ORACLE APEX
FOR BEGINNER

ORACLE APEX FOR BEGINNER

Syafrial Fachri Pane
Siti Nurhayati Puja Kesuma
Rayhan Prastya

Informatics Research Center
Politeknik Pos Indonesia

Kreatif Industri Nusantara

Penulis:
Syafrial Fachri Pane
Siti Nurhayati Puja Kesuma
Rayhan Prastya

ISBN :

Editor:
Rayhan Prastya

Penyunting:
Siti Nurhayati Puja Kesuma
Rayhan Prastya

Desain sampul dan Tata letak:
Deza Martha Akbar
Rayhan Prastya

Penerbit:
Kreatif Industri Nusantara

Redaksi:
Jl. Ligar Nyawang No. 2
Bandung 40191
Tel. 022 2045-8529
Email : awangga@kreatif.co.id

Distributor:
Informatics Research Center
Jl. Sariasih No. 54
Bandung 40151
Email : irc@poltekpos.ac.id

Cetakan Pertama, Desember 2019

'Jika Kamu tidak dapat
menahan lelahnya
belajar, Maka kamu harus
sanggup menahan
perihnya Kebodohan.'
Imam Syafi'i

CONTRIBUTORS

SYAFRIAL FACHRI PANE
RAYHAN PRASTYA
SITI NURHAYATI PUJA KESUMA

Informatics Research Center.
Politeknik Pos Indonesia, Bandung, Indonesia

CONTENTS IN BRIEF

DAFTAR ISI

DAFTAR GAMBAR

KATA PENGANTAR

Buku ini diciptakan untuk memberikan pemahaman dasar menganai bahasa pemrograman python

S. F. PANE

Bandung, Jawa Barat
Januari, 2020

ACKNOWLEDGMENTS

Terima kasih atas semua masukan dari para mahasiswa agar bisa membuat buku ini lebih baik dan lebih mudah dimengerti.

Terima kasih ini juga ditujukan khusus untuk team IRC yang telah fokus untuk belajar dan melakukan dokumentasi hasil belajarnya melalui buku dasar-dasar python ini.

S. F. P.

ACRONYMS

APEX	Application Express

GLOSSARY

Python	Merupakan sebuah bahasa pemrograman berbasis objek
Integer	Merupakan tipe data yang berbentuk angka, atau lebih tepatnya merepresentasikan bilangan bulat
Linux	Sistem operasi berbasis sumber kode terbuka yang dibuat oleh Linus Torvald
TryExcept	Sebuah fungsi untuk melakukan penanganan error
unicode	Penyedia nomor unik untuk setiap karakter[1]
CLI	Perantara komunikasi antar user dan sistem operasi

INTRODUCTION

Informatics Research Center
Bandung, Jawa Barat, Indonesia

Apex oracle merupakan sebuah aplikasi database yang sering digunakan pada persuahaan-perusahaan besar.

BAB 1

DATABASE

1.1 *Database*

PSebelum membuat tutorial cara membuat database menggunakan Oracle Apex ini, akan dijelaskan beberapa penjelasan dasar mengenai Database. Database atau dalam Bahasa Indonesia yang berartikan Basis Data berasal dari dua suku kata Basis dan Data. Basis berdasarkan KBBI yang memiliki arti asas atau dasar sedangkan Data memiliki arti Keterangan atau bahan nyata yang dapat dijadikan dasar kajian (analisis atau kesimpulan). Jika dijadikan satu pengertian Basis Data mempunyai beragam salah satu pengertianya Basis Data merupakan urat nadi sistem informasi sehingga perananannya dalam membentuk konsep laporan sangatlah penting yang membuat para pemakai dapat menggunakannya sesuai dengan kebutuhan. Berikut pengertian Basis Data menurut beberapa ahli:

1. Menurut *Fabbri dan Schwab*, basis data adalah suatu sistem terpadu yang dirancang terutama untuk meminimalkan dalam pengulangan data.

2. Menurut *Date*, basis data dapat dianggap sebagai tempat untuk sekumpulan berkas data terkomputerisasi.

3. Menurut *Chou*, Basis Data di definisikan sebagai kumpulan informasi bermanfaat yang diorganisasikan ke dalam tata cara yang khusus

Sedangkan secara garis besarnya Basis Data adalah kumpulan informasi yang disimpan di dalam komputer secara sistematik sehingga dapat diperiksa menggunakan suatu program komputer untuk memperoleh informasi dari basis data tersebut. Basis Data dikelola secara langsung oleh perangkat lunak (software) yang disebut DBMS (Database Management Systen). Basis Data jika digabungkan dengan pengelolanya atau DBMS akan menghasilkan sebuah Sistem. Dalam pembuatan sebuah Sistem Basis Data memiliki Tingkatan atau level bagaimana dalam melihat data di sebuah Sistem Basis Data. Tingkatan atau level sebagai berikut:

1. Level Fisik (Physical Level) Level terendah yang menunjukan bagaimana data disimpan sebagai teks, angka bahkan bit data.

2. Level Konseptual (Conceptual Level) Level yang menggambarkan data secara fungsional disimpan dalam Basis Data seperti disimpan dalam beberapa tabel atau file.

3. Level Penampakan (View Level) Level tertinggi yang menunjukan sebagaian data dari basis data. Kemunculan data atau tampilan data diatur oleh aplikasi end user sehingga data pada level ini sudah data siap saji.

1.2 *SQL*

Basis Data memiliki Bahasa khusus yang mengatur interaksi atau komunikasi antara pemakai dengan basis data di dalam mengelola atau mengorganisasikan data. Contoh bahasa khusus Basis data adalah SQL (Structure Query Language) sebuah bahasa yang digunakan untuk mengakses data dalam Basi Data Relasional. SQL secara de facto merupakan bahasa standar yang digunakan dalam RDMS (Relational Database Management System). SQL juga merukan bahasa baku (ANSI/SQL) non prosedural dan berorientasi himpunan (set oriented language) SQL dapat digunakan baik secara interaktif atau ditempelkan pada sebuah program aplikasi. Standarisasi SQL dimulai pada tahun 1986 ditandai dengan dikeluarkannya standar SQL oleh ANSI, kemudian diperbaiki pada tahun 1989 kemudian diperbaiki kembali pada tahun 1992. Selain itu MySQL software merupakan suatu aplikasi yang sifatnya open source serta server basis data MySQL memiliki kinerja sangat cepat, reliable, dan mudah untuk digunakan serta bekerja dengan arsitektur client server atau embedded systems. Dikarenakan faktor open source dan popular tersebut maka cocok untuk mendemontrasikan proses replikasi basis data. MySQL dapat digunakan untuk mengelola database mulai dari yang kecil sampai dengan yang sangat besar My SQL berkembang sudah mencapai versi 5. Beberapa sistem manejemen database relasionaal umum yang menggunakan SQL adalah: Oracle, Sybase, Microsoft SQL server, Acces, Ingres dan lain lain. Meskipun demikian perintah-perintah SQL standar seperti Select, Insert, Update, Delete, Create, Drop dapat digunakan pada seluruh DBMS tersebut. MySQL juga dapat menjalankan perintah-perintah Structured Query Language

(SQL) untuk mengelola database-database yang ada di dalamnya. Query adalah pertanyaan atau permintaan informasi tertetu dari sebuah basis data yang ditulis dalam format tertentu. Query juga dapat di definisikan sebagai perintah yang digunakn untuk mengakses data pada sistem Basis Data untuk melakukan manipulasi terhadap Basis Data yang dikenal dengan nama SQL (Structured Query Language). Secara umum SQL terdiri dari dua bahasa, yaitu:

1. **Data Defination Language (DDL)**
   DDL adalah struktur atau skema Basis Data yang menggambarkan atau mewakili desain Basis Data secara keseluruhan dispesifikasikan dengan Bahasa DDL. Data Defination Language dapat digunakan untuk:

   - Membuat Tabel Baru
   - Mengubah Tabel
   - Menentukan Struktur Penyimpanan Tabel

   Output dari kompilasi perintah DDL adalah kumpulan tabel yang disimpan dalam file khusus yang disebut kamus data (Data Dictionary). Kamus data merupakan suatu meta data atau super data yang mendeskripsikan data yang sesungguhnya. Kamus Data selalu diakses dalam suatu operasi Basis Data sebelum suatu file atau tabel data yang sesungguhnya diakses.

2. **Data Manipulation Language (DML)**
   Data Manipulation Language (DML) adalah Bahasa Manipulasi Data yang berguna untuk melakukan manipulasi dan pengambilan data pada suatu Basis Data. Data Manipulation Language dapat digunakan untuk:

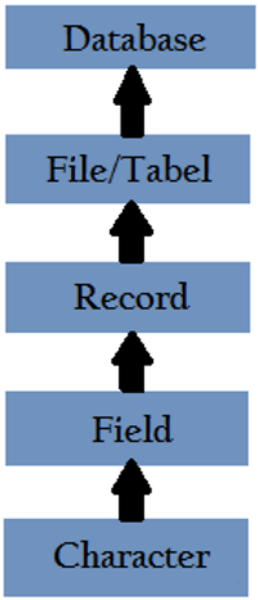
   - Menyisipkan atan menambahkan data baru ke suatu Basis Data
   - Menghapuskan data dari suatu Basis Data
   - Mengubah data di suatu Basis Data.

BAB 2

HIRARIKI ATAU JENJANG DATA

2.1 Hirarki

Dalam Basis Data terdapat Hirarki atau Jenjang Data, yang memiliki arti kumpulan yang terkecil sampai yang terbesar. Berikut merupakan gambaran dari jenjang data



Gambar 2.1 multi entitas

1. Character Character atau Karakter dalam KBBI memiliki makna huruf, angka, ruang simbol khusus yang dapat di tampilkan pada layar papan ketik. Karakter dalam Basis data adalah bagian data yang terkecil dapat berupa karakter numerik (angka 0 9) huruf (A Z, a z) ataupun karakter-karakter khusus, seperti *, &, %, # dan lain-lain.

2. Field Field merepresentasikan suatu atribut dari record yang menunjukan suatu item dari data, seperti misalnya nama, alamat dsb. Setiap field harus mempunyai:

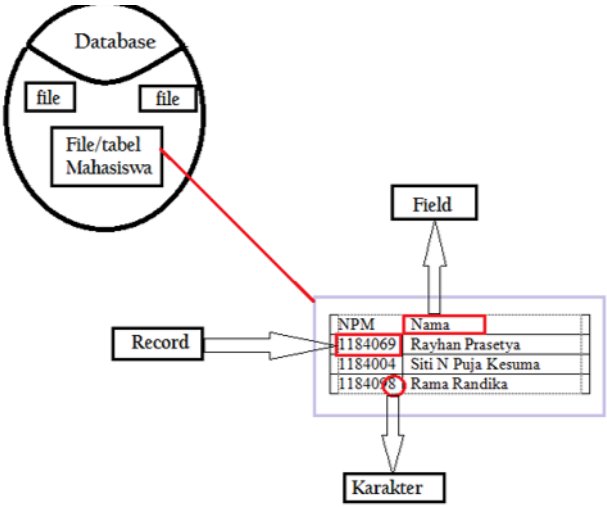
   - Field Name :Harus memberi nama yang unik
   - Field Representation :Tipe field (karakter, teks, tanggal, angka dsb), lebar field (ruang maksimum yang dapat diisi dengat data)
   - Field Value : Isi dari Field

3. Record atau Baris Data Kumpulan dari field item yang logic membentuk suatu record. Sebuah record menggambarkan suatu unit data individu yang tertentu

4. File atau Tabel File terdiri dari kumpulan record yang menggambarkan satu kesatuan data yang sejenis dan logic berhubungan.

5. Database Database merupakan kumpulan file-file yang berhubungan secara logis dan digunakan secara rutin pada operasi-operasi sistem informasi manajemen.

   Contoh gambar dari jenjang data yang sudah dijelaskan diatas:



Gambar 2.2 multi entitas

BAB 3

MODEL BASIS DATA

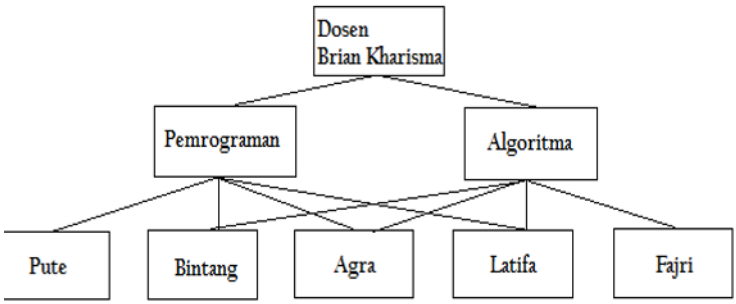
3.1 Model Basis Data

Basis Data memiliki beberapa model. Model Basis Data adalah kumpulan dari konsepsi pada suatu Basis Data yang biasanya mewakili struktur dan relasi data yang terdapat pada suatu Basis Data. Sebuah model Basis Data adalah tempat dimana data atau suatu metodologi untuk menyimpan data. Model Basis Data menyatakan hubungan antar rekaman yang tersimpan dalam Basis Data. Jenis-jenis Model Basis Data:

1. **Model Basis Data Jaringan** Model jaringan merupakan model Basis Data yang secara fleksibel mewakili objek dan hubungan mereka. Model ini memiliki fitur istimewa yang pada skema diagram diperlihatkan sebagai grafik dengan tipe objek. Model Basis Data Jaringan terdiri atas record yang dihubungkan satu sama lain melalui link yang berupa pointer. Model Basis Data ini dapat menyatakan hubungan:
    - Satu ke Satu (One To One) yang artinya satu orang tua memiliki satu anak
    - Satu ke Banyak (One To Many) yang artinya satu orang tua punya beberapa anak

- Banyak ke Banyak (Many To Many) yang artinya beberapa anak punya beberapa orang tua.

Model Basis Data ini memiliki kelemahan yaitu lebih kompleks dan lebih susah dalam proses query dan dalam memanipulasi data lebih rumit karena harus menelusuri data pada setiap recodnya. Contoh Gambar:



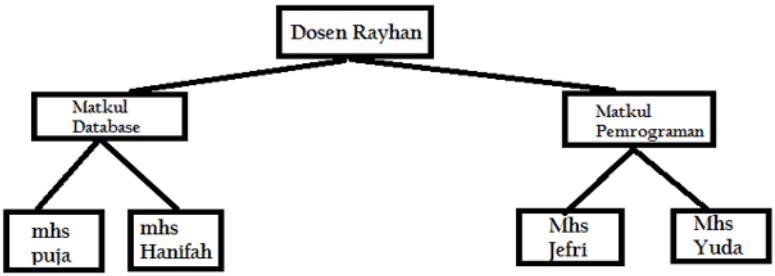
Gambar 3.1 multi entitas

2. **Model Basis Data Hirarki** Model Basis Data ini disebut juga model pohon, karena hubungan antar simpul digambarkan seperti skema struktur pohon (tree-structured) yang dibalik dengan pola hubungan orang tua-anak (parent-child). Model Basis Data ini menyatakan hubungan:

   - Satu ke satu (One to one)

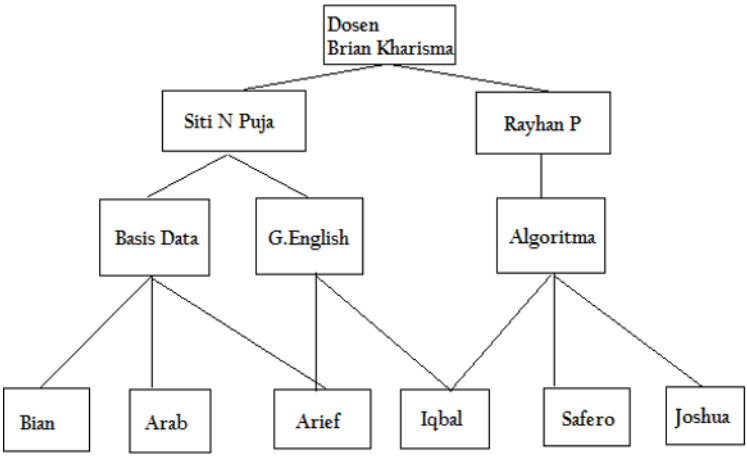
   - Satu ke banyak (One to many) tetapi satu anak hanya boleh mempunyai satu orang tua.

Model Basis Data Hirarki ini memiliki kelemahan yaitu ketidak mampuan dalam mengelola hubungan banyak ke banyak (many to many) sehingga di dalam Model Basis Data Hirarki ini sering terjadinya redudansi atau duplikasi data. Contoh Gambar:



Gambar 3.2 multi entitas

3. **Model Basis Data Relasional** Model Data Relasionala adalah suatu model Basis Data yang menggunakan tabel dua dimensi, yang terdiri atas baris dan kolom untuk menggambarkan sebuah berkas data. Model ini menunjukan cara mengelola atau mengorganisasikan data secara fisik. Keuntungan Model Data ini adalah bentuknya sederhana dan mudah melakukan berbagai operasi data (query, update atau edit, delete), mampu mengurangi adanya redudancy data, fleksibel karena nilai data dalam tabel tidak ada pembatasan dalam berbagai proses pencarian data. Model ini menggunakan Bahasa Query Formal (prosedural dan Non Prosedural) dan Bahasa Query Komersial (QUEL, QBE, dan SQL)
   Contoh Gambar:



Gambar 3.3 multi entitas

Didalam Model Basis Data Relasional memiliki istilah-istilah. Berikut merupakan istilah-istilah yang sering dipakai pada Model Basis Data Relasional:

- Relasi Relasi adalah sebuah tabel yang terdiri dari beberapa kolom dan baris.
  Contoh:

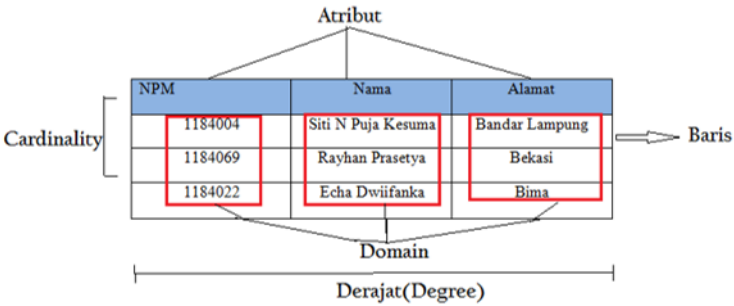
NPM	Nama Mahasiswa
1184004	Siti N Puja Kesuma
1184069	Rayhan Prasetya
1184022	Echa Dwiifanka

Kode_Kuliah	Matkul
INF01	Basis Data
INF02	Pemrograman
INF03	Algoritma

Gambar 3.4 multi entitas

- Atribut Atribut adalah nama yang tercantum di kolom pada sebuah relasi(field).
- Tuple Tupel adalah baris pada sebuah relasi(record) atau kumpulan elemen yang saling berkaitan.

- Domain Domain adalah kumpulan nilai yang valid untuk satu atau lebih atribut bersifat atomik
- Derajat (degree) Derajat adalah jumlah atribut dalam sebuah relasi (jumlah field)
- Cardinality Cardinality adalah jumlah tupel dalam sebuah relasi (jumlah record).
  Contoh:



Gambar 3.5 multi entitas

BAB 4

RANCANGAN BASIS DATA

4.1 Rancangan Basis Data

Perancangan Basis Data diperlukan agar dapat terbentuk Basis Data yang efesien dalam penggunaan ruang penyimpanan, Cepat dalam pengaksesan dan mudah dalam memanipulasi (Tambah, ubah dan hapus) data. Tahapan dalam Perancangan Basis Data ada beberapa yaitu:

1. **Normalisasi Data** Normalisasi dalam KBBI adalah tindakan mengembalikan pada keadaan, hubungan, dan sebagainya yang biasa atau yang normal. Normalisasi dalam Basis Data adalah proses pengelompokan atribut yang membentuk entitas sederhana, non redudansi, fleksibel dan mudah beradaptasi sehingga dapat dipastikan bahwa Basis Data yang dibuat berkualitas baik. Normalisasi merupakan cara pendekatan lain dalam membangun desain logic sebuah Basis Dara Relasional dengan menerapkan sejumlah aturan dan kreteria standar untuk menghasilkan struktur tabel yang normal atau baik. Dalam pendekatan normalisasi ini perancangan basis data bertolak dari situasi yang nyata dimana telah memiliki item-item data yang siap ditempatkan dalam baris dan kolom pada tabel-tabel relasional.

2. **Atribut** Atribut adalah katagori variabel kualitatif atau karakteristik dari entity yang menyediakan penjelasan detail tentang entity atau relationship tersebut. Atribut sendiri identik dengan Kolom data (field) pada sebuah tabel. Atribut dapat dibedakan menjadi beberapa kelompok:

   - **Atribut Kunci** Atribut kunci adalah satu atau gabungan dari beberapa atribut yang dapat membedakan semua baris data dalam tabel secara unik. Dikatakan unik Jika pada atribut yang dijadikan kunci tidak boleh ada baris data dengan nilai yang sama. Ada 4 macam key yang dapat diterapkan pada suatu tabel yaitu:

     – Super Key
     Super Key merupakan satu atau lebih atribut (Kumpulan Atribut) yang dapat membedakan setiap baris data dalam sebuah tabel secara unik

     – Candidate Key
     Candidate key merupakan kumpulan atribut minimal yang dapat membedakan atau mengidentifikasi nilai-nilai kombinasi setiap baris data dalam sebuah tabel secara unik. Candidate Key tidak boleh berisi atribut dari tabel lain.

     – Foreign Key
     Foreign Key atau dalam Bahasa Indonesia Kunci Tamu adalah atribut dengan domain yang sama yang akan menjadi kunci utama pada sebuah tabel tetapi pada tabel lain atribut tersebut tersebut hanya sebagai atribut biasa. Foreign Key ini adalah kunci penyambung antar tabel atau atribut yang digunakan untuk merelasikan atau atribut yang melengkapi satu relationship yang menunjukan ke induknya, dengan kata lain keduannya saling berkaitan.

     – Primary Key
     Primary key atau Kunci Utama adalah atribut yang telah dipilih untuk mengidentifikasi setiap record secara unik. Kunci utama harus merupakan atribut yang benar-benar unik dan tidak boleh ada nilai NULL. Kreteria menentukan Primary Key:

   - Atribut tersebut dijadikan acuan
   - Atribut lebih sederhana
   - Atribut cukup unik.

   - Atribut Sederhana
     Atribut sederhana adlaah atribut atomik yang tidak dapat dipilah lagi atau diuraikan menjadi sub-sub atribut.

Tabel 4.1 sederhana

Nama Mahasiswa
Rayhan Prastya
Siti Nurhayati Puja Kesuma

- Atribut Komposit
  Atribut komposit adalah atribut yang masih dapat diuraikan lagi menjadi sub-sub atribuut yang masing-masing memiliki makna.
  Contoh :

Tabel 4.2 TABEL ALAMAT

Alamat_Mahasiswa
Jl.Cijarokaso No.18 Sarijadi
Jl.Wala Jaya No.11 Waylaga
Jl.Cilandak NO.50 Sarimanah

- Atribut Bernilai Tunggal
  Atribut bernilai tunggal adalah atribut-atribut yang memiliki paling banyak satu nilai untuk setiap baris data.
  Contoh:

Tabel 4.3 TABEL MAHASISWA

Nama Mahasiswa	**NPM**
Rayhan Prastya	1184069
Siti N Puja Kesuma	1184004

- Atribut Bernilai Banyak
  Atribut bernilai banyak adalah atribut yang dapat diisi dengan lebih dari satu nilai, tetapi jenisnya sama.
  Contoh :

Tabel 4.4 TABEL KEAHLIAN

Keahlian
Menyanyi
Menjahit

- Atribut Harus Bernilai
  Atribut haarus bernilai adalah atribut pada sebuah tabel yang harus berisi

data (nilainya tidak boleh kosong).
Contoh:

Tabel 4.5 TABEL MAHASISWA

Nama Mahasiswa	NPM
Rayhan Prastya	1184069
Siti N Puja Kesuma	1184004

- Atribut Nilai Null
  Atribut nilai null adalah atribut yang nilainya boleh dikosongkan. Dapat digunakan untuk menyatakan atau mengisi atribut-atribut yang nilainya memang belum siap atau tidak ada.
  Contoh:

Tabel 4.6 TABEL MAHASISWA

Nama Mahasiswa	NPM

- Atribut Turunan
  Atribut turunan adalah atribut-atribut yang nilai-nilainya diperoleh dari pengolahan atau dapat diturunkan dari atribut tabel lain yang berhubungan. Dapat ditiadakan dari sebuah tabel, karena nilainya bergantung pada nikai yang ada di atribut lain.
  Contoh:

Tabel 4.7 TABEL MAHASISWA

IP
3,50
3,04

3. Tipe Data
   Tipe data digunakan untuk mendefinisikan suatu field atau kolom. Setiap kolom yang dibuat harus didefiniskan terlebih dahulu. Lebih merujuk pada kemampuan penyimpanan data yang mungkin bagi suatu atribut secara fisik. Tipe data bagi setiap atribut relevan untuk diperhitungkan pada saat di implementasikan pada Basis Data. Jenis tipe data ada beberapa macam. Berikut ini macam-macam tipe data yang digunakan di SQL:

   - Tipe Numerik
     Tipe data numerik digunakan untuk menyimpan data berupa angka. Ciri

utama nya adalah suatu data yang memungkinkan untuk dikenai operasi aritmatika seperti pertambahan, pengurangan, perkalian dan pembagian.
Berikut ini tipe field (kolom) di MySQL yang termasuk kedalam kelompok tipe numerik:

- Tinyint
- Smallint
- Mediumint
- Int
- Begint
- Float
- Double atau real
- Decimal atau numeric

- Tipe Date dan Time Tipe date dan time digunakan untuk menyimpan data dan waktu. Berikut ini tipe field (kolom) di MySQL yang termasuk ke dalam kelompok tipe date dan time:

  - Date
  - Time
  - DateTime
  - Year

- Tipe String (Text)
  Tipe data string digunakan untuk menyimpan data text. Ciri utama string adalalh suatu data yang memungkinkan untuk dikenai operasi aritmatika seperti pertambahan, pengurangan, perkalian dan pembagian.
  Berikut ini tipe field (kolom) di MySQL yang termasuk kedalam kelompok tipe String.

  - Char
  - Varchar
  - Tinytext
  - Text
  - Mediumtext
  - Longtext

- Tipe BLOB (Biner)
  Tipe Blob atau Binary Large Object digunakan untuk menyimpan data binner. Tipe ini biasanaya digunakan untuuk menyimpan kode-kode binner dari suatu file atau object.
  Berikut ini tipe field(kolom) yang termasuk kelompok tipe blob :

  - Bit

- Tinyblob
- Blob
- Mediumblob
- Longblob

4. Operator
   Operator merupakan simbol yang digunakan untuk menginstruksikan program untuk melakukan sesuatu. Operator digunakan dalam query untuk melakukan filter data.
   Berikut merupakan jenis-jenis operator di dalam Basis Data:

   ▪ Operator Relasional

Tabel 4.8 tabel relasional

Operator	Arti
=	Sama dengan
!= atau <>	Tidak sama dengan
>	Lebih dari
>=	Lebih dari atau sama dengan
<	Kurang dari
<=	Kurang dari atau sama dengan

   ▪ Operator Logika

Tabel 4.9 tabel logika

2***Opernd 1**	2***Operand 2**	**Hasil Operasi**	
		Operator OR	**Operator AND**
Salah	Salah	Salah	Salah
Salah	Benar	Benar	Salah
Benar	Salah	Benar	Salah
Benar	Benar	Benar	Benar

   ▪ Operator Aritmatika

Tabel 4.10 tabel aritmatika

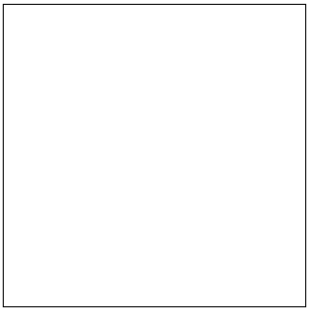
Operator	Keterangan	Prioritas
*	Perkalian	1
/	Pembagian	1
%	Sisa Pembagian	2
DIV	Hasil Pembagian bulat	2
+	Penjumlahan	3
-	Pengurangan	3

BAB 5

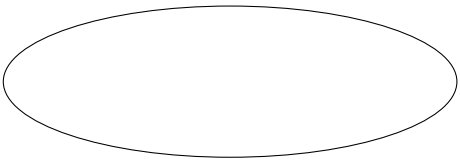
ER DIAGRAM

5.1 Diagram Entity-Relationship (ERD)

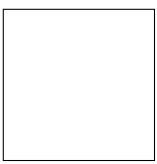
Diagram Entity Relationship adalah suatu model untu menjelaskan hubungan antar data di dalam Basis Data berdasarkan objek-objek dasar data yang mempunyai hubungan antar relasi. ERD merupakan model data berupa konseptual. Tujuan dibuatnya Diagram E-R ini adalah untuk menunjukan objek-objek(himpunan entitas) yang terlibat dalam sebuah basis data dan bagaimana hubungan yang terjadi diantara objek-objek tersebut.
Diagram Entity Relationship ini memiliki notasi simbolik yang terdiri dari :

- 

  Persegi Panjang yang menyatakan Himpunan Entitas

- 

  Elips menyatakan Atribut. Atribut yang berupa kunci(key) diberi tanda unik yaitu digaris bawahi.

- 

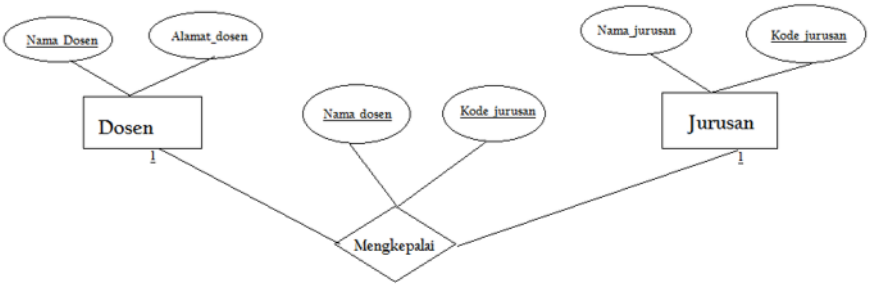
  Belah Ketupat yang menyatakan Himpunan relasi.

-

  Garis digunakan sebagai penghubung himpunan entitas dengan himpunan relasi.

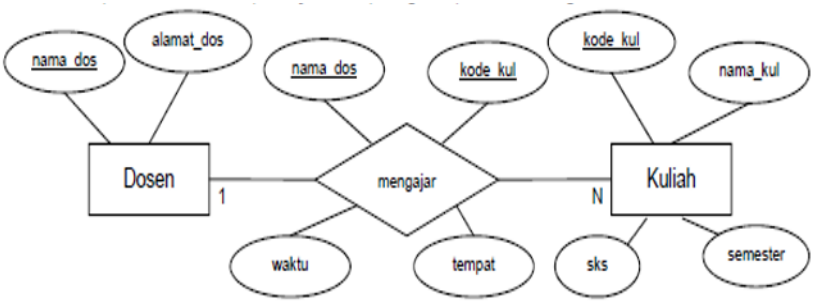
Contoh Diagram E-R **satu ke satu**:

satu.png



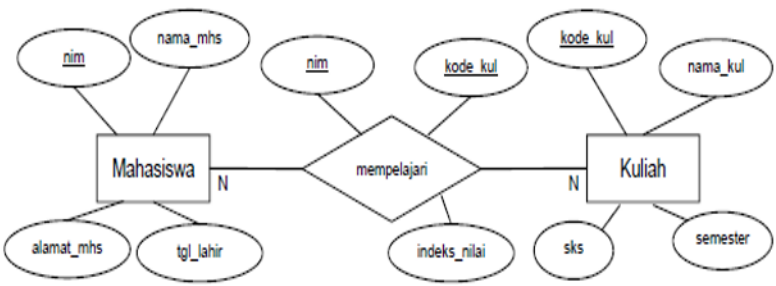
Gambar 5.1 satu ke satu

Contoh Diagram E-R **satu ke banyak**:



Gambar 5.2 satu ke satu

Contoh Diagram E-R **banyak ke banyak**:



Gambar 5.3 satu ke satu

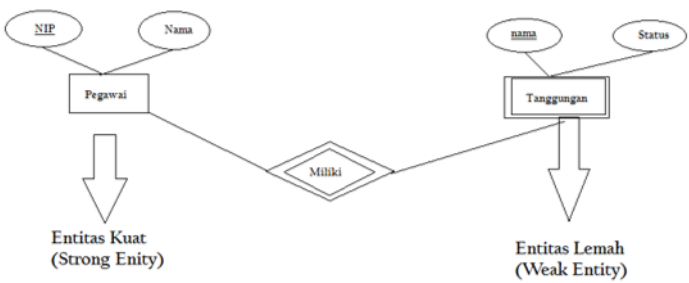
Tahapan pembuatan Diagram E-R

- Mengidentifikasi dan menetapkan seluruh himpunan entitas yang akan terlibat
- Menentukan atribut-atribut key dari masing-masing himpunan entitas
- Mengidentifikasi dan menetapkan seluruh himpunan relasi diantara himpunan entitas beserta foreignkey nya
- Menentukan derajat/kardinalitas relasi untuk setiap himpunan relasi
- Melengkapi himpunan entitas dan himpunan relasi dengan atribut-atribut deskriptif.

Entity atau Entitas adalah sebuah objek yang keberadannya dapat dibedakan terhadap objek lain. Enitiy sendiri memiliki beberapa varian, biasanya himpunan entitas dalam Diagram E-R adalam himpunan entitas kuat. Berikut merupakan varian entitas dalam Diagram E-R:

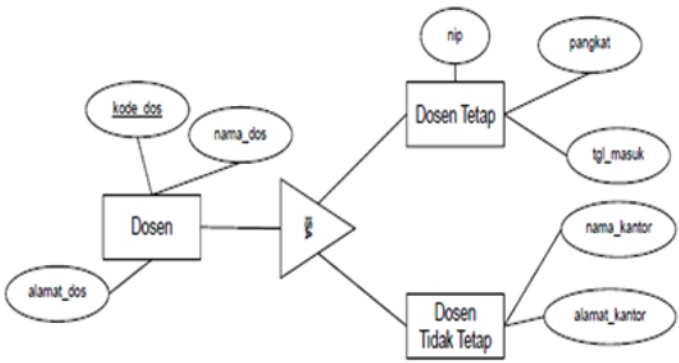
- Strong Entity Sets
  Strong entity sets tidak memiliki ketergantungan ketergantungan dengan himpunan entitas lainnya, dimana kemunculan entitas-entitas di dalamnya tidak tergantung pada keberadaan entitas di himpunan entitas lainnya. Strong Entity Sets ini entitas yang memiliki atribut kunci. Daya entits kuat mempunyai ciri khas yang istimewa yaitu identifier (suatu atribut tunggal atau perpaduan atribut-atribut yang secara khas bisa dipakai untuk membedakannya dari entitas kuat yang lain).
- Weak Entity Sets
  Weak Entity Sets biasanya tidak memiliki atribut yang dapat berfungsi sebagai key (yang benar-benar menjamin keunikan entitas didalamnya). Entitas lemah di identifikasikan dengan mengaitkan entitas penting dari jenis entitas yang lain ditambah atribut yang beraal dari entitas lemah.
  contoh :

Python/figures/weakentitiy.png



Gambar 5.4 weak entity

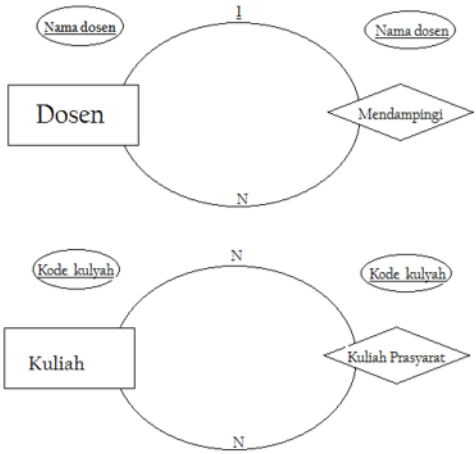
- Subtype Entity
  Sub entitas adalah himpunan entitas yang beranggotakan entitas-entitas bagian dari himpunan entitas yang lebih superior/utama. Sub Entitas ini merupakan hasil dekomposisi (spesialisasi) himpunan entitas berdasarkan pengelompokan tertentu dari himpunan entitas yang lain.
  Contoh :



Gambar 5.5 subtype

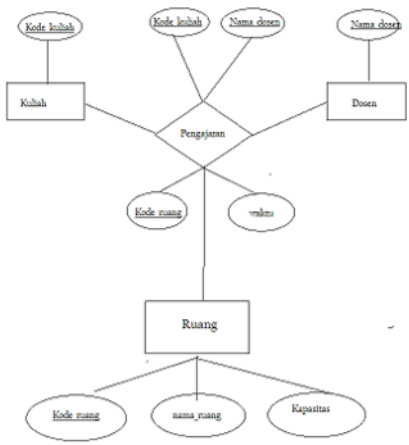
Relasi yang terjadi di antara dua himpunan entitas yang berbeda disebut sebagai relasi Biner (Binary Relation) yang merupakan relasi yang paling umum digunakan. Relasi hanya melibatkan sebuah himpunan entitas atau lebih dari dua himpunan entitas.
Relasi memiliki beberapa varian, berikut varian-varian dari relasi:

- Relasi Tunggal (unary relation)
  Relasi Tunggal adalah relasi yang terjadi dari sebuah himpunan entitas ke himpunan entitas yang sama
  Contoh:



Gambar 5.6 relasi tunggal

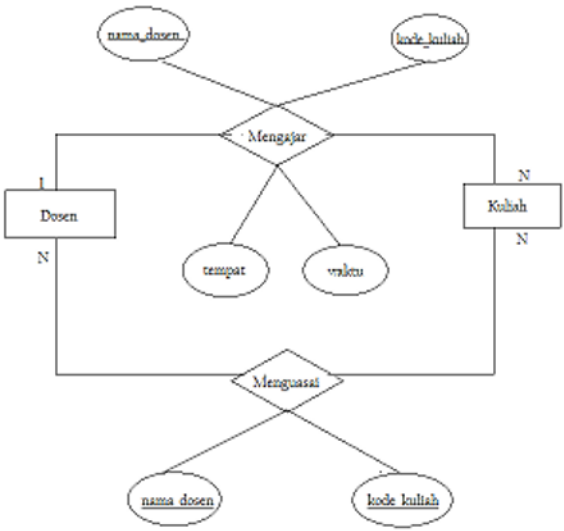
- Relasi Multi Entitas (N-ary Relation)
  Relasi Multi Entitas dalah relasi dari tiga himpunan atau lebih. Relasi ini disarankan untuk dihindari, karena akan mengaburkan derajat relasi (derajat parsial) yang ada dalam relasi tersebut. Contoh:



Gambar 5.7 multi entitas

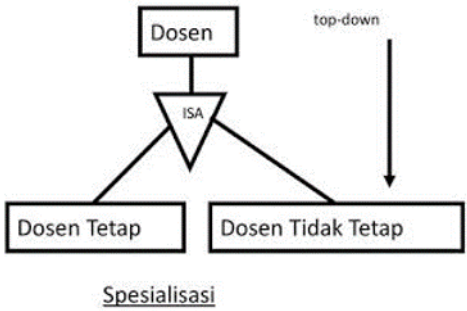
- Relasi Ganda (Redundant Relation)
  Relasi Ganda adalah relasi yang muncul antara dua himpunan entitas tidak

hanya satu relassi, tetapi ada lebih dari satu relasi.
contoh :



Gambar 5.8 multi entitas

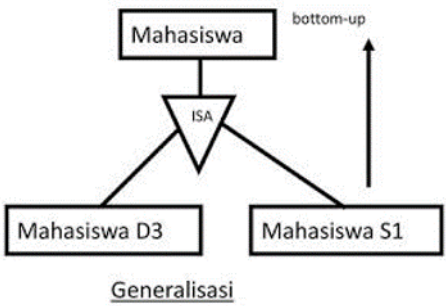
Spesialisasi
Spesialisasi adalah proses dari sebuah entitas yang dikelompokan berdasarkan atribut-atribut yang berbeda yang akan melahirkan himpunan entitas baru (proses top-down). Spesialisasi ditekankan pada perbedaan antar kelompok entitas. Notasi relasi yang digunakan adalah relasi ISA berasal dari kata Is A.
contoh :



Gambar 5.9 multi entitas

Generalisasi

Generelasasi adalah proses dari sebuah entitas, lalu dikelompokan berdasarkan atribut-atribut yang sama, yang akan melahirkan himpunan entitas baru (proses bottom-up). Yang di tekankan pada generalisasi adalah persamaan antar kelompok entitas.
Contoh:

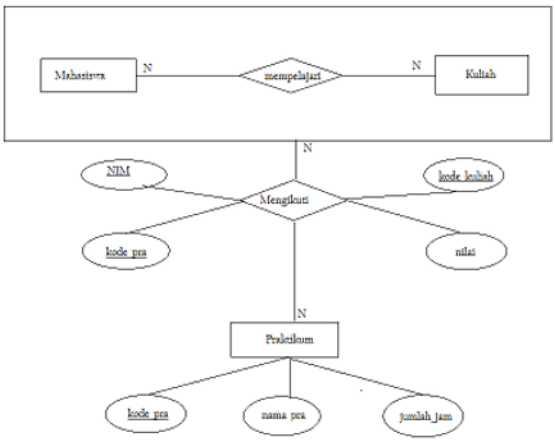


Gambar 5.10 multi entitas

Agreagasi

Agresiasi dalam realitas dapat dijumpai adanya relasi yang secara kronologis mensyaratkan telah adanya relasi lain. Sebuah relasi terbentuk tidak hanya dari entitas tetapi jufa mengandung unsur dari relasi lain. Fenoma tersebut diakomodasi dengan agregasi.

Contoh:

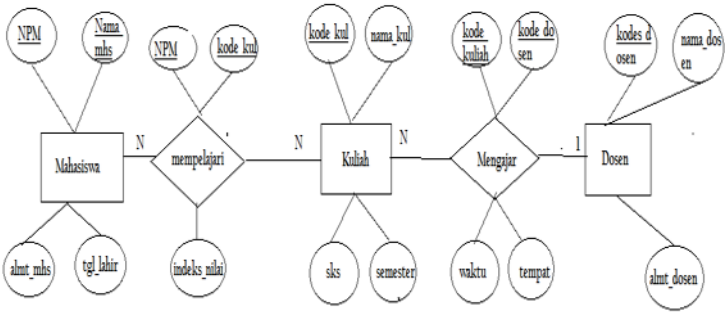


Gambar 5.11 multi entitas

Modifikasi Diagram E-R

mengarah pada penyempurnaan dan optimis model data karena pertimbangan-pertimbangan efisiensi ruang atau kecepatan dan kemudahan dalam mengakses data.

- Key Alternatif (Alternate Key)
  Key Alternatif adalah key yang membedakan secara unik setiap entitas pada himpunan entitasnya, namun tidak dikenal dalam pemakaian sehari-hari sehingga bukan merupakan fakta yang telah ada di dunia nyata. Key dapat dikatagorikan baik jika berukuran kecil dan sekuensial.
  Contoh:



Gambar 5.12 multi entitas

- Pengkodean Internal
  Pengkodean internal adalah data koding yang merupakan cara untuk menyatakan suatu data dalam bentuk lain. Data koding terdiri dari 3 bentuk, yaitu:

  – Sekuensial
    Sekuensial adalah pengkodean yang dilakukan dengan mengasosiasikan data dengan kode urut (biasanya berdasarkan bilangan atau abjad) Contoh: Data Hari (Senin,Selasa,.....,Sabtu) Data Nilai (A,B,C,D)

  – Mnemonic
    Mnemonic adalah pengkodean yang dilakukan dengan membentuk suatu singkatan dari data yang ingin dikodekan.
    Contoh:
    Data Mata Kuliah (Matematika Diskrit,Database) dikodekan dengan (Matdis,DB)

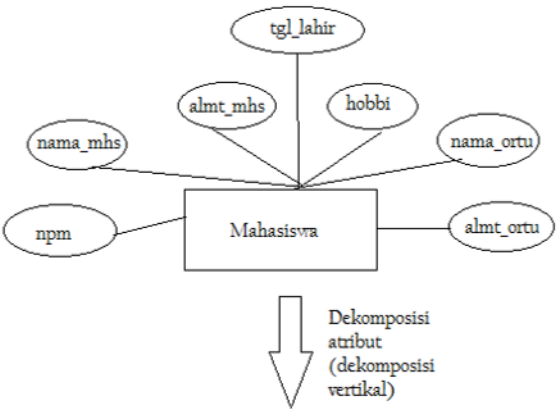
  – Blok
    Blok adalah pengkodeaa yang dinyatakan dalam format.
    Contoh:
    Data no.induk mahasiswa dengan format XXYYYY yang terbentuk atas XX=dua dijit terakhir angka tahun masuk dan YYYY = no.urut mahasiswa.

Dekomposisi Himpunan Entitas

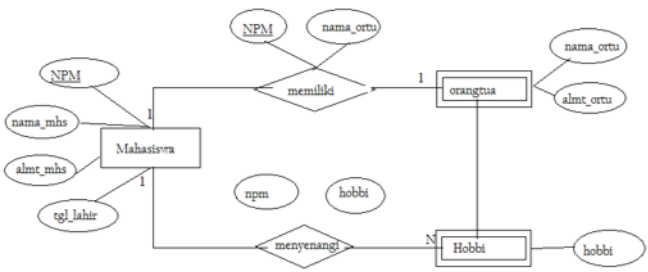
Dekomposisi Himpunan Entitas adalah sebuah himpunan entitas yang ada dalam sebuah diagram E=R dapat didekomposisi menjadi beberapa himpunan entitass baru karena pertimbangan efisiensi ruang penyimpnan dan pertimbangan kemudahan atau kecepatan pengaksesan data. Upaya dekomposisi ini senantiasa akan menghasilkan satu himpunan entitas kuat dan satu atu beberapa himpunan entitas lemah atau sub entitas.

Dekomposisi memiliki dua bentuk yaitu:

- Dekomposisi Atribut
  Dekomposisi atribut adalah dekomposisi dengan dengan membagi sebuah himpunan entitas menjadi dua atau lebih dengan pemisahan atribut.
  Contoh:



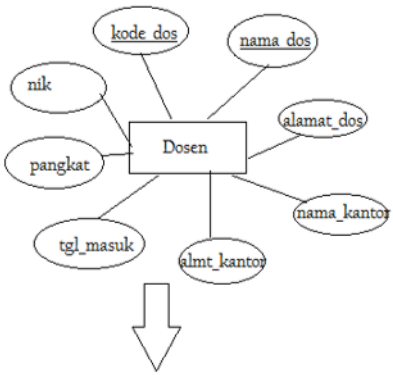
Gambar 5.13 multi entitas



Gambar 5.14 multi entitas

- Dekomposisi Entitas
  dekomposisi dengan membagi sebuah himpunan entitas menjadi dua atau lebih

dengan pemisahan entitas.
Contoh:



Gambar 5.15 multi entitas

Fleksibilitas
Fleksibilitas didalam basis data dapat direalisasikan dalam bentuk :

- Penambahan atribut
- Pemilihan domain atribut yang lebih luas
- Generalisassi
- Perubhana struktur entitas dari yang berorientasi kolom sampai menjadi yang berorientasi baris

BAB 6

TRANSFORMASI ATAU IMPLEMENTASI

6.1 Transformasi atau Implementasi Model Data

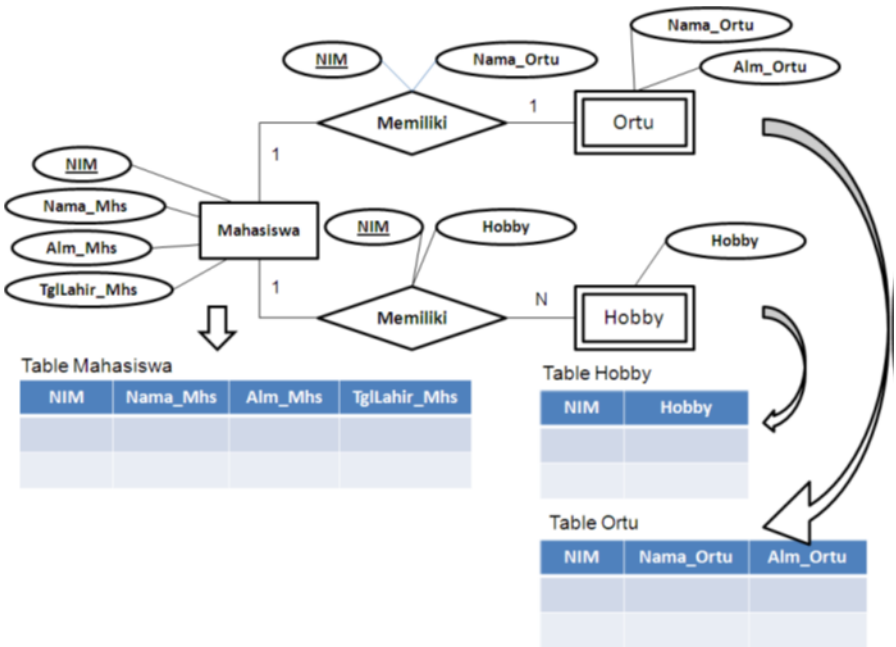
Transformasi Data adalah upaya yang dilakukan dengan tujuan utama untuk mengubah skala pengukuran data asli menjadi bentuk lain sehingga data dapat memenuhi asumsi-asumsi yang mendasari analisis ragam. Dalam mengimplementasikan Basis Data adalah upaya untuk membangun Basis Data fisik yang ditempatkan dalam memori sekunder dengan bantuan DBMS tertentu yang dipilih. Tahap ini diawali dengan melakukan transformasi dari model data yag telah selesai dibuat kedalam struktur tabel basis data sesuai dengan DBMS tertentu yang dipilih. Ketentuan transformasi:

- Sebuah Diagram E-R direpresentasikan menjadi sebuah basis data secara fisik
- Himpunan entitas dan himpunan relasi yang ada pada Diagram E-R ditransformasikan melalui aturan tertentu menjadi tabel-tabel
- Atribut-atribut pada setiap himpunan entitas maupun himpunan relasi dinyatakan sebagai field-field dari tabel yang sesuai.

Transformasi memiliki banyak bentuk:

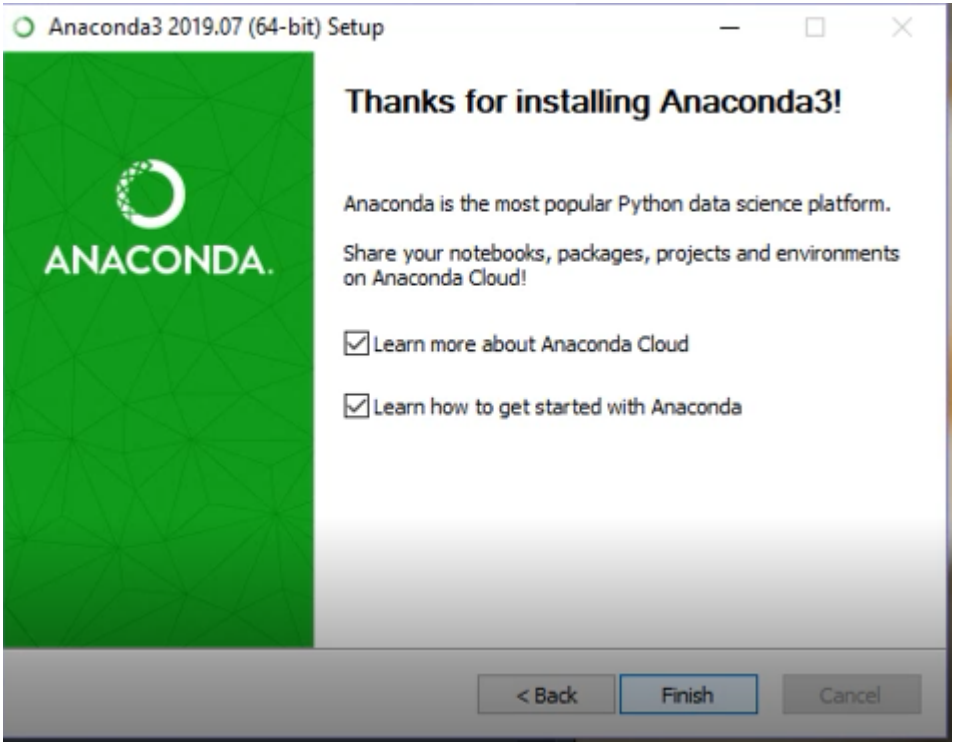
1. **Transformasi Umum atau dasar**
   Transformasi umum atau dasar adalah aturan dalam pemetaan Model Data (Level Konsptual dalam Abstraksi Data) yang digambarkan dengan diagram E-R menjadi Basis Data Fisik. Level Fisik dalam abstraksi data adalah:

   - Setiap himpunan entitas akan diimplementasikan sebagai sebuah tabel (file data)
     contoh:



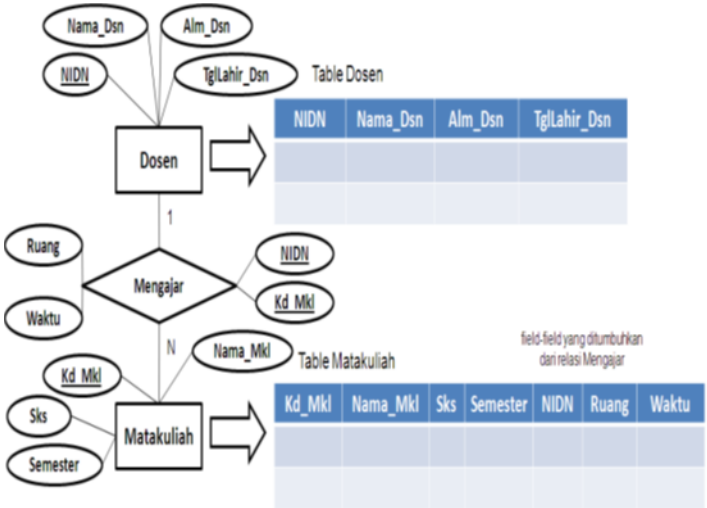
Gambar 6.1 multi entitas

   - Relasi dengan derajat relasi 1:1 (satu ke satu) yang akan menghubungkan dua buah himpunan entitas akan direpresentasikan dalam bentuk penambahan atau penyertaan atribut-atribut relasi ke tabel yang mewakili salah satu atribut key dari kedua himpunan entitas yang memiliki derajat minimum lebih besar atau diperkirakan jumlah barisnya lebih sedikit.
     Contoh:



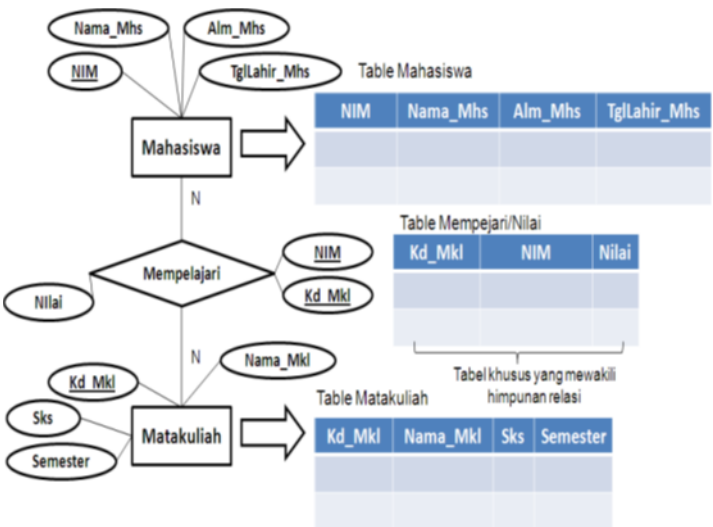
Gambar 6.2 multi entitas

- Relasi dengan Derajat relasi 1-N (satu ke banyak) yang menghubungkan dua himpunan entitas juga akan direpresentasikan dalam bentuk pemberian atau pencantuman atribut key dari himpunan entitas pertama yang berderajat 1 ke tabel yang mewakili himpunan entitas kedua yang berderajat N. Atribut key dari himpunan pertama akan menjadi atribut tambahan bagi himpunan entitas kedua.
  Contoh:



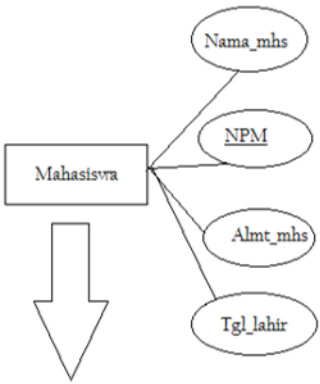
Gambar 6.3 multi entitas

- Himpunan relasi dengan derajat N-N yang menghubungkan 2 buah himpunan entitas, akan direpresentasikan dalam bentuk tabel khusus yang memiliki field (foreign key) yg berasal dari key-key dari Himpunan entitas yang dihubungkannya.
  Contoh:



Gambar 6.4 multi entitas

2. **Transformasi dari Himpunan Entitas Lemah dan Sub Entitas** Himpunan Entitas Lemah dan Sub Entitas hanya dapat ditransformasi menjadi tabel dengan menyertakan pula atribut key yang ada di Himpunan Entitas Kuat yang berelasi dengannya. Bedanya jika himpunan entitas kuat sudah dapat langsung menjadi sebuah tabel utuh atau sempurna walaupun tanpa melihat relasinya dengan himpunan entitas yang lain.
   Contoh:

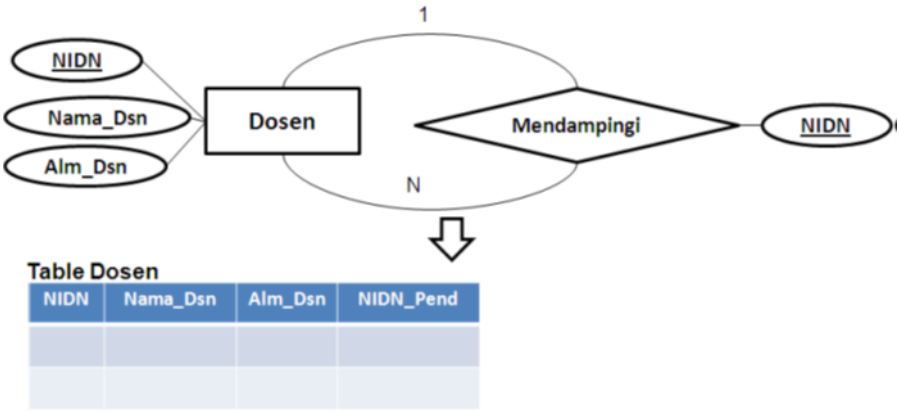


Tabel mahasiswa

NPM	Nama_mhs	Almt_mhs	Tgl_lahir

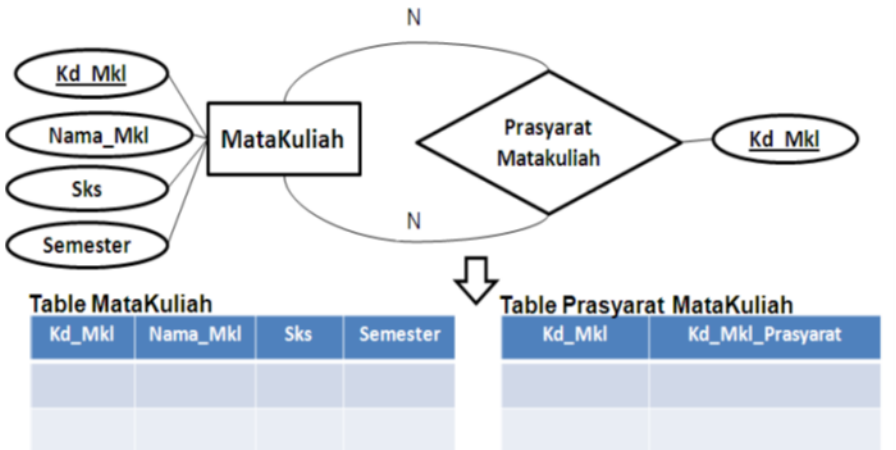
Gambar 6.5 multi entitas

3. **Transformasi dari Relasi Tunggal** Relasi Tunggal dari/ke himpunan entitas yang sama dalam Diagram E-R tergantung derajat relasinya. Relasi satu ke banyak di transformasikan melalui penggunaan field key dua kali tapi untuk fungsi yang berbeda.
   Contoh:



Gambar 6.6 multi entitas

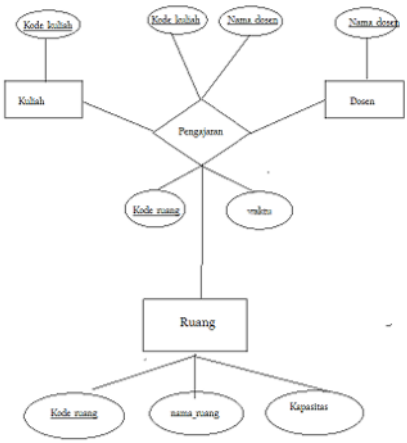
Relasi yang derajatnya banyak ke banyak akan di transformasikan melalui pembentukan tabel baru yang merepresentasikan relasi tersebut. Tabel baru ini akan mendapatkan field dari smeua atribut relasi yang akan ditambah dengan atribut key dari himpunan entitsnya.
Contoh:



Gambar 6.7 multi entitas

4. **Transformasi dari relasi multi entitas** Relasi Multi Entitas yang menghubungkan lebih dari dua himpunan entitas (N himpunan entitas dimana N¿2) akan di-

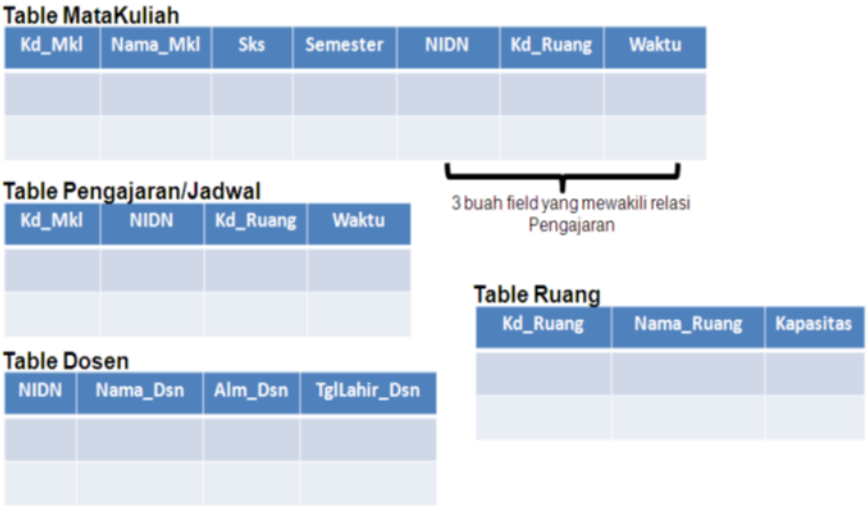
transformasikan sebagai sebuah tabel Jika pada relasi yg menghubungkan N buah himpunan entitas, kita dapat memastikan bahwa derajat relasi parsial diantara (N-1) buah himpunan entitas dengan suatu himpunan entitas (misalnya X) adalah satu-ke-banyak, maka relasi tadi tidak perlu diwujudkan sbagai sebuah tabel khusus dan atribut-atributnya cukup dilekatkan pada himpunan entitas X tersebut.
Contoh:



Gambar 6.8 multi entitas

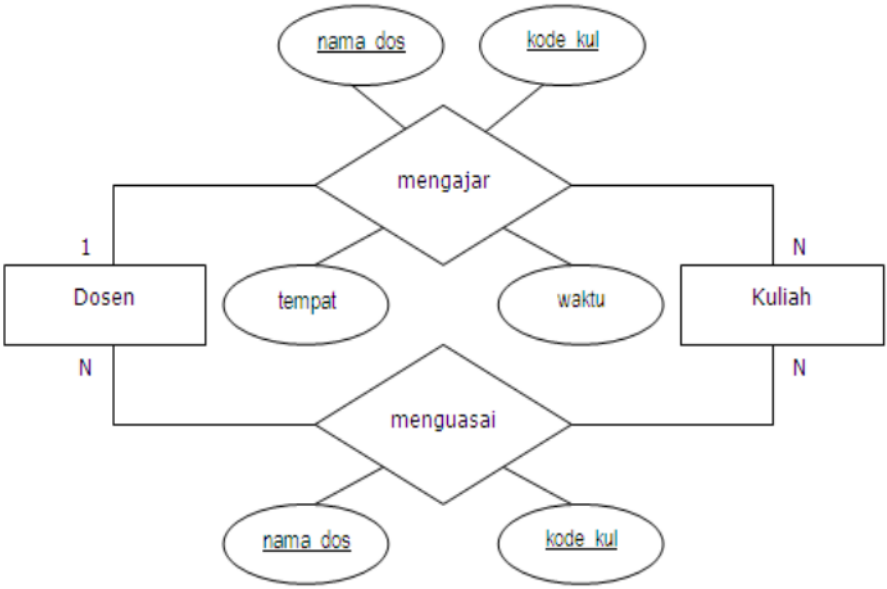
Hasil Akhir Transformasinya adalah:

Python/figures/hasil transform.png



Gambar 6.9 multi entitas

5. **Transformasi dari Relasi Ganda** Transformasinya kita tinjau pada masing-masing himpunan relasi dan berdasarkan derajat relasi di masing-masing himpunan relasinya.
   Contoh:



Gambar 6.10 multi entitas

Hasil Akhir Transformasinya adalah:

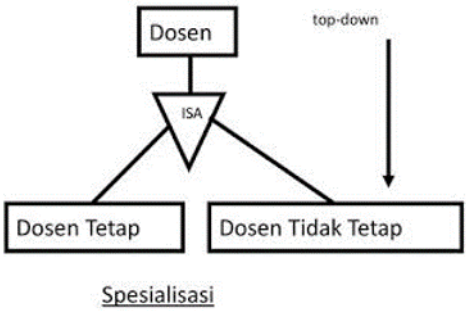
Tabel 6.1 kuliah

Kode_kul	Nama_kul	sks	semester	Kode_pos

Tabel 6.2 menguasai

Kode_dos	Nama_dos

6. **Transformasi Spesialisai**



Gambar 6.11 multi entitas

menjadi:

Tabel 6.3 dosen

Kode_dos	Nama_dos	Alamat_dos

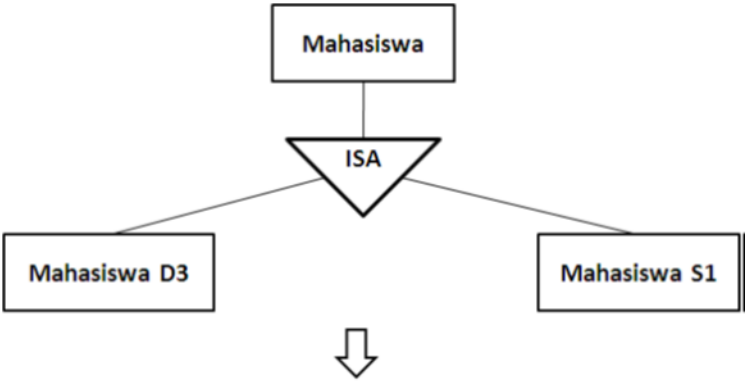
Tabel 6.4 dosen tetap

Kode_dos	NIK	Pangkat	Tgl_masuk

Tabel 6.5 tidak tetap

Kode_dos	Nama_kantor	Alamat_kantor

7. **Transformasi Generalisasi**

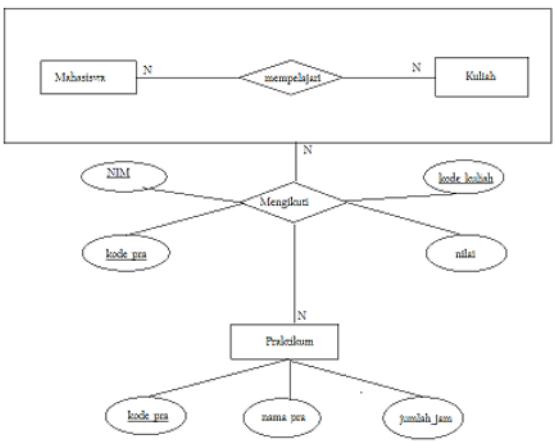


Tabel Mahasiswa

Nim	Nama_mhs	Alamat_mhs	Tgl_lahir	Prog_studi

Gambar 6.12 multi entitas

8. **Transformasi Agregasi**



Gambar 6.13 multi entitas

menjadi:

Tabel 6.6 nilai

NIM	Kode_kul	Indeks_nilai

Tabel 6.7 praktikum

Kode_pra	Nama_pra	Jumlah_jam

Tabel 6.8 mengikuti

NIM	Kode_kul	Kode_pra	nilai

BAB 7

SERVER BASIS DATA

7.1 Server Basis Data My SQL

Pada Bab I telah dijelaskan Server Basis Data MySQL secara singkat. Pada Bab ini akan dijelaskan MySQL secara mendetail serta cara menginstall MySQL dan cara mengimplementasikannya.

(a) **Cara Installasi Mysql**

- Kunjungin website resmi MySQL
  `http://dev.mysql.com/downloads/mysql/`
- Lalu Scroll down dan pilih Download seperti yang terlihat pada gambar dibawah ini, namun sesuaikan dengan Operating System yang digunakan.
- Lalu pilih No Thanks seperti gambar dibawah ini, dan tunggu sampai selesai di download
- Setelah ter-download silahkan buka dan akan muncul seperti gambar dibawah lalu klik Run

- Lalu tunggu proses seperti dibawah ini
- Setelah itu silahkan ikuti seperti yang terlihat pada gambar
- Lalu pilih costom untuk dapat mengubah folder instalasi MySql
- Lalu ikuti petunjuk yang terdapat pada gambar
- Klik MySQL Server
- Akan terdapat pilihan seperti pada gambar

Install Directory adalah folder tempat file program MySQL sedangkan data directory adalah tempat file data seperti Database dan tabel berada.

- Lalu pada tab insallation Klik excute untuk memulai proses instalasi MySQL Server
- Lalu akan masuk ke tahap konfigurasi awal seperti terlihat pada gambar

Lalu pada tab Type and Networking pada config type ikuti saja bawaan pada computer seperti pada gambar

Lalu ikuti seperti yang terlihat pada gambar

Lalu pada tab Account and User role masukan pasword untuk user root. Root adalah user tertinggi pada MySQL. User root memiliki akses untuk megakses seluruh database yang ada pada computer. Setelah masukan pasword kemudian klik next

Lalu pada tab Windows Service akan keluar seperti pada di gambar

Tetapi pada Configure MySQL Server as a Windows Service biasanya di computer sudah otomatis di centang akan tetapi kita hilangkan centangnya karena jika di centang kita tidak dapat mengakses MySQL lebih dari 1 di dalam satu komputer.

Lalu pada tab terakhir konfigurasi ini, centang semua step yang ada di configuration steps lalu pilih excute

Lalu akan kembali ke menu sebelimnya dan pada tab Product Configuration pilih next seperti pada gambar

Lalu pada tab terakhir dari instalasi ini pilih finish

Lalu selesai proses instalasi Server MySQL ini.

BAB 8

STUDI KASUS

8.1 Oracle Apex

dalam kali ini kita akan menerapkan studi kasus penggunaan database menggunakan database oracle apex. dalam studi kasus kali ini kami akan menggunakan studi kasus database apotik.

8.2 Latar Belakang

Pengelolaan Obat merupakan salah satu kegiatan pelayanan kefarmasian yang mencakup perencanaan, permintaan, penerimaan, penyimpanan, pendistribusian, pemusnahan dan penarikan, pengendalian, serta pencatatan dan pelaporan. Tujuannya adalah untuk menjamin kelangsungan ketersediaan dan keterjangkaun obat yang efisien, efektif dan rasional, meningkatkan kompetensi/kemampuan tenaga kefarmasian, mewujudkan sistem informasi manajemen, dan melaksanakan pengendalian mutu pelayanan[2]. Suatu apotek memerlukan informasi yang tepat dan efsien sehingga diperlukan suatu sistem informasi yang

mendukung kebutuhan Apotek pengolahan data obat dalam menciptakan efsiensi dan efektivitas kerja perusahaan/instansi itu sendiri, maupun dalam meningkatkan pelayan apotek terhadap pelanggan atau kliennya[3]. Dalam penyimpanan data stok barang diperlukan keamanan serta keperaktisan, maka dari itu diperlukan sistem yang dapat diakses melalui komputer dan media teknologi lainnya[4], seperti database stock barang. Database merupakan kumpulan file-file yang saling berkaitan dan berinteraksi, relasi tersebut bila ditunjukan dengan kunci dari tiap-tiap file yang ada. Satu database menunjukkan suatu kumpulan data yang dipakai dalam suatu lingkup perusahaan, instansi [5]. Kami membuat database stock obat pada Apotek secara online menggunakan Oracle Application Express(Oracle Apex). Oracle Application Express (Oracle APEX), adalah alat pengembangan aplikasi web kode rendah untuk Oracle Database. Mesin Application Express membuat aplikasi secara real time dari data yang disimpan dalam tabel database[6]. Application Express memungkinkan untuk merancang, mengembangkan, dan menggunakan aplikasi berbasis database yang indah, responsif, baik di tempat atau di cloud. Hanya menggunakan browser web dan pengalaman pemrograman terbatas, Anda dapat dengan cepat mengembangkan dan menggunakan aplikasi profesional yang cepat dan aman untuk perangkat apa pun, dari desktop ke ponsel. Oracle Application Express menggabungkan kualitas alat kode yang rendah, produktivitas, kemudahan penggunaan, dan fleksibilitas dengan kualitas alat pengembangan perusahaan, keamanan, integritas, skalabilitas, ketersediaan, dan dibangun untuk web [7].

8.3 Identifikasi Masalah

Berdasarkan latar belakang masalah yang ada, Maka dapat diidentifikasi menjadi beberpa masalah, yaitu sebagai berikut :

(a) Kurang efisiennya apoteker dalam mengelola data obat

8.4 Tujuan dan Manfaat

Berdasarkan Identifikasi masalah masalah yang ada, Maka tujuan yang di dapat, yaitu sebagai berikut

(a) Mempersingkat waktu dalam mengelola data obat

8.5 Ruang Lingkup

Dari data yang didapat, maka ruang lingkup dari penelitian ini adalah sebagai berikut

(a) Menampilkan informasi obat yang tersedia pada suatu apotek/puskesmas

8.6 Sistematika Penulisan

Materi-materi yang tertera oada laporan proyek ini dikelompokkan menjadi beberapa subba dengan sistematika penyampaian sebagai berikut

(a) BAB 1 PENDAHULUAN
Pada BAB ini berisi tentang latar belakang, identifikasi masalah, tujuan, ruang lingkup dan sistematika penulisan.

(b) BAB 2 LANDASAN TEORI
Pada BAB ini berisi tentang teori yang mendukung pengerjaan proyek.

(c) BAB 3 METODE
Pada bab ini akan dijelaskan bagimana cara alur kerja aplikasi yang dibuat menggunakan rancangan CDM dan PDM.

(d) BAB 4 PERCOBAAN DAN HASIL
Bab ini menjelaskan tentang percobaan pembuatan aplikasi yang terdiri dari alat-alat pendukung, lingkungan implementasi, tampilan antar muka, dan petun- juk pemakaian. Bab ini juga membahas tentang pembahasan hasil pembuatan aplikasi.

(e) BAB 5 KESIMPULAN DAN SARAN pada BAB ini berisikan kesimpulan dan saran

BAB 9

LANDASAN TEORI

9.1 Apex

APEX adalah aplikasi web yang digabungkan secara erat dengan database oracle. ia memiliki beberapa kegunaan: Anda dapat menggunakan alat SQL Worksop untuk query database, memodifikasi kontennya, atau mengubah strukturnya; Anda dapat menggunakan alat Application Builde untuk membuat aplikasi web Anda sendiri yang berinteraksi dengan database [8].

9.2 Aplikasi

Program Aplikasi adalah program siap pakai. Aplikasi akan menggunakan sistem operasi (OS) komputer dan aplikasi yang lainnya yang mendukungProgram Aplikasi adalah program siap pakai. Aplikasi akan menggunakan sistem operasi (OS) komputer dan aplikasi yang lainnya yang mendukung [9].

9.3 Sistem

sistem adalah suatu jaringan kerja dari prosedur-prosedur yang saling berhubungan, berkumpul bersama-sama untuk melakukan suatu kegiatan atau untuk menyelesaikan suatu sasaran yang tertentuuntuk melakukan suatu kegiatan atau untuk menyelesaikan suatu sasaran yang tertentu [10].

9.4 Informasi

informasi adalah suatu rekaman fenomena yang diamati, atau bisa juga berupa putusan-putusan yang dibuat seseoranginformasi adalah suatu rekaman fenomena yang diamati, atau bisa juga berupa putusan-putusan yang dibuat seseorang. Informasi memiliki nilai guna apabila dapat memberikan ilmu pengetahuan dan bermanfaat bagi pemakainya [11].

9.5 Sistem Informasi

Sistem informasi adalah berupa suatu sistem di dalam suatu organisasi yang mempertemukan kebutuhan pengolahan data transaksi harian yang mendukung operasi yang bersifat manajerial dengan kegiatan strategi suatu organisasi untuk dapat menyediakan kepada pihak luar tertentu dengan laporanlaporan yang diperlukan [12].

9.6 Oracle

Oracle adalah salah satu produk yang bisa digunakan untuk mengolah data atau mengumpulkan data adalah Oracle. Oracle memiliki produk yaitu Oracle database. Oracle telah melakukan pemasaran data dengan berbagai produk yang dimilikinya. Oracle database merupakan suatu kumpulan data yang dibuat oleh perusahaan oracle dan kumpulan data tersebut disimpan dalam manajemen basis data yang bisa disebut dengan RDBMS.

RDBMS merupakan kepanjangan dari Relational Database Management System. Dengan menggunakan oracle database, kita bisa bertukar data dengan orang lain yang sudah diberikan hak akses terhadap data kita. Data bisa digunakan secara bebas sesuai dengan kebutuhan masing-masing [13].

9.7 Database

Database atau yang biasa disebut dengan istilah basis data, terdiri dari dua kata, basis dan data. Menurut Musyawarah (2005) Database adalah sekumpulan data

yang berisi informasi mengenai satu atau beberapa object. Sedangkan menurut Abdul Kadir seperti dikutip Khusnia dan Riasti (2014) Database menyatakan merupakan suatu bentuk pengelolaan data yang ditujukan agar pengaksesan terhadap data dapat dilakukan dengan mudah. Menurut Deborah Kurniawati & Edy Prayitno seperti dikutip Nugroho dan Purnama (2012) basis data atau database adalah kumpulan terintegrasi dari elemen data yang secara logika saling berhubungan [14].

9.8 Obat

Obat berdasarkan Undang-undang Kesehatan nomor 36 tahun 2009 adalah bahan atau paduan bahan, termasuk produk biologi yang digunakan untuk memengaruhi atau menyelidiki sistem fisiologi atau keadaan patologi dalam rangka penetapan diagnosis, pencegahan, penyembuhan, pemulihan, peningkatan kesehatan dan kontrasepsi, untuk manusia [15].

9.9 Apotek

Menurut Peraturan Pemerintah No. 51 Tahun 2009, Apotek adalah sarana pelayanan kefarmasian oleh apoteker. Pelayanan kefarmasian adalah suatu mengumpulkan dokumen-dokumen yang pelayanan langsung dan bertanggung jawab kepada pasien yang berkaitan dengan sediaan farmasi dengan maksud mencapai hasil yang pasti untuk meningkatkan mutu kehidupan pasien. Pekerjaan kefarmasian yang dilakukan meliputi pembuatan termasuk pengendalian mutu sediaan farmasi, pengamanan, pengadaan, penyimpanan dan pendistribusian atau penyaluran obat, pelayanan obat atas resep dokter, pelayanan informasi obat serta pengembangan obat, bahan obat, obat tradisional dan kosmetika [16]

9.10 Farmasi

Farmasi merupakan salah satu bidang kesehatan untuk menyediakan obat sebagai suatu sarana dalam meningkatkan derajat kesehatan dan kesejahteraan masyarakat [17].

BAB 10

PERANCANGAN

10.0.1 CDM

Berikut merupakan rancangan database yang berupa *Conceptual Data Model (CDM)*

Gambar 10.1 CDM

10.0.2 PDM

Berikut merupakan rancangan database yang berupa *Physical Data Model (PDM)*

Gambar 10.2 PDM

Tabel 10.1 Tabel Kategori Obat

Kategori Obat		
Nama	**Type Data**	**Jenis**
Kategori_Obat	Varchar(10)	PK
Jenis_Obat	Varchar(15)	

Tabel 10.2 Tabel Supplier

Supplier		
Nama	**Type Data**	**Jenis**
Id_Supplier	Int	PK
Nama_Supplier	Varchar(50)	

Tabel 10.3 Tabel Obat

Obat		
Nama	**Type Data**	**Jenis**
Id_Obat	Int	PK
Id_Supplier	Int	FK
Kategori_Obat	Varchar(10)	FK
Nama_Obat	Varchar(50)	
Stock	Int	
Harga_Obat	Int	

Tabel 10.4 Tabel Transaksi

Transaksi		
Nama	**Type Data**	**Jenis**
Id_Transaksi	Int	PK
Id_Obat	Int	FK
Tanggal_Transaksi	Date	

10.0.3 Kamus Data Tabel

Berikut merupakan penjelasan data dari tabel-tabel database yang sudah dibuat

10.0.4 Perancangan antar muka yang di bangun

Berikut merupakan tampilan dari aplikasi yang telah dibuat

BAB 11

IMPLEMENTASI DAN PERANCANGAN

11.1 Lingkungan Implementasi

Sesudah menyelesaikan proses analisis, proses yang dilakukan selanjutnya adalah perancangan spesifikasi. Perancangan spesifikasi ini dilakukan untuk merancang kebutuhan-kebutuhan perankat keras dan perangkat lunak pada aplikasi yang dibangun.

11.1.1 Perangkat Keras

Berikut pada tabel 11.1 merupakan spesifikasi yang digunakan pada proses penelitian proyek I.

singlelinecheck=off

Tabel 11.1 Deskripsi Perangkat Keras

No	Nama Perangkat	Spesifikasi	Keterangan
1	*Harddisk*	500 GB	Media untuk menyimpan data aplikasi yang dibuat
2	*Memory*	4 GB	*Memory System* yang digunakan
3	*processor*	*Intel core i5-8250U CPU @ 1.60GHz (8 CPUs), 1.8Ghz*	Untuk kecepatan transfer data dari sistem yang sangat bergantung pada kecepatan prosesor komputer
4	Infrastruktur Jaringan		Bisa dianalogikan sebagai alur proses dari titik awal proses sampai pada akhir proses

11.2 Perancangan

11.2.1 *Perancangan Awal*

(a) Membuka Website Oracle Apex pada link ini https://apex.oracle.com/pls/apex/f?p=4550:1:708578987265698:::::

gambar/yes.png

(b) Awalnya buat rancangannya berupa gambaran Conseptual Data Model (CDM) sebagai rancangannya, seperti dibawah ini

gambar/CDM.JPEG

(c) Lalu dilanjutkan dengan Physical Data Model (PDM) untuk di generate, seperti gambar dibawah

gambar/PDM.JPEG

11.2.2 Perancangan Tabel

Hal yang harus dilakukan selanjutnya adalah membuat tabel, tabel disini berfungsi sebagai penampung dari atribut-atribut data yang nantinya akan saling berelasi dan membentuk sebuah database. Berikut merupakan tata cara membuat tabel pada apex oracle.

(a) membuat table di oracle apex ini menggunakan subquery yang akan dituliskan pada sql command seperti yang terlihat pada gambar berikut

gambar/14.png

(b) Lalu untuk perintah membuat table menggunakan subquery berikut:
Create table namatable (column tipedata);

gambar/15.png

(c) Pada setiap Table mempunyai satu primary key, primary key harus bersifat unik untuk membedakan antar table, subquery yang digunakan untuk membuat primary key di apex adalah:
Alter table namatable
Add primary key (namacolumn)

gambar/17a.png

(d) Selanjutnya, mebuat foreign key yang digunakan untuk merelasikan hubungan antar table, subquery yang digunakan sebagai berikut:
Alter table namatable
Add foreign key (namacolumn)
References namatable(namacolumn);

gambar/17.png

11.2.3 Perancangan Trigger

Setelah membuat table, menambahkan primary key, dan menambahkan foreign key selanjutnya saya akan membuat trigger pada aplikasi ini. Trigger adalah kode prosedural yang secara otomatis dijalankan untuk menanggapi perubahan tertentu pada table tertentu atau tampilan dalam database.

(a) Trigger disini saya gunakan untuk mengurangi stock pada table obat yang di eksekusi karena ada nya pengimputan di table transaksi2, subquery yang digunakan sebagai berikut:
Create or replace trigger NAMATRIGGER
after delete on NAMATABLE
for each row
begin
update NAMATABLEUTAMA

gambar/55.png

set kolomyangdiupdate = kolomyangdiupdate - :new.kolom
where namakolom = :old.namakolom; *end;*

(b) dibawah ini adalah trigger yang digunakan untuk mengembalikan jumlah-stock apabila report pada transaksi2 dihapuskan. Subquery nya sebagai berikut// *Create or replace trigger NAMATRIGGER*
after delete on NAMATABLE
for each row
begin
update NAMATABLEUTAMA
set kolomyangdiupdate = kolomyangdiupdate + :old.kolom
where namakolom = :old.namakolom; *end;*

gambar/B.png

11.2.4 Membuat Aplikasi

(a) Klik App Builder dan klik create

gambar/21.png

(b) Klik New Aplication

gambar/22.png

(c) Tuliskan nama aplikasi yang anda inginkan

gambar/23.png

(d) Untuk menambahkan page pada aplikasi klik ”Add Page” lalu pilih ”Multiple report”

gambar/24.png

(e) Centang semua tabel yang akan di tampilkan

gambar/25.png

(f) Lalu klik Create Application seperti digambar

gambar/29.png

(g) Lalu klik Run Application

gambar/30.png

(h) Masukan ulang username dan pasword untuk melanjutkan proses berikutnya

(i) Aplikasi berhasil dibuat

gambar/yu.png

11.2.5 Membuat Komputasi

Komputasi merupakan sebuah proses yang akan berjalan pada keadaan tertentu, dalam aplikasi ini kami membuat 3 buah komputasi yang masing-masing memiliki fungsi yang berbeda-beda.

(a) Tanggal Transaksi
Komputasi ini berfungsi untuk mengambil data tanggal dari system. dengan query sebagai berikut

```
select sysdate from dual
```

Query ini akan menjalankan perintah yang berupa pengambilan data tanggal dari sistem

(b) Harga Jual
Komputasi ini berfungsi untuk mengambil harga jual dari tabel obat dan memasukkannya kedalam tabel transaksi yang memiliki value id obat = id transaksi
berikut merupakan querynya:

```
            select obat.harga_jual \\from obat, transaks
where \\ obat.id_obat = transaksi2.id_obat
```

11.2.6 IMPLEMENTASI

(a) Pada page obat dapat menampilkan infomrasi dan juga dapat melakukan update infromasi tentang obat

gambar/obt.png

gambar/obt1.png

(b) Pada Page Supplier akan menampilkan report dan dapat menambahkannya juga

gambar/supp.png

gambar/supp1.png

(c) Pada page Katagori terdapat report dan dapat ditambahkan juga oleh user

gambar/katagori.png

gambar/katagori1.png

(d) Pada page transaction untuk melakukan proses pembelian obat yang nantinya akan masuk kedalam report juga *Create table namatable (column tipedata);*

gambar/trans.png

Create table namatable (column tipedata);

gambar/trans1.png

(e) Pada page Nota ini berhubungan dengan page transaction. Hanya akan menampilkan informasi data yang telah di proses di page transaction

gambar/nota.png

BAB 12

KESIMPULAN DAN SARAN

12.1 Kesimpulan

Dari Laporan project Aplikasi Sistem Informasi Obat Menggunakan Oracle Apex dapat diambil kesimpulan bahwa:

(a) Admin atau user dapat menginputkan data-data, melakukan update serta menghapus informasi mengenai Obat yang ada di dalam aplikasi ini.

12.2 Saran

Agar kerja dari Sistem Informasi Obat Menggunakan Oracle APEX dirancang lebih optimal, maka penulis memberikan beberapa saran yaitu:

(a) Untuk lebih menyempurnakan Sistem Informasi Obat pada Aplikasi yang telah dibangun, diharapkan kedepannya program aplikasi ini bisa lebih di kembangkan kembali.

BAB 13

LIST ERROR

13.1 Issues #1

Pada *issues #1* (*Invalid CREATE command*) permasalahannya yaitu salah menuliskan perintah ”tabel” . Pemecahan masalahnya yaitu dengan menggunakan *method*

```
create table obat (id_obat number not null, nama_obat varcha
```

13.2 Issues #2

Pada *issues #2* (*missing right parenthesis*) yaitu kurang tanda kurung sebagai penutup

```
create table obat (id_obat number not null,
nama_obat varchar (50)
```

Pembernarannya:

```
create table obat (id_obat number not null,
nama_obat varchar (50));
```

13.3 Issues #3

Pada *issues #3* (*invalid SQL statement*) yaitu tidak lengkap menuliskan statement pada SQL.

```
Add Obat
primary key(id_obat)
```

Pembenaran:

```
Alter table Obat
add primary key(id_obat)
```

13.4 Issues #4

Pada *issues #4* (*need to specify the datatype for this column*) yaitu menuliskan tipe data yang ada.

```
Create table transaksi2
(id_transaksi number not null,
tanggal_transaksi);
```

Pembenaran:

```
Create table transaksi2
(id_transaksi number not null,
tanggal_transaksi date);
```

13.5 Issues #5

Pada *issues #5* (*invalid ALTER command*) Salah karena salah menuliskan statement ALTER

```
ALTER TABLE obat DROP COLUMN id_obat
```

13.6 Issues #6

Pada *issues #6* (*invalid user.table.column, or column specification*)

```
insert all
into katagori('134','obat bebas')
```

Pembenaran:

```
insert into katagori
('kode_obat','jenis_obat')
values ('134','obat bebas')
```

13.7 Issues #7

Pada *issues #7* (*missing SELECT Keyword*)

```
insert all
into katagori values('134','obat bebas)
```

Pembenaran: kurangnya tanda petik pada values obat bebas

```
insert into katagori
('kode_obat','jenis_obat')
values ('134','obat bebas')
```

13.8 Issues #8

Pada *issues #8* (*not enough values*) kurang menuliskan value yang ada di dalam table.

```
insert
into katagori('kode_obat','jenis_obat') values('134');
```

Pembenaran:

```
insert
into katagori('kode_obat','jenis_obat')
values('134','Obat Kuat');
```

13.9 Issues #9

Pada *issues #9* (*Table can have only one primary key*) adalah *error* yang terjadi ketika sebuah table sudah memiliki 1 primary key dan terjadinya penambahan primary key.

13.10 Issues #10

Pada *issues #10* (*Column contains NULL values; can not alter to NOT NULL*) adalah *error* yang terjadi apabila kita ingin merubah struktur table akan tetapi tabel tersebut sudah memiliki nilai

13.11 Issues #11

Pada *issues #11*

```
Create tabel(id_obat number not null,
nama_obat varchar2(50),
kode_jenis number not null,
harga_jual number not null,
id_supplier number not null)
```

Karna harusnya

```
Create table obat
(id_obat number not null,
nama_obat varchar2(50),
kode_jenis number not null,
harga_jual number not null,
id_supplier number not null)
```

13.12 Issues #12

```
 Create tabel
 (id_obat number not null,
 nama_obat varchar2(50),
 kode_jenis number not null,
 harga_jual number not null,
 id_supplier number not null)
```

hal ini terjadi akibat Tidak menggunakan penutup perintah(;)

```
Create table obat
(id_obat number not null,
nama_obat varchar2(50),
kode_jenis number not null,
harga_jual number not null,
id_supplier number not null);
```

13.13 Issues #13

Pada *issues #13* Add obat Primary key(id_obat) menambahkan primarykey pada table obat

```
Alter table obat
Add primary key(id_obat)
```

13.14 Issues #14

Pada *issues #14*

```
Create tabel supplier
(id_supplier number not null,
nama_supplier varchar(50) not null)
```

error terjadi akibat Salah menggunakan kata tabel harusnya table

```
Create table supplier
(id_supplier number not null,
nama_supplier varchar(50) not null)
```

13.15 Issues #15

Pada *issues #15*

```
Create tabel supplier
(id_supplier number not null,
nama_supplier varchar(50) not null)
```

error terjadi akibat Penutup sql query nya (;) tertinggal

```
Create table supplier
(id_supplier number not null,
nama_supplier varchar(50) not null);
```

13.16 Issues #16

Pada *issues #16*

```
Create table katagori
(kode_jenis number nut null,
jenis_obat varchar(50));
```

error ini terjadi akibat Salah penulisan nut harusnya not

```
Create table katagori
(kode_jenis number not null,
jenis_obat varchar(50));
```

13.17 Issues #17

```
Create table katagori
(kode_jenis number nut null,
jenis_obat varchar(50));
```

hal ini terjadi Karna tidak memberikan jenis datanya harusnya not null

```
Create table katagori
(kode_jenis number nut null,
jenis_obat varchar(50) not null);
```

13.18 Issues #18

Pada *issues #18*

```
Create table transaksi2
(id_transaksi number not null,
tanggal_transaksi number not null,
id_obat number not null,
harga_jual not null,
jumlah number not null,
total_harga number not null);
```

Salah memberikan type data pada tanggal_transaksi harusnya date

```
Create table transaksi2
```

```
(id_transaksi number not null,
tanggal_transaksi date not null,
id_obat number not null,
harga_jual not null,
jumlah number not null,
total_harga number not null);
```

13.19 Issues #19

Pada *issues #19*

```
Create table transaksi2
(id_transaksi number not null,
tanggal_transaksi number not null,
id_obat number not null,
harga_jual not null,
jumlah number not null,
total_harga number not null);
```

Terlewat memberikan type data pada atribut harga_jual harusnya number

```
Create table transaksi2(id_transaksi number not null, tangga
id_obat number not null,
harga_jual number not null,
jumlah number not null,
total_harga number not null);
```

13.20 Issues #20

Alter tabel suplier Primary key (id_supplier) Pada *issues #20* Salah penulisan nama tabel harusnya
Alter tabel supplier
Primary key (id_supplier)

13.21 Issues #21

Pada *issues #21*

```
Alter tabel suplier Primary key (id_supplier)
```

kuranggnya perintah add

```
Alter tabel suplier
Add Primary key (id_supplier)
```

13.22 Issues #22

```
Alter table obat
Add foreign key(kode_jenis)
References katagori(kode_jenis);
ORA-02270: no matching unique
or primary key for this column-list
```

Pada *issues #22* primary key dari tabel katagori belum didefinisikan dan tidak ditemukan oleh sistem sehingga penambahan foreign key pun gagal

BAB 14

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

14.11 acd

BAB 15

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

15.11 penggunaan

BAB 16

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

16.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

BAB 17

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

17.11 acd

BAB 18

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

18.11 penggunaan

BAB 19

ORACLE

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata

stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administra-

tors are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.1 1

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This

section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle

recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.2 2

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.3 3

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.4 4

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.5 5

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see ”Browser Requirements” in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.6 6

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.7 7

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express

does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application

Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.8 8

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide

stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage

workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See ”Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server” on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.9 9

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application

Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development environment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application

Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

19.10 a

This section offers a quick introduction to using and logging in to Oracle Application Express. The topics in this section assume you have completed the installation process. Understanding Oracle Application Express How Oracle Application Express Works About Application Express User Roles Signing In To Oracle Application Express Understanding the Workspace Home Page Editing Your Account Profile Editing User Preferences Using Oracle Application Express Documentation Understanding Oracle Application Express This section describes Oracle Application Express and explains the differences between runtime and full development environments. What is Oracle Application Express? How Oracle Application Express Works About the Differences Between Runtime and Full Development Environments What is Oracle Application Express? Oracle Application Express is a hosted declarative development environment for developing and deploying database-centric web applications. Thanks to built-in features such as user interface themes, navigational controls, form handlers, and flexible reports, Oracle Application Express accelerates the application development process. The Application Express engine renders applications in real time from data stored in database tables. When you create or extend an application, Oracle Application Express creates or modifies metadata stored in database tables. When the application is run, the Application Express engine then reads the metadata and displays the application. To provide stateful behavior within an application, Oracle Application Express transparently manages session state in the database. Application developers can get and set session state using simple substitutions and standard SQL bind variable syntax. How Oracle Application Express Works Oracle Application Express installs with your Oracle database and consists of data in tables and PL/SQL code. Whether you run the Oracle Application Express development environment or run an application built using Oracle Application Express, the process is the same. Your browser sends a URL request that is translated into the appropriate Oracle Application Express PL/SQL call. After the database processes the PL/SQL, the results are relayed back to your browser as HTML. This cycle happens each time you either request or submit a page. Oracle Application Express does not use a dedicated database connection. Instead, each request is made through a new database session, consuming minimal CPU resources. Application session state is managed in the database tables by the Application Express engine. Behind the scenes, the Application Express engine renders and processes pages. The Application Express engine also performs these tasks: Session state management Authentication services Authorization services Page flow control Validation processing About the Differences Between Runtime and Full Development Environments When you install Oracle Application Express, you can install two different environments: Runtime environment. In a runtime environment users can run applications but cannot modify them. This is the appropriate choice for production implementations. Full development en-

vironment. In a full development environment, users can develop, modify, run, and delete Application Express applications. This environment provides complete access to the Application Builder environment described in this document. Signing In To Oracle Application Express This section describes how to sign in to Oracle Application Express. In addition to describing the sign in steps, this section also discusses browser requirements, available user roles, and configuration option Browser Requirements About Application Express User Roles Overview of Configuring Oracle Application Express Signing In and Out of a Workspace as a Developer Browser Requirements Because Oracle Application Express relies upon standards-compliant HTML5, CSS3, and JavaScript, Oracle recommends that you use the latest web browser software available for the best experience. To learn more, see "Browser Requirements" in Oracle Application Express Installation Guide. About Application Express User Roles To access the Oracle Application Express development environment, users sign in to a shared work area called a workspace. Users are divided into four primary roles: End users do not have access to development or administrative capabilities. End users cannot sign into a workspace and create applications. End users can only run existing database or Websheet applications. Developers are users who create and edit applications. Workspace administrators are users who perform administrator tasks specific to a workspace such as managing user accounts, monitoring workspace activity, and viewing log files. Instance administrators are superusers that manage an entire hosted instance using the Application Express Administration Services application. Instance administrators manage workspace provisioning, configure features and instance settings, and manage security. Overview of Configuring Oracle Application Express How you set up Oracle Application Express depends upon your user role. If you are a developer accessing a hosted development environment, an administrator must grant you access to a workspace. If you are an Instance administrator, you must sign in to the Oracle Application Express Administration Services application and perform the steps described in this section. Signing In To Oracle Application Express Administration Services Specifying a Provisioning Mode Creating a Workspace Signing In To the Workspace Signing In To Oracle Application Express Administration Services To sign in to Oracle Application Express Administration Services: 1. In a web browser, navigate to the Oracle Application Express Administration Services application. By default, Oracle Application Express Administration Services installs to the following location: If your setup uses Oracle REST Data Services, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle REST Data Services is installed. port is the port number assigned when configuring Oracle REST Data Services. In a default installation, this number is 8080. To learn more, see Oracle REST Data Services Installation, Configuration, and Development Guide. apex is the service name defined when configuring Oracle REST Data Services. If your setup uses the embedded PL/SQL gateway, go to: http://hostname:port/apex/apex_admin Where: hostname is the name of the system where Oracle XML DB HTTP Server is installed. port is the

port number assigned to HTTP on the Oracle XML DB HTTP Server. In a default installation, this number is 8080. If you are using the Oracle Database 12c Pluggable Databases architecture, then each PDB will have a distinct port number. See "Verifying the Port Assigned to HTTP on the Oracle XML DB HTTP Server" on page 1-9. apex is the Database Access Descriptor (DAD) defined in the configuration file. If your setup uses Apache and mod_plsql, go to: http://hostname:port/pls/apex/apex_admin Where: hostname is the name of the system where Oracle HTTP Server is installed. port is the port number assigned to Oracle HTTP Server. In a default installation, this number is 7777. pls is the indicator to use the mod_plsql cartridge.

DAFTAR PUSTAKA

[1] "Unicode," https://unicode.org/standard/WhatIsUnicode.html, accessed: 2019-12-05.

[2] R. J. Mailoor, F. R. Maramis, and C. K. Mandagi, "Analisis pengelolaan obat di puskesmas danowudu kota bitung," *KESMAS*, vol. 6, no. 3, 2017.

[3] A. Suryadi, E. Harahap, and A. Rachmanto, "Rancang bangun sistem informasi persediaan obat berbasis web di apotek xyz," *JURNAL PETIK*, vol. 4, no. 2, pp. 114–119, 2018.

[4] B. Wasito, S. Kom *et al.*, "Analisis pemilihan tempat penyimpanan data secara online menggunakan metode analytical hierarchy process," *Jurnal Informatika dan Bisnis*, vol. 7, no. 1, 2018.

[5] R. Sovia and J. Febio, "Membangun aplikasi e-library menggunakan html, php script, dan mysql database," *Jurnal Processor*, vol. 6, no. 2, 2017.

[6] I. Adyanti and S. Suryatiningsih, "Sistem monitoring kegiatan akademik kepala sekolah, guru dan tata usaha berbasis apex (studi kasus: Sma n 1 indramayu)," *eProceedings of Applied Science*, vol. 1, no. 1, 2015.

[7] "What is application express," https://www.oracle.com/database/technologies/appdev/apex-what-is.html, accessed: 2019-11-18.

[8] E. Sciore, *Understanding Oracle APEX 5 Application Development*. Apress, 2015.

[9] H. T. Sihotang, "Pembuatan aplikasi e-learning pada smk swasta pariwisata imelda," *Jurnal Mantik Penusa*, vol. 1, no. 2, 2017.

[10] E. Sova and D. A. Rahayu, "Perancangan sistem informasi berbasis web untuk pendaftaran peserta pelatihan kursus sertifikasi internasional secara daring di universitas gunadarma," *Jurnal Ilmiah Informatika Komputer*, vol. 24, no. 1, pp. 80–92, 2019.

[11] D. Ayumanda and E. Rahmah, "Paket informasi obat-obat herbal berbasis lokal konten di kecamatan koto tangah kota padang," *Ilmu Informasi Perpustakaan dan Kearsipan*, vol. 7, no. 1, pp. 32–39, 2018.

[12] H. Kurniawan, "Perancangan sistem informasi persediaan obat pada apotik abc berbasis client server," *JUSITI: Jurnal Sistem Informasi dan Teknologi Informasi*, vol. 4, no. 1, 2018.

[13] "Pengertian oracle," https://www.nesabamedia.com/pengertian-oracle/, accessed: 2019-11-20.

[14] M. Dewi, "Analisis statistik keterpakaian database online science direct (januari-juni 2018) dalam mengambil kebijakan pengadaan bahan pustaka elektronik pada perpustakaan universitas islam indonesia," *Al-Kuttab: Jurnal Kajian Perpustakaan, informasi dan kearsipan*, vol. 1, no. 1, pp. 23–34, 2019.

[15] S. A. S. Siahaan, T. Usia, S. Pujiati, I. U. Tarigan, S. Murhandini, S. Isfandari, and T. Tiurdinawati, "Pengetahuan, sikap, dan perilaku masyarakat dalam memilih obat yang aman di tiga provinsi di indonesia," *Jurnal Kefarmasian Indonesia*, vol. 7, no. 2, pp. 136–145, 2017.

[16] R. Irviani, "Pengembangan sistem informasi apotek berbasis website pada apotek ar-roz farma 4 kedondong," *Jurnal TAM (Technology Acceptance Model)*, vol. 3, pp. 40–47, 2017.

[17] H. Zulkifli, M. Faizal *et al.*, "Analisis determinan persepsi masyarakat di lingkungan sekitar industri farmasi pt. x kota palembang," *Jurnal Kesehatan*, vol. 10, no. 1, pp. 105–112, 2019.