

Chapter 1: Getting Started

Purpose and Function	1
Terminology and Concepts	2
Command-line Interface	3
Graphical User Interface	3
Command Keys	4

Chapter 2: Fundamentals

What is PL/SQL	1
Block-structured Language	2
Block Structure	2
Variables and Constants	2
Assigning Values to a Variable	3
Declaring Constants	3
Cursors	4
Cursor FOR Loops	5
Attributes	6
%TYPE	6
%ROWTYPE	6
Control Structures	8
Conditional Control	8
Iterative Control	8
Subprograms	11
Packages	12
Objects and Collections	13
Data Abstraction	13
Collections	13
Records	13
Object Types	13
Error Handling	14

Chapter 3: Architecture

Environments	1
Oracle Server	1
Anonymous Blocks	1
Stored Subprograms	2
Database Triggers	3
Advantages of PL/SQL	4
Support for Object-oriented Programming	5
Better Performance	6
Tight Integration with SQL	7

Chapter 4: Programming Elements

Character Set	1
Delimiters	2
Simple Symbols	2
Compound Symbols	3
Identifiers	4
Quoted Identifiers	5
Literals	6
Numeric Literals	6
Character Literals	6
String Literals	7
Boolean Literals	7
Comments	8
Single-line	8
Multi-line	8
Datatypes	9
Number Types	10
PLS_INTEGER	11
Character Types	12
LONG and LONG RAW	13
ROWID and UROWID	14
Logical Rowids	14
VARCHAR2	15
LOB Types	16
BFILE	17
Declarations	19
DEFAULT Keyword	20
NOT NULL Constraint	21
%TYPE Attribute	22
%ROWTYPE	23
Assignments	24
Boolean Values	25
Database Values	26
Expressions and Comparisons	27
Operators	28
Relational Operators	28
IS NULL Operator	28
LIKE Operator	28
BETWEEN Operator	29
IN Operator	29
Concatenation	30
Handling Nulls	31
NOT Operator	31

Chapter 5: Flow of Control

Structures	1
IF Statements	2
IF-THEN-ELSE	2
IF-THEN-ELSIF	3
LOOP and EXIT Statements	4
WHILE-LOOP	5
FOR-LOOP	6
Dynamic Ranges	7
EXIT Statement	8
GOTO and NULL Statements	9
NULL Statement	10

Chapter 6: Interaction with Oracle

SQL Support	1
Transaction Control	2
SQL Functions	3
SQL Pseudocolumns	4
Curval and Nextval	4
LEVEL	4
ROWID	5
ROWNUM	5
Comparison Operators	6

Chapter 7: Error Handling

PL/SQL Approaches to Error Handling	1
Advantages of Error Handling	2
Predefined Exceptions	3
Declaring Exceptions	4
EXCEPTION_INIT	5
raise_application_error	6
RAISE Statement	7
Handling Raised Exceptions	7
Branching to or from an Exception Handler	8
SQLCODE and SQLERRM	9
Continuing After an Exception is Raised	10

Chapter 8: Cursors

Types of Cursors	1
Explicit Cursors	2
Declaring a Cursor	3
Opening a Cursor	4
Passing Cursor Parameters	5
Fetching with a Cursor	6
Closing a Cursor	7
Packaging Cursors	8
Cursor FOR Loops	9
Aliases	10
Passing Parameters	11
Cursor Variables	12
Defining REF CURSOR Types	13
Declaring Cursor Variables	13
Opening a Cursor Variable	14
Fetching from a Cursor Variable	14
Closing a Cursor Variable	15

Chapter 9: Subprograms

Definition and Purpose	1
Procedures	3
Functions	4
RETURN Statement	5
Declaring Subprograms	6
Actual versus Formal Parameters	7
Positional and Named Parameters	8
Parameter Modes	9
IN Mode	9
OUT Mode	10
IN OUT Mode	11
Overloading	12

Chapter 10: PL/SQL Programming

Definition and Purpose	1
Nested Tables	2
Nested Tables versus Associative Arrays	2
Varrays	3
Varrays versus Nested Tables	4
Creating Collections	5
Defining a Collection	5
Declaring Collections	6
Initializing and Referencing Collections	7
Referencing Collection Elements	8
Assigning and Comparing Collections	9
Assigning Collection Elements	9
Manipulating Collections	10

Populating the Database.....	11
Manipulating Individual Elements	13
Collection Methods.....	14
EXISTS.....	14
COUNT.....	14
LIMIT	15
EXTEND.....	15
TRIM.....	16
DELETE	16
Record: Definition and Purpose	17
Defining Records.....	17
Declaring Records.....	18
Initializing and Referencing Records	18
Referencing Records	19
Assigning Records	19
Comparing Records	20

Chapter 11: Transaction Processing

Transactions.....	1
Transaction and Guarding Transactions.....	2
COMMIT.....	2
ROLLBACK.....	3
Statement-level Rollbacks.....	3
SAVEPOINT.....	4
SET TRANSACTION.....	4
Overriding Default Locking.....	6
FOR UPDATE.....	6
LOCK TABLE.....	7
Autonomous Transactions.....	8
Advantages of Autonomous Transactions.....	8
Defining Autonomous Transactions.....	9
Controlling Autonomous Transactions.....	10

Chapter 12: Performance

Collections.....	1
Bulk Binds	1
External Routines.....	3
NOCOPY Constraints.....	4
RETURNING Clause.....	5
PLS_INTEGER Data Type.....	6
Avoid the NOT NULL Constraint.....	7
Avoid Implicit Datatype Conversions	8