Oracle® Certification Program Candidate Guide

Oracle9i PL/SQL Developer Certified Associate
Oracle9i Forms Developer Certified Professional

January 2005

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Visit the Oracle Certification Program Web site at http://www.oracle.com/education/certification/

1 Benefits of Oracle Certification

The demand for professionals in the information technology (IT) industry is high, and the competition for jobs is intense. Individuals, experienced or new to the profession, need to know what skills make them attractive to employers. Employers look for ways to select prospective employees who have the solid foundation of skills needed for effective performance.

The Oracle Certification Program helps the IT industry establish a standard of competence in key entry-level and professional job roles.

An Oracle Certification is a valuable, industry-recognized credential that signifies a proven level of knowledge and ability. Each higher level of Oracle certification brings a higher standard of benchmarked skill and ability, which can lead to greater opportunities and higher pay.

"Technical certifications have evolved from a hiring tool to a screening tool: If you don't have them, you aren't viewed as a serious candidate." [1]

Benefits to the Technical Professional

An ***Oracle Certified Associate (OCA)*** demonstrates a solid understanding of the foundation skills of a given job role, which can be applied at an apprentice or entry level.

By earning an OCA certification, you can have increased entry-level job opportunities. It is the stepping-stone to starting a successful career as an Oracle professional.

Beyond OCA, by becoming an ***Oracle Certified Professional (OCP)*** you demonstrate your understanding of the full range of skills required by Oracle professionals in your chosen job role. An OCP is in high demand in today's marketplace, and the level of demand is expected to grow with each new installation of Oracle technologies around the world. An Oracle Certification helps raise your visibility and increases your access to the industry's most challenging opportunities.

"Oracle's certification strength in a declining economy is due in part to the fact that more complex, high-level certifications appear to be less vulnerable." [2]

The true value of earning an Oracle Certification credential is increased opportunity. With more opportunity come career growth and higher pay.

"Given the key importance of data as an organizational asset, it should come to no surprise that DBAs remain in high demand and that related training certification programs are popular even in this time of economic trouble... By the numbers, Oracle leads the DBMS/DBA certification area." [3]

Benefits to the IT Employer

The Oracle Certification Program is also valuable to hiring managers who want to distinguish among candidates for critical IT positions. For companies that send employees for annual IT training, certification helps ensure a return on the training investment by validating the knowledge and understanding gained during training sessions. Companies can also combine certification with an employee development program to enhance employee loyalty and performance on the job. Hiring certified professionals can have a direct impact on a company's success.

1 Source: Employers Raise the Bar on Certification, Information Week, 2002
2 Source: IDC Certification Report and Forecast 2002–2006
3 Source: Certified Expert: Working as a Database Administrator, CertMag, January 2003

2 *Oracle9i PL/SQL Developer Certified Associate Oracle9i Forms Developer Certified Professional*

Oracle9*i* Developer Certification: Overview

The expertise of Oracle Application Developers is integral to the success of today's increasingly complex system environments. The best Certified Developers operate primarily behind the scenes. Without their highly valued skills organizations would fail to realize the potential of their information management and e-business solutions. Oracle Developers can apply their skills to almost any type of project from business intelligence solutions to automation.

Oracle9*i* PL/SQL Developer Certified Associate (OCA)

An OCA certification is an entry-level credential for candidates who have a proven foundation of basic knowledge, which they can build upon as they work toward a career as an Oracle Application Developer. An OCA can next earn an Oracle9*i* Forms Developer Certified Professional (OCP) credential.

Oracle9*i* Forms Developer Certified Professional (OCP)

By moving upward and earning OCP status, Oracle professionals demonstrate the complete set of skills that are required for working independently as an expert Developer. The OCP credential provides candidates increased opportunities and higher pay. The OCP path requires that candidates first earn their OCA-level credential. To become an OCP, only one additional exam is required, which evaluates candidates' skills with the Oracle9*i* Forms Developer toolset. An OCP certification helps you translate your knowledge and skills into increased visibility through the market's most highly valued Developer certification. The Oracle Application Developer Certified Professional credential was related the highest in employment value as compared to all other developer credentials by *Certification Magazine,* April 2003.[1]

View the chart on page 5 for a list of required tests to earn the Oracle9*i* Application Developer credential.

Upgrading Your Current OCP Credential to Oracle9*i*

Oracle Forms Developer Release 6/6*i* to Oracle9*i* Upgrade Path (1 exam)

Candidates certified on Oracle Forms Developer Release 6/6*i* may pass exam #1Z0-140 (Oracle9*i* Forms Developer: New Features) to upgrade their Developer certification to Oracle9*i*.

Oracle Developer Release 1 to Oracle9*i* Upgrade Path (2 exams)

Candidates certified on Oracle Developer Release 1 are required to pass two exams to upgrade their OCP credential: exam #1Z0-130 (Oracle Forms Release 1 to Release 6/6*i*: New Features) and exam #1Z0-140 (Oracle9*i* Forms Developer: New Features).

Candidate Qualifications

Most candidates pursuing their Oracle Application Developer certification combine up-to-date training with some level of on-the-job experience. There is no "typical" candidate. Many of the questions on the OCA and OCP tests are based on real job scenarios. In addition to the appropriate training, you will need hands-on experience with the software. Trial software versions are available through Oracle University and the Oracle Technology Network (OTN).

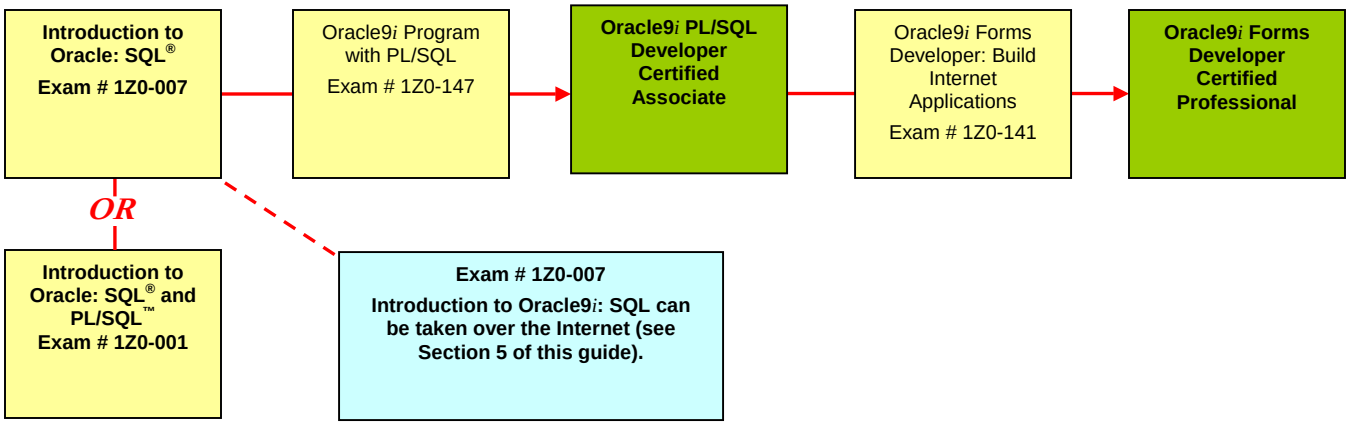
1 Source: "Rating Certifications," Certification Magazine, April, 2003

Required Exams for Oracle9*i* Application Developer Certification Paths

Oracle customers and business partners demand hands-on experience from their Oracle Certified Professionals. In order to meet commitments to Oracle customers and constituents, Oracle University has recently made a significant investment toward building more validity and quality into its Certification Program, including scenario-based exam questions.

Exams Required

Oracle9*i* Application Developer Certified Associate
Oracle9*i* Application Developer Certified Professional



Oracle9*i* Application Developer Upgrade Path

To upgrade your Oracle Application Developer Release 1 OCP credential to Oracle9*i* Application Developer, you must pass the following two upgrade exams.

3 Preparing for Oracle9*i* Application Developer Exams

Oracle recommends that you prepare for Oracle9*i* Developer exams by combining offerings from Oracle University with practice and on-the-job experience. Start by reviewing the topics covered on the exam in the Test Content Checklist in this guide. Then look over the following preparation methods for a combination that suits your background.

Oracle University Preparation Tools

Instructor-Led Training and *Online Library* offered by Oracle University are the best ways to prepare to become an Oracle Certified Professional. These courses lay the foundation of knowledge that you will need to pass the OCA and OCP exams.

Refer to the curriculum map on the following page to chart your optimal preparation based on Oracle University instructor-led training and online library. Your local Oracle University representative can advise you on the best option. For more information, visit the Oracle University Web site at http://www.oracle.com/education/.

Preparing on Your Own

Experience is the best way to deepen your understanding of the topics covered in Oracle University courses. Oracle recommends that you extend your classroom learning either by applying your new skills and knowledge to the job or through practice and self-study.

Test Content Checklist

Use the Test Content Checklist to identify all the test topics for which you must prepare. Oracle may make modifications to the Test Content Checklist, so visit the OCP Web site at http://www.oracle.com/education/certification/ to download the latest version of this guide.

Additional Preparation Tools

- Practice Tests

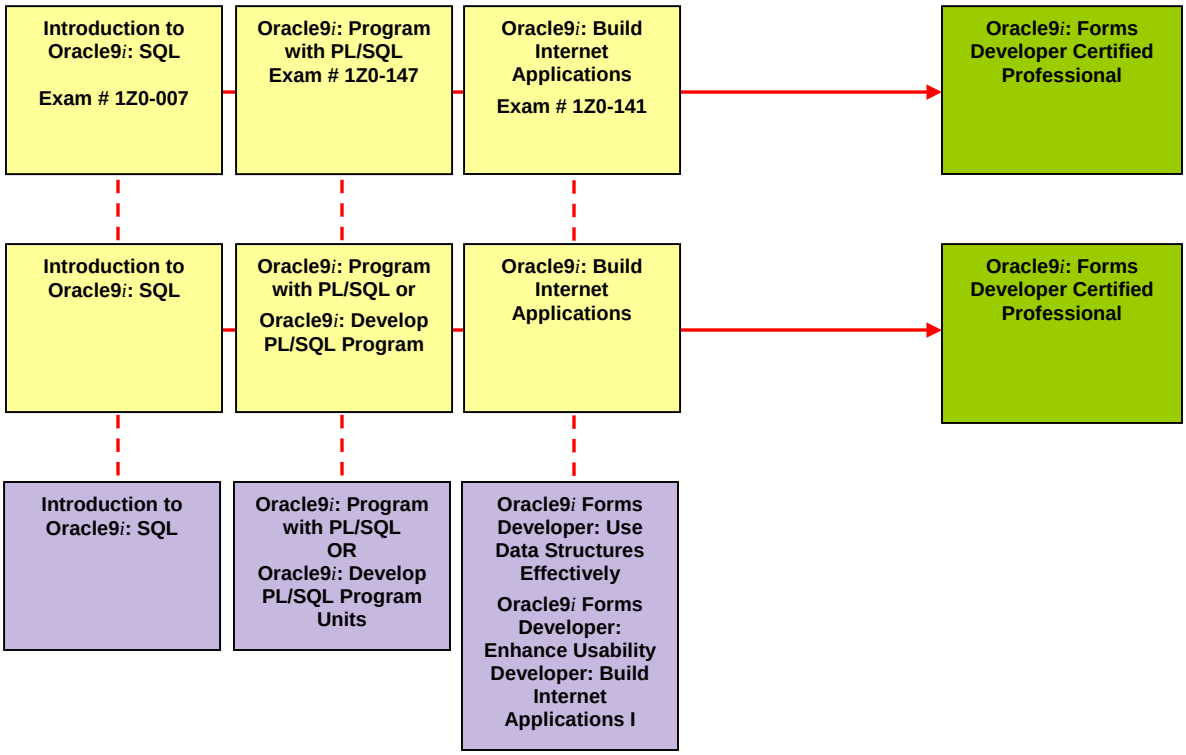
  Oracle and Self Test Software have partnered to develop the highest quality practice tests available to individuals seeking Oracle Certified Professional status. To purchase practice tests, visit the OCP Web site at http://www.oracle.com/education/certification/.

- Oracle Press

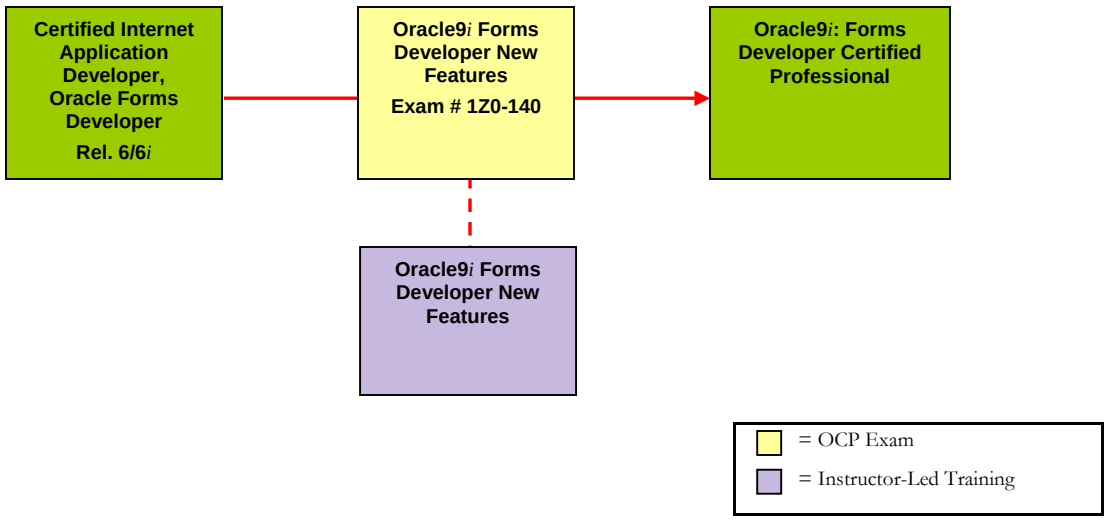
  Oracle Press publishes both reference guides and exam preparation guides to help candidates prepare for their job requirements. These can be helpful as additional sources for study. However, Oracle Press books are not designed to be used by OCA or OCP candidates as their only source of exam preparation. Oracle Press books are additional references that can be helpful to those who have completed hands-on training or who have real-job experience.

Oracle9*i* Application Developer Certification

Oracle University Instructor-Led Training and Online Library titles are shown below:



Oracle9*i* Forms Developer Upgrade Path for Certified Application Developer Release 6/6*i* OCP



4 Registering for Your Tests

Oracle Certification Program exams are offered at Oracle University Testing Centers and through Prometric, the world's largest provider of testing to the information technology industry. Many Oracle University Locations now also offer these exams, and can serve as a convenient alternative for both preparation and exam writing at one facility. Follow the registration directions shown below for scheduling exams at an Oracle University Center or at an Authorized Prometric Testing Center (APTC).

All exams are delivered electronically by means of computer. A brief tutorial precedes each test to familiarize you with the test delivery system. You should attempt to answer every question on the exam because incomplete answers are scored as incorrect. Using a summary screen you can navigate throughout the exam, proceeding forward and back among questions.

Reviewing the Candidate Agreement

Candidates pursuing Oracle certification must accept the terms of the Oracle Certified Associate - Professional Candidate Agreement before taking the tests. You will be presented with the agreement on the screen before the test starts. You can also review the agreement before your appointment by visiting the Oracle Certification Program Web site at http://www.oracle.com/education/certification/canagreemt.html.

Scheduling Your Exam

1. There are three convenient ways to register for exam:

   a. **Prepare and appear for test at an Oracle University Center**
   Many countries throughout Europe, India, and Asia offer exam preparation assistance as well as the exams themselves from one convenient location. Visit the OCP Web site, and you will find phone numbers for your local Oracle University Center on the Exam Registration Web page. (http://www.oracle.com/education/certification/testreg.html)

   b. **APTC Online Registration**
   Register online at http://www.2test.com/.

   c. **APTC Telephone Registration**
   Call the Prometric Regional Service Center (RSC) serving your country during normal business hours. (A list of RSCs is given on the last page of this guide.)

2. Make sure that you have both the number and title of the exam that you are registering for. Schedule your exam appointment Monday through Saturday during normal authorized Prometric testing center hours. Hours vary by location.

3. When you register, ask the Prometric customer service representative for a list of valid forms of identification that you will need to present when you take your exam. You will not be allowed to take the test without valid identification.
4. Regular exam fees are equivalent to US$125, plus any local taxes.

   The exam fee is payable to Prometric by any major credit card (VISA, MasterCard, American Express, and Switch Cards) at the time of registration. All discounts must be applied at the time of paying your exam fee.
5. You must schedule a test at least 24 hours in advance.

Changing or Canceling Your Appointment

To cancel or reschedule your test appointment, you must call the Prometric Regional Service Center. The cancellation policy by region is:

- The Americas: One business day in advance
- Asia Pacific: By midday (Sydney time) the previous business day
- EMEA: Two business days in advance
- Japan: Three business days in advance

Candidates who do not appear for the test or who cancel less than one business day before the test do not receive a refund.

5 Taking Your Tests

Taking Introduction to Oracle9*i*: SQL over the Internet

The Introduction to Oracle9*i*: SQL exam is now delivered on the Internet in an effort to make taking this first exam easy and flexible, and cheap to the OCA candidate who is just getting started.

The exam can be taken anytime, from anywhere with a PC, current Web browser (see page 5 of this guide, Internet Delivered Tests, for the recommended browsers), and a recommended Internet connection of at least 33.6 Kps.

To take this online exam, visit the Oracle Certification Program Web site. There is no need for preregistration. Payment can be made by credit card right on the Internet.

Your score will be available to you immediately after completion of the exam and submittal of your file for grading. If you become disconnected during your exam, you will be able to resume where you left off when you reconnect. However, the time clock will remain in effect. Internet exams have an additional window of 30 minutes to give you time to resolve technical problems.

Taking a Test at an Authorized Prometric Testing Center

1. Arrive at the testing center at least 15 minutes before your scheduled appointment.
2. Sign the test log and present two forms of identification. One must be a government-issued photo identification. Both forms of identification must contain your signature.
3. The test administrator will give you a brief orientation and escort you to a computer terminal where you will take the test. You are not allowed to bring papers, books, bags, or calculators into the room.
4. Remember to adhere to the requirements set forth in the Oracle Certification Candidate Agreement. You must agree to the terms and conditions in the agreement before completing any Oracle Certification exam. Any attempt to cheat, assist others, or remove exam content from the testing room will not be tolerated and may result in a zero score, disallowance of OCP credential, and even prosecution by law.

Obtaining Your Test Results

You will receive your score report immediately after the test. Beta exam score reports are sent to candidates following analysis and scoring of the beta exam. Candidates completing a beta version of a test can expect their score reports 10–12 weeks following the beta period. Your results are automatically forwarded to Oracle following testing. Please keep a copy of all test reports for your records.

Retaking a Test

Candidates must wait 30 days before retaking a failed exam. There are no exceptions to this policy.

If you do not pass an Oracle Certification exam on the first attempt, Oracle encourages you to make use of the diagnostic feedback supplied with the score report to review the areas that need further study.

If you receive a low score, an Oracle University training course may be appropriate for you to gain more knowledge. Otherwise, if you require only skill-set review in a few areas, we recommend that you consult Oracle University Online Learning, where you will find each topic area available as a short course module. Most modules require only 45 minutes for completion. Visit Online Learning at http://www.oracle.com/education/oln/.

6 After You Are Certified

Receiving Your Oracle Certification Welcome Kit

You will receive your Oracle Certified Associate or Oracle Certified Professional certificate by mail from Prometric within 30 days after successfully completing all the required exams and course requirements as applicable. You should use your certificate as verification of your Oracle Certification credential.

If you do not receive your Welcome Kit, send an e-mail to fulfillment@prometric.com, providing your name, Prometric ID number, current mailing address, and daytime phone number.

Oracle Certified Professional Members Web Site

Upon completion of your Oracle Certified Professional credential, you will receive information on how to obtain a copy of the OCP logo in your Welcome Kit. The logo may be used on business cards and resumes.

You will also receive a letter of congratulations from Oracle, which will indicate how you can begin to access the wealth of OCP benefits that await you. This will include the access log in and password that you will need to enter the OCP member online community.

The OCP Members site is available only to Oracle Certified Professionals, and not to Oracle Certified Associates.

Keeping Current with New Oracle Technology Releases

Oracle is committed to keeping the Oracle Certification Program abreast with the latest technology. To take full benefit of your Oracle Certified Professional credential, you may find it advantageous to upgrade your certification to the latest release.

Retirement of an OCP Track

When Oracle announces the retirement of a track, you will have at least six months to pass the remaining exams in the retiring track. If you do not upgrade your certification by the deadline, you will be required to complete all tests within the new track to obtain the latest credential. Consult the OCP Web site for current testing requirements.

Updating Your Demographic Information

Visit the Prometric Web site at http://register.prometric.com/ to update your demographic information.

Follow the steps below:

1. Log in to the site with your e-mail address and password. If you have never registered online before, click the link to set up your online account.
2. In the left navigation bar under Exam Services, click Update Profile.
3. You may update your mailing address, telephone numbers, and your e-mail address.
4. Select Next. Your OCP Candidate information is now updated.

7 Special Testing Opportunities

Special Opportunities: Beta and Tryout Tests

Oracle may offer beta or tryout versions of OCP tests as new and updated questions are developed. Beta and tryout tests are generally offered free or at a discount from the regular test price. Participating in beta and tryout tests is a good way to economize on your certification and to be among the first professionals to be certified on a new track or product release.

Beta score reports are sent to candidates following analysis and scoring of the beta test.

Visit the Oracle Certification Program Web site at http://www.oracle.com/education/certification/ to find beta and tryout opportunities. Oracle provides detailed descriptions of each beta and tryout offer to help you decide whether the tests are right for you.

Visit the OCP Web site at http://www.oracle.com/education/certification/

Test Content Checklists

The following test content checklists show the objectives covered in the Oracle Certification exams.

Test Content Checklist

Introduction to Oracle: SQL® and PL/SQL™ Exam# 1Z0-001

Overview of Relational Databases, SQL, and PL/SQL

- ☐ Discuss the theoretical and physical aspects of a relational database
- ☐ Describe the Oracle implementation of the RDBMS and ORDBMS
- ☐ Describe the use and benefits of PL/SQL

Writing Basic SQL Statements

- ☐ List the capabilities of SQL SELECT statements
- ☐ Execute a basic SELECT statement
- ☐ Differentiate between SQL statements and SQL*Plus commands

Restricting and Sorting Data

- ☐ Limit the rows retrieved by a query
- ☐ Sort the rows retrieved by a query

Single-Row Functions

- ☐ Describe various types of functions available in SQL
- ☐ Use character, number, and date functions in SELECT statements
- ☐ Describe the use of conversion functions

Displaying Data from Multiple Tables

- ☐ Write SELECT statements to access data from more than one table by using equality and nonequality joins
- ☐ View data that generally does not meet a join condition by using outer joins
- ☐ Join a table to itself

Aggregating Data Using Group Functions

- ☐ Identify the available group functions
- ☐ Describe the use of group functions
- ☐ Group data by using the GROUP BY clause
- ☐ Include or exclude grouped rows by using the HAVING clause

Subqueries

- ☐ Describe the types of problems that subqueries can solve
- ☐ Define subqueries
- ☐ List the types of subqueries
- ☐ Write single-row and multiple-row subqueries

Multiple-Column Subqueries

- ☐ Write multiple-column subqueries
- ☐ Describe and explain the behavior of subqueries when null values are retrieved
- ☐ Write subqueries in a FROM clause

Producing Readable Output with SQL*Plus

- ☐ Produce queries that require an input variable
- ☐ Customize the SQL*Plus environment
- ☐ Produce more readable output
- ☐ Create and execute script files
- ☐ Save customizations

Exam #1Z0-001—Introduction to Oracle: SQL® and PL/SQL™ (continued)

Manipulating Data

- ☐ Describe each DML statement
- ☐ Insert rows into a table
- ☐ Update rows in a table
- ☐ Delete rows from a table
- ☐ Control transactions

Creating and Managing Tables

- ☐ Describe the main database objects
- ☐ Create tables
- ☐ Describe the data types that can be used when specifying column definition
- ☐ Alter table definitions
- ☐ Drop, rename, and truncate tables

Including Constraints

- ☐ Describe constraints
- ☐ Create and maintain constraints

Creating Views

- ☐ Describe a view
- ☐ Create a view
- ☐ Retrieve data through a view
- ☐ Insert, update, and delete data through a view
- ☐ Drop a view

Exam #1Z0-001—Introduction to Oracle: SQL® and PL/SQL™ (continued)

Oracle Data Dictionary

- ☐ Describe the data dictionary views a user may access
- ☐ Query data from the data dictionary

Other Database Objects

- ☐ Describe database objects and their uses
- ☐ Create, maintain, and use sequences
- ☐ Create and maintain indexes
- ☐ Create private and public synonyms

Controlling User Access

- ☐ Create users
- ☐ Create roles to ease setup and maintenance of the security model
- ☐ Use the GRANT and REVOKE statements to grant and revoke object privileges

Declaring Variables

- ☐ List the benefits of PL/SQL
- ☐ Describe the basic PL/SQL block and its sections
- ☐ Describe the significance of variables in PL/SQL
- ☐ Declare PL/SQL variables
- ☐ Execute a PL/SQL block

Writing Executable Statements

- ☐ Describe the significance of the executable section
- ☐ Write statements in the executable section
- ☐ Describe the rules of nested blocks
- ☐ Execute and test a PL/SQL block
- ☐ Use coding conventions

Interacting with the Oracle Server

- ☐ Write a successful SELECT statement in PL/SQL
- ☐ Declare the data type and size of a PL/SQL variable dynamically
- ☐ Write DML statements in PL/SQL
- ☐ Control transactions in PL/SQL
- ☐ Determine the outcome of SQL DML statements

Writing Control Structures

- ☐ Identify the uses and types of control structures
- ☐ Construct an IF statement
- ☐ Construct and identify different loop statements
- ☐ Use logic tables
- ☐ Control block flow by using nested loops and labels

Working with Composite Data Types

- ☐ Create user-defined PL/SQL records
- ☐ Create a record with the %ROWTYPE attribute
- ☐ Create a PL/SQL table
- ☐ Create a PL/SQL table of records
- ☐ Describe the difference between records, tables, and tables of records

Exam #1Z0-001—Introduction to Oracle: SQL® and PL/SQL™ (continued)

Writing Explicit Cursors

- ☐ Distinguish between an implicit and an explicit cursor
- ☐ Use a PL/SQL record variable
- ☐ Write a cursor FOR loop

Advanced Explicit Cursor Concepts

- ☐ Write a cursor that uses parameters
- ☐ Determine when a FOR UPDATE clause in a cursor is required
- ☐ Determine when to use the WHERE CURRENT OF clause
- ☐ Write a cursor that uses a subquery

Handling Exceptions

- ☐ Define PL/SQL exceptions
- ☐ Recognize unhandled exceptions
- ☐ List and use different types of PL/SQL exception handlers
- ☐ Trap unanticipated errors
- ☐ Describe the effect of exception propagation in nested blocks
- ☐ Customize PL/SQL exception message

Test Content Checklist

Introduction to Oracle9i: SQL®
Exam# 1Z0-007

Writing Basic SQL Select Statements

- ☐ List the capabilities of SQL SELECT statements
- ☐ Execute a basic SELECT statement
- ☐ Differentiate between SQL statements and *i*SQL*Plus commands

Restricting and Sorting Data

- ☐ Limit the rows retrieved by a query
- ☐ Sort the rows retrieved by a query

Single-Row Functions

- ☐ Describe various types of functions available in SQL
- ☐ Use character, number, and date functions in SELECT statements
- ☐ Use conversion functions

Displaying Data from Multiple Tables

- ☐ Write SELECT statements to access data from more than one table by using equality and nonequality joins
- ☐ View data that generally does not meet a join condition by using outer joins
- ☐ Join a table to itself by using a self-join

Aggregating Data Using Group Functions

- ☐ Identify the available group functions
- ☐ Use group functions
- ☐ Group data by using the GROUP BY clause
- ☐ Include or exclude grouped rows by using the HAVING clause

Subqueries

- ☐ Describe the types of problems that subqueries can solve
- ☐ Define subqueries
- ☐ List the types of subqueries
- ☐ Write single-row and multiple-row subqueries

Producing Readable Output with *i*SQL*Plus

- ☐ Produce queries that require a substitution variable
- ☐ Produce more readable output
- ☐ Create and execute script files

Manipulating Data

- ☐ Describe each DML statement
- ☐ Insert rows into a table
- ☐ Update rows in a table
- ☐ Delete rows from a table
- ☐ Merge rows in a table
- ☐ Control transactions

Exam #1Z0-007—Introduction to Oracle9*i*: SQL® (continued)

Creating and Managing Tables

- ☐ Describe the main database objects
- ☐ Create tables
- ☐ Describe the data types that can be used when specifying column definition
- ☐ Alter table definitions
- ☐ Drop, rename, and truncate tables

Including Constraints

- ☐ Describe constraints
- ☐ Create and maintain constraints

Creating Views

- ☐ Describe a view
- ☐ Create, alter the definition, and drop a view
- ☐ Retrieve data through a view
- ☐ Insert, update, and delete data through a view

Creating Other Database Objects

- ☐ Create, maintain, and use sequences
- ☐ Create and maintain indexes
- ☐ Create private and public synonyms

Test Content Checklist

Oracle9i: Program with PL/SQL
Exam# 1Z0-147

Overview of PL/SQL Programs

- ☐ Describe a PL/SQL program construct
- ☐ List the components of a PL/SQL block
- ☐ List the benefits of subprograms
- ☐ Describe how a stored procedure or function is invoked

Creating Procedures

- ☐ Define what a stored procedure is
- ☐ List the development steps for creating a procedure
- ☐ Create a procedure
- ☐ Describe the difference between formal and actual parameters
- ☐ List the types of parameter modes
- ☐ List the methods for calling a procedure with parameters
- ☐ Describe the DEFAULT option for parameters
- ☐ Create a procedure with parameters
- ☐ Invoke a procedure that has parameters
- ☐ Define a subprogram in the declarative section of a procedure
- ☐ Describe how exceptions are propagated
- ☐ Remove a procedure

Creating Functions

- ☐ Define what a stored function is
- ☐ Create a function
- ☐ List how a function can be invoked
- ☐ List the advantages of user-defined functions in SQL statements
- ☐ List where user-defined functions can be called from within an SQL statement
- ☐ Describe the restrictions on calling functions from SQL statements
- ☐ Remove a function
- ☐ Describe the differences between procedures and functions

Managing Subprograms

- ☐ Contrast system privileges with object privileges
- ☐ Grant privileges
- ☐ Contrast invokers' rights with definers' rights
- ☐ Identify views in the data dictionary to manage stored objects

Exam #1Z0-147—Oracle9*i*: Program with PL/SQL (continued)

Creating Packages

- ☐ Use the DESCRIBE command to describe packages, and list their possible components
- ☐ Identify a package specification and body
- ☐ Create packages: Create related variables, cursors, constants, exceptions, procedures, and functions
- ☐ Designate a package construct as either public or private
- ☐ Invoke a package construct
- ☐ Use a bodiless package
- ☐ Drop packages
- ☐ Identify benefits of packages

More Package Concepts

- ☐ Write packages that use the overloading feature
- ☐ Use Forward Referencing
- ☐ Describe errors with mutually referential subprograms
- ☐ Initialize variables with a one-time-only procedure
- ☐ Identify persistent states in package variables and cursors
- ☐ Identify restrictions on using packaged functions in SQL statements
- ☐ Invoke packaged functions from SQL
- ☐ Use PL/SQL tables and records in packages

Oracle Supplied Packages

- ☐ Describe the benefits of Execute Immediate over DBMS_SQL for Native Dynamic SQL
- ☐ Identify the flow of execution
- ☐ Use EXECUTE IMMEDIATE
- ☐ Describe the use and application of some Oracle server–supplied packages: DBMS_DDL, DBMS_JOB, Submit Jobs, DBMS_OUTPUT, UTL_FILE, UTL_HTTP, and UTL_TCP

Manipulating Large Objects

- ☐ Compare and contrast LONG and large object (LOB) data types
- ☐ Create and maintain LOB data types
- ☐ Differentiate between internal and external LOBs
- ☐ Identify and manage Bfiles: Create directories, use Bfiles, load Bfiles, and use the Bfilename function
- ☐ Migrate from LONG To LOB
- ☐ Use the DBMS_LOB PL/SQL package
- ☐ Create LOB columns and populate them
- ☐ Perform SQL operations on LOBS: Update LOBs with SQL, select from LOBS, and delete LOBS
- ☐ Describe the use of temporary LOBs

Exam #1Z0-147—Oracle9*i*: Program with PL/SQL (continued)

Creating Database Triggers

- ☐ Describe the different types of triggers
- ☐ List how triggers are used
- ☐ List guidelines for designing triggers
- ☐ Create a DML trigger
- ☐ List the DML trigger components
- ☐ Describe the trigger firing sequence options
- ☐ Use conditional predicates in a DML trigger
- ☐ Create a row-level trigger
- ☐ Create a statement-level trigger
- ☐ Use the OLD and NEW qualifiers in a database trigger
- ☐ Create an INSTEAD OF trigger
- ☐ Describe the difference between stored procedures and triggers
- ☐ Describe the trigger execution model
- ☐ Alter a trigger status
- ☐ Remove a trigger

More Trigger Concepts

- ☐ Define what a database trigger is
- ☐ Describe events that cause database triggers to fire
- ☐ Create a trigger for a DDL statement
- ☐ Create a trigger for a system event
- ☐ Describe the functionality of the CALL statement
- ☐ Describe the cause of a mutating table
- ☐ List what triggers can be implemented for
- ☐ List the privileges associated with triggers
- ☐ View trigger information in the dictionary views

Managing Dependencies

- ☐ Track procedural dependencies
- ☐ Describe dependent objects and referenced objects
- ☐ View dependency information in the dictionary views
- ☐ Describe how the UTLDTREE script is used
- ☐ Describe how the IDEPTREE and DEPTREE procedures are used
- ☐ Describe a remote dependency
- ☐ List how remote dependencies are governed
- ☐ Describe when a remote dependency is unsuccessfully recompiled
- ☐ Describe when a remote dependency is successfully recompiled
- ☐ List how to minimize dependency failures

Test Content Checklist

Oracle9i Forms Developer: Build Internet Applications
Exam# 1Z0-141

Introduction to Oracle Forms Developer and Oracle Forms Services

- ☐ Describe the components of Oracle9*i* Developer Suite and Oracle9*i* Application Server
- ☐ Describe the features and benefits of Oracle Forms Services and Oracle Forms Developer
- ☐ Describe the architecture of Oracle Forms Service
- ☐ Describe Forms Builder components
- ☐ Navigate the Forms Builder interface
- ☐ Customize the Forms Builder session
- ☐ Use the online help facilities

Running a Forms Developer Application

- ☐ Describe the run-time environment:
- — Explain the role of each
- — Modify Forms environment variables
- — Describe the appearance of a form at run time
- ☐ Navigate a Forms application
- ☐ Retrieve both restricted and unrestricted data
- ☐ Describe the two modes of operation
- ☐ Insert, update, and delete records
- ☐ Display database errors

Working in the Forms Developer Environment

- ☐ Describe the main Forms Developer executables
- ☐ Describe the main Forms Developer module types
- ☐ Describe the main objects in a form module
- ☐ Run a form from within Forms Builder
- — Start and stop an OF4J instance
- — Set Forms Builder preference to use OF4J

Creating a Basic Form Module

- ☐ Create a form module
- ☐ Create data blocks, create data blocks with relationships, and create control blocks
- ☐ Use wizards in reentrant mode to make changes to the data block and layout
- ☐ Save and compile a form module
- ☐ Describe Forms file formats and their characteristics
- ☐ Explain how to deploy a form module
- ☐ Produce text files and documentation
- ☐ Run a master-detail form module

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Working with Data Blocks and Frames

- ☐ Describe the methods to modify object properties
- ☐ Describe the features of the Property palette
- ☐ Manipulate properties through the Property palette
- — Display the Property palette
- — Describe the property controls for different types of properties
- — Display multiple Property palettes
- — Set properties on multiple objects
- — Copy properties
- ☐ Control the behavior and appearance of data blocks
- — Use visual attributes
- — Use font, pattern, and color pickers
- — Set navigation properties
- — Set records properties
- — Set database properties
- — Set scrollbar properties
- ☐ Control frame properties
- ☐ Delete data blocks and their components

Working with Text Items

- ☐ Describe text items
- ☐ Create a text item
- ☐ Manage and modify text items by using the Property palette
- — Control data in text item
- — Alter navigational behavior
- — Enhance relationship between text item and database
- — Add functionality to text item
- ☐ Display helpful messages

Creating LOVs and Editors

- ☐ Describe LOVs and editors
- ☐ Design, create, and associate LOVs with text items in a form module
- — Describe the relationship between LOVs and record groups
- — Explain the steps to create an LOV manually
- — Use the LOV Wizard to create an LOV
- — Set LOV properties
- ☐ Create editors and associate them with text items in a form module

Creating Additional Input Items

- ☐ Describe the item types that allow input
- ☐ Create a check box
- ☐ Create a list item
- ☐ Create a radio group

Creating Noninput Items

- ☐ Describe item types that do not allow input
- ☐ Create a display item
- ☐ Create an image item
- ☐ Create a button
- ☐ Create a calculated item
- ☐ Create a hierarchical tree item
- ☐ Create a bean area item

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Creating Windows and Content Canvases

- ☐ Define windows, content canvases, and viewports
- ☐ Describe the relationship between windows and content canvases
- ☐ Create windows and content canvases
- ☐ Display a form module in multiple windows and on multiple layouts

Working with Other Canvas Types

- ☐ Describe the different types of canvases and their relationships to each other
- ☐ Identify the appropriate canvas type for different scenarios
- ☐ Create an overlay effect by using stacked canvases
- ☐ Create a toolbar
- ☐ Create a tabbed interface

Introduction to Triggers

- ☐ Describe triggers
- ☐ Describe the different trigger categories
- ☐ Describe the components of a trigger
- ☐ Describe the types of statements used in trigger code
- ☐ Describe the properties that affect the behavior of a trigger

Producing Triggers

- ☐ Write trigger code
  - — Create a trigger of appropriate type and scope
  - — Describe the features of the PL/SQL Editor
  - — Describe the features of the Database Trigger Editor
  - — Explain the structure of trigger code
  - — Use variables in triggers
- ☐ Explain the use of built-in subprograms in Forms applications
- ☐ Describe the When-Button-Pressed trigger
- ☐ Describe the When-Window-Closed trigger

Debugging Triggers

- ☐ Describe the methods to debug triggers in Forms Builder
- ☐ Describe the components of the Debug Console
- ☐ Run a form module in debug mode by using the Run Form Debug button
- ☐ Debug PL/SQL code
  - — Set breakpoints in code
  - — Step through code
  - — View variable values while form is running

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Adding Functionality to Items

- ☐ Describe item interaction triggers
- ☐ Supplement the functionality of input items by using triggers and built-ins
  - — Code interactions with radio groups
  - — Code interactions with check boxes
  - — Change list items at run time
  - — Display an LOV from a button
- ☐ Supplement the functionality of noninput items by using triggers and built-ins
  - — Populate image items
  - — Populate hierarchical trees
  - — Code interactions with JavaBeans in the bean area item

Run-Time Messages and Alerts

- ☐ Describe the default messaging behavior of a form
- ☐ Handle run-time failure of built-in subprograms
- ☐ Describe the different types of Forms Builder messages
- ☐ Cause a trigger to fail in a controlled manner
- ☐ Control system messages
- ☐ Create and control alerts
- ☐ Handle database server errors

Query Triggers

- ☐ Explain the processes involved in querying a data block
- ☐ Describe query triggers and their scope
- ☐ Control query array processing
- ☐ Write triggers to modify query behavior
- ☐ Control trigger action based on the form's query status
- ☐ Obtain query information at run time

Validation

- ☐ Describe the validation process
- ☐ Control validation
  - — Using object properties
  - — Explain the effects of the validation unit upon a form
  - — Use an LOV for validation
  - — Use triggers
  - — Use Pluggable Java Component
- ☐ Describe how Forms tracks validation status
- ☐ Control when validation occurs

Navigation

- ☐ Describe how navigation affects the navigation unit and the cursor
- ☐ Distinguish between internal and external navigation
- ☐ Control navigation with properties
- ☐ Describe and use navigation triggers to control navigation
- ☐ Explain how the navigation trap occurs
- ☐ Use navigation built-ins in triggers

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Transaction Processing

- ☐ Explain the process used by Forms to apply changes to the database
- ☐ Describe the commit sequence of events
- ☐ Describe the characteristics and uses of commit triggers
- ☐ Supplement transaction processing
  - — Perform delete validation
  - — Allocate sequence numbers to records as they are applied to tables
  - — Keep an audit trail
- ☐ Test the results of trigger DML
- ☐ Override default transaction processing
- ☐ Describe how to run against a non_Oracle data source
- ☐ Get and set the commit status
- ☐ Implement array DML

Writing Flexible Code

- ☐ Describe flexible code
- ☐ Use system variables to determine:
  - — Cursor focus
  - — Trigger focus
  - — Commit status
- ☐ Describe built-in subprograms that assist flexible coding
- ☐ Write code to reference objects:
  - — By internal ID
  - — Indirectly

Sharing Object and Code

- ☐ Describe benefits of reusing objects and code
- ☐ Create and use property classes
  - — Describe property classes
  - — Create property classes
  - — Add properties to property classes
  - — Inherit properties from property classes
  - — Explain the inheritance symbol in the Property palette
- ☐ Group related objects for reuse
- ☐ Copy and subclass objects
- ☐ Reuse objects from an object library
  - — Describe object libraries
  - — Describe the benefits of using object libraries
  - — Create object libraries
  - — Populate object libraries
  - — Modify objects in an object library
  - — Create and use SmartClasses
- ☐ Reuse PL/SQL code

Introducing Multiple Form Applications

- ☐ Describe the characteristics of multiple form applications
- ☐ Describe the benefits of multiple form applications
- ☐ Call one form from another form module
- ☐ Define multiple form functionality
- ☐ Share data among open forms
- ☐ Control opening and closing multiple forms
- ☐ Synchronize data among multiple forms

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Creating Menu Modules

- ☐ Describe the different components of a menu module
- ☐ Create, save, and attach menu modules
- ☐ Set menu properties by using the Property palette
- ☐ Create menu toolbars
- ☐ Create pop-up menus

Managing Menu Modules

- ☐ Control menus programmatically
- ☐ Manage the interaction between the menu and form documents
- ☐ Implement application security through the menu

Programming Function Keys

- ☐ Define key triggers and their uses
- ☐ Program function keys
- ☐ Describe the characteristics of key triggers
- ☐ Classify key triggers
- ☐ Associate function keys with interface controls

Building Multiple Form Applications

- ☐ Describe the various ways of invoking additional forms modules
- ☐ Open and close form modules
- ☐ Navigate between form modules
- ☐ Control open form modules
- ☐ Choose the most appropriate method for invoking forms

Defining Data Sources

- ☐ Describe the various data source types
- ☐ Base a data block on a FROM clause query
- ☐ Discuss the advantages of using a FROM clause query
- ☐ Base a data block on a stored procedure that returns a REF cursor
- ☐ Return a table of records from a stored procedure
- ☐ Define a data source with the Data Block Wizard
- ☐ Select the appropriate data source for a data block

Working with Record Groups

- ☐ Describe the record group object
- ☐ Use record groups
- ☐ Define record groups at design time
- ☐ Control record groups by using built-in functions
- ☐ Define query record groups programmatically and nonprogrammatically
- ☐ Manipulate record group rows
- ☐ Define lists of values (LOVs) programmatically
- ☐ Implement dynamic list items and add values to combo boxes

Exam #1Z0-141—Oracle9*i* Forms Developer: Build Internet Applications (continued)

Using Database Objects in Forms Applications

- ☐ Recognize which object types are supported
- ☐ Describe how object types are represented within Form Builder
- ☐ Create a block based on an object table
- ☐ Create a block based on a relation table with an object or an REF column
- ☐ Populate a REF column with an LOV

Test Content Checklist

Oracle9i Forms Developer: New Features
Exam# 1Z0-140

Why Upgrade to Oracle9*i* Forms

- ☐ Explain the components of Oracle9*i* Developer Suite
- ☐ Describe the benefits provided by Oracle9*i* Forms
  - — Explain the reasons why Forms has been optimized for the Web
  - — Describe Oracle9*i* Forms productivity enhancements
  - — Explain the features for global deployment of Forms applications
  - — Explain how Oracle9*i* Forms provides integration features
  - — Describe the openness of Oracle9*i* Forms
- ☐ Explain how Oracle9*i* Forms has been streamlined
  - — Explain the types of features removed from the product
  - — Explain the components that have been removed from the product

Deploying Forms Applications on the Internet

- ☐ Describe the architecture of Oracle9*i* Application Server
- ☐ Explain the role of Oracle Containers for J2EE (OC4J) in deploying applications
- ☐ Describe the components of Oracle9*i* Forms Services
- ☐ Describe the process of starting a run-time session
- ☐ Run a form from the Forms Builder using OC4J
  - — Start and stop an OC4J session
  - — Set Forms Builder preferences to use OC4J
- ☐ Customize the Forms Services configuration
  - — Define environment variables
  - — Define Forms Servlet parameters

Migrating Existing Applications to Oracle9*i* Forms

- ☐ Describe the migration path for applications written in previous versions of Forms
- ☐ Explain the methods you can use to upgrade applications
- ☐ Use Oracle9*i* Forms Migration Assistant to upgrade a Forms6*i* application
- ☐ Explain issues that can be encountered when upgrading from Forms versions before 6*i*
- ☐ Describe design and upgrade issues with applications previously deployed by other means
- ☐ Explain how to integrate graphs from Forms6*i* applications
- ☐ Run Reports from Oracle9*i* Forms

Exam #1Z0-140—Oracle9*i* Forms Developer: New Features (continued)

Designing Forms Modules Outside the Builder

- ☐ Explain the batch methods of modifying Forms modules
- ☐ Describe the benefits of modifying Forms with a batch method
- ☐ Use the Java API (JDAPI) to modify Forms modules
  - — Explain the advantages of using JDAPI
  - — Describe the architecture of JDAPI
  - — Use JDAPI to:
    - ∏ Manage the JDAPI session
    - ∏ Create a new Form module
    - ∏ Add objects to modules
    - ∏ Save and compile modules
    - ∏ Load existing modules
    - ∏ Access child objects of a Forms module
    - ∏ Modify Forms objects
    - ∏ Delete Forms objects
    - ∏ Copy and subclass Forms objects
    - ∏ Handle exceptions
  - — Explain how to write generic code
  - — Use javadoc for JDAPI
- ☐ Use the Forms to XML conversion utility to modify Forms modules

Troubleshooting Forms Applications

- ☐ Describe the components of the Forms Debugger
- ☐ Use the Debugger to diagnose problems with a Forms module:
  - — Set breakpoints
  - — Run a form in debug mode
  - — Step through code
- ☐ Debug an application remotely
- ☐ Enable tracing and logging to help troubleshoot problems:
  - — Configure Forms Track
  - — Start a trace
  - — View Forms Trace output
  - — Describe servlet logging levels
  - — Turn on Forms Listener Servlet logging
  - — Turn on Forms Servlet logging
  - — View the servlet log file

Integrating Java into Forms Applications

- ☐ Explain the methods for using Java in Forms applications
- ☐ Explain the significance of using JDK 1.3
- ☐ Use the improved support for JavaBeans
  - — Describe JavaBeans
  - — Explain how Forms and JavaBeans interact
  - — Describe the functionality provided by the FBean package
  - — Set bean area item properties
  - — Respond to JavaBean events
  - — Interact with nonevent JavaBeans
  - — Deploy JavaBeans for use with Forms applications
- ☐ Use Pluggable Java Components (PJCs)
  - — Describe PJCs
  - — Implement PJCs

Exam #1Z0-140—Oracle9*i* Forms Developer: New Features (continued)

Enhancing the User Experience

- ☐ Design an LOV that can be canceled for long-running queries
- ☐ Write code that retrieves the Forms version
- ☐ Write code to restrict a query only the first time it is executed

Deploying Forms Applications Globally

- ☐ Specify item length for single-byte, multiple-byte, and variable-byte character sets
- ☐ Adjust functionality for different time zones
  - — Explain how time zone conversion works
  - — Modify environment variables to enable time zone conversion
  - — Use built-ins to manipulate time zones
- ☐ Publish one URL for applications that will be displayed in different languages based on the browser setter
  - — Explain how browser language settings are communicated to the applications server
  - — Describe how the language setting determines the application that runs
  - — Deploy language-specific applications
- ☐ Describe the TranslationHub tool to translate Forms modules into different languages
  - — Explain how to start TranslationHub
  - — Describe the TranslationHub user interface
  - — Explain the steps to translate an application

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Italy	Lelystad	1.6787.8441
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Jamaica	Latin America	1.800.892.1978
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