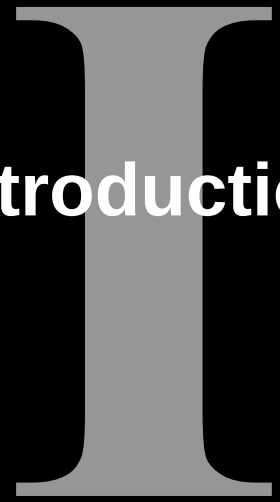


Introduction

Copyright © Oracle Corporation, 2001. All rights reserved.

Objectives

After completing this lesson, you should be able to do the following:

- List the features of Oracle9*i*
- Discuss the theoretical and physical aspects of a relational database
- Describe the Oracle implementation of the RDBMS and ORDBMS

Copyright © Oracle Corporation, 2001. All rights reserved.

Oracle9*i*

Scalability

One vendor

Reliability

One management interface

Single development model

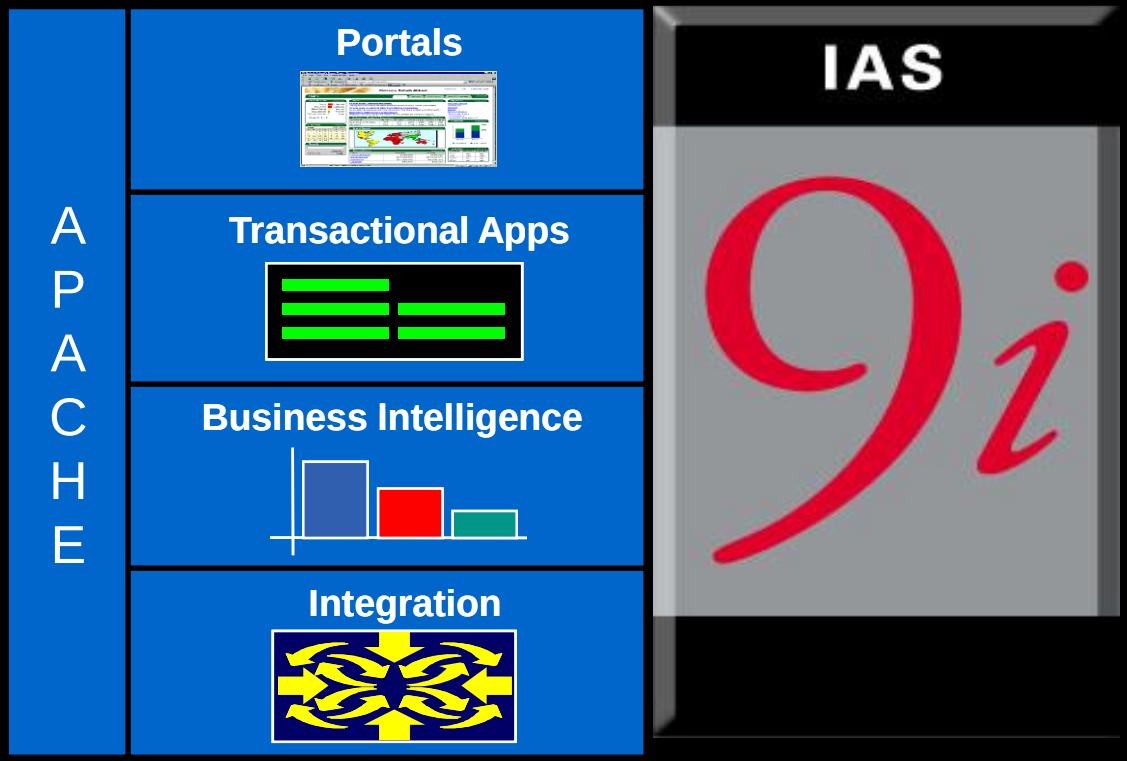
Common skill sets

Copyright © Oracle Corporation, 2001. All rights reserved.

Oracle9*i*

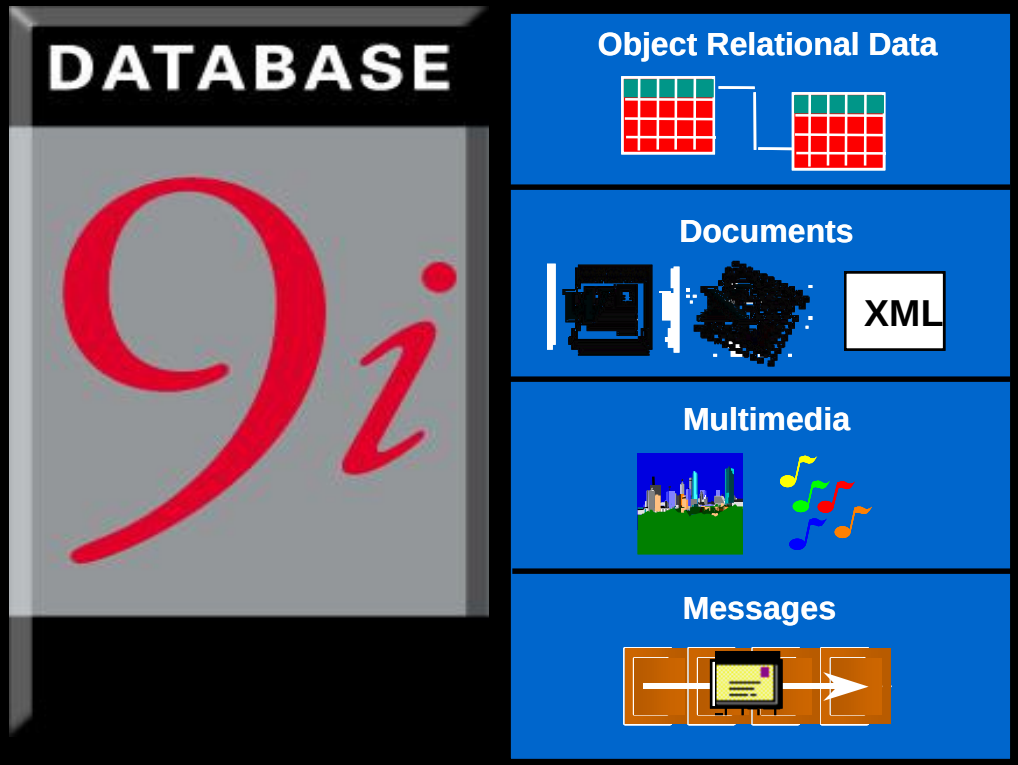
Copyright © Oracle Corporation, 2001. All rights reserved.

Oracle9*i* Application Server



Copyright © Oracle Corporation, 2001. All rights reserved.

Oracle9*i* Database



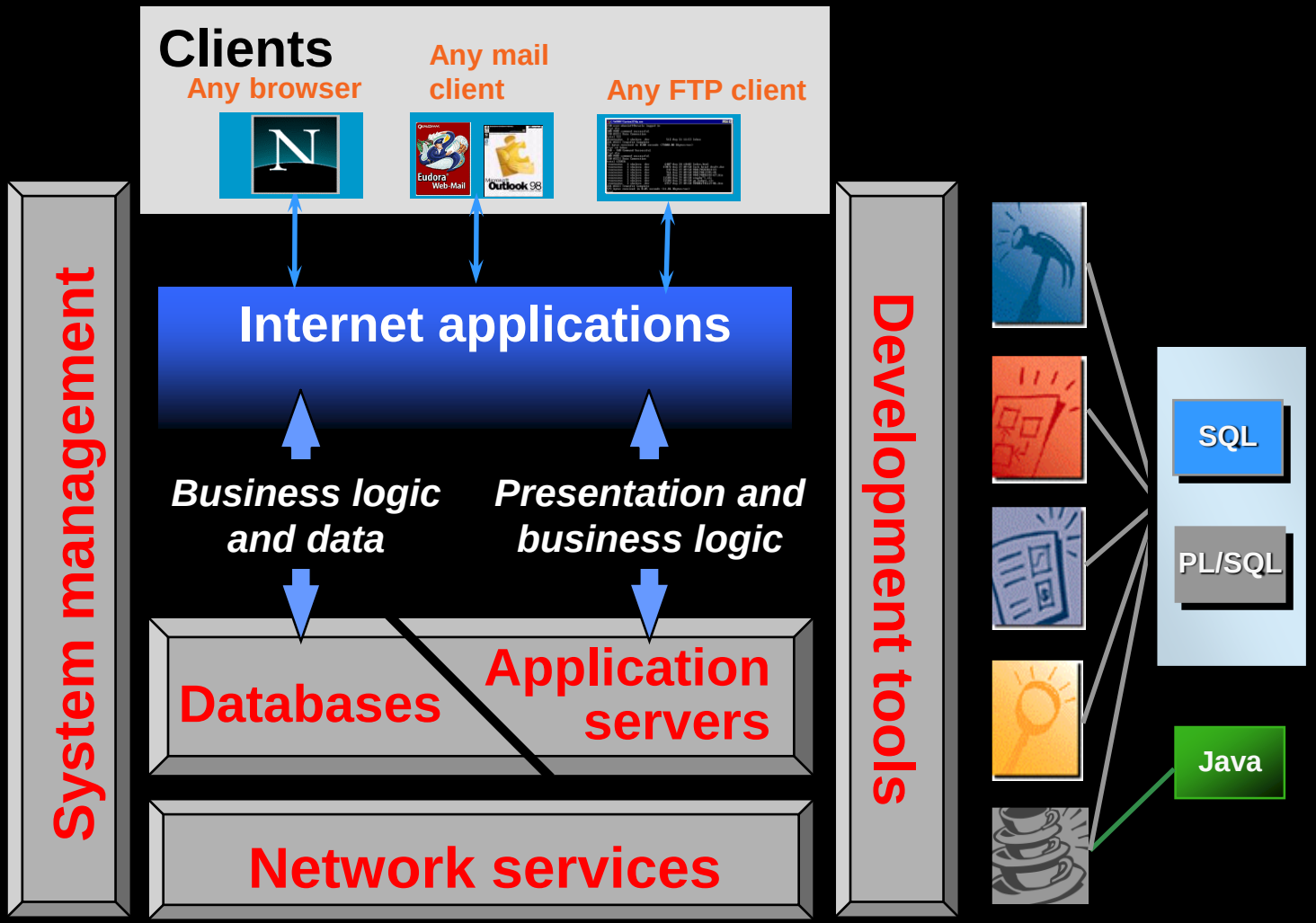
Copyright © Oracle Corporation, 2001. All rights reserved.

Relational and Object Relational Database Management System

- Relational model and object relational model
- User-defined data types and objects
- Fully compatible with relational database
- Support of multimedia and large objects
- High-quality database server features

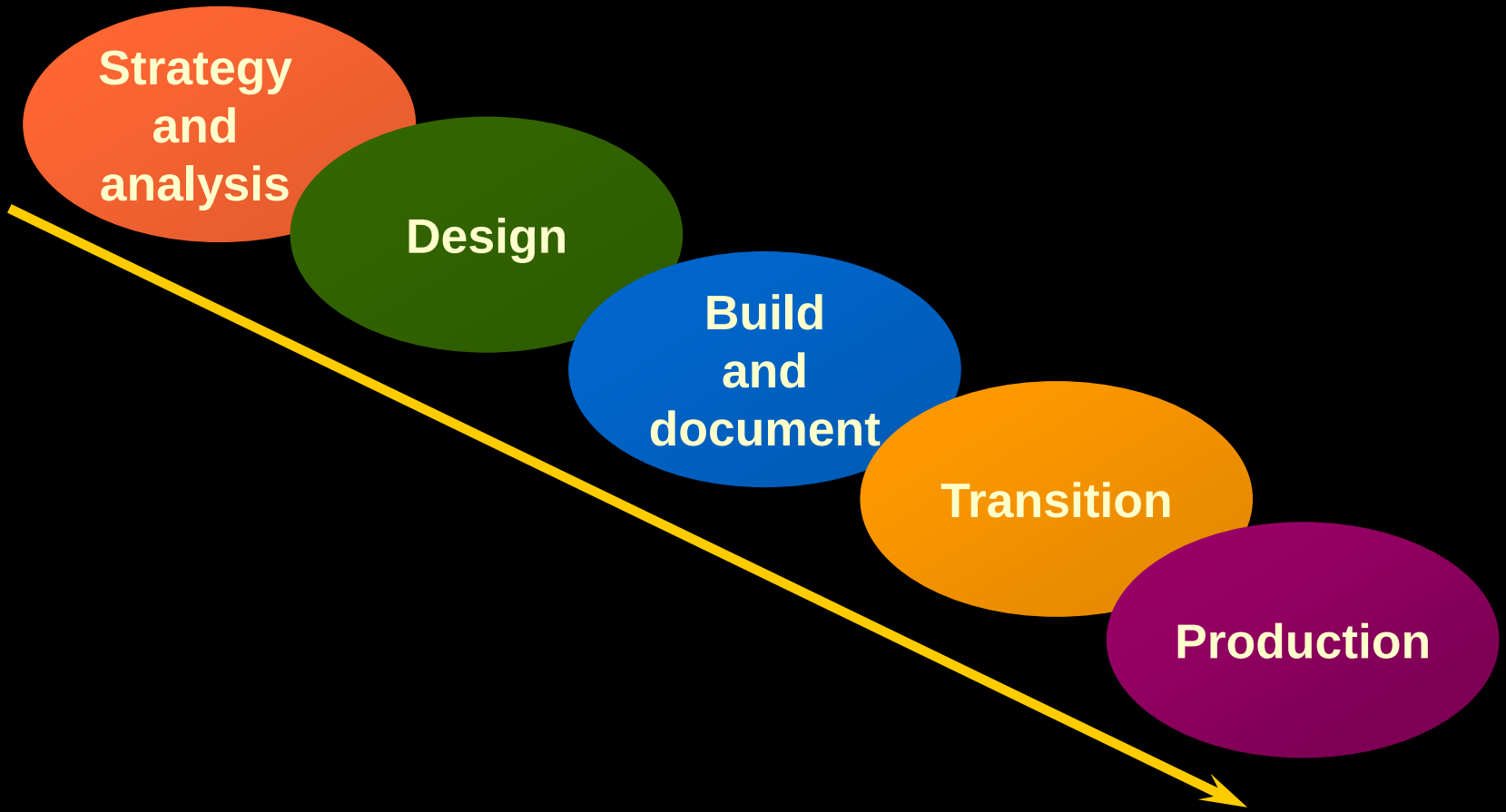
Copyright © Oracle Corporation, 2001. All rights reserved.

Oracle Internet Platform



Copyright © Oracle Corporation, 2001. All rights reserved.

System Development Life Cycle

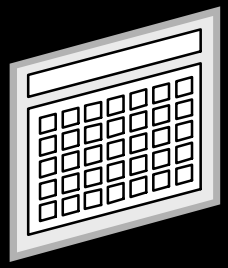


Copyright © Oracle Corporation, 2001. All rights reserved.

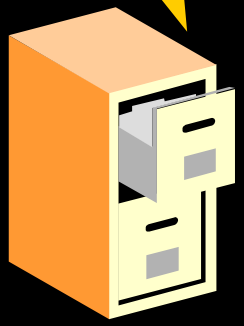
Data Storage on Different Media

DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
10	Administration	200	
20	Marketing	201	
50	Shipping	124	
60	IT	103	
80	Sales	149	
90	Executive	100	
110	Accounting	205	
190	Contracting		

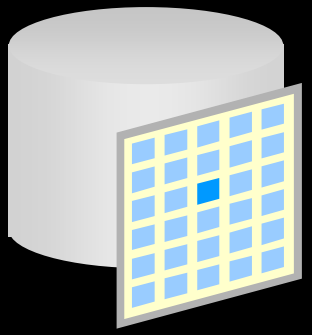
GRA	LOWEST_SAL	HIGHEST_SAL
A	1000	2999
B	3000	5999
C	6000	9999
D	10000	14999
E	15000	24999
F	25000	40000



Electronic spreadsheet



Filing cabinet



Database

Copyright © Oracle Corporation, 2001. All rights reserved.

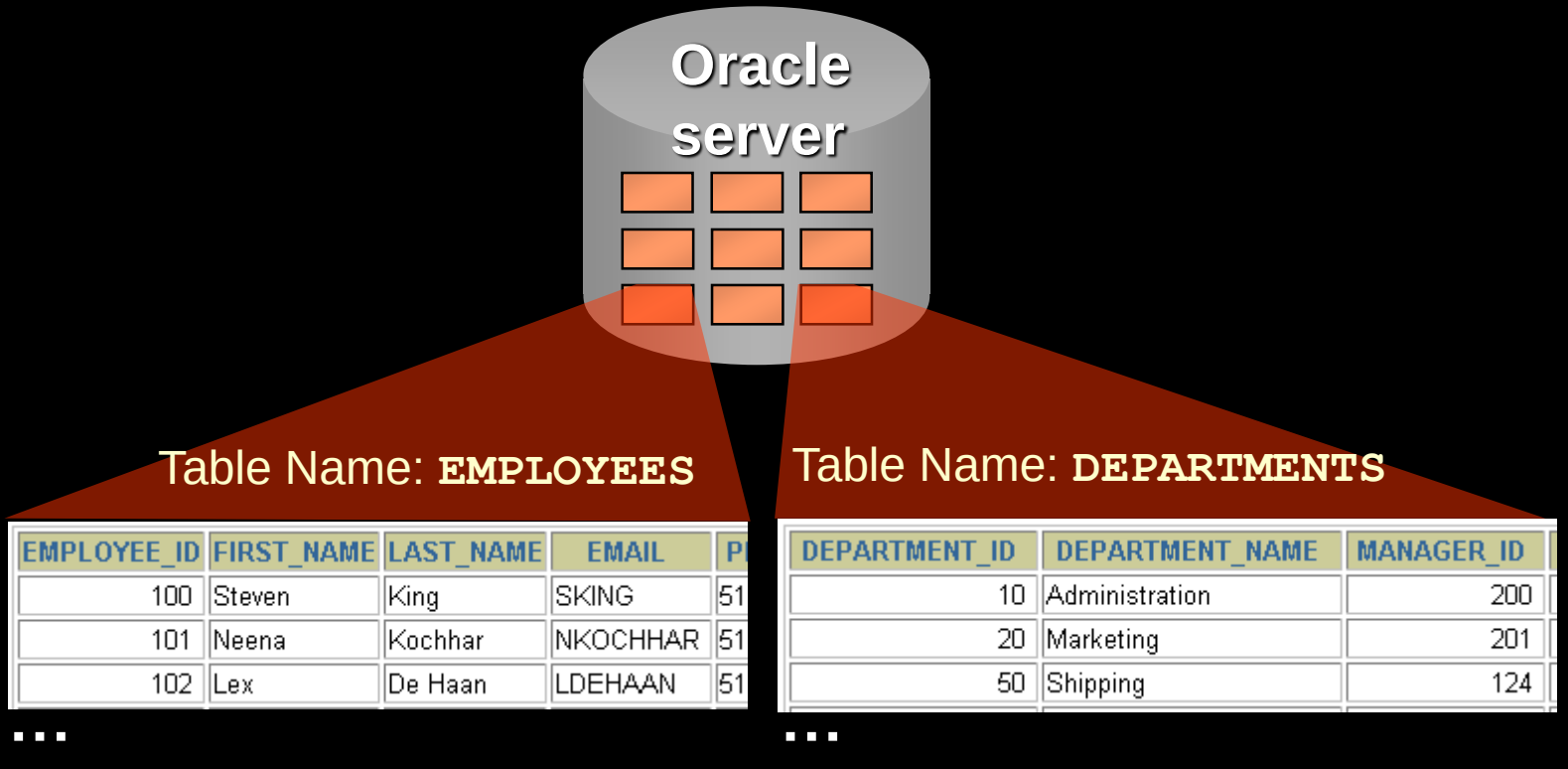
Relational Database Concept

- Dr. E.F. Codd proposed the relational model for database systems in 1970.
- It is the basis for the relational database management system (RDBMS).
- The relational model consists of the following:
  - Collection of objects or relations
  - Set of operators to act on the relations
  - Data integrity for accuracy and consistency

Copyright © Oracle Corporation, 2001. All rights reserved.

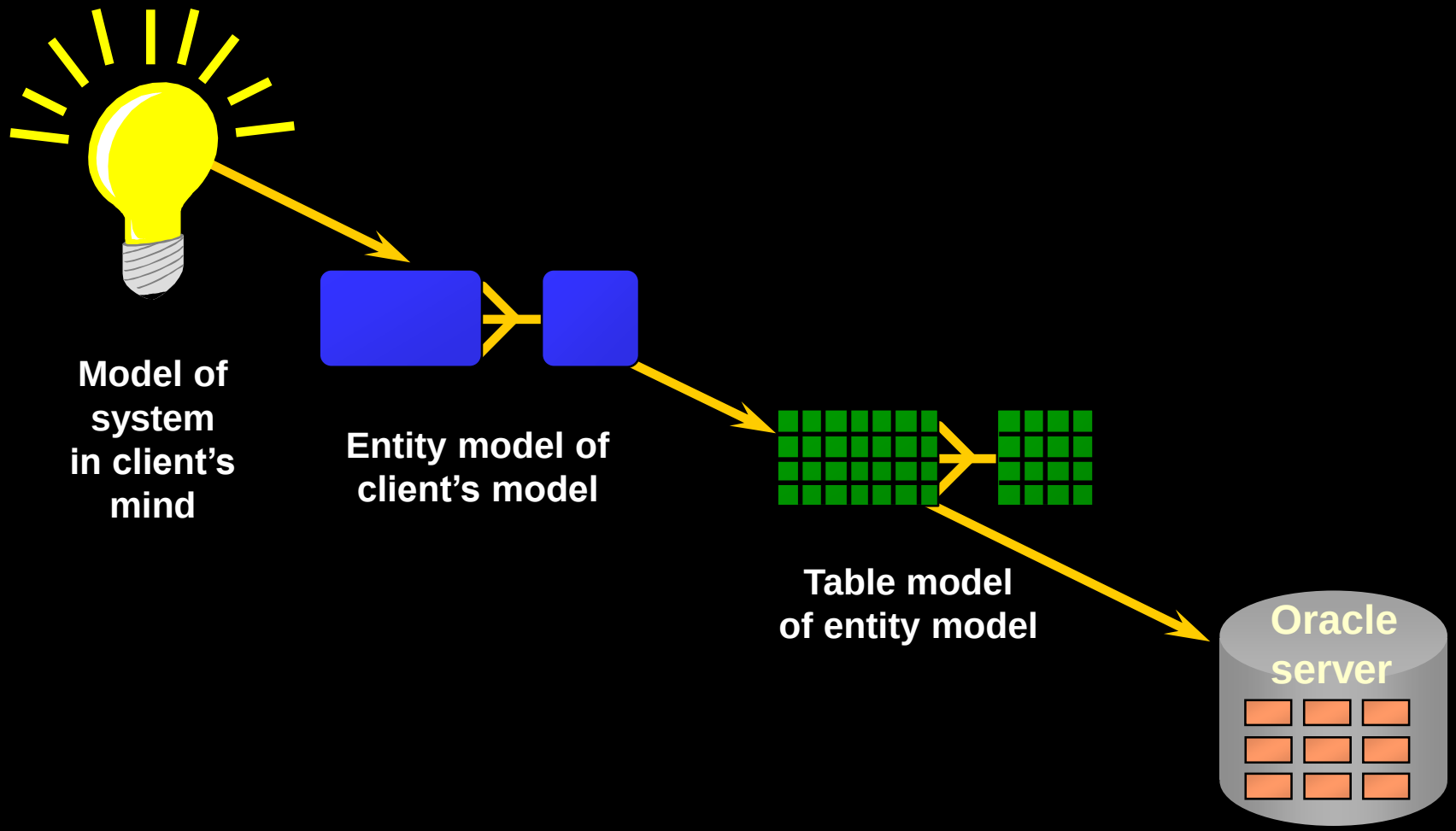
Definition of a Relational Database

A relational database is a collection of relations or two-dimensional tables.



Copyright © Oracle Corporation, 2001. All rights reserved.

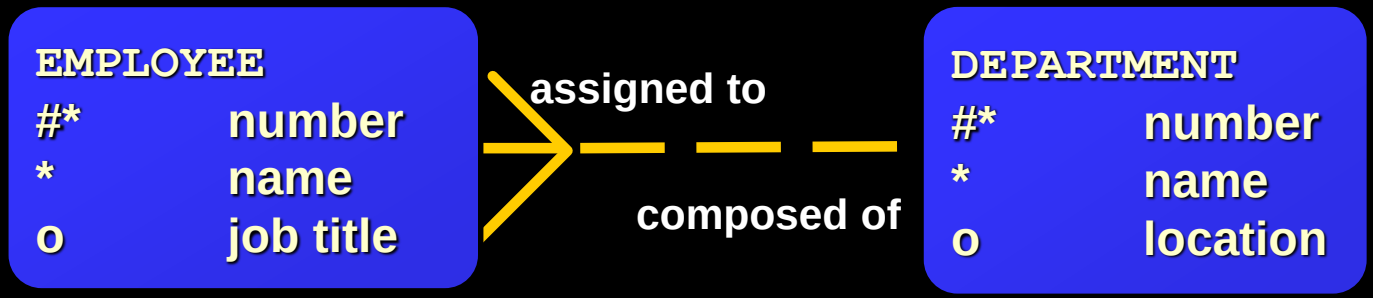
Data Models



Copyright © Oracle Corporation, 2001. All rights reserved.

Entity Relationship Model

- Create an entity relationship diagram from business specifications or narratives



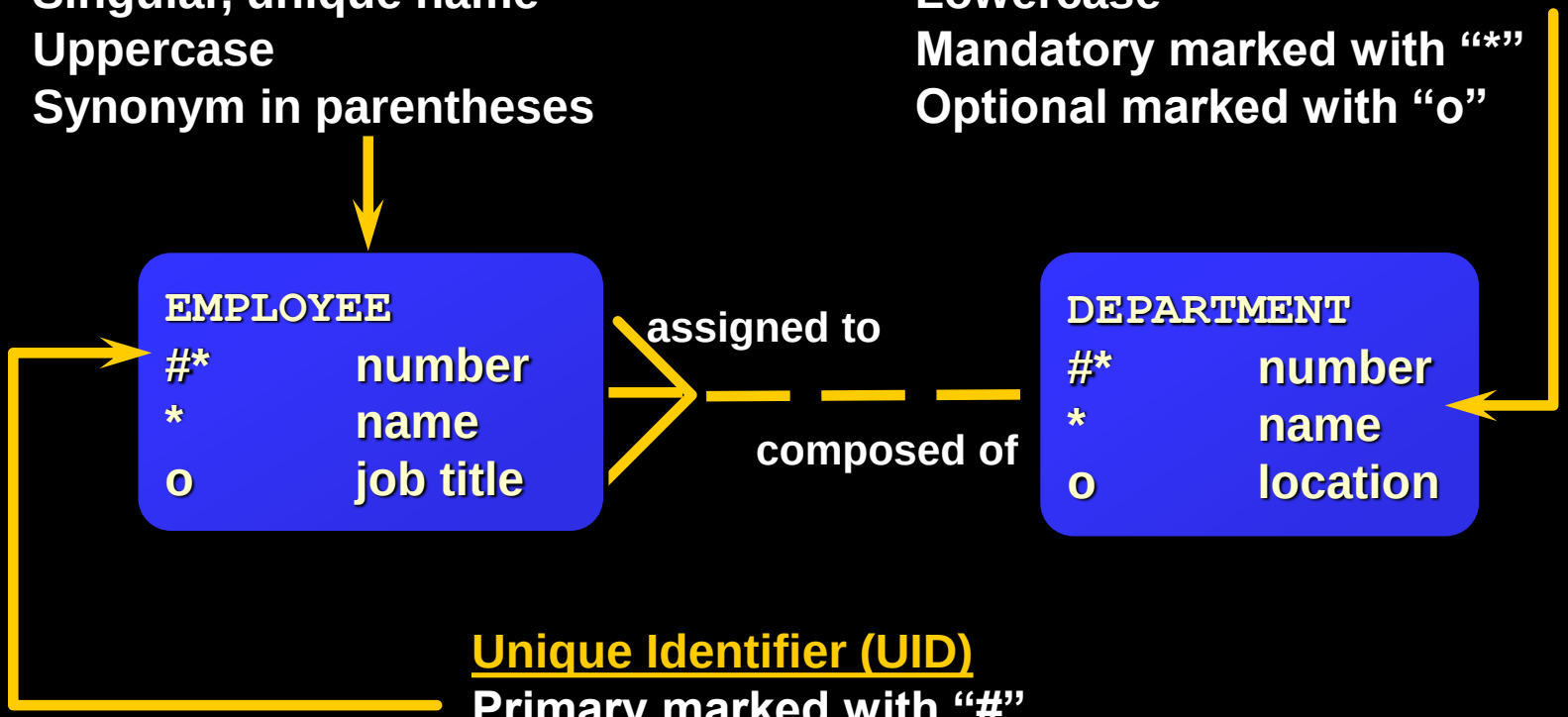
- Scenario
  - “. . . Assign one or more employees to a department . . .”
  - “. . . Some departments do not yet have assigned employees . . .”

Copyright © Oracle Corporation, 2001. All rights reserved.

Entity Relationship Modeling Conventions

Entity
Soft box
Singular, unique name
Uppercase
Synonym in parentheses

Attribute
Singular name
Lowercase
Mandatory marked with "*"
Optional marked with "o"



Unique Identifier (UID)
Primary marked with "#"
Secondary marked with "(#)"

Copyright © Oracle Corporation, 2001. All rights reserved.

Relating Multiple Tables

- Each row of data in a table is uniquely identified by a primary key (PK).
- You can logically relate data from multiple tables using foreign keys (FK).

Table Name: **EMPLOYEES**

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	DEPARTMENT_ID
174	Ellen	Abel	80
142	Curtis	Davies	50
102	Lex	De Haan	90
104	Bruce	Ernst	60
202	Pat	Fay	20
206	William	Gietz	110

...

Primary key

Foreign key

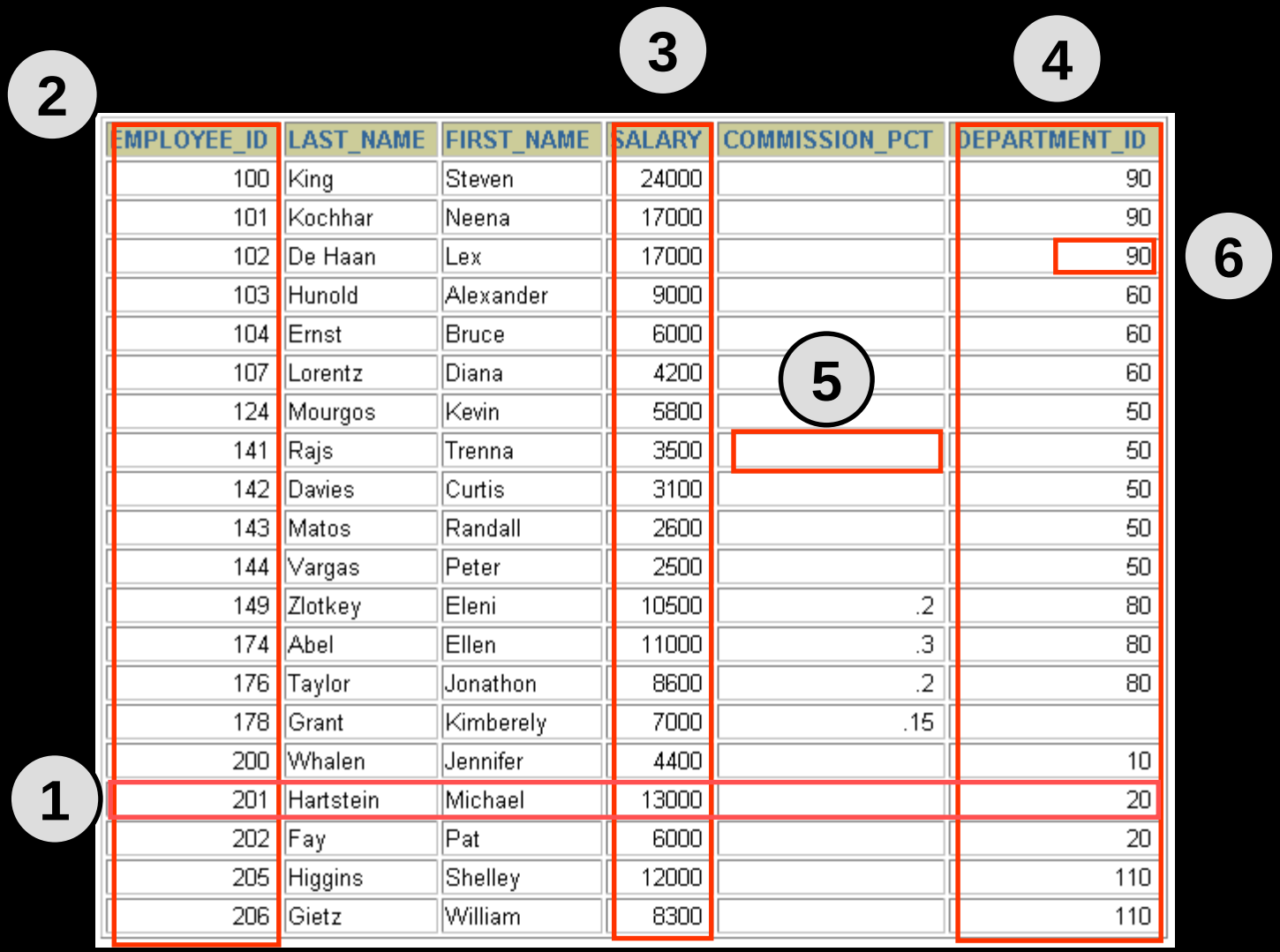
Table Name: **DEPARTMENTS**

DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
10	Administration	200	1700
20	Marketing	201	1800
50	Shipping	124	1500
60	IT	103	1400
80	Sales	149	2500
90	Executive	100	1700
110	Accounting	205	1700
190	Contracting		1700

Primary key

Copyright © Oracle Corporation, 2001. All rights reserved.

Relational Database Terminology



EMPLOYEE_ID	LAST_NAME	FIRST_NAME	SALARY	COMMISSION_PCT	DEPARTMENT_ID
100	King	Steven	24000		90
101	Kochhar	Neena	17000		90
102	De Haan	Lex	17000		90
103	Hunold	Alexander	9000		60
104	Ernst	Bruce	6000		60
107	Lorentz	Diana	4200		60
124	Mourgos	Kevin	5800		50
141	Rajs	Trenna	3500		50
142	Davies	Curtis	3100		50
143	Matos	Randall	2600		50
144	Vargas	Peter	2500		50
149	Zlotkey	Eleni	10500	.2	80
174	Abel	Ellen	11000	.3	80
176	Taylor	Jonathon	8600	.2	80
178	Grant	Kimberely	7000	.15	
200	Whalen	Jennifer	4400		10
201	Hartstein	Michael	13000		20
202	Fay	Pat	6000		20
205	Higgins	Shelley	12000		110
206	Gietz	William	8300		110

Copyright © Oracle Corporation, 2001. All rights reserved.

Relational Database Properties

A relational database:

- Can be accessed and modified by executing structured query language (SQL) statements
- Contains a collection of tables with no physical pointers
- Uses a set of operators

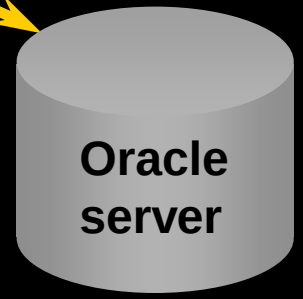
Copyright © Oracle Corporation, 2001. All rights reserved.

Communicating with a RDBMS Using SQL

SQL statement is entered.

```
SELECT department_name
FROM   departments;
```

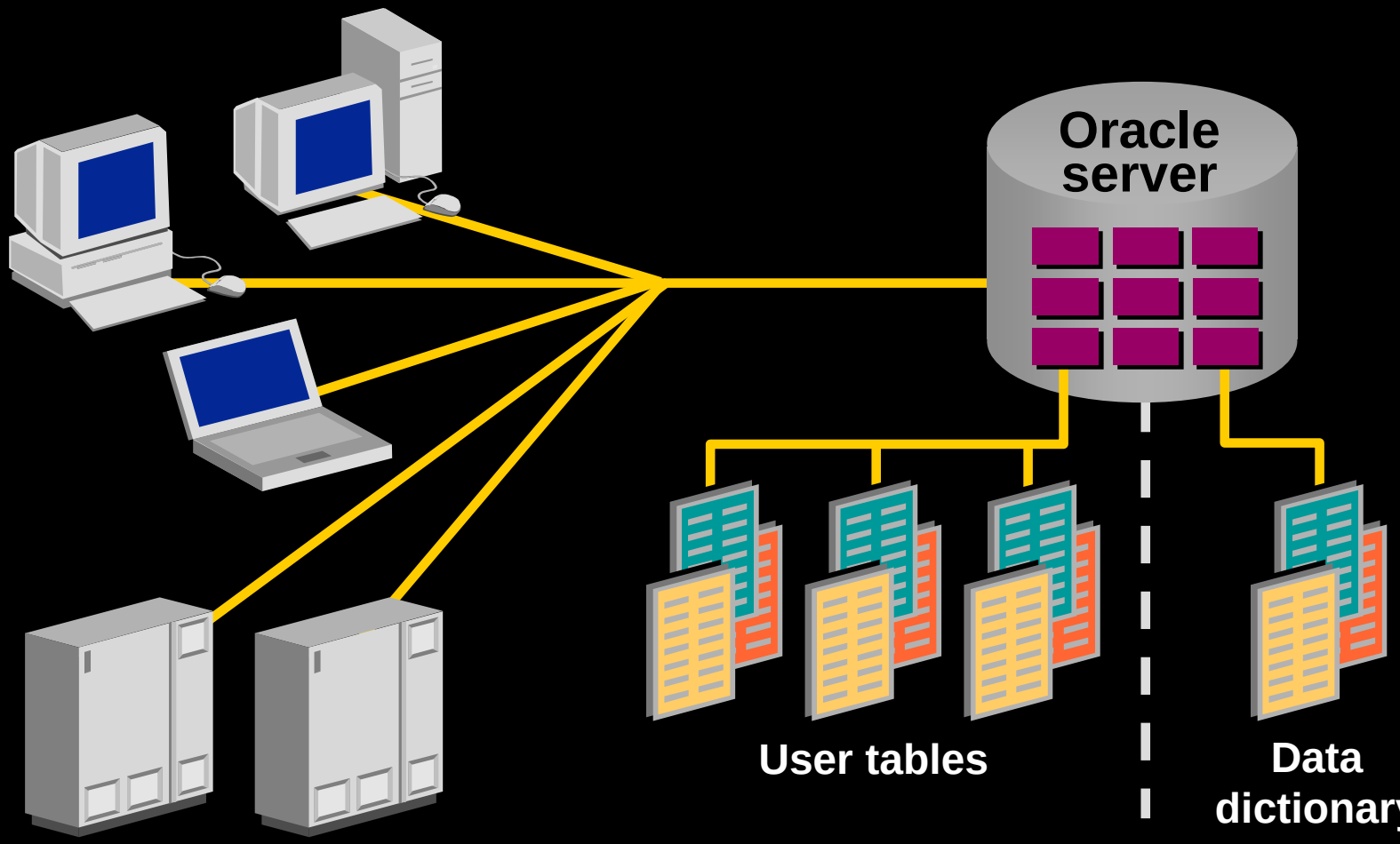
Statement is sent to Oracle Server.



DEPARTMENT_NAME
Administration
Marketing
Shipping
IT
Sales
Executive
Accounting
Contracting

Copyright © Oracle Corporation, 2001. All rights reserved.

Relational Database Management System



Copyright © Oracle Corporation, 2001. All rights reserved.

SQL Statements

SELECT	Data retrieval
INSERT UPDATE DELETE MERGE	Data manipulation language (DML)
CREATE ALTER DROP RENAME TRUNCATE	Data definition language (DDL)
COMMIT ROLLBACK SAVEPOINT	Transaction control
GRANT REVOKE	Data control language (DCL)

Copyright © Oracle Corporation, 2001. All rights reserved.

Tables Used in the Course

EMPLOYEES

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALA
100	Steven	King	SKING	515.123.4567	17-JUN-87	AD_PRES	240
101	Neena	Kochhar	NKOCHHAR	515.123.4568	21-SEP-89	AD_VP	170
102	Lex	De Haan	LDEHAAN	515.123.4569	13-JAN-93	AD_VP	170
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-JAN-90	IT_PROG	90
104	Bruce	Ernst	BERNST	590.423.4568	21-MAY-91	IT_PROG	60
107	Diana	Lorentz	DLORENTZ	590.423.5567	07-FEB-99	IT_PROG	42
124	Kevin	Mourgos	KMOURGOS	650.123.5234	16-NOV-99	ST_MAN	58
141	Trenna	Rajs	TRAJS	650.121.8009	17-OCT-95	ST_CLERK	35
142	Curtis	Davies	CDAVIES	650.121.2994	29-JAN-97	ST_CLERK	31
143	Randall	Matos	RMATOS	650.121.2874	15-MAR-98	ST_CLERK	26
				0.121.2004	09-JUL-98	ST_CLERK	25
				1.44.1344.429018	29-JAN-00	SA_MAN	105
				1.44.1644.429267	11-MAY-96	SA_REP	110
				1.44.16			

DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
10	Administration	200	1700
20	Marketing	201	1800
50	Shipping	124	1500
60	IT	103	1400
80	Sales	149	2500
90	Executive	100	1700
110	Accounting	205	1700
190	Contracting		1700

DEPARTMENTS

GRA	LOWEST_SAL	HIGHEST_SAL
A	1000	2999
B	3000	5999
C	6000	9999
D	10000	14999
E	15000	24999
F	25000	40000

JOB_GRADES

Copyright © Oracle Corporation, 2001. All rights reserved.

Summary

- The Oracle9*i* Server is the database for Internet computing.
- Oracle9*i* is based on the object relational database management system.
- Relational databases are composed of relations, managed by relational operations, and governed by data integrity constraints.
- With the Oracle Server, you can store and manage information by using the SQL language and PL/SQL engine.

Copyright © Oracle Corporation, 2001. All rights reserved.