordIndex = 0; recordIndex < attributes.length;
recordIndex++) {
                    // If the Object is null, make it as empty
                      if(resultSet.getObject(attributes[recordIndex]) != null)
                       {

element.setAttributeValue(attributes[i],resultSet.getObject(attributes[recor
dIndex]).toString());
                       } else
                       {

element.setAttributeValue(attributes[recordIndex],"");
                       }
                }
                wdContext.nodeResultSet().addElement(element);
         }


         stmt.close();
         conn.close();
      } catch (NamingException e) {
       messageMgr.reportException(e.getMessage(),false);

      } catch (SQLException e) {
       messageMgr.reportException(e.getMessage(),false);
      } catch(Exception e)
      {
       messageMgr.reportException(e.getMessage(),false);
      }
```

3.2 Create Views and Plugs.

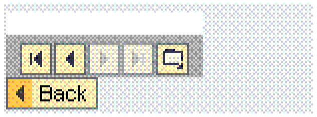
Create a view named “TableInputView” (for getting the table name from the user) and “TableResultView” (for displaying the database records). Map TableName Attribtute from Component Controller to TableInputView. Map ResultSet and ResultSetMetaData Nodes from Component Controller to TableResultView.

Create layout for both the views as in the following picture.

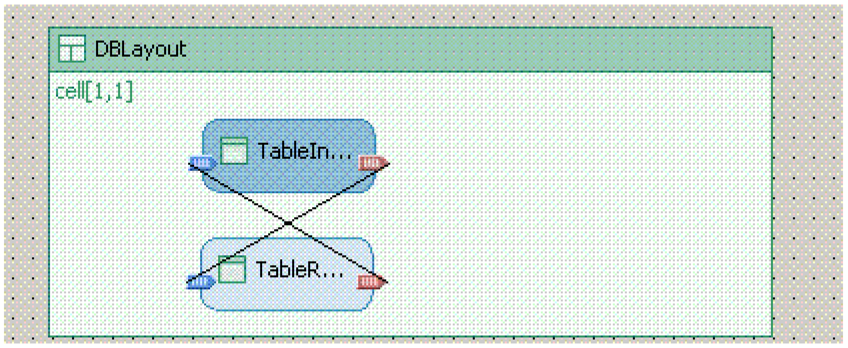
(TableInputView)



(TableResultView)



Open the “DBViewer” window and create a Grid Layout (1 Column by 1 Row). Embed these two views inside the layout and make “TableInput” view as default. Create inbound and outbound plugs in both the views and connect them through data link (as in the following picture)



4. View Implementation

4.1 Input View Implementation

Open the View “TableInputView” and create an action for “ShowRecords” and paste the following code for the action implementation. This action will be triggered on click of “Show Records” Button.

```
        wdThis.wdGetDBViewerController().RetrieveData();
        wdThis.wdFirePlugToResFromInput();
```

4.2 Result View Implementation

Open the View “TableResultView” , create a context node called ViewResultSet (Bind this context as datasource in the table) and paste the following code in wdDoModifyView.

```
   // First, Delete all the dynamically created view elements
           view.resetView();
           // Get the Root Transparent Container
                IWDTransparentContainer container = (IWDTransparentContainer)
view.getElement("RootUIElementContainer");
                // Get the Table
                IWDTable table = (IWDTable) view.getElement("Table");


                       for (int columnIndex = 0; columnIndex <
wdContext.nodeResultSetMetaData().size(); columnIndex++) {


                       // Create Table Cell Editor
                       IWDTextView editor = (IWDTextView)
view.createElement(IWDTextView.class,
"TableColumnTextViewEditor"+columnIndex);

   editor.bindText(wdContext.nodeViewResult().getNodeInfo().getAttribute(wdCo
ntext.nodeResultSetMetaData().getResultSetMetaDataElementAt(columnIndex).get
ColumnName()));


                       // Create Table Cell Header

                       String columnHeader1 = "TableColumnCaption"+columnIndex;
                       IWDCaption columnCaption1 = (IWDCaption)
view.createElement(IWDCaption.class, columnHeader1);

   columnCaption1.setText(wdContext.nodeResultSetMetaData().getResultSetMetaD
ataElementAt(columnIndex).getColumnName());


                       // Create Table Column
                       IWDTableColumn column = (IWDTableColumn)
view.createElement(IWDTableColumn.class, "TableColumn" + columnIndex);
                       column.setTableCellEditor(editor);
                       column.setHeader(columnCaption1);
                       table.addGroupedColumn(column);

                       }
```

And paste the following code in `onPlugFromInputToRes`.

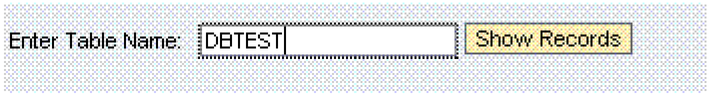
```
// First remove the dynamic attributes of ViewResult context node
      boolean hasAttr = false;
             for (Iterator iter =
   wdContext.nodeViewResult().getNodeInfo().iterateAttributes();
   iter.hasNext();) {
                    hasAttr = true;
                    break;
              }
              if(hasAttr == true)
              {
                    wdContext.nodeViewResult().getContext().reset();
              }


      // Create dynamic attribute in ViewResult context node
      String[] attributes = new
   String[wdContext.nodeResultSetMetaData().size()];
        for (int columnIndex = 0; columnIndex <
   wdContext.nodeResultSetMetaData().size(); columnIndex++) {
              String columnName =
   wdContext.nodeResultSetMetaData().currentResultSetMetaDataElement().getColum
   nName();
              attributes[columnIndex] = columnName;

      wdContext.nodeViewResult().getNodeInfo().addAttribute(columnName,wdContext
   .nodeResultSetMetaData().getNodeInfo().getAttribute("ColumnName").getDataTyp
   e());
            wdContext.nodeResultSetMetaData().moveNext();
      }


        // Retrieve the database contents from the controller context node of
   ResultSet and assign those values to ViewResult
        for (int recordIndex = 0; recordIndex <
   wdThis.wdGetDBViewerController().wdGetContext().nodeResultSet().size();
   recordIndex++) {
            IPublicDBViewer.IResultSetElement controllerElement =
   wdThis.wdGetDBViewerController().wdGetContext().nodeResultSet().getResultSet
   ElementAt(recordIndex);
            IPrivateTableResultView.IViewResultElement viewElement =
   wdContext.nodeViewResult().createViewResultElement();
            for (int j = 0; j < attributes.length; j++) {
                String attrValue = 
controllerElement.getAttributeValue(attributes[j]).toString();
                viewElement.setAttributeValue(attributes[j],attrValue);

            }
            wdContext.nodeViewResult().addElement(viewElement);
    }
```

Implement the Action for Back Button with the following Code:

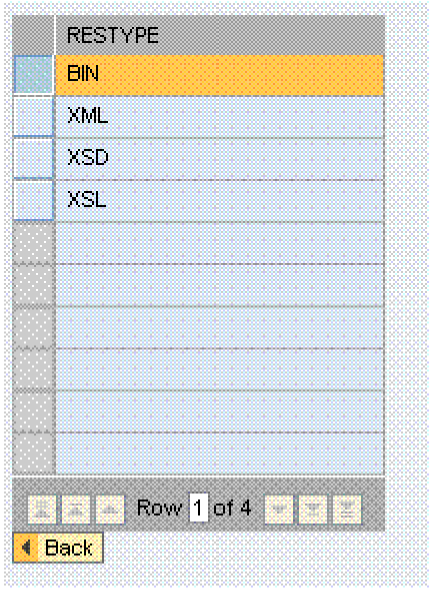
```
wdThis.wdFirePlugToInputFromRes();
```

4.3 Deploy and Run the Application

Build the project and deploy the archive in SAP AS Java. Run the application. Application initial page will looks like



On click of "Show Records" button page will looks like



RESTYPE
BIN
XML
XSD
XSL

If there are multiple columns, all the columns and its corresponding row values will get displayed here.

Related Content

- https://www.sdn.sap.com/irj/sdn/developerareas/Web Dynpro
- https://www.sdn.sap.com/irj/sdn/developerareas/Web Dynpro?rid=/library/uuid/49f2ea90-0201-0010-ce8e-de18b94aee2d
- http://help.sap.com/saphelp_erp2005vp/helpdata/en/15/0d4f21c17c8044af4868130e9fea07/frameset.htm

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