

# Fun with PL/SQL Server Pages



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# Introduction

- ◆ Examples of PSPs in action
  - Document your database with PSPs
  - Output the DDL to recreate database objects
  - Dynamically create a Microsoft Excel spreadsheet with data from the database
  - Get parameters on an HTML form and control what data is retrieved and how it is sorted.
  - Facilitate electronic data interchange by dumping data from a database into XML.

# Just a Quick Review

- ◆ What is a PSP?
  - PSP is to PL/SQL as ASP is to Visual Basic
  - PSP is to PL/SQL as JSP is to Java
- ◆ Simply put:
  - A PSP is HTML with embedded “scriptlets” written in PL/SQL

# A (very) Short Tutorial

- ◆ Four basic tags
  - Declaratives, marked `<%@ ... %>`
  - Declarations, marked `<%! ... %>`
  - Included values, marked `<%= ... %>`
  - Scriptlets marked, `<% ... %>`
- ◆ PSPs are written in ordinary text files
- ◆ Compiled with command line utility:  
loadpsp

# Underlying Architecture

- ◆ OAS PL/SQL Cartridge or
- ◆ WebDB Lightweight Web Server or
- ◆ 9iAS mod\_plsql (also PL/SQL Gateway)

and

- ◆ PL/SQL Web Toolkit loaded in the database
- ◆ PSPs compile to PL/SQL procedures that call the Web Toolkit

# Documenting Your Database

- ◆ PSPs can be used to document our sample database.
- ◆ Always start a project with the data
  - Create a cursor package
  - **Example:** A cursor package for the system catalog
- ◆ Now create the PSP
  - **Example:** My database documentation PSP

# Database Definition for TMS

## Table Definitions

### TASKS

Tablespace: CWMS                      Pct Free: 10                      Initial Extent: 51200                      Created: 03/23/2001 08:29  
    Pct Used: 40                      Next Extent: 51200                      Last Change: 06/25/2001 09:34  
    Min Extents: 1                      Last Analyzed:  
    Max Extents: 121  
    Pct Increase: 1

### Columns

Name	Null Vals?	Datatype	Length	Dec. Places	Dflt	Comments
TASK_TYPE	N	VARCHAR2	30			Type of Task
TITLE	N	VARCHAR2	70			Text describing the problem to be solved or the work to be done.
DESCRIPTION	N	VARCHAR2	2000			Text describing the problem to be solved or the work to be done.
PROJECT_TASK_ID	Y	VARCHAR2	30			
AFFECTED_APPLICATION	N	VARCHAR2	10			Acronym for the Application System affected by this task.
AFFECTED_FILE	Y	VARCHAR2	30			Name of an affected module or doc, if any. Create subtasks if more than one.
AFFECTED_FILE_TYPE	Y	VARCHAR2	30			Type or module or file affected, for instance Word, SQL *Plus, or C.

# Generalizing this Report

- ◆ Original version is limited
  - Can only document objects visible to the owner of the procedure
  - Needs to be “Invoker’s Rights”
- ◆ PSP can’t create Invoker’s Rights modules
  - So, we have to make a post-compile change

```
PROCEDURE database_definition (  
  owner IN VARCHAR2 default USER,  
  table_name IN VARCHAR2 default '%')  
AUTHID CURRENT_USER AS  
  BEGIN NULL;  
  http.prn ('  
  ');
```

# Database Scripts

- ◆ Use the same cursor package:  
Code re-use is one of the benefits
- ◆ Just change the PSP:
  - contentType="text/plain" or
  - Enclose the code in <PRE> </PRE>
  - Example: [Code](#) for Table DDL, [Output](#)
  - Example: [Code](#) for Procedure DDL

# Alternative Procedure PSP

- ◆ Here is another way to output DDL for a procedure: [Example](#)
- ◆ Notice the use of a OWA\_UTIL procedure
  - Never re-invent the wheel
  - Check out OWA\_UTIL and other toolkit procedures

# Reporting with Query Criteria

- ◆ 2 Screen Application
  - Query and Sorting Criteria
  - Report
- ◆ Start with a Cursor Package:
  - **Example:** Cursor Package with a Cursor Function
  - The function returns a REF CURSOR

# Query Screen

- ◆ Here is the PSP for the Query Screen:  
**Example**
- ◆ Notice that this is plain HTML
  - Plain HTML can be a PSP
  - This adds security to the application
    - Have to hack the database to change the page
    - You can even limit who can see it - grant **execute**



# Task Management System

## Task Report

Lists tasks, by assigned worker, by creator, or by date updated.

Enter query criteria for Tasks

**Task Type:**

**Affected Application:**

**Priority:**  to

**Status:**

- Closed
- On-Hold
- Open

**Submit By:**

**Submit Date:**  to

**Due Date:**  to

**Entry Date:**  to

**Updated By:**

**Update Date:**  to

**Assigned By:**

**Assigned To:**

**Assignment Date:**  to

# Producing the Report

- ◆ Each field on the form is a parameter
- ◆ Pass the parameters to the cursor function
- ◆ Returns a REF CURSOR with selected rows
- ◆ Loop through the rows to produce the report
- ◆ **Example:** PSP for the report

Tasks Report - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Print Edit Discuss Real.com

Address [http://synx1.smdi.com/test\\_dasis2/tms\\_report\\_fun](http://synx1.smdi.com/test_dasis2/tms_report_fun) Go Links >>

## Task Report by Assigned To, Assignment Date

Title	Description	Affected application	Due date	Completion date	Priority	Status	Submit by/ Submit date	Assigned to/ Assigned by/ Assignment date	Updated by Update date
Explore possibility of States using SAMHDA software for their data	Explore possibility of States using SAMHDA software for their data	UNKNOWN			5	<input type="radio"/>	RMASON 04/18/2000	JMOELLER TMS 05/28/2000	TMS 05/02/2000
Make non-State approved facilities available to States	Make non-State approved facilities available to States	UNKNOWN			5	<input type="radio"/>	RMASON 06/28/2000	JMOELLER TMS 11/17/2000	TMS 11/17/2000
Adapt list search functions so Synectics/MPR/OAS can search I-SATS	Adapt list search functions so Synectics/MPR/OAS can search I-SATS	ISATS		11/26/2000	5	<input type="radio"/>	RMASON 10/18/2000	JMOELLER TMS 11/24/2000	TMS 11/24/2000
Make Contact System available outside Synectics	Make Contact System available outside Synectics	UNKNOWN			5	<input type="radio"/>	TMS 03/23/2001	JMOELLER TMS 03/23/2001	TMS 03/23/2001
Locator file for eLocal.com	Locator file for eLocal.com	NSATS			5	<input type="radio"/>	DEBORAH TRUNZO 08/26/2000	JMOELLER TMS_TESTER 04/09/2001	TMS_TESTER 03/23/2001

[Change Query Criteria and query again](#)

# Reporting to Excel or Word

## ◆ But what if we need a spreadsheet?

- `<%@ page language="PL/SQL"  
contentType="application/vnd.ms-excel"%>`

## ◆ Or a Word Document?

- `<%@ page language="PL/SQL"  
contentType="application/ms-word"%>`
- While Word (and WordPerfect for that matter) can read HTML, you might want to try RTF. See: [http://home1.stofanet.dk/peter\\_lorenzen/](http://home1.stofanet.dk/peter_lorenzen/)

A15 = Adapt list search functions so Synectics/MPR/OAS can search I-SATS

A B C D E F G H I J

# Task Report by Entry Date Desc

	Title	Description	Affected application	Due date	Completion date	Priority	Status	Submit by/ Submit date	Assigned to/ Assigned by/ Assignment date	Updated by/ Update date
1	Locator file for eLocal.com	Locator file for eLocal.com	NSATS			5	0	DEBORAH TRUNZO 8/26/00	JMOELLER TMS_TESTER 4/9/01	TMS_TESTER 3/23/01
2	Explore possibility of States using SAMHDA software for their data	Explore possibility of States using SAMHDA software for their data	UNKNOWN			5	0	RMASON 4/18/00	JMOELLER TMS	TMS 5/2/00
3	Make non-State approved facilities available to States	Make non-State approved facilities available to States	UNKNOWN			5	0	RMASON 6/28/00	JMOELLER TMS	TMS 11/17/00
4	Adapt list search functions so Synectics/MPR/OAS can search I-SATS	Adapt list search functions so Synectics/MPR/OAS can search I-SATS	ISATS		11/26/00	5	0	RMASON 10/18/00	JMOELLER TMS	TMS 11/24/00
5	Make Contact System available outside Synectics	Make Contact System available outside Synectics	UNKNOWN			5	0	TMS 3/23/01	JMOELLER TMS	TMS 3/23/01

[Change Query Criteria and query again](#)

# Generating XML

- ◆ XML: The standard for Electronic Data Interchange (EDI)
- ◆ XML Toolkit is easier for simple XML output, and good for XML input too.
- ◆ IMHO, PSP is easier for more control over XML output
- ◆ **Example:** PSP for writing XML

http://synx1.smdi.com/test\_dasis2/tms\_xml\_fun?p\_assigned\_to=JMOELLER - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Print Edit Discuss Real.com

Address http://synx1.smdi.com/test\_dasis2/tms\_xml\_fun?p\_assigned\_to=JMOELLER Go Links >>

```
<?xml version="1.0" ?>
- <ASSIGNED_TASKS>
- <TASK TASK_ID="874">
  <TITLE>Locator file for eLocal.com</TITLE>
  <DESCRIPTION>Locator file for eLocal.com</DESCRIPTION>
  <AFFECTED_APPLICATION>NSATS</AFFECTED_APPLICATION>
  <ASSIGNMENT_DATE>04/09/2001</ASSIGNMENT_DATE>
  <DUE_DATE />
  <PRIORITY>5</PRIORITY>
  <STATUS>0</STATUS>
- <TASK_UPDATES>
  - <COMMENT TASK_UPDT_ID="917">
    <UPDATE_BY>JERRY</UPDATE_BY>
    <UPDATE_DATE>08/26/2000</UPDATE_DATE>
    <TEXT>Awaiting feedback on sample file</TEXT>
  </COMMENT>
  </TASK_UPDATES>
</TASK>
+ <TASK TASK_ID="821">
```

Internet

# Design Documents from Designer Repository

- ◆ The Oracle Repository
  - “The documentation’s in the repository.”, not where management can see it.
  - The reports supplied with Designer don’t do it.
- ◆ As usual, start with a cursor package:
  - **Example:** cursor package for the repository
  - **Example:** cursor package body for the repository
- ◆ Then write a PSP to generate the docs:
  - **Example:** Functional Requirements PSP

# Functional Requirements

## Task Management System

This System includes the Problem Tracking portions of the original Client Data Management System (CDMS), plus new To-Do list features.

### Description

Maintains a list of tasks to be accomplished by Synectics. These include, but are not limited to Problem Reports, To Do List Items, Module Tests, and Data File requests. The system allows tasks to be broken down into multiple layers of subtasks, and to be assigned to workers. It also allows workers to enter dated updates about the work done on the task.

### Objectives

The most important difference between TMS and other To Do, or Task management applications is that it allows workers to add dated text that updates the status of the task. Most other similar systems have only a single text field in which to update the status of a task, with no automatic date to tell when work was done. They therefore cannot create a report showing only the work that was done during a given period, such as for a monthly or weekly status report.

### Activity Report

#### Description

List all new tasks, updates to existing tasks, and tasks closed during a given period. The period is usually a month, but can be any period.

#### Entities Used

Name	Create	Retrieve	Update	Delete	Remarks
PRODUCT SUPPORT INFO	N	Y	N	N	
TASK	N	Y	N	N	

# Conclusion

- ◆ PSPs are easy - just HTML with a little PL/SQL
- ◆ PSPs are versatile
  - Generate Database Documentation and DDL
  - Generate Reports in multiple formats
    - Excel, Word
    - XML
- ◆ PSPs are Fun! Now see what you can do with them.

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