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**14. KONFERENCIJA
HRVATSKE UDRUGE
ORACLE KORISNIKA**

13. - 17. LISTOPAD 2009. ROVINJ

Application Express – How to become an Apex Developer

Denes Kubicek, APEX, Oracle and IT Consulting
www.opal-consulting.de

Denes Kubicek



Oracle ACE APEX Developer of the Year 2008

Blog & Tools:

<http://www.deneskubicek.blogspot.com/>

<http://apex.oracle.com/pls/otn/f?p=31517:1>

<http://www.opal-consulting.de>

I have answered over 3000 Emails regarding Apex within the last 12 Months. The most of the questions – over 80 % – came from users with little or no knowledge about Apex:

1. Forms Developers
2. Oracle DBA's
3. J2EE Developers
4. Programmers with a background different than Oracle

How?

Why?

It doesn't
work...

Where?

**Please
help...**

I'm stuck.

*Could you
please...?*

**I am
desperate
...**

Viele Fragen darüber, wie man mit APEX anfangen sollte

„...I am pushing Apex and Dashboards this year to augment my customer base of mainly Oracle Forms/Reports/Discoverer using App Server (which I really dislike!).“

„...I work for local government in Belfast, Northern Ireland. I have been an Oracle FORMS developer for about 8 years, and within the last 8 months have moved over to Oracle APEX.“

„I recently finished my first Oracle certification: OCA PL/SQL Developer. I feel I'm at a cross roads now. My company uses three competing technologies: Forms, J2EE, and ASP. Based on my current knowledge set I've decided not to pursue ASP so it's between PL/SQL and J2EE.

I've been using Apex now for a little over a year and love it! But Oracle seems to be leaving Forms in favor of J2EE and the ADF. I wonder if Apex has a similar shelf life. Where do you feel my time learning is better spent? Does J2EE really offer any advantages over Apex?“

“...our main application (development) technology is based on Oracle products (9i; DB IAS - Forms). Now, we are starting a new (small) project, which don't need such a massive solution (as Oracle Forms). Could you please help us and advise how to start with Apex?“

“...I am an Oracle Forms/PL/SQL developer but am just beginning to explore the capabilities of Apex. I consider your demo application to be the an excellent contribution to the Apex development community. It has sparked my determination to become an Apex developer of some competence.“

00. You always wanted to start developing Database driven Web Applications but you didn't know which tool to use?

I will show you how to start using APEX going through the ten most important topics about APEX you need to know.

10. APEX Basics – what do you need to know about APEX Architecture?

20. APEX Resources - Top 10 APEX-Websites.

30. The most important WEB-Development Tools – which tools do you need for an efficient work with APEX?

40. APEX Documentation – often underestimated but very usefull.

50. Which program languages do I need to start developing with APEX?

60. Knowing the most important APEX-Functionalities.

70. Layout – is APEX also good for „normal“ websites?

80. Scalability – is APEX also good for programming of „big“ Applications?

90. Quality Control of APEX Applications – which tools can I use for that?

100. What else can I do to get even better?

APEX Basics – what do you need to know about APEX Architecture?



...this is easy to understand

Oracle Application Express Architecture

Client

Web Browser (FF, IE, Safari, ...)

Mobile



HTTP Server

Apache HTTP Server
with mod_plsql

Embedded
PL/SQL Gateway

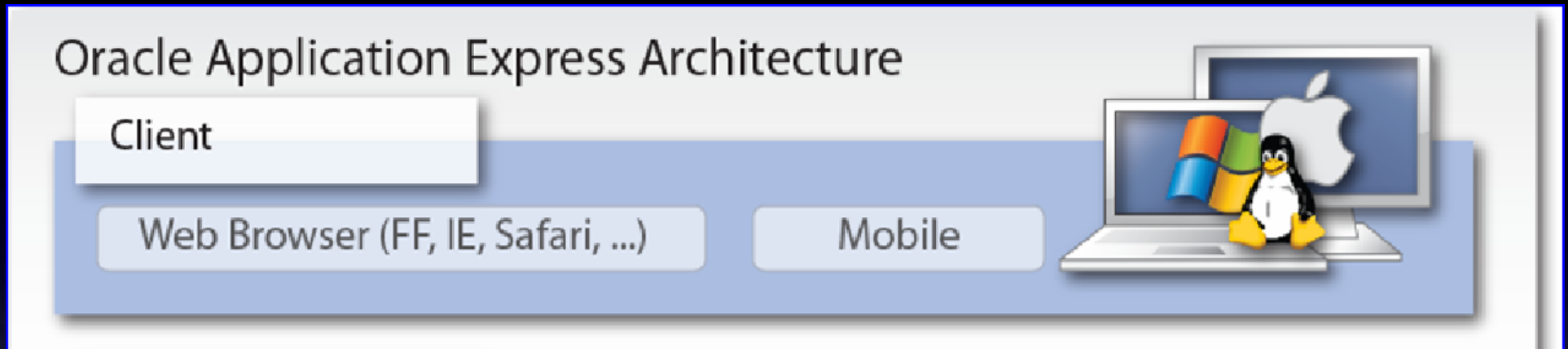
Oracle Database

Oracle APEX
Engine + Metadata

Workspaces + Schemas

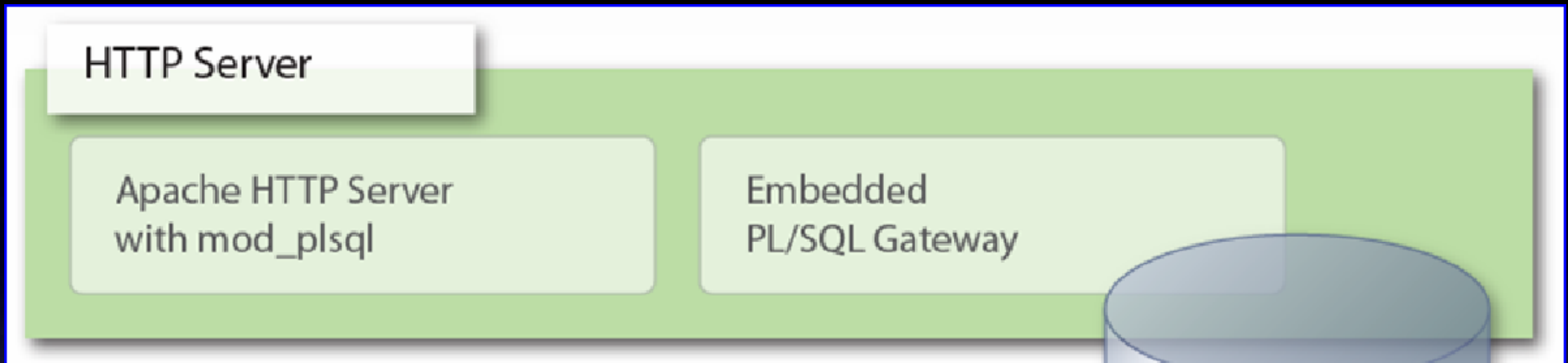


Apex Architecture - Client

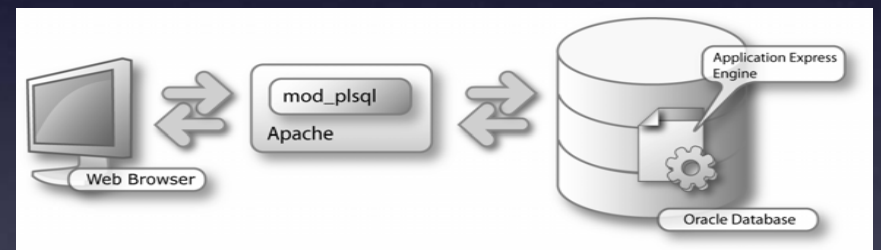


- pure HTML Pages (no Java-Applets)
- CSS
- Java-Script
- Development + Runtime in a Browser

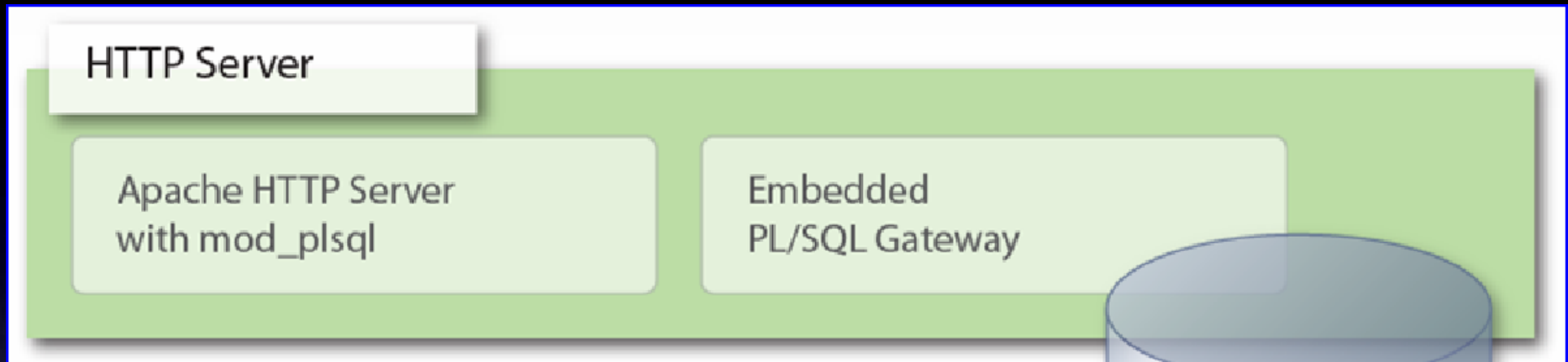
Apex Architecture – HTTP Server



- 3-Tier with an Apache Server
- Static Files in a File System
- Communication using mod_plsql
- FAST!



Apex Architecture – HTTP Server

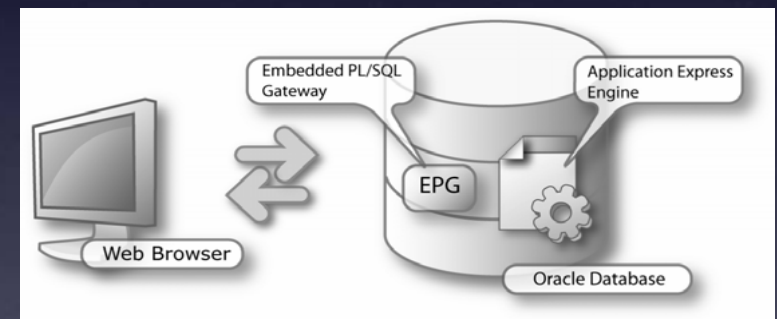


- 2-Tier with a “built-in” Webserver in 11g and XE

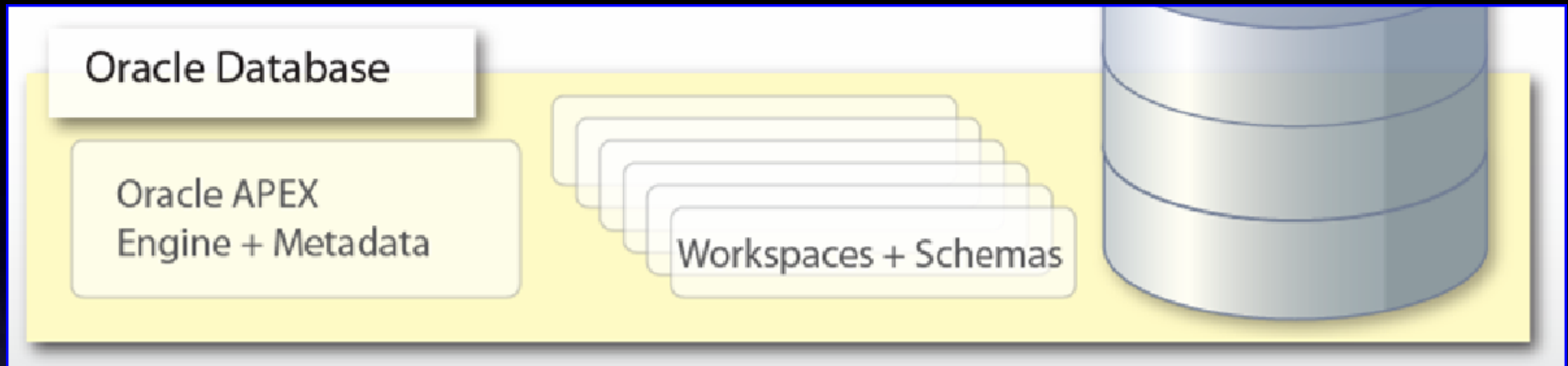
- less “moving” parts

- Communication using Embedded PL/SQL Gateway

- Sometimes Performance Problems?!

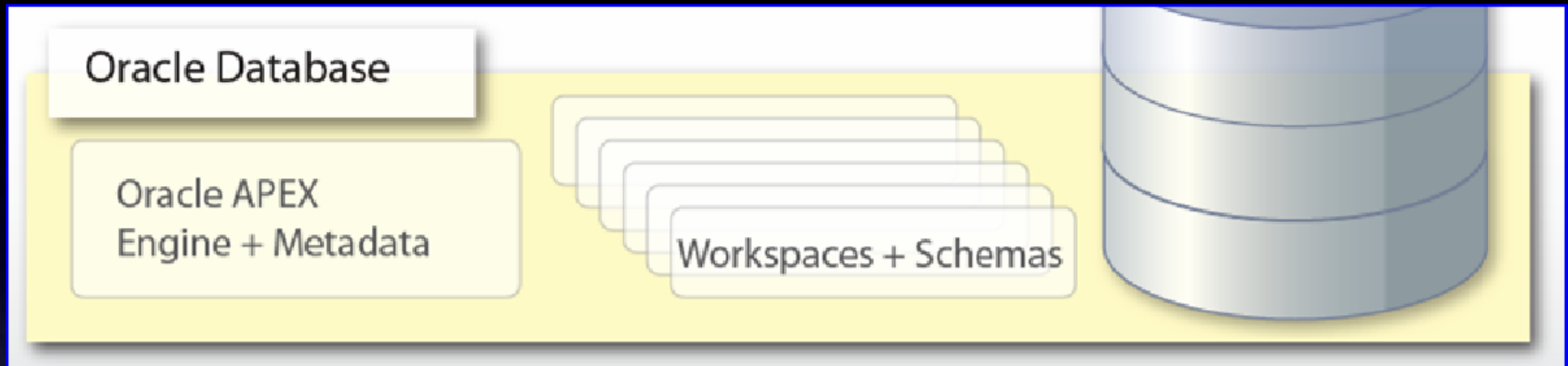


Apex Architecture – Oracle Database



- APEX is running in the Database
- APEX Engine written in PL/SQL
- Application Metadata stored in Tables
- Session State stored in Database

Apex Architecture – Oracle Database



- Business-Logic stored in Packages
- Reusing Business-Logic created in Oracle-Forms
- Direct Access to ALL Database Features

Apex Architecture – Oracle Database

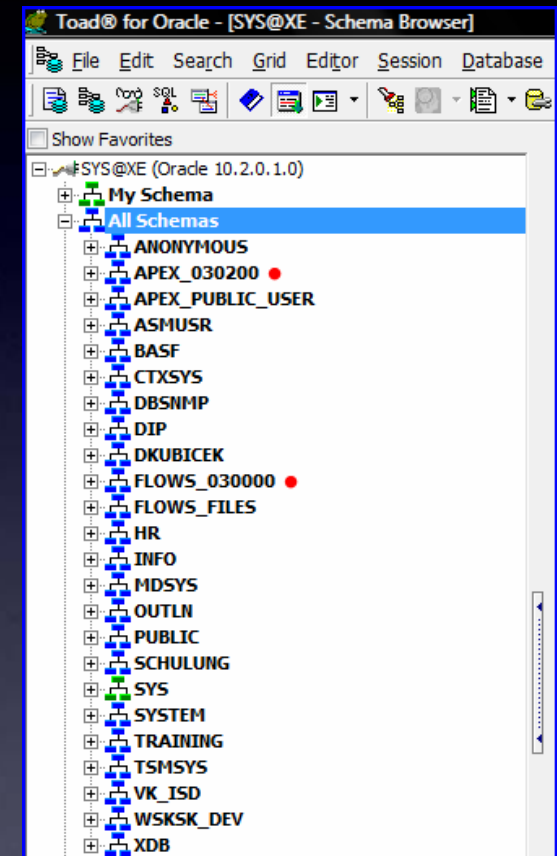
- FLOWS_XXXXXX till 3.1

- APEX_XXXXXX from 3.2

Switching between versions just as
easy as:

```
ALTER SESSION SET CURRENT_SCHEMA = APEX_030200;  
exec  
apex_030200.wv_flow_upgrade.switch_schemas('FLOWS_030000','APEX_030200');
```

```
ALTER SESSION SET CURRENT_SCHEMA = FLOWS_030000;  
exec  
flows_030000.wv_flow_upgrade.switch_schemas('APEX_030200','FLOWS_030000');
```



Apex Architecture – Oracle Database Direct Access to ALL Database Features

SQL
PL/SQL
RAC
Spatial
OLAP
Flashback
Web Services
Oracle Text
Multimedia
Analytic Functions
Globalization
XML DB

The collage features several overlapping web application screenshots:

- International Society for Infectious Diseases (ISID):** Shows a navigation menu, a "PromED-mail" logo, and a "Today on PromED-mail" section with news items from April 03, 2008.
- Tom Oracle:** A Q&A site with a search bar, navigation tabs (Questions, Resources, Archives, Links, Popular, Hot, Files), and a text snippet: "Times are East coast times (GMT-4:00) In the last 4 weeks, I've taken 89 new questions, read 518 followups, and respon followups".
- Oracle DICOM Image Archive:** A multimedia interface with filters for Keyword, Modality, Patient Name, Semantic, and Patient Name, and a grid of image thumbnails.
- Pinnacle:** A system interface for Larry Foster, showing a "SUBSCRIBER PROFILE" for Abraham Lincoln with details like Subscriber ID 1071157, Name, Title, Email, and Directory Phone.
- Oracle Think.com Education Foundation:** A community site with a "Member Log In" section (Username, Password, Enroll, Log In) and a "News" section dated Aug 22, 2007.
- World Map:** A map showing a table of users by country and a globe with red markers.

Name	Users
United States	78603
India	21259
Brazil	18950
Germany	13966
China	13747
United Kingdom	12976
Spain	12926
Canada	12447
Denmark	11669
Colombia	10166
Japan	10011
Peru	9278

20. APEX Resources - Top 10 APEX-Websites



These are the Top 10 APEX-Websites

<http://apex.oracle.com>

<http://forums.oracle.com/forums/forum.jspa?forumID=137>

http://www.oracle.com/technology/products/database/application_express/

<http://www.oracle.com/global/de/community/index.html>

<http://apex.oracle.com/pls/otn/f?p=4550>

<http://apex.oracle.com/pls/otn/f?p=31517>

<http://www.deneskubicek.blogspot.com/>

<http://daust.blogspot.com/>

<http://www.apexblogs.info/>

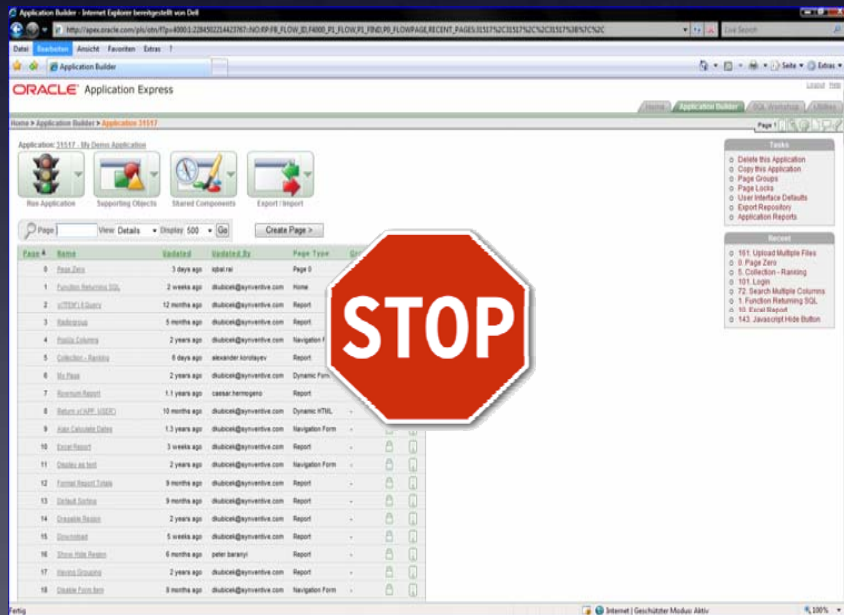
<http://www.inside-oracle-apex.com/>

30. The most important WEB-Development Tools



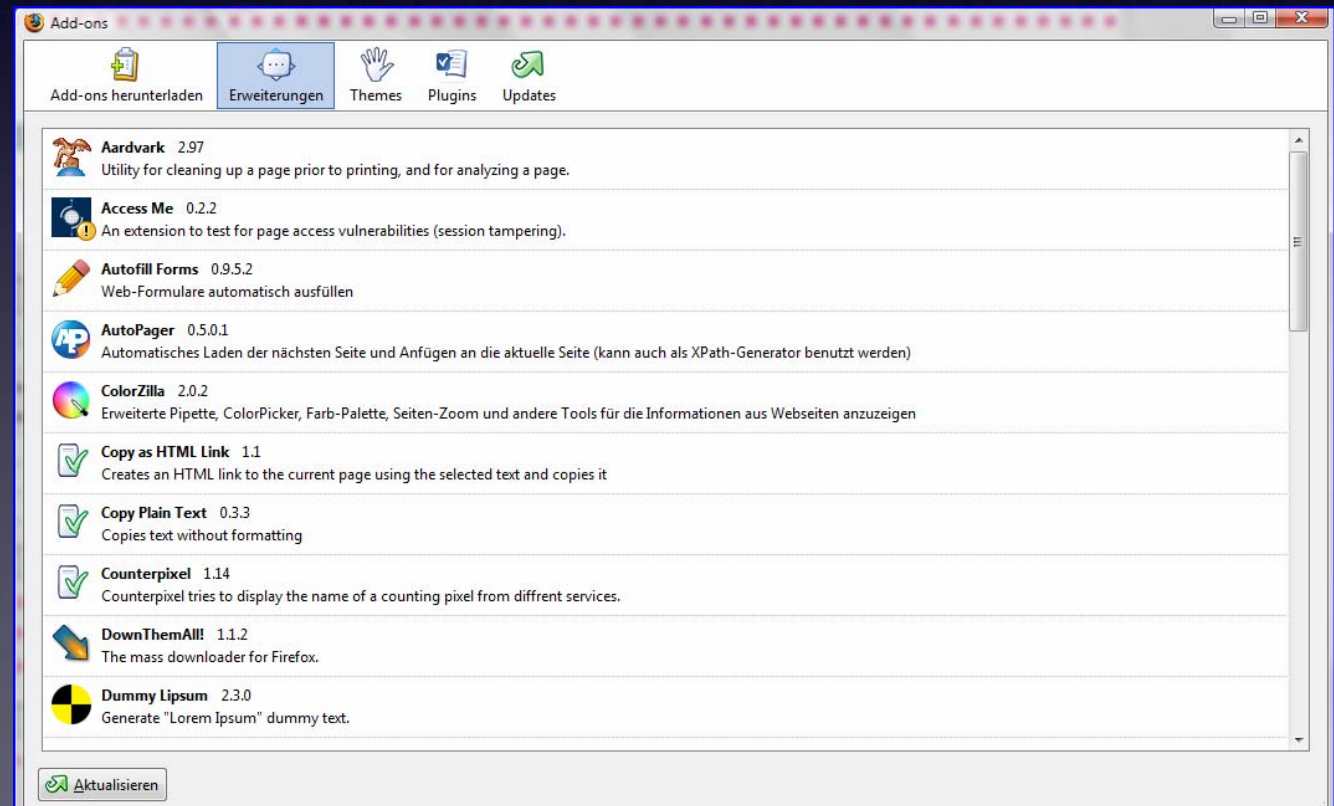
Was sollten Sie und was sollten Sie nicht?

- Use Firefox for developing Apex Applications
- NEVER use IE for development
- USE IE for Testing of your Applications



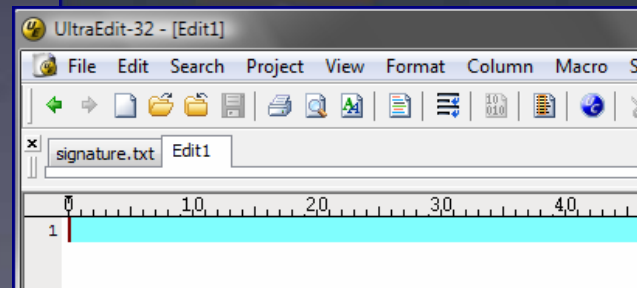
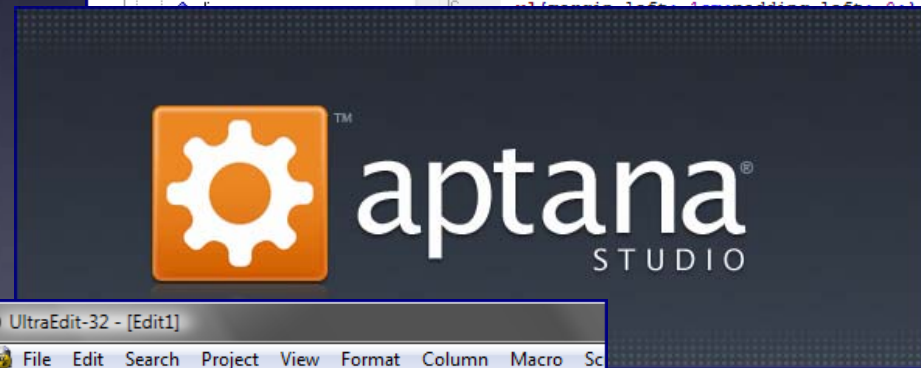
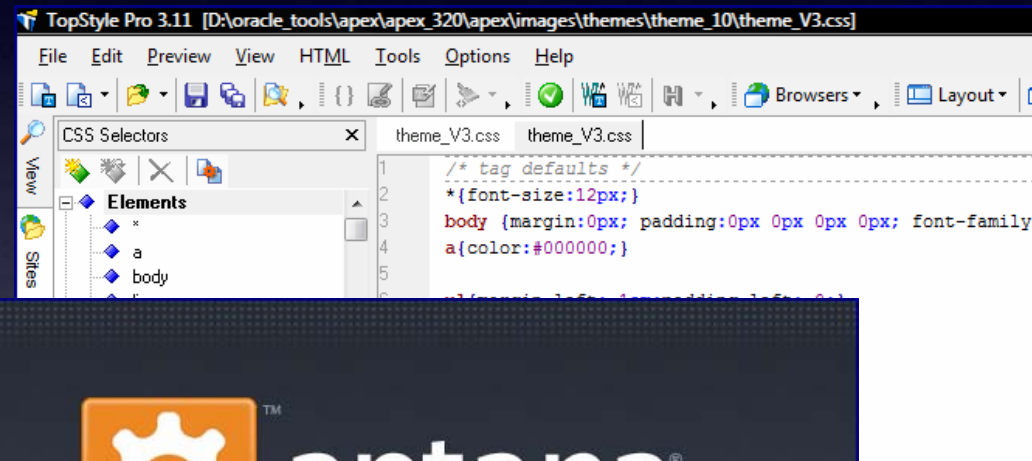
Use Firefox Plugins

- WebDeveloper Toolbar
- Firebug
- Font-Finder
- IE View
- Image Zoom
- Screen Grab
- Measure It
- Color Picker
- Aardvark



Other Tools

- Paint (images)
- http://www.gifworks.com/cgi-bin/gifworks.pl?com=transfer_open
- Adobe Photoshop (images, pictures)
- First Page 2006 (html)
- Top Style Pro (.css)
- Aptana IDE (javascript)
- Ultra Edit (text, code)
- Multiple Browser (IE, FF, Opera)




APEX Documentation – often underestimated but very usefull.



Use the Apex Documentation

shortcuts | GETTING STARTED | DOWNLOADS | DOCUMENTATION | FORUMS | ARTICLES | SAMPLE CODE | TUTORIALS

Printer View | E-mail this page | Bookmark

 **Oracle Application Express**

[Return to Oracle APEX Home](#)

Application Express Documentation and Tutorials

<input type="checkbox"/> 3.2 Release Notes	HTML	PDF
<input type="checkbox"/> Installation Guide	HTML	PDF
<input type="checkbox"/> 2 Day + Developer's Guide	HTML	PDF
<input type="checkbox"/> Application Builder User's Guide	HTML	PDF
<input type="checkbox"/> Migration Guide	HTML	PDF
<input type="checkbox"/> Administration Guide	HTML	PDF
<input type="checkbox"/> SQL Workshop and Utilities Guide	HTML	PDF
<input type="checkbox"/> API Reference	HTML	PDF
<input type="checkbox"/> Advanced Tutorials	HTML	PDF
<input type="checkbox"/> Full Library	HTML	

The Advanced Tutorials Guide contains up-to-date How-Tos including:

- [Create a Tabular Form](#)
- [Create a Parameterized Report](#)
- [Create a Drill Down Report](#)
- [Control Form Layout](#)
- [Work with Check Boxes](#)
- [Implement a Web Service](#)
- [Create a Stacked Bar Chart](#)
- [Upload and Download Files in an Application](#)
- [Incorporate JavaScript into an Application](#)
- [Build an Access Control Page](#)
- [Review a Packaged Application](#)
- [Create a Master Detail PDF Report](#)
- [Design an Issue Tracking Application](#)
- [Build and Deploy an Issue Tracking Application](#)

[Older How-tos](#) are still available. Please note that the navigation in the current release may differ from what is detailed in these documents due to updates and improvements.

Technical Whitepapers


- [Integrating Application Express with Google Maps](#) (March 2008)
- [Integrating Application Express with PayPal Payments Pro](#) (Sept 2007)

PL/SQL API's


http://download.oracle.com/docs/cd/E10513_01/doc/apirefs.310/e12855/toc.htm

APEX_UTIL
APEX_MAIL
APEX_ITEM
APEX_APPLICATION
APEX_COLLECTION
APEX_LANG
APEX_CUSTOM_AUTH
APEX_LDAP
APEX_INSTANCE_ADMIN
APEX_UI_DEFAULT_UPDATE











Oracle® Application Express API Reference
Release 3.1.2
Part Number E12855-01

 [Next](#)

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| (Or click any  icon to expand that chapter.)

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-  [1 APEX_UTIL](#)
-  [2 APEX_MAIL](#)
-  [3 APEX_ITEM](#)
-  [4 APEX_APPLICATION](#)
-  [5 APEX_CUSTOM_AUTH](#)
-  [6 APEX_LDAP](#)
-  [7 APEX_INSTANCE_ADMIN](#)
-  [8 APEX_UI_DEFAULT_UPDATE](#)
-  [9 JavaScript APIs](#)

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PL/SQL API's

apex_util

apex_application_global.vc_arr2
Array

apex_util.string_to_table
String => Array

apex_util.string_to_table
Array => String

apex_util.get_session_state
Item Session State

Employees
KING
BLAKE
CLARK
JONES
SCOTT
FORD
SMITH
ALLEN
WARD
MARTIN
TURNER
ADAMS
JAMES
MILLER

```
DECLARE
    p_vc_arr2    apex_application_global.vc_arr2;
    p_string     VARCHAR2 (2000);
BEGIN
    SELECT ename
    BULK COLLECT INTO p_vc_arr2
    FROM emp
    WHERE deptno = :p84_select_deptno;

    p_string := apex_util.table_to_string
(p_vc_arr2, ':');

    HTP.p (p_string);
END;
```

```
DECLARE
    l_vc_arr2    apex_application_global.vc_arr2;
BEGIN
    l_vc_arr2 := apex_util.string_to_table
(:p84_employees);

    FOR i IN 1.. l_vc_arr2.COUNT
    LOOP
        HTP.p (l_vc_arr2 (i) || '<br>');
    END LOOP;
END;(p_string);
END;
```

PL/SQL API's

apex_application

`g_fxx` und `g_fcs` Arrays
Tabular Forms Column Value

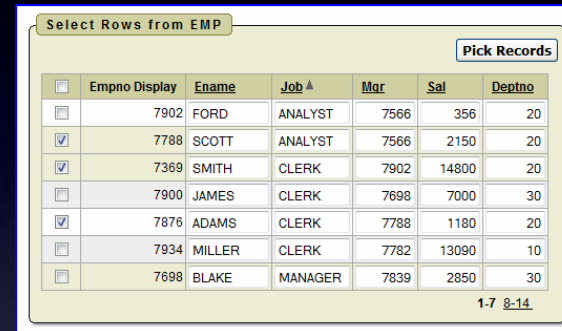
`g_user`
current Apex User

`g_flow_id`, `g_flow_step_id`
Application and Page ID

`g_request`
current Request

`g_debug`
Debug

`g_message`
Create own APEX-Messages.



Select Rows from EMP

<input type="checkbox"/>	Empno Display	Ename	Job ^A	Mgr	Sal	Deptno
<input type="checkbox"/>	7902	FORD	ANALYST	7566	356	20
<input checked="" type="checkbox"/>	7788	SCOTT	ANALYST	7566	2150	20
<input checked="" type="checkbox"/>	7369	SMITH	CLERK	7902	14800	20
<input type="checkbox"/>	7900	JAMES	CLERK	7698	7000	30
<input checked="" type="checkbox"/>	7876	ADAMS	CLERK	7788	1180	20
<input type="checkbox"/>	7934	MILLER	CLERK	7782	13090	10
<input type="checkbox"/>	7698	BLAKE	MANAGER	7839	2850	30

Pick Records

1-7 8-14

```
DECLARE
    v_user    VARCHAR2 (40);
BEGIN
    v_user := apex_application.g_user;
    HTP.p ('User: ' || v_user);
END;
```

```
BEGIN
    apex_application.g_user := 'USER';
END;
```

```
BEGIN
    apex_application.g_notification := 'Message!';
END;
```

Javascript API's

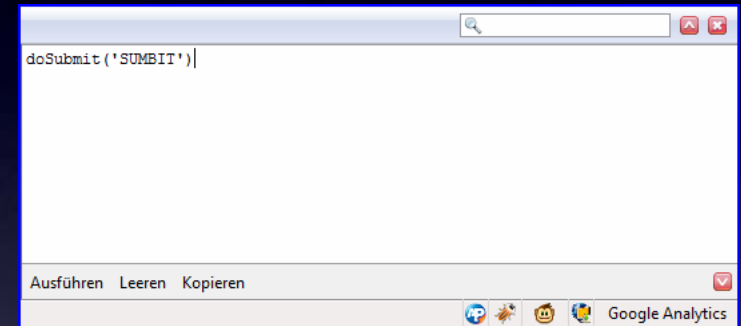
http://download.oracle.com/docs/cd/E10513_01/doc/apirefs.310/e12855/javascript_api.htm#CDEEIGFH

\$x - `alert($x('f07_0003').value)`

Instead of `document.getElementById`

\$s - `$s('f07_0003', '22')`

Sets the value of an item



doSubmit ('REQUEST')

Creates a SUBMIT Request for conditional processing

\$x_Hide, \$x_Show, \$x_Toggle, \$x_Remove

...and lots of other functions.

50. Which program languages do I need to start developing with APEX?



Learn the proper Programming Languages and Techniques

- SQL for Business Users, RAD Developers and Enterprise Developers
- PL/SQL for RAD Developers and Enterprise Developers
- Javascript and Ajax for enhanced development – WEB 2.0
- HTML for modification and development of own templates
- CSS for enhanced web layout and development of Corporate Layouts
- other programming languages and techniques

60. Knowing the most important APEX-Functionalities.



Understand the Apex Development Environment

The screenshot displays the Oracle Application Express (APEX) interface. At the top, the header includes the Oracle logo and 'Application Express', along with navigation tabs for 'Home', 'Application Builder', 'SQL Workshop', and 'Utilities'. A breadcrumb trail shows 'Home > Application Builder > Application 463'. The main content area is titled 'Application: 463 - Sample Application' and features four primary action buttons: 'Run Application' (traffic light icon), 'Supporting Objects' (3D bar chart icon), 'Shared Components' (compass icon), and 'Export / Import' (double arrows icon). Below these is a search bar with 'Page' input, 'View' set to 'Icons', 'Display' set to '15', and a 'Go' button, alongside a 'Create Page >' button. The main workspace contains ten numbered application pages, each with a representative icon: 1 - Sample Application (house), 2 - Customers (hand on grid), 3 - Add/Modify Customers (gear), 4 - Orders (calendar), 5 - Cluster Bar (bar chart), 6 - Add/Modify Products (document), 7 - Products (hand on grid), 8 - Manage Users (document), 9 - Enter New Order (compass), and 10 - Calendar (calendar). Yellow callout boxes with arrows point to specific features: 'Build Applications' points to the 'Application Builder' tab; 'Browse and create database objects' points to the 'SQL Workshop' tab; 'Load Data' points to the 'Utilities' tab; 'Deploy Applications' points to the 'Export / Import' button; 'Flash Charting' points to the 'Cluster Bar' icon; 'Reporting & Publishing' points to the 'Orders' icon; 'Data Entry Forms' points to the 'Add/Modify Products' icon; 'Interactive Reports' points to the 'Products' icon; 'Tabular Forms' points to the 'Manage Users' icon; 'Navigation' points to the 'Enter New Order' icon; and 'Calendar' points to the 'Calendar' icon.

Build Applications **Browse and create database objects** **Load Data**

ORACLE® Application Express Logout Help

Home Application Builder SQL Workshop Utilities

Home > Application Builder > Application 463 Page 1

Application: 463 - Sample Application

Run Application Supporting Objects Shared Components Export / Import

Page [] View Icons [v] Display 15 [v] Go Create Page >

1 - Sample Application 2 - Customers 3 - Add/Modify Customers 4 - Orders 5 - Cluster Bar

6 - Add/Modify Products 7 - Products 8 - Manage Users 9 - Enter New Order 10 - Calendar

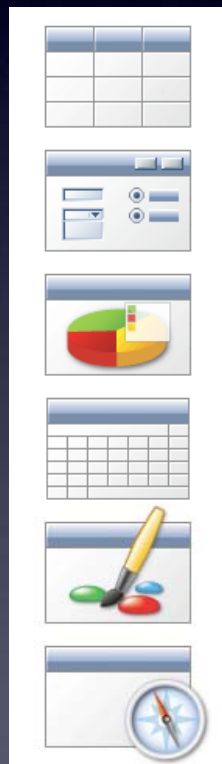
Deploy Applications

Flash Charting

Reporting & Publishing

Data Entry Forms **Interactive Reports** **Tabular Forms** **Navigation** **Calendar**

Know about Apex Out-of-the-Box Features



Reports

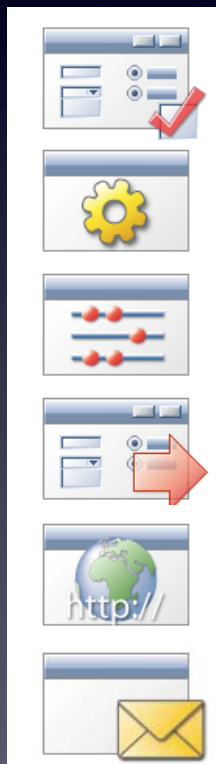
Forms

Charts

Calendar

Templates

Navigation



Validations

Processes

Computations

Branches

Web Services

Email Services



Translation Services

Conditional Processing

Authentication

Authorization

Session State Management

Logging & Monitoring

Understand Apex Conditional Processing

use PL/SQL Expressions

Conditional Processing

Condition Type
PL/SQL Expression

[PL/SQL] [item=value] [item not null] [request=e1] [page in] [page not in] [exists] [none] [never]

Expression 1
:REQUEST IN ('SAVE', 'SUBMIT', 'CREATE', 'SUBMIT2', 'SUBMIT3', 'ADD', 'ADD2', 'ADD3')

Expression 2

Conditional Display

Condition Type
PL/SQL Expression

[PL/SQL] [item=value] [item not null] [request=e1] [page in] [page not in] [exists] [none] [never]

Expression 1
:P12_ORDER_NO_HIDDEN IS NOT NULL AND :P12_AUFTRAG_READONLY = 1 AND :P12_TAB = 'TAB_PROBEN'

Expression 2

Understand Apex Validations

use PL/SQL Function Returning Error Text

```
DECLARE
    v_billing_type    NUMBER := 0;
    v_billing_cost    NUMBER;
BEGIN
    FOR c IN (SELECT billing_type, billing_cost
              FROM bas_billing
              WHERE method_sk = :p12_method_sk
              AND SYSDATE BETWEEN valid_from_date AND valid_to_date)
    LOOP
        v_billing_type := c.billing_type;
        v_billing_cost := c.billing_cost;
    END LOOP;

    IF v_billing_type = 2 AND :p12_hours IS NULL
    THEN
        RETURN    'Die gültige Abrechnungsmethode ist pro Stunde. '
                || 'Der Anzahl der Stunden ist leer!';
    ELSIF v_billing_type = 0
    THEN
        RETURN    'Die gültige Abrechnungsmethode ist nicht vorhanden. '
                || 'Der Auftrag kann nicht abgeschlossen werden!';
    END IF;
END;
```

70. Layout – is APEX also good for „normal“ websites?



...create your own Business Applications in a Corporate Layout

Erleben, was verbindet.

Kundendaten Online T-Systems

Home Kundendaten Marktdaten Ansprechpartner Kundenkontakte SelfService QCenter Information

Sie sind hier: Home

Suche

Home

Kundendaten

Marktdaten

Ansprechpartner

Kundenkontakte

Self Service

QCenter

Information

Hilfe

Dokumentation & Anleitung

Glossar der Fachbegriffe

Nutzungsbedingungen

Registrieren

Registrieren Sie sich hier!

Sie können das Informationssystem selbst mit gestalten!

Gestalten Sie mit Kundendaten Online - soll Sie unterstützen auf dem gemeinsamen Weg zu mehr Kundennähe und besserer Servicequalität.

Sie nutzen Kundendaten lokal und möchten diese integrieren? Sie möchten die Ansprechpartner ihres Bereiches integrieren und online pflegen? Sie vermissen Informationen?

Gestalten Sie mit, senden Sie uns Ihre Wünsche.

Programm Management KIO Server Kunde T-Systems
Email: faka.nlsche@t-systems.com
Telefon: 0228-709 28932

Email: torsten.lau@mann@t-systems.com
Telefon: 0160-978 36743

Die Informationen im System werden bereitgestellt durch den KIO Server Kunde, dem zentralen Kundenstammdatensystem der T-Systems.

Ein Service des Kundenstammdatenmanagement T-Systems.

Die Nutzung der Bereiche Ansprechpartner ist nur für registrierte Benutzer möglich. Zur Registrierung gelangen Sie über den Navigationsbereich links unten. Die Bereiche Kundenkontakte und Self-Service befinden sich noch im Aufbau, wir bitten um Ihr Verständnis.

powered by KIO Server Kunde

Vertriebskalkulation

intereroh

Angebote Kunden Reporting Stammdaten Listpflege Fachadmin Benutzer Debug Administration Hilfe

Angebot 5708 / 1 bearbeiten

Stammdaten DS BLI SZ KombiPreis Status / Workflow

Abbrechen Löschen Änderungen anwenden

Kunde Auswählen Entfernen Neu Bearbeiten

Branchenvordrängung Branchenverdrängung ändern

Debitorennummer
Kundenname
Straße / Nr.
Postleitzahl
Ort
Land
Ansprechpartner
Außendienst

Tilouche Fruchtimport GmbH
81371 München
DE
Frau Tilouche
Wanninger, Luise

Branchen
Keine Branche 0 0 100 / 0 100

Angebotskopf

Vertragslaufzeit von 01.01.2009 bis 31.12.2009

Angebot-Art: Neuvertrag
Angebots-Grund: Angebot an potentiellen Kunden nach AD - Telefonat
Vertriebskanal: Flächenvertrieb

Kosten: 01.09.2008 - 31.12.2009 (default) Preise: 01.09.2008 - 31.12.2009 (default)

Ansprechpartner

Name	Email	Telefon
Frau Tilouche		

Kunden Gesamtvolumina

Fraktion	Volumen [t]	Sto	Kommentar
Glas	0		
PPK	25,1218		
Weißblech	4,3962		
Aluminium	0		
Getränkedarfverbrunde	0		
Sonstige Verbunde	0		
Kunststoffe	7,1637		Gesammelte Folie und Körper

Willkommen ADMIN

Home | Logout |

BASF
The Chemical Company

Home Aufträge Aussteller Stammdaten Benutzerverwaltung

Sie sind hier: Home

Home

Sorptionslabor

Information!
Willkommen bei der Anwendung Sorptionslabor.

Die neue Anwendung „Sorptionslabor“ wird eine mit ApEx (Oracle Application Express, Datenbank Oracle 10gR2) entwickelte Web-Anwendung, die von allen BASF-Mitarbeitern durch Eingabe von Novell-Userid mit Passwort aufgerufen werden kann. BASF-Mitarbeiter, die bereits Kunden im Sorptionslabor sind, werden per E-Mail über die neue Anwendung informiert. Mit der E-Mail wird der Link zur Anwendung verschickt. Außerdem veranlasst GCC/IZ, Tel. 54245, dass die Anwendung als Link auf der GCC-Homepage zur Verfügung gestellt wird.

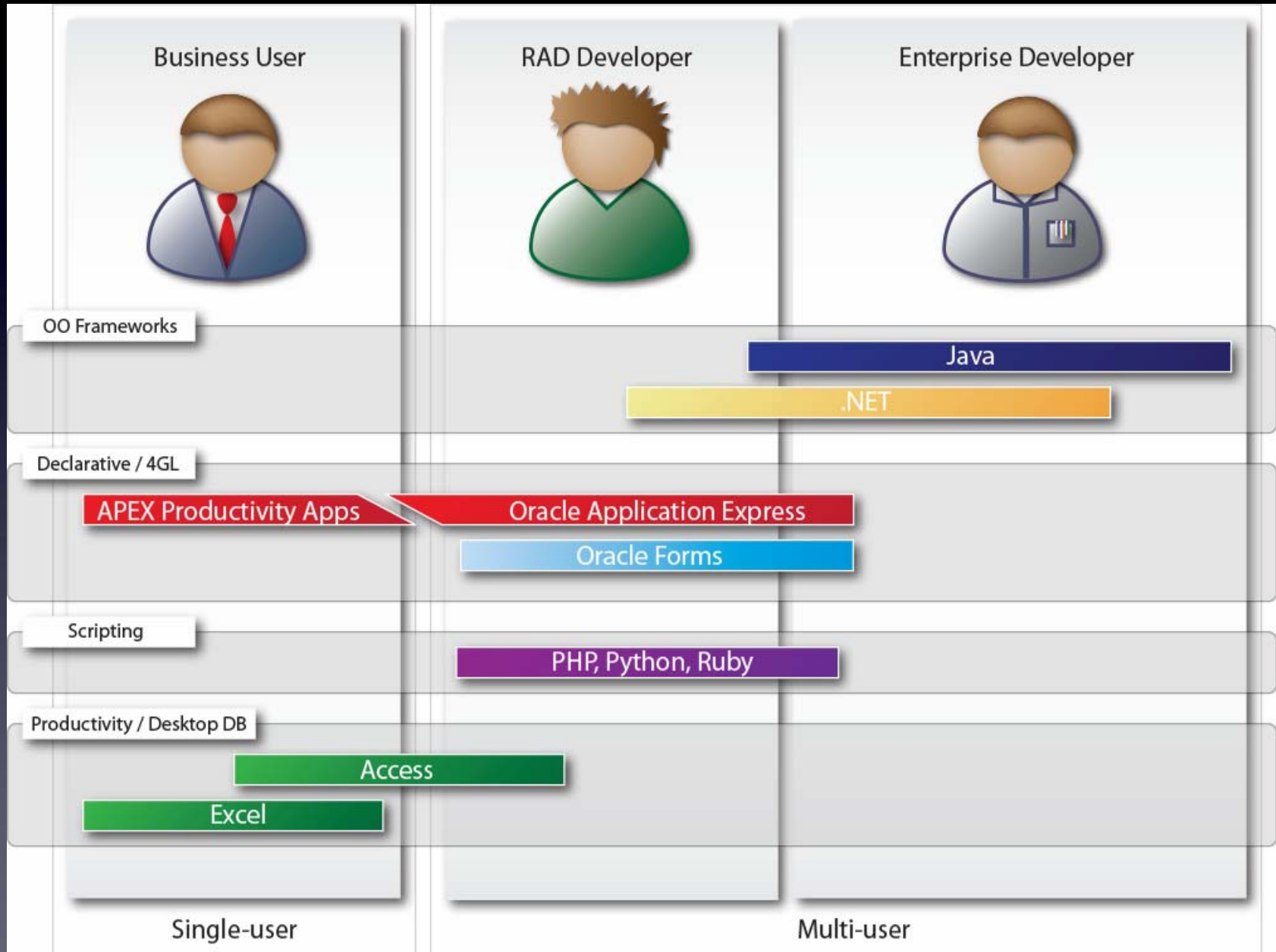
Drucken Versenden

Verantwortlich: Harald Freiberger | Administration: Webmaster | Copyright 2008 by BASF SE

80. Scalability – is APEX also good for programming of „big“ Applications?



Developers



Apex Architecture Flexibility in Use



Hosted Service



Company Corporate Service



Department-Server

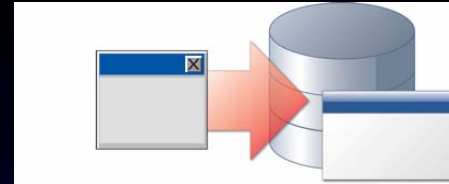


Local Database (Oracle XE)

Applications



**Online Reporting
& Publishing**



Enhancing Oracle Forms



**Web-Application
Development**



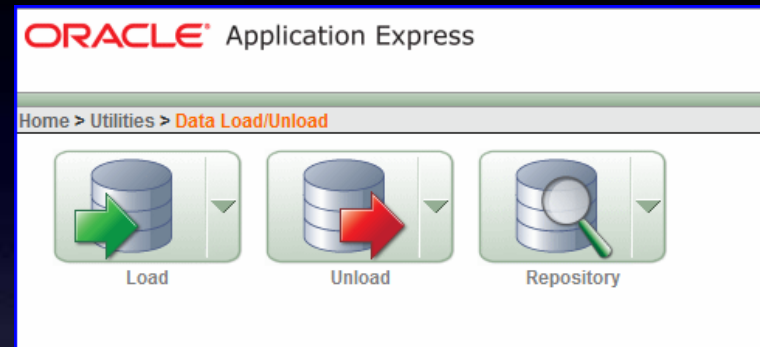
Spreadsheet Web-ification



Access-Replacement

Apex for Business Users

- Excel Import Wizard
- MS Access Migration Tools



http://www.oracle.com/technology/products/database/application_express/migrations/oracle_application_express-application_migration_workshop.pdf

<http://www.oracle.com/technology/tech/migration/workbench/index.html>

- Apex Productivity Applications – Packaged Applications

http://www.oracle.com/technology/products/database/application_express/packaged_apps/packaged_apps.html

- Interactive Reports using Wizard – no SQL Knowledge required

Apex for RAD Developers (PL/SQL and Forms Developer)

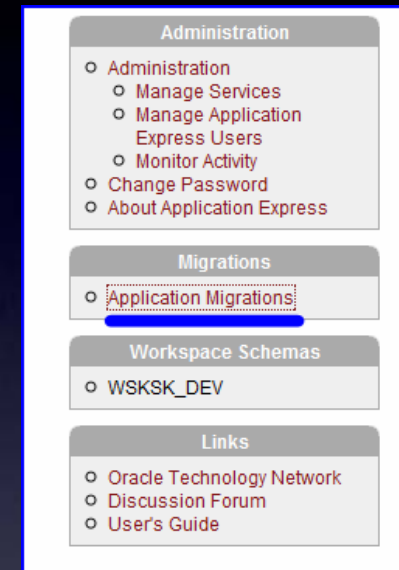
- Application Migrations
- Converting Oracle Forms into Apex

<http://dl.getdropbox.com/u/120066/APEX%2032%20-%20Forms%20Migration.m4v>

- Apex Productivity Applications – Packaged Applications

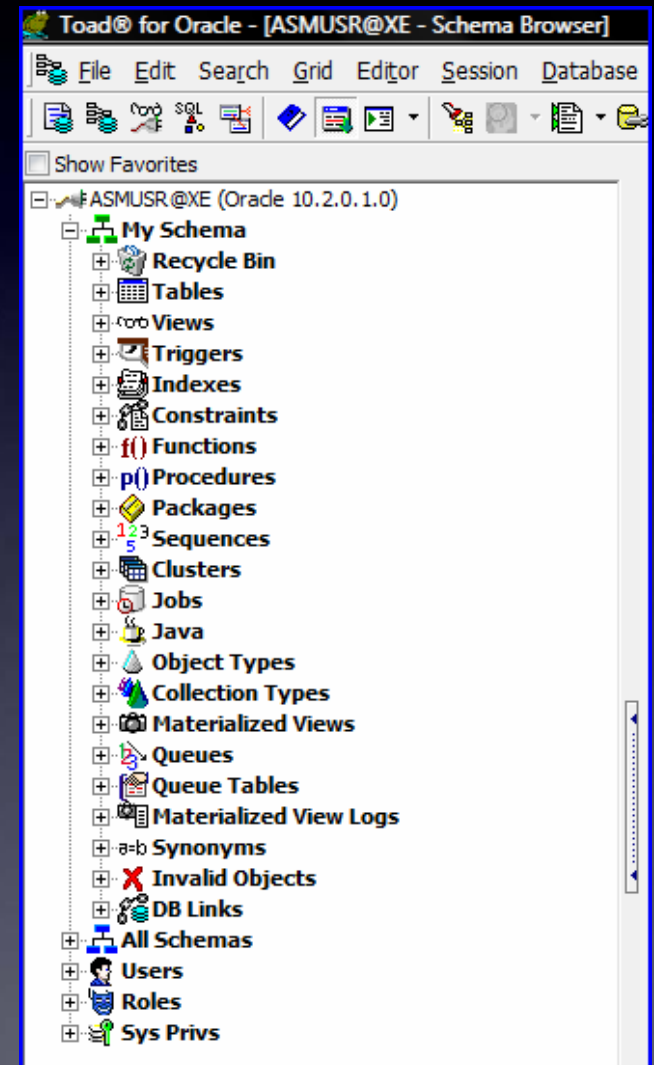
http://www.oracle.com/technology/products/database/application_express/packaged_apps/packaged_apps.html

- Declarative 4GL Development
- Fast learning curve



Apex for Enterprise Developers

- Direct Access to all Database Features
- Web-Service Integration
- Providing Web Services using OC4J and PL/SQL
- Many Security Features, especially in 3.2
- Integration with SSO, Active Directory, LDAP
- Performance issues easier to debug



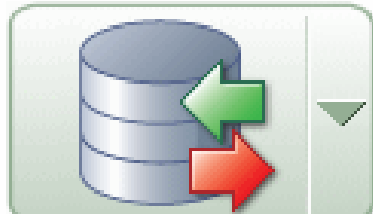
90. Quality Control of APEX Applications – which tools can I use for that?



Use APEX Views

ORACLE Application Express

Home > Utilities



Data Load/Unload



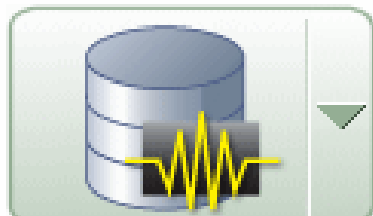
Generate DDL



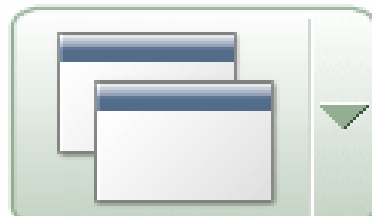
Object Reports



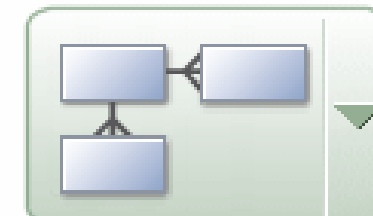
Recycle Bin



Database Monitor



APEX Views

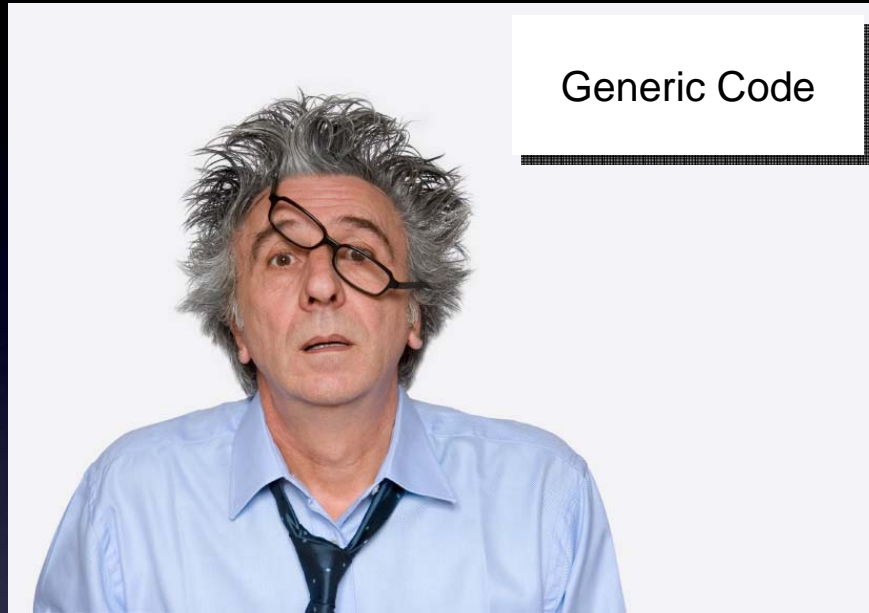


Schema Comparison

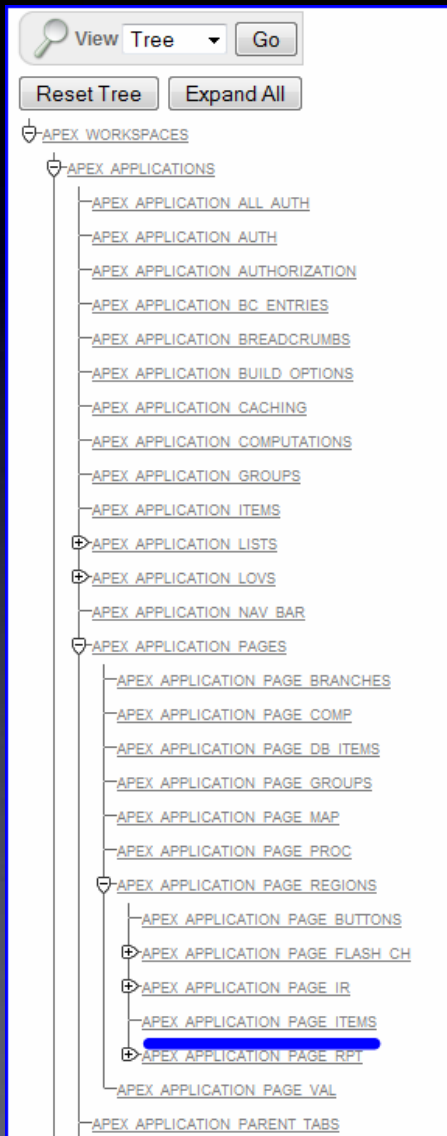


About Database

APEX Views



Create Generic Code using Apex Dictionary Views

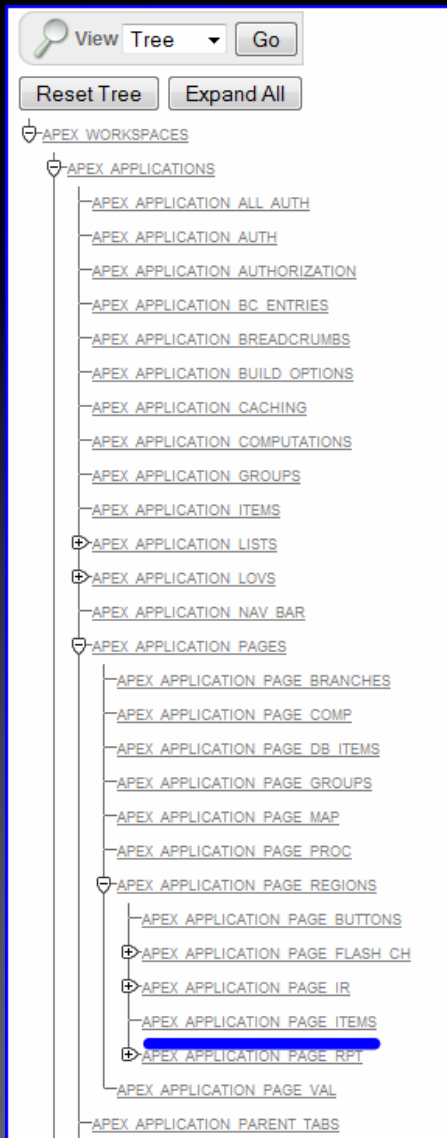


```
SELECT application_name, page_id, item_name, display_as,
       item_label_template
FROM apex_application_page_items
WHERE item_label_template LIKE '%Label with Help'
      AND display_as <> 'Hidden'
ORDER BY application_name, page_id, item_name;
```

```
SELECT application_name, page_id, item_name,
       display_as, label_alignment
FROM apex_application_page_items
WHERE label_alignment <> 'Left' AND display_as <> 'Hidden'
ORDER BY application_name, page_id, item_name;
```

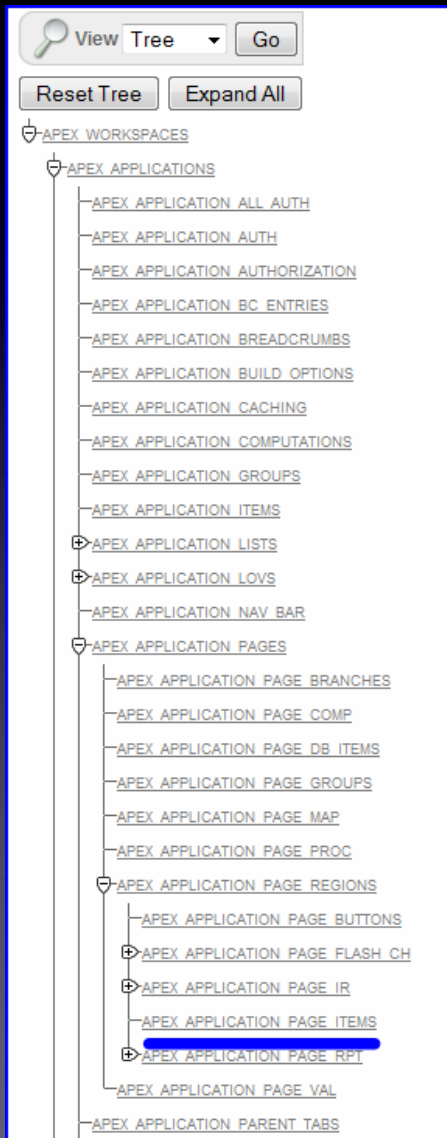
```
SELECT region_id
FROM apex_application_page_regions
WHERE application_id = :app_id
      AND page_id = :app_page_id
      AND region_name = 'Export Report';
```

Monitor Apex Applications using Apex Dictionary Views



```
SELECT apex_user, page_id, page_name, view_date,
       error_message, error_on_component_type,
       error_on_component_name,
       SUBSTR (error_message, 1, 9) err,
       NVL (AGENT,
            (SELECT AGENT
             FROM apex_workspace_activity_log a
             WHERE a.apex_session_id = al.apex_session_id
                   AND ROWNUM = 1)
            ) AGENT
FROM apex_workspace_activity_log al
WHERE workspace = 'DEVELOPER'
      AND application_id = 100
      AND log_context != 'INSTALL APPLICATION'
      AND error_message IS NOT NULL
```

Develop you own Quality Checks using Apex Dictionary Views



```
SELECT aat.application_id, aat.tab_name, aat.tab_page,
       aat.authorization_scheme_id, aap.authorization_scheme_id
FROM apex_application_tabs aat,
     (SELECT page_id, authorization_scheme_id
      FROM apex_application_pages
      WHERE application_id = 100 AND authorization_scheme_id IS NOT NULL) aap
WHERE aat.tab_page = aap.page_id
      AND aat.application_id = 100
      AND aat.authorization_scheme_id IS NOT NULL
      AND aat.authorization_scheme_id <> aap.authorization_scheme_id
```

Use APEX-Essentials for a Quality Control of your Applications

- Powerfull Tool created by Patrick Wolf - <http://www.inside-oracle-apex.com>

Result	
Pages > 0 - Page Zero > Regions > Blogs	
Property	Condition Expression1 (Specifies an expression based on the specific condition type selected.)
Check	Referenced Page Number Exists
Category	Error
Message	Page 503 does not exist
Help Text	-
Value	101, 200, 201, 202, 203, 204, 205, 206, 207, 300, 301, 302, 303, 304, 305, 500, 501, 502, 503
	View

Property	Region Footer Text
Check	Referenced Page Number Exists
Category	Error
Message	Target Page 4550/1 does not exist
Help Text	-
Value	<script language="JavaScript1.2">

Pages > 6 - My Page > Processes > Run Stored Procedure	
Property	Process Source (Identifies the corresponding process text for the process type)
Check	Is Valid SQL/PLSQL Code
Category	Error
Message	Compilation error - ORA-06550: line 2, column 1: PLS-00221: 'CUSTOM_AUTH' is not a procedure or is undefined ORA-06550: line 2, column 1: PL/SQL: Statement ignored Statement: BEGIN DKUBICEK.CUSTOM_AUTH(P_USERNAME => :P6_USERNAME, P_PASSWORD => :P6_PASSWORD); END;
Help Text	-
Value	#OWNER#.CUSTOM_AUTH(P_USERNAME => :P6_USERNAME, P_PASSWORD => :P6_PASSWORD);
	View

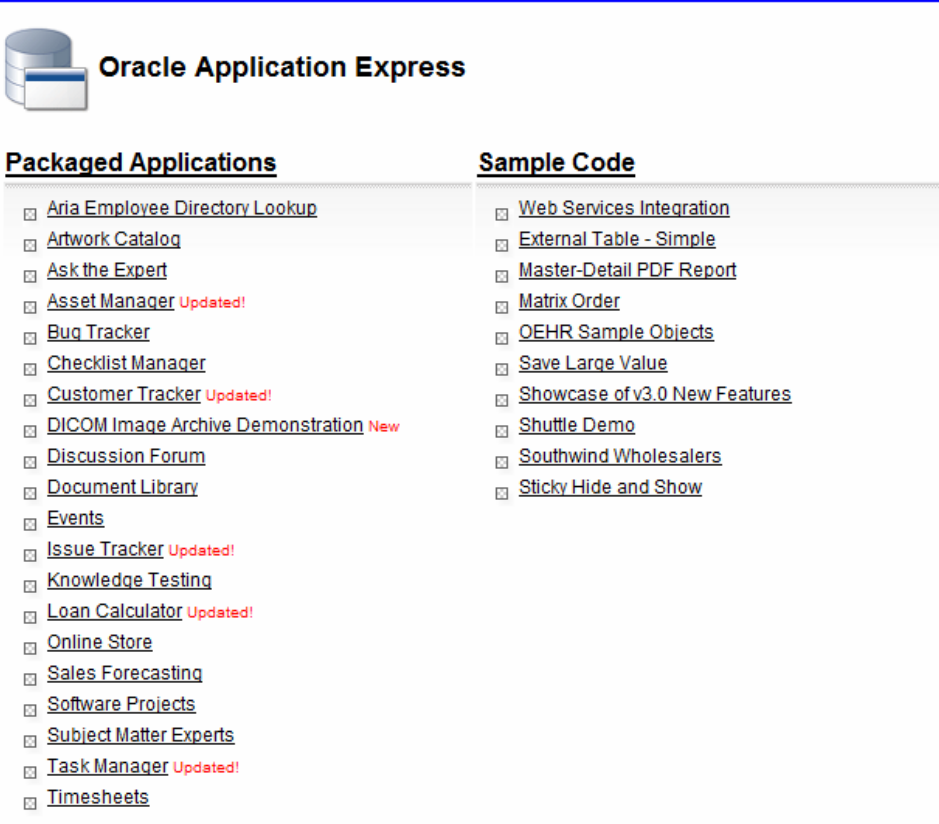
100. What else can I do to get even better?




Explore Packaged Applications

http://www.oracle.com/technology/products/database/application_express/packaged_apps/packaged_apps.html

Great Resource of Code and Solutions



 **Oracle Application Express**

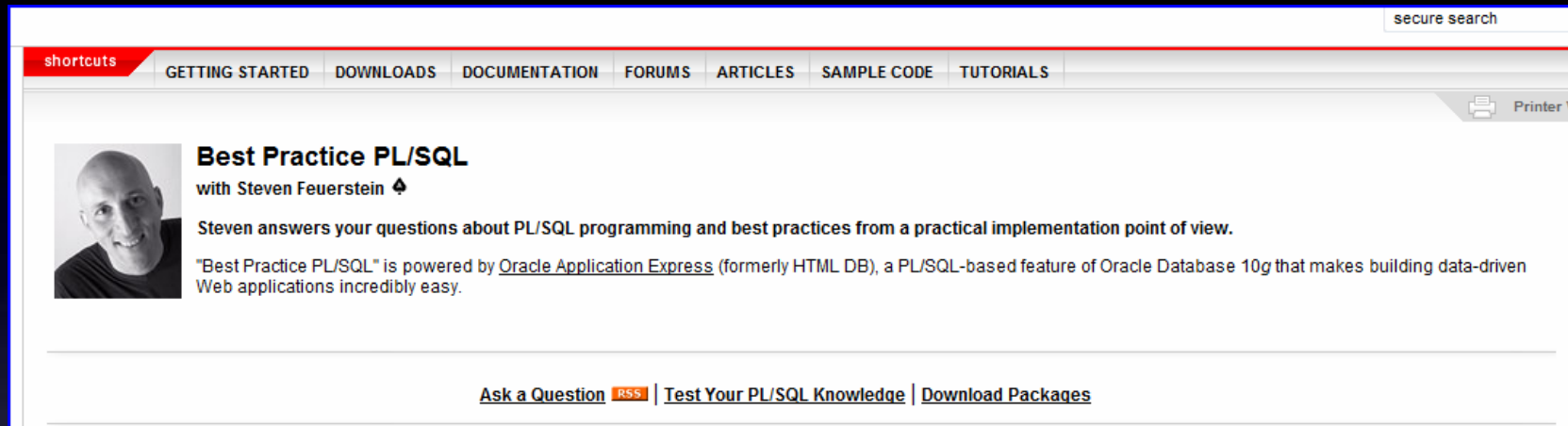
Packaged Applications

- [Aria Employee Directory Lookup](#)
- [Artwork Catalog](#)
- [Ask the Expert](#)
- [Asset Manager Updated!](#)
- [Bug Tracker](#)
- [Checklist Manager](#)
- [Customer Tracker Updated!](#)
- [DICOM Image Archive Demonstration New](#)
- [Discussion Forum](#)
- [Document Library](#)
- [Events](#)
- [Issue Tracker Updated!](#)
- [Knowledge Testing](#)
- [Loan Calculator Updated!](#)
- [Online Store](#)
- [Sales Forecasting](#)
- [Software Projects](#)
- [Subject Matter Experts](#)
- [Task Manager Updated!](#)
- [Timesheets](#)

Sample Code

- [Web Services Integration](#)
- [External Table - Simple](#)
- [Master-Detail PDF Report](#)
- [Matrix Order](#)
- [OEHR Sample Objects](#)
- [Save Large Value](#)
- [Showcase of v3.0 New Features](#)
- [Shuttle Demo](#)
- [Southwind Wholesalers](#)
- [Sticky Hide and Show](#)

SQL and PL/SQL - Plenty of Resources available



The screenshot shows the Oracle Best Practice PL/SQL website. At the top right, there is a search bar labeled "secure search". Below it is a navigation menu with the following items: "shortcuts", "GETTING STARTED", "DOWNLOADS", "DOCUMENTATION", "FORUMS", "ARTICLES", "SAMPLE CODE", and "TUTORIALS". On the right side of the page, there is a "Printer V" icon. The main content area features a profile picture of Steven Feuerstein, followed by the title "Best Practice PL/SQL" and the text "with Steven Feuerstein". Below this, it states "Steven answers your questions about PL/SQL programming and best practices from a practical implementation point of view." and "Best Practice PL/SQL" is powered by Oracle Application Express (formerly HTML DB), a PL/SQL-based feature of Oracle Database 10g that makes building data-driven Web applications incredibly easy. At the bottom of the page, there are links for "Ask a Question", "Test Your PL/SQL Knowledge", and "Download Packages".

<http://www.oracle.com/technology/pub/columns/plsql/index.html>

<http://www.techonthenet.com/oracle/index.php>

<http://www.orafaq.com/>

<http://www.asktom.oracle.com>

Javascript – no need to reinvent the wheel

w3schools.com Search W3Schools: [input]


HOME HTML CSS XML JAVASCRIPT ASP PHP SQL MORE... References Examples Forum About

YOUR FREE WEBSITE
Free Flash Website
Free Flash Templates
Free Web Design

ALTOVA mapforce 2009
NEW features in version 2009

JavaScript Tutorial

← Previous Next →



JavaScript is *THE* scripting language of the Web.

JavaScript is used in millions of Web pages to add functionality, validate forms, detect browsers, and much more.

[Start learning JavaScript now!](#)

Examples in Each Chapter

This JavaScript tutorial contains more than 100 examples.
With our online editor, you can edit the JavaScript code, and click on a button to view the result.

Example

```
<html>
<body>

<script type="text/javascript">
document.write("This is my first JavaScript!");
</script>

</body>
</html>
```

[Try it Yourself](#)

Click on the "Try it Yourself" button to see how it works.

WEB HOSTING
\$15 Domain Name Registration
Best Web Hosting
PHP MySQL Hosting
Top 10 Web Hosting
UK Reseller Hosting
Web Hosting
FREE Web Hosting

WEB BUILDING
Website Templates
Flash Templates
Website Builder
Internet Business Opportunity
Custom Programming
FREE Trial or Demo
Web Content Manager
Forms, Web Alerts, RSS
Download XML editor
FREE Flash Website
FREE Web Templates

EDUCATION
US Web Design Schools
HTML Certification
JavaScript Certification
XML Certification
PHP Certification
ASP Certification

STATISTICS
Browser Statistics
Browser OS

<http://www.w3schools.com/js/default.asp>

<http://www.sitepoint.com/books/dhtml1/>

<http://www.dynamicdrive.com/>

<http://jquery.com/>

HTML Knowledge

The screenshot shows the w3schools.com website interface. At the top, there is a search bar and a navigation menu with links for HOME, HTML, CSS, XML, JAVASCRIPT, ASP, PHP, SQL, and MORE... Below the navigation menu, there is a banner for IconExperience.com with the tagline "A plethora of high-quality icons". The main content area is titled "HTML URL Encoding Reference" and includes a "Previous" and "Next" navigation bar. The text explains that URL encoding converts characters into a format that can be safely transmitted over the Internet. It defines a URL as the address of a web page, such as http://www.w3schools.com. The page also covers "URL Encoding", stating that URLs can only be sent over the Internet using the ASCII character set. It notes that since URLs often contain characters outside the ASCII set, the URL must be converted. URL encoding replaces unsafe ASCII characters with "%" followed by two hexadecimal digits corresponding to the character values in the ISO-8859-1 character set. It also mentions that URLs cannot contain spaces and that URL encoding normally replaces a space with a + sign. A "Try It Yourself" section includes a form with the text "Hello Günter" and a "Submit" button, with instructions to click the button to see the browser's output. The right sidebar contains several categories of links: WEB HOSTING (including \$15 Domain Name Registration, Best Web Hosting, PHP MySQL Hosting, Top 10 Web Hosting, UK Reseller Hosting, Web Hosting, and FREE Web Hosting), WEB BUILDING (including Website Templates, Flash Templates, Website Builder, Internet Business Opportunity, Custom Programming, FREE Trial or Demo Web Content Manager Forms, Web Alerts, RSS, Download XML editor, FREE Flash Website, and FREE Web Templates), and EDUCATION (including US Web Design Schools, HTML Certification, JavaScript Certification, XML Certification, PHP Certification, and ASP Certification). The left sidebar lists various HTML and web development resources, such as HTML Reference, HTML Tags, and HTML Messages.

<http://www.w3schools.com/html/default.asp>

...and many, many others

CSS Knowledge

w3schools.com Search W3Schools :

HOME HTML CSS XML JAVASCRIPT ASP PHP SQL MORE... References Examples Forum About

FREE Free Website Templates

Guessing sucks.

CSS How To...

← Previous Next →

Examples

- Look at [Example 1](#)
- Look at [Example 2](#)

How to Insert a Style Sheet

When a browser reads a style sheet, it will format the document according to it. There are three ways of inserting a style sheet:

External Style Sheet

An external style sheet is ideal when the style is applied to many pages. With an external style sheet, you can change the look of an entire Web site by changing one file. Each page must link to the style sheet using the <link> tag. The <link> tag goes inside the head section:

```
<head>
<link rel="stylesheet" type="text/css" href="mystyle.css" />
</head>
```

The browser will read the style definitions from the file mystyle.css, and format the document according to it.

An external style sheet can be written in any text editor. The file should not contain any html tags. Your style sheet should be saved with a .css extension. An example of a style sheet file is shown below:

```
hr {color:sienna}
p {margin-left:20px}
body {background-image:url("images/back40.gif")}
```

⚠ Do not leave spaces between the property value and the units! "margin-left:20 px" (instead of "margin-left:20px") will only work in IE6, but it will not work in Firefox or Opera.

Internal Style Sheet

WEB HOSTING

- \$15 Domain Name Registration
- Best Web Hosting
- PHP MySQL Hosting
- Top 10 Web Hosting
- UK Reseller Hosting
- Web Hosting
- FREE Web Hosting

WEB BUILDING

- Website Templates
- Flash Templates
- Website Builder
- Internet Business Opportunity
- Custom Programming
- FREE Trial or Demo Web Content Manager Forms, Web Alerts, RSS
- Download XML editor
- FREE Flash Website
- FREE Web Templates

EDUCATION

- US Web Design Schools
- HTML Certification
- JavaScript Certification
- XML Certification
- PHP Certification
- ASP Certification

STATISTICS

- Browser Statistics
- Browser OS
- Browser Display

http://www.w3schools.com/css/css_howto.asp

<http://www.csszengarden.com/>

Become a part of the great Apex Community

- Participate in the Oracle Forums by asking Questions or helping others in solving their issues

<http://forums.oracle.com/forums/forum.jspa?forumID=137>

ORACLE

Forum Home Database Application Express

Forum: Application Express

[Post New Thread](#) [Back to Category](#)

Messages: 211,129 - Threads: 43,716 - Filter: All Threads Pages: 2,915 [[Previous](#) | [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) | [Next](#)]

Thread	Author	Views	Replies	Last Post
How to pass tabular report col reference in the onChange event of Txtfield Pages: [1 2 3]	VKS	699	35	May 8, 2009 9:15 AM Last Post By: ATD »
page is NOT FOUND by app server after copy of one application to another	datagrunt	48	8	May 8, 2009 9:03 AM Last Post By: datagrunt »
House Accounts	user11071853	13	0	May 8, 2009 8:56 AM Last Post By: user11071853 »
Report Engine hangs using IEB	crs	3	0	May 8, 2009 8:40 AM Last Post By: crs »
WNA - SSO - on Application Express	FuryDev	4	0	May 8, 2009 8:36 AM Last Post By: FuryDev »
Unable to run app in Restricted access or Available to developers modes.	RamKishore	6	0	May 8, 2009 8:24 AM Last Post By: RamKishore »
javascript condition	toopran	7	0	May 8, 2009 8:23 AM Last Post By: toopran »
Keeping Lines Together in a .RTF Template	Kelly Mello	32	2	May 8, 2009 8:22 AM Last Post By: Tony Miller »
APEX all page loads very very slow - Default install with 11G R1	solvetek	282	13	May 8, 2009 8:20 AM Last Post By: solvetek »

Welcome, Guest

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[Search](#)
[FAQ](#)

Search Forum

Top Users in Forum

- ATD (5810)
- varad.acharya (3010)
- sspadafo (2620)
- Roel (2150)
- Denes Kubicek (2000)
- Dan McGhan (1425)
- Arie Geller (965)
- Jes (885)
- Munky (845)
- Dimitri Gielis@AE (630)

Become a part of the great Apex Community

-Read the Apex Blogs

<http://www.apexblogs.info/pls/apex/f?p=113:8:0>


with access to all known resources for Apex (written in Apex)



 **APEX BLOG AGGREGATOR**
by Apex Evangelists 

Blog Posts | Statistics | Feedback | About | Login

Search Between 12-JUL-2008 and 09-MAY-2009 Apex-only

Blog Selection 

Collaborate 09 - Thursday ★★★★★ Dimitri Gielis 07-MAY-2009 21:29

The final day... only one session to follow, one session to do and then flight back to Belgium.

The first session of the day was by Francis Mignault. He presented "How to build a multi-tenant SAAS application with Oracle Application Express".

I liked the presentation a lot. He started globally, but also went into the technical part. He showed some really nice things, like their integration of jquery in their application. Some people have doubts about performance and dynamic sql, but Francis showed once more APEX scales well. He's getting very good performance on modest hardware and is using dynamic sql a lot. He creates every page depending on the organization. So one APEX application for multiple customers. It looks like they have all their own application, but underlying its the same one.

Next it was my turn to present "What happens on an APEX Page?"



I talked about how an APEX page is structured (page - multiple regions - multiple buttons and items and navigation for your page flow) and how an APEX page is working. A lot of people didn't know (or where not conscious) the page has two phases: a show (rendering) phase and an accept (processing) phase.

You can also view your page in different ways. The picture on the right shows you the page in the Events view. These steps you'll also see if you run your APEX page in debug mode. At the end I demoed some more advanced techniques; for ex. how you can track things if your page does AJAX. The session got also recorded but it might be hard to follow certain parts (especially demos) if you don't see what I'm actually doing on the screen. I'm also asked to do a webinar of it, but there is no date etc for it yet.

After having some final lunch we went to the airport. I'm on the same flight as a lot of other Europeans of the conference for ex. Jonathan Lewis, Mark Rittman and John Scott.

I look forward to see my family again...

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General Apex Links

- [Apex Evangelists Ltd](#)
- [Apex Homepage](#)
- [Apex First time](#)
- [Apex Documentation](#)
- [Apex How To's](#)
- [Apex Discussion Forum](#)
- [Apex Wiki](#)
- [Apex Sourceforge](#)
- [Apex Frapp](#)
- [Apex Studio](#)
- [Apex OTN](#)
- [IOUG Apex SIG](#)
- [ODTUG Apex SIG](#)
- [German Apex Site](#)

Apex Examples

- [Carl Backstrom's](#)
- [Denes Kubicek's](#)
- [Dimitri Gielis's](#)
- [Insum's iQuery Demo](#)
- [Mark Lancaster's](#)

Become a part of the great Apex Community

-Use Apex Demo Applications

<http://apex.oracle.com/pls/otn/f?p=31517:1>

With over 250 Examples including
full code and Step-by-Step explanations

Over 1200 Registered Users of the
Workspace

4000 Pageclicks a day

The most visited non-commercial application
on apex.oracle.com



And you said...

First of all I have to admit that I'm one of those guys who's always looking in your demo application (and reading your answers in the forum) to get things done. Looking at a working example makes it a lot easier to develop a own solution or pretending it's a own solution by cut-and-paste your work :) Thank you very much for all the effort you put in it.

Denes Kubicek

ApEx Demo Application

	<p>Oracle Apex Training: Knowhow aus der Praxis</p> <p>21.09.2009 - 23.09.2009 Bensheim / Frankfurt</p> <p>Anmeldung unter: www.opal-consulting.de</p> <p>Anfragen an: training@opal-consulting.de</p>
<p>Dozenten:</p> <p>Dietmar Aust Denes Kubicek</p>	

User Name

guest

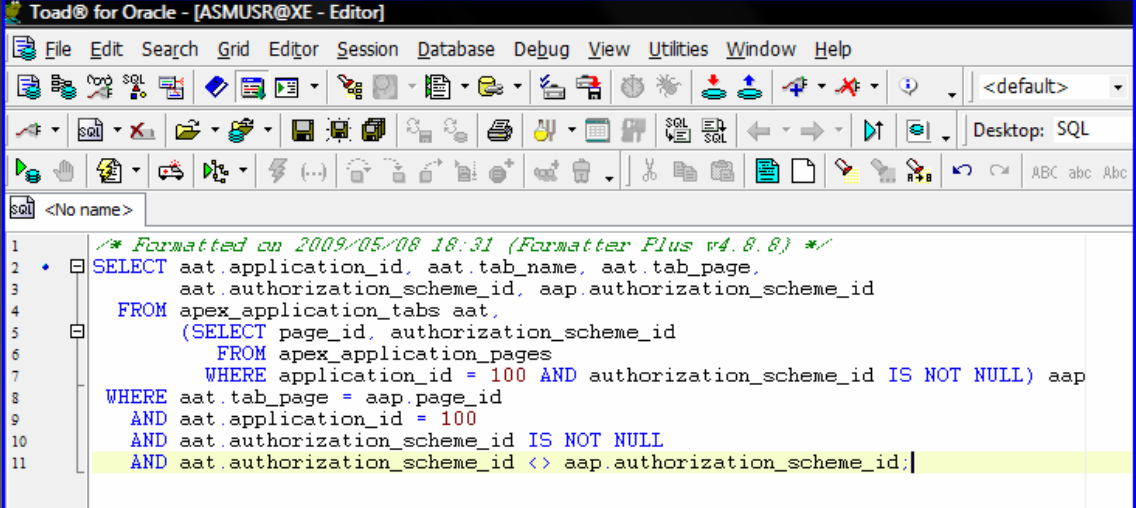
Password

••••••••

Login

Format your Code

- Make it readable
- Use formating Tools (like Toad)
- It is easier to debug
- You will have one standard



The screenshot shows the Toad for Oracle editor interface. The title bar reads "Toad® for Oracle - [ASMUSR@XE - Editor]". The menu bar includes File, Edit, Search, Grid, Editor, Session, Database, Debug, View, Utilities, Window, and Help. The toolbar contains various icons for file operations, SQL execution, and navigation. The main editor window displays the following SQL code, which is formatted with indentation and line numbers:

```
1  /* Formatted on 2009/05/08 18:31 (Formatter Plus v4.8.8) */
2  SELECT aat.application_id, aat.tab_name, aat.tab_page,
3         aat.authorization_scheme_id, aap.authorization_scheme_id
4  FROM apex_application_tabs aat,
5       (SELECT page_id, authorization_scheme_id
6        FROM apex_application_pages
7         WHERE application_id = 100 AND authorization_scheme_id IS NOT NULL) aap
8  WHERE aat.tab_page = aap.page_id
9        AND aat.application_id = 100
10       AND aat.authorization_scheme_id IS NOT NULL
11       AND aat.authorization_scheme_id <> aap.authorization_scheme_id;
```


...and...

...never just copy / paste someone else's code.
Try to understand what it does.
That will save you a lot of time.

Q&A

Thank You.