

Essential SQL for Oracle 11g

Section	Title	Page
One	Introduction to SQL	2
	– Definition of SQL	3
	– Definition of a Database	4
Two	Database Objects	5
	– Introduction	6
	– Tables	7
	– Views	8
	– Materialized Views	9
	– Indexes	10
	– Sequences	11
	– Packages, Functions and Procedures	12
Three	The SQL Plus Interface	13
	– Introduction	14
	– Anatomy of SQL Plus	15
	– ORA-01005: null password given; logon denied	19
	– ORA-12154: TNS:could not resolve the connect identifier	20
	– ORA-01017: invalid username/password	21
	– Exiting an SQL Plus Session	22
	– Using the DOS Window	23
	– Copying and Pasting	24
	– Using the Function Keys	25
	– Using the Line Editor in SQL Plus	28
	– Using the Editor in SQL Plus	29
	– SQL Plus Environment Settings	30
	– File Manipulation in SQL Plus	31
	– Spooling Results in SQL Plus	32
– Changing Passwords / Clearing the Screen	33	
Four	SQL Scripts	34
	– Commenting SQL Scripts	35
	– Running SQL in Batch Scripts	39
	– Passing Parameters with SQL Scripts	41
Five	Simple Queries	43
	– Introduction	45
	– Oracle Metadata	46
	– SQL Syntax	47
	– Counting Records in an Oracle Table	52
	– Displaying Literals in a Select statement	55
	– Displaying Variables in a Select statement	57
	– <i>Exercise One</i>	60
	– Column Aliases	61
	– Column Manipulation with SQL Functions	65
	– Concatenating Columns in SQL	68
	– Performing Calculations in SQL	74
	– Ordering Data in SQL	75
	– Ordering More than One Column	76
– Manipulating Dates in SQL	78	
– Displaying Dates in SQL	79	
– <i>Exercise Two</i>	80	
		81

Essential SQL for Oracle 11g

Section	Title	Page
Six	Limiting Data Selected with a Where Clause	86
	– Limiting Data in SQL	87
	– Structure of an SQL Where Clause	88
	– Different types of SQL Where Clauses	89
	– Handling Nulls in Where Clauses	97
	– Case Restrictions in SQL Where Clauses	98
	– Using Functions in Where Clauses	99
	– Rownum in SQL Tables	102
	– Using Rowid in SQL Tables	104
	– <i>Exercise Three</i>	106
	Seven	Oracle Datatypes
– Introduction		111
– Varchar2		112
– Varchar2 and Char		114
– Number		115
– Date		116
– Float		117
– Long		118
– Large Objects		119
– Bfile		123
Eight	Aggregating Values	124
	– Introduction	125
	– Using Group By	126
	– Using Having with Group By	129
	– Using Rollup to Total Grouping	131
Nine	Tree Walking Tables in SQL	132
	– Introduction	133
	– Syntax for Tree Walking in SQL	135
	– Example of Tree Walking in SQL	136
	– Advanced Ordering of Siblings in Tree Walks	137
	– Sys_Connect_By_Path	139
	– <i>Exercise Four</i>	141
Ten	Joining Tables in an SQL Statement	141
	– Using Table Aliases in SQL	145
	– Linking Tables in an SQL statement	147
	– Problems with Joining Tables in SQL	152
	– Methods of Joining Tables in SQL	154
	– Using Ansi SQL/86 to Join Tables	155
	– Ansi SQL/86 and Outer Joins	156
	– Ansi SQL/99 Standards (Natural Joins)	159
	– Ansi SQL/99 Standards (Cross Joins)	160
	– Ansi SQL/99 Standards (Joins/Using)	161
	– Ansi SQL/99 Standards (On)	162
	– Ansi SQL/99 Standards (Multiple On)	163
	– Ansi SQL/99 Standards (Left Outer Join)	164
	– Ansi SQL/99 Standards (Right Outer Join)	165
	– Ansi SQL/99 Standards (Full Outer Join)	166
	– Merging Tables in SQL	167
	– Using Union to Merge Tables in SQL	168
– Using Union All to Merge Tables in SQL	169	
– Using Intersect to Merge Tables in SQL	170	

Essential SQL for Oracle 11g

Section	Title	Page
	– Using Minus to Merge Tables in SQL	171
	– Knowledge Check	172
	– Using the Merge Syntax in SQL	177
	– <i>Exercise Five</i>	178
Eleven	Advanced SQL Query Techniques	182
	– Introduction	183
	– Pivot	184
	– Adding a Total to a Pivot	189
	– Changing the Pivot Headings of X Axis	190
	– Rotating the Axis of the Pivot	192
	– Unpivot	193
	– Unpivot and Null values	196
	– Using First_Value/Last_Value in SQL	197
	– Ignoring Nulls with First/Last_Value	199
	– Window Specification	200
	– Breakdown of Window Specification	201
	– Window Specification – The Arguments	203
	– Window Specification – Query Partition	204
	– Window Specification – The Order By	206
	– Window Specification – The Windowing	208
	– Window Specification – Rows between	210
	– Window Specification – Shortcuts	214
	– Difference between Range and Rows	215
	– Using Lead and Lag in SQL	218
	– Using Rank Function in SQL	222
	– Using Ntile Function in SQL	229
	– Using Width_Bucket Function in SQL	231
	– Using Listagg Function in SQL	234
	– Using Case Function in SQL	236
	– <i>Exercise Six</i>	240
Twelve	Creating Database Objects in SQL	244
	– Creating Tables in SQL	245
	– Mandatory Columns in SQL Tables	247
	– Creation Syntax for Tables in SQL	248
	– Virtual Columns	250
	– Creating Virtual Columns with new Table	251
	– Specifying Virtual Column Datatype and Size	252
	– Adding Virtual Columns to Existing Table	253
	– Using Virtual Columns in SQL ...	254
	– Using Virtual Columns with Functions	256
	– Limitations of Virtual Columns (ORA-54012)	257
	– Limitations of Virtual Columns (ORA-54015)	258
	– Limitations of Virtual Columns (ORA-54013)	259
	– Viewing Virtual Columns in USER_TAB_COLS	260
	– Commenting on Tables in SQL	261
	– Commenting on Columns in SQL	262
	– Creating Indexes in SQL	263
	– Index Creation in SQL	266
	– Disabling Indexes in SQL	268
	– Creating Views in SQL	269

Essential SQL for Oracle 11g

Section	Title	Page
	– Creating Sequences in SQL	271
	– Using Sequences in SQL	272
	– Altering Sequences in SQL	274
	– Using Default Value in SQL Tables	275
	– Renaming Objects in an Oracle Database	276
	– Dropping Objects from an Oracle Database	279
	– Granting Access in other Schemas	280
	– Accessing other Schemas	283
	– Creating Synonyms in Oracle	284
	– <i>Exercise Seven</i>	285
Thirteen	Altering and Populating Oracle Tables	287
	– Some Rules when Altering Tables	288
	– Syntax for Altering Tables	289
	– Rules When Populating Tables in SQL	290
	– Syntax for Populating Tables	291
	– Using Variables to Populate Tables	296
	– General Comments	297
	– Updating Data in Oracle Tables	298
	– Deleting Data from Oracle Tables	300
	– Handling Large Objects in SQL Plus	301
	– Handling BFiles in SQL Plus	303
Fourteen	Committing Records	304
	– The Difference Between DDL and DML	305
	– Using Autocommit in SQL Plus	308
Fifteen	Materialized Views	309
	– Introduction	310
	– Syntax for Creating Materialized Views	312
	– Refreshing Materialized Views	314
	– Building Materialized Views	320
	– Miscellaneous	322
	– <i>Exercise Eight</i>	323
 Appendices		
	Appendix S1 – SQL Functions	
	Appendix S2 – SQL Line Editor Commands	
	Appendix S3 – SQL Environment Settings	
	Appendix S4 – SQL Number Formats	
	Appendix S5 – SQL Date Formats	

Delegate Questionnaire