DB Implementation Project

Kyle Amyx

[kamyx@andrew.cmu.edu](mailto:kamyx@andrew.cmu.edu)

Qinzhi Peng

[qinzhip@andrew.cmu.edu](mailto:qinzhip@andrew.cmu.edu)

**Project Group #1**

**Script #1**

DROP TABLE training;

DROP TABLE assignment;

DROP TABLE project;

DROP TABLE skill;

DROP TABLE employee;

DROP TABLE department;

DROP TABLE client;

CREATE TABLE Skill

(Code CHAR(4) CONSTRAINT Skill\_CODE\_PK PRIMARY KEY,

Name VARCHAR2(20) CONSTRAINT Skill\_NAME\_NN NOT NULL

CONSTRAINT Skill\_NAME\_UK UNIQUE,

Category VARCHAR2(20));

CREATE TABLE Department

(Dept\_Code CHAR(2) CONSTRAINT Department\_DEPT\_CODE\_PK PRIMARY KEY,

Name VARCHAR2(20) CONSTRAINT Department\_NAME\_NN NOT NULL, -- VARCHAR to VARCHAR2

Location VARCHAR(12) CONSTRAINT Department\_LOCATION\_NN NOT NULL,

Phone CHAR(10),

Manager\_ID CHAR(8));

CREATE TABLE Employee

(Emp\_Num CHAR(8) CONSTRAINT Employee\_EMP\_NUM\_PK PRIMARY KEY,

LName VARCHAR2(20) CONSTRAINT Employee\_LNAME\_NN NOT NULL,

FName VARCHAR2(20) CONSTRAINT Employee\_FNAME\_NN NOT NULL,

DOB DATE,

Hire\_Date DATE DEFAULT SYSDATE,

Super\_ID CHAR(8) CONSTRAINT Employee\_SUPER\_ID\_FK REFERENCES Employee(Emp\_Num),

Dept\_Code CHAR(2) CONSTRAINT Employee\_DEPT\_CODE\_FK REFERENCES Department (Dept\_Code));

CREATE TABLE Training

(Train\_Num CHAR(4) CONSTRAINT Training\_TRAIN\_NUM\_PK PRIMARY KEY,

Code CHAR(4) CONSTRAINT Training\_CODE\_FK REFERENCES Skill (Code),

Emp\_Num CHAR(8) CONSTRAINT Training\_EMP\_NUM\_FK REFERENCES Employee (Emp\_Num),

Name VARCHAR2(30),

Date\_Acquired DATE DEFAULT SYSDATE,

Comments VARCHAR2(100));

CREATE TABLE Client

(Client\_ID CHAR(4) CONSTRAINT Client\_CLIENT\_ID\_PK PRIMARY KEY,

Name VARCHAR2(20) CONSTRAINT Client\_NAME\_NN NOT NULL,

Street VARCHAR2(20),

City VARCHAR2(20),

State CHAR(2),

Zip\_Code CHAR(10),

Industry VARCHAR2(20),

Web\_Address VARCHAR2(30) CONSTRAINT Client\_WEB\_ADDRESS\_UK UNIQUE,

Phone VARCHAR2(10),

Contact\_LName VARCHAR2(20) CONSTRAINT Client\_CONTACT\_LNAME\_NN NOT NULL,

Contact\_FName VARCHAR2(20) CONSTRAINT Client\_CONTACT\_FNAME\_NN NOT NULL);

CREATE TABLE Project

(Proj\_Number CHAR(4) CONSTRAINT Project\_PROJ\_NUMBER\_PK PRIMARY KEY,

Name VARCHAR2(20),

Start\_Date DATE DEFAULT SYSDATE,

Total\_Cost NUMBER(9,2),

Dept\_Code CHAR(2) CONSTRAINT Project\_DEPT\_CODE\_FK REFERENCES Department (Dept\_Code),

Client\_ID CHAR(4) CONSTRAINT Project\_CLIENT\_ID\_FK REFERENCES Client (Client\_ID),

Code CHAR(4) CONSTRAINT Project\_CODE\_FK REFERENCES Skill (Code)

CONSTRAINT Project\_CODE\_NN NOT NULL);

Create TABLE Assignment

(Assign\_Num CHAR(4) CONSTRAINT Assignment\_ASSIGN\_NUM\_PK PRIMARY KEY,

Proj\_Number CHAR(4) CONSTRAINT Assignment\_PROJ\_NUMBER\_FK REFERENCES Project (Proj\_Number),

Emp\_Num CHAR(8) CONSTRAINT Assignment\_EMP\_NUM\_FK REFERENCES Employee (Emp\_Num),

Date\_Assigned DATE DEFAULT SYSDATE,

Date\_Ended DATE,

Hours\_Used NUMBER(4,0),

CONSTRAINT Assignment\_DATE\_ENDED\_CK CHECK (Date\_Ended > Date\_Assigned),

CONSTRAINT Assignment\_DATE\_ENDED\_1\_M\_CK CHECK (EXTRACT(MONTH FROM Date\_Ended) - EXTRACT(MONTH FROM Date\_Assigned) <= 1));

**Script #2**

-- skills category : Technique , Marketing, Project Management

INSERT INTO skill (Code, Name, Category) VALUES ('01', 'JAVA', 'Technique');

INSERT INTO skill (Code, Name, Category) VALUES ('02', 'Advertising', 'Marketing');

INSERT INTO skill (Code, Name, Category) VALUES ('03', 'Writing', 'Project Management');

-- department

INSERT INTO department (Dept\_Code, Name, Location, Phone, Manager\_ID) VALUES ('01', 'Marketing', '2F', '8008351001', '1001');

INSERT INTO department (Dept\_Code, Name, Location, Phone, Manager\_ID) VALUES ('02', 'Finance', '3F', '8008351002', '1002');

INSERT INTO department (Dept\_Code, Name, Location, Phone, Manager\_ID) VALUES ('03', 'Human Resources', '4F', '8008351003', '1003');

-- employee

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1001', 'Piveteau', 'Duangkaew', DATE '1963-11-02', DATE '1996-01-12', '', '01');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1002', 'Facello', 'Georgi', DATE '1973-09-02', DATE '2006-06-26', '1001', '01');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1003', 'Simmel', 'Bezalel', DATE '1974-06-02', DATE '2005-11-21', '1001', '02');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1004', 'Bamford', 'Parto', DATE '1979-12-03', DATE '2006-08-28', '1001', '03');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1005', 'Facello', 'Georgi', DATE '1984-05-01', DATE '2017-12-01', '1002', '01');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1006', 'Koblick', 'Chirstian', DATE '1985-01-21', DATE '2019-06-02', '1003', '02');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1007', 'Maliniak', 'Kyoichi', DATE '1983-04-20', DATE '2021-05-01', '1004', '03');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1008', 'Preusig', 'Anneke', DATE '1983-09-02', DATE '2021-05-16', '1002', '01');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1009', 'Zielinski', 'Tzvetan', DATE '1988-10-12', DATE '2021-05-02', '1003', '02');

INSERT INTO employee (Emp\_Num, LName, FName, DOB, Hire\_Date, Super\_ID, Dept\_Code) VALUES ('1010', 'Peac', 'Saniya', DATE '1993-06-01', DATE '2021-05-22', '1004', '03');

-- training

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0001', '01', '1008', 'Computer Skills Training', DATE '2021-06-23', 'Great!');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0002', '02', '1009', 'Marketing Training', DATE '2021-09-11', 'Good enough.');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0003', '03', '1010', 'Professional Training', DATE '2021-07-02', 'Still need more practice.');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0004', '03', '1010', 'Professional Training', DATE '2021-10-21', 'Great!');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0005', '03', '1008', 'Professional Training', DATE '2021-07-11', 'Good enough.');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0006', '01', '1002', 'Computer Skills Training', DATE '2021-06-23', 'Great!');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0007', '03', '1004', 'Professional Training', DATE '2021-07-01', 'Great!');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0008', '03', '1010', 'Professional Training', DATE '2021-07-01', 'Great!');

INSERT INTO training (Train\_Num, Code, Emp\_Num, Name, Date\_Acquired, Comments) VALUES ('0009', '03', '1009', 'Professional Training', DATE '2021-07-01', 'Great!');

-- client

INSERT INTO client (Client\_ID, Name, Street, City, State, Zip\_Code, Industry, Web\_Address, Phone, Contact\_LName, Contact\_FName) VALUES ('0001', 'Cristinel Bouloucos', '114 EAST SAVANNAH', 'ATLANTA', 'GA', '30314', 'Apple', 'www.cristinel.com', '4125531001', 'Bouloucos', 'Cristinel');

INSERT INTO client (Client\_ID, Name, Street, City, State, Zip\_Code, Industry, Web\_Address, Phone, Contact\_LName, Contact\_FName) VALUES ('0002', 'Kazuhide Peha', '1201 ORANGE AVE', 'SEATTLE', 'WA', '98114', 'Amazon', 'www.kazuhide.com', '4125531002', 'Peha', 'Kazuhide');

INSERT INTO client (Client\_ID, Name, Street, City, State, Zip\_Code, Industry, Web\_Address, Phone, Contact\_LName, Contact\_FName) VALUES ('0003', 'Lillian Haddadi', '58 TILA CIRCLE', 'CHICAGO', 'IL', '60605', 'FaceBook', 'www.lillian.com', '4125531003', 'Haddadi', 'Lillian');

INSERT INTO client (Client\_ID, Name, Street, City, State, Zip\_Code, Industry, Web\_Address, Phone, Contact\_LName, Contact\_FName) VALUES ('0004', 'Linde Hartman', '60 BIG SHANDY RD', 'ATLANTA', 'GA', '30022', 'TechCrunch', 'www.linda.edu', '4045531003', 'Hartman', 'Linde');

INSERT INTO client (Client\_ID, Name, Street, City, State, Zip\_Code, Industry, Web\_Address, Phone, Contact\_LName, Contact\_FName) VALUES ('0005', 'Ken Williams', '625 EDGEHILL PL', 'ALPHARETTA', 'GA', '30022', 'PiggyFoods', NULL, '7705531003', 'Williams', 'Ken');

-- project

--<>ON GOING PROJECT<>--

INSERT INTO project (Proj\_Number, Name, Start\_Date, Total\_Cost, Dept\_Code, Client\_ID, Code) VALUES ('0001', 'Big Husky', DATE '2021-10-01', NULL, '01', '0001', '01');

INSERT INTO project (Proj\_Number, Name, Start\_Date, Total\_Cost, Dept\_Code, Client\_ID, Code) VALUES ('0002', 'Tarius', DATE '2021-05-06', '10000', '01', '0002', '02');

INSERT INTO project (Proj\_Number, Name, Start\_Date, Total\_Cost, Dept\_Code, Client\_ID, Code) VALUES ('0003', 'Allosaurus', DATE '2021-07-01', '5000', '02', '0003', '03');

INSERT INTO project (Proj\_Number, Name, Start\_Date, Total\_Cost, Dept\_Code, Client\_ID, Code) VALUES ('0004', 'Big Tech Stuff', DATE '2021-08-01', '5000', '02', '0003', '03');

INSERT INTO project (Proj\_Number, Name, Start\_Date, Total\_Cost, Dept\_Code, Client\_ID, Code) VALUES ('0005', 'Long Term Restore', DATE '2021-01-01', '20000', '02', '0003', '03');

-- assignment

--<> Currently ongoing project w/ 1 employee<>--

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0001', '0001', '1002', DATE '2021-10-01', DATE '2021-10-31', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0002', '0001', '1002', DATE '2021-12-01', NULL, NULL);

--<> Project Completed in 1 month by 4 employee<>--

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0003', '0002', '1003', DATE '2021-05-06', DATE '2021-05-31', 165);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0004', '0002', '1007', DATE '2021-05-06', DATE '2021-05-31', 150);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0005', '0002', '1009', DATE '2021-05-06', DATE '2021-05-31', 50);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0006', '0002', '1002', DATE '2021-05-06', DATE '2021-05-31', 50);

--<> Project completed in 2 months by 5 employees<>--

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0007', '0003', '1004', DATE '2021-07-01', DATE '2021-07-31', 80);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0008', '0003', '1004', DATE '2021-08-01', DATE '2021-08-31', 80);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0009', '0003', '1005', DATE '2021-07-01', DATE '2021-07-31', 80);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0010', '0003', '1005', DATE '2021-08-01', DATE '2021-08-31', 80);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0011', '0003', '1002', DATE '2021-07-01', DATE '2021-07-31', 50);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0012', '0003', '1003', DATE '2021-07-01', DATE '2021-07-31', 50);

--<> Project completed in 3 months by 1 employee (w/ gap)<>--

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0013', '0004', '1006', DATE '2021-08-01', DATE '2021-08-31', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0014', '0004', '1006', DATE '2021-10-01', DATE '2021-10-31', 70);

--<> Project completed in 6 months by 1 employee<>--

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0015', '0005', '1009', DATE '2021-01-01', DATE '2021-01-31', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0016', '0005', '1009', DATE '2021-02-01', DATE '2021-02-28', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0017', '0005', '1009', DATE '2021-03-01', DATE '2021-03-31', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0018', '0005', '1009', DATE '2021-04-01', DATE '2021-04-30', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0019', '0005', '1009', DATE '2021-05-01', DATE '2021-05-31', 70);

INSERT INTO assignment (Assign\_Num, Proj\_Number, Emp\_Num, Date\_Assigned, Date\_Ended, Hours\_Used) VALUES ('0020', '0005', '1009', DATE '2021-06-01', DATE '2021-06-30', 70);

**Table Contents**

*Skill*

CODE NAME CATEGORY

-------- -------------------- --------------------

01 JAVA Technique

02 Advertising Marketing

03 Writing Project Management

*Training*

TRAIN\_NUM CODE EMP\_NUM NAME DATE\_ACQUIRED COMMENTS

----------------- ---- -------- ------------------------------ ---------------------- --------------------

0001 01 1008 Computer Skills Training 23-JUN-21 Great!

0002 02 1009 Marketing Training 11-SEP-21 Good enough.

0003 03 1010 Professional Training 02-JUL-21 Still need more prac

0004 03 1010 Professional Training 21-OCT-21 Great!

0005 03 1008 Professional Training 11-JUL-21 Good enough.

0006 01 1002 Computer Skills Training 23-JUN-21 Great!

0007 03 1004 Professional Training 01-JUL-21 Great!

0008 03 1010 Professional Training 01-JUL-21 Great!

0009 03 1009 Professional Training 01-JUL-21 Great!

*Department*

DEPT\_CODE NAME LOCATION PHONE MANAGER\_ID

---------------- -------------------- ------------ ---------- ----------

01 Marketing 2F 8008351001 1001

02 Finance 3F 8008351002 1002

03 Human Resources 4F 8008351003 1003

*Employee*

EMP\_NUM LNAME FNAME DOB HIRE\_DATE SUPER\_ID DEPT\_CODE BONUS\_AMT

-------- -------------------- -------------------- --------- --------- -------- --------- ----------

1001 Piveteau Duangkaew 02-NOV-63 12-JAN-96 01 0

1002 Facello Georgi 02-SEP-73 26-JUN-06 1001 01 0

1003 Simmel Bezalel 02-JUN-74 21-NOV-05 1001 02 0

1004 Bamford Parto 03-DEC-79 28-AUG-06 1001 03 0

1005 Facello Georgi 01-MAY-84 01-DEC-17 1002 01 0

1006 Koblick Chirstian 21-JAN-85 02-JUN-19 1003 02 0

1007 Maliniak Kyoichi 20-APR-83 01-MAY-21 1004 03 0

1008 Preusig Anneke 02-SEP-83 16-MAY-21 1002 01 0

1009 Zielinski Tzvetan 12-OCT-88 02-MAY-21 1003 02 200

1010 Peac Saniya 01-JUN-93 22-MAY-21 1004 03 0

*Client*

CLIENT\_ID NAME STREET CITY STATE ZIP\_CODE INDUSTRY WEB\_ADDRESS PHONE CONTACT\_LNAME CONTACT\_FNAME

----------- ---------- ------------ -------- ----------- ----- -------- -------------------- ------------------------- ---------- ------------------- --------------------

0001 Cristinel Bouloucos 114 EAST SAVANNAH ATLANTA GA 30314 Apple www.cristinel.com 4125531001 Bouloucos Cristinel

0002 Kazuhide Peha 1201 ORANGE AVE SEATTLE WA 98114 Amazon www.kazuhide.com 4125531002 Peha Kazuhide

0003 Lillian Haddadi 58 TILA CIRCLE CHICAGO IL 60605 FaceBook www.lillian.com 4125531003 Haddadi Lillian

0004 Linde Hartman 60 BIG SHANDY RD ATLANTA GA 30022 TechCrunch www.linda.edu 4045531003 Hartman Linde

0005 Ken Williams 625 EDGEHILL PL ALPHARETTA GA 30022 PiggyFoods 7705531003 Williams Ken

*Project*

PROJ\_NUMBER NAME START\_DAT TOTAL\_COST DEPT\_CODE CLIENT\_ID CODE

----------- -------------------- --------- ----------- --------- ----------- ----

0001 Big Husky 01-OCT-21 01 0001 01

0002 Tarius 06-MAY-21 $10000.00 01 0002 02

0003 Allosaurus 01-JUL-21 $5000.00 02 0003 03

0004 Big Tech Stuff 01-AUG-21 $5000.00 02 0003 03

0005 Long Term Restore 01-JAN-21 $20000.00 02 0003 03

*Assignment*

ASSIGN\_NUM PROJ\_NUMBER EMP\_NUM DATE\_ASSIGNED DATE\_ENDED HOURS\_USED

---------- ----------- -------- ------------- ---------- ----------

0001 0001 1002 01-OCT-21 31-OCT-21 70

0002 0001 1002 01-DEC-21

0003 0002 1003 06-MAY-21 31-MAY-21 165

0004 0002 1007 06-MAY-21 31-MAY-21 150

0005 0002 1009 06-MAY-21 31-MAY-21 50

0006 0002 1002 06-MAY-21 31-MAY-21 50

0007 0003 1004 01-JUL-21 31-JUL-21 80

0008 0003 1004 01-AUG-21 31-AUG-21 80

0009 0003 1005 01-JUL-21 31-JUL-21 80

0010 0003 1005 01-AUG-21 31-AUG-21 80

0011 0003 1002 01-JUL-21 31-JUL-21 50

0012 0003 1003 01-JUL-21 31-JUL-21 50

0013 0004 1006 01-AUG-21 31-AUG-21 70

0014 0004 1006 01-OCT-21 31-OCT-21 70

0015 0005 1009 01-JAN-21 31-JAN-21 70

0016 0005 1009 01-FEB-21 28-FEB-21 70

0017 0005 1009 01-MAR-21 31-MAR-21 70

0018 0005 1009 01-APR-21 30-APR-21 70

0019 0005 1009 01-MAY-21 31-MAY-21 70

0020 0005 1009 01-JUN-21 30-JUN-21 70

## Queries

### #1

SQL> COLUMN Employee FORMAT A30

SQL> COLUMN Skill FORMAT A15

SQL> COLUMN Times FORMAT A5

SQL> COLUMN Earliest\_Date FORMAT A15

SQL> SELECT e.emp\_num ||': '|| e.fname ||' '|| e.lname AS "Employee", s.name AS "Skill",

2 COUNT(t.train\_num) AS "# of Training", MIN(t.date\_acquired) AS "Earliest\_Date",

3 TRUNC(MONTHS\_BETWEEN(SYSDATE, MAX(t.date\_acquired))) AS "# of Passed\_Month"

4 FROM employee e, training t, skill s

5 WHERE e.emp\_num = t.emp\_num

6 AND t.code = s.code

7 GROUP BY e.emp\_num, e.fname, e.lname, s.name

8 ORDER BY e.emp\_num;

Employee Skill # of Training Earliest\_Date # of Passed\_Month

------------------------------ --------------- ------------- --------------- -----------------

1002 : Georgi Facello JAVA 1 23-JUN-21 5

1004 : Parto Bamford Writing 1 01-JUL-21 5

1008 : Anneke Preusig JAVA 1 23-JUN-21 5

1008 : Anneke Preusig Writing 1 11-JUL-21 4

1009 : Tzvetan Zielinski Advertising 1 11-SEP-21 2

1009 : Tzvetan Zielinski Writing 1 01-JUL-21 5

1010 : Saniya Peac Writing 3 01-JUL-21 1

7 rows selected.

### #2

SQL> COLUMN Employee FORMAT A40

SQL> SELECT LEVEL,

2 LPAD(' ', 3\*(LEVEL-1)) || emp\_num || ' ' || fname || ' ' || lname AS "Employee",

3 department.name AS "Dept. Name"

4 FROM employee JOIN department USING(dept\_code)

5 START WITH emp\_num=1001

6 CONNECT BY PRIOR emp\_num = super\_id;

LEVEL Employee Dept. Name

---------- ---------------------------------------- --------------------

1 1001 Duangkaew Piveteau Marketing

2 1002 Georgi Facello Marketing

3 1005 Georgi Facello Marketing

3 1008 Anneke Preusig Marketing

2 1003 Bezalel Simmel Finance

3 1006 Chirstian Koblick Finance

3 1009 Tzvetan Zielinski Finance

2 1004 Parto Bamford Human Resources

3 1007 Kyoichi Maliniak Human Resources

3 1010 Saniya Peac Human Resources

10 rows selected.

### #3

SQL> COLUMN Project FORMAT A20

SQL> COLUMN start\_date FORMAT A10

SQL> COLUMN Proj\_Start FORMAT A10

SQL> COLUMN Month FORMAT A10

SQL> SELECT a.proj\_number || ': ' || p.name AS "Project", p.start\_date AS "Proj\_Start",

2 TO\_CHAR(TO\_DATE(EXTRACT(MONTH FROM Date\_Assigned),'MM'), 'MONTH') AS "Month",

3 COUNT(DISTINCT a.emp\_num) AS "# of Employees", SUM(a.hours\_used) AS "Total\_Hours"

4 FROM project p, assignment a

5 WHERE p.proj\_number = a.proj\_number

6 AND p.total\_cost IS NULL

7 GROUP BY a.proj\_number, p.name, p.start\_date, a.date\_assigned

8 UNION ALL

9 SELECT a.proj\_number || ': ' || p.name AS "Project", p.start\_date, 'TOTAL:', COUNT(DISTINCT a.emp\_num), SUM(a.hours\_used)

10 FROM project p, assignment a

11 WHERE p.proj\_number = a.proj\_number

12 AND p.total\_cost IS NULL

13 GROUP BY a.proj\_number, p.name, p.start\_date;

Project Proj\_Start Month # of Employees Total\_Hours

-------------------- ---------- ---------- -------------- -----------

0001: Big Husky 01-OCT-21 DECEMBER 1

0001: Big Husky 01-OCT-21 OCTOBER 1 70

0001: Big Husky 01-OCT-21 TOTAL: 1 70

### 

### #4

SQL> ALTER TABLE employee

2 ADD Bonus\_Amt NUMBER(4,0);

Table altered.

SQL> UPDATE employee

2 SET Bonus\_Amt = CASE WHEN emp\_num IN

3 (SELECT emp\_num

4 FROM project JOIN assignment USING(proj\_number)

5 WHERE EXTRACT(YEAR FROM start\_date) = EXTRACT(YEAR FROM SYSDATE)

6 AND ROUND(EXTRACT(MONTH FROM start\_date)/3) <= 1

7 GROUP BY EMP\_NUM

8 HAVING SUM(hours\_used) >= 150) THEN 200

9 ELSE 0

10 END;

10 rows updated.

SQL> select \* from employee;

EMP\_NUM LNAME FNAME DOB HIRE\_DATE SUPER\_ID DEPT\_CODE BONUS\_AMT

-------- -------------------- -------------------- --------- --------- -------- --------- ----------

1001 Piveteau Duangkaew 02-NOV-63 12-JAN-96 01 0

1002 Facello Georgi 02-SEP-73 26-JUN-06 1001 01 0

1003 Simmel Bezalel 02-JUN-74 21-NOV-05 1001 02 0

1004 Bamford Parto 03-DEC-79 28-AUG-06 1001 03 0

1005 Facello Georgi 01-MAY-84 01-DEC-17 1002 01 0

1006 Koblick Chirstian 21-JAN-85 02-JUN-19 1003 02 0

1007 Maliniak Kyoichi 20-APR-83 01-MAY-21 1004 03 0

1008 Preusig Anneke 02-SEP-83 16-MAY-21 1002 01 0

1009 Zielinski Tzvetan 12-OCT-88 02-MAY-21 1003 02 200

1010 Peac Saniya 01-JUN-93 22-MAY-21 1004 03 0

10 rows selected.

### #5

SQL> COLUMN Employee FORMAT A30

SQL> COLUMN date\_acquired FORMAT A15

SQL> COLUMN Training\_Name FORMAT A30

SQL> SELECT e.emp\_num ||': '|| e.fname ||' '|| e.lname AS "Employee", e.hire\_date,

2 t.name AS "Training\_Name", t.date\_acquired, t.date\_acquired - e.hire\_date AS "Days of Training",

3 COUNT(DISTINCT a.proj\_number) AS "#Porject"

4 FROM employee e

5 LEFT JOIN training t

6 ON e.emp\_num = t.emp\_num

7 LEFT JOIN assignment a

8 ON e.emp\_num = a.emp\_num

9 WHERE e.hire\_date >= TO\_DATE('2021-04-01','yyyy-mm-dd')

10 AND e.hire\_date <= TO\_DATE('2021-06-30','yyyy-mm-dd')

11 GROUP BY e.emp\_num, e.fname, e.lname, e.hire\_date, t.name, t.date\_acquired

12 ORDER BY e.emp\_num;

Employee HIRE\_DATE Training\_Name DATE\_ACQUIRED Days of Training #Porject

------------------------------ ------------ ------------------------------ --------------- ---------------- ----------

1007 : Kyoichi Maliniak 01-MAY-21 1

1008 : Anneke Preusig 16-MAY-21 Computer Skills Training 23-JUN-21 38 0

1008 : Anneke Preusig 16-MAY-21 Professional Training 11-JUL-21 56 0

1009 : Tzvetan Zielinski 02-MAY-21 Marketing Training 11-SEP-21 132 2

1009 : Tzvetan Zielinski 02-MAY-21 Professional Training 01-JUL-21 60 2

1010 : Saniya Peac 22-MAY-21 Professional Training 01-JUL-21 40 0

1010 : Saniya Peac 22-MAY-21 Professional Training 02-JUL-21 41 0

1010 : Saniya Peac 22-MAY-21 Professional Training 21-OCT-21 152 0

8 rows selected.

### 

### #6

SQL> SELECT name, start\_date,

2 CASE WHEN total\_cost IS NULL THEN 'on-going'

3 ELSE 'completed'

4 END AS "Status"

5 FROM(SELECT name, start\_date, total\_cost

6 FROM assignment JOIN (SELECT proj\_number, assign\_num, project.name, start\_date, total\_cost

7 FROM assignment JOIN project USING(proj\_number)

8 GROUP BY proj\_number, name, start\_date, assign\_num, total\_cost

9 ORDER BY proj\_number)

10 USING(assign\_num)

11 GROUP BY name, start\_date, total\_cost

12 HAVING (

13 COUNT(DISTINCT EXTRACT(MONTH FROM date\_assigned)) <>

1 + MAX(EXTRACT(MONTH FROM date\_assigned)) -

MIN(EXTRACT(MONTH FROM date\_assigned)))

14 );

NAME START\_DAT Status

-------------------- --------- ---------

Big Tech Stuff 01-AUG-21 completed

Big Husky 01-OCT-21 on-going

### 

### #7

SQL> COLUMN Quarter FORMAT A10

SQL> SELECT TO\_CHAR(p.start\_date,'Q') quarter, COUNT(DISTINCT p.proj\_number) AS "# of Project",

2 COUNT(DISTINCT a.emp\_num) AS "# of Employee", SUM(a.hours\_used) / COUNT(DISTINCT p.proj\_number) AVG\_Hours

3 FROM project p, assignment a

4 WHERE p.proj\_number = a.proj\_number

5 AND TO\_CHAR(p.start\_date,'YYYY') = '2021'

6 GROUP BY TO\_CHAR(p.start\_date,'YYYY') ,TO\_CHAR(p.start\_date,'Q')

7 ORDER BY TO\_CHAR(p.start\_date,'YYYY') ,TO\_CHAR(p.start\_date,'Q');

QUARTER # of Project # of Employee AVG\_HOURS

---------- ------------ ------------- ----------

1 1 1 420

2 1 4 415

3 2 5 280

4 1 1 70

### 

### #8

SQL> SELECT DECODE(emp\_num, null, '---', emp\_num) ID,

2 DECODE(emp\_name, null, 'Number of Trainings:', emp\_name) "Employee Name",

3 NVL(SUM(DECODE(code,01,1)),0) AS Java,

4 (CASE

5 WHEN emp\_name IS NULL THEN '------'

6 ELSE MAX(java\_da)

7 END

8 ) AS "Latest Date Acquired",

9 NVL(SUM(DECODE(code,02,1)),0) AS Advertising,

10 (CASE

11 WHEN emp\_name IS NULL THEN '------'

12 ELSE MAX(ad\_da)

13 END

14 ) AS "Latest Date Acquired",

15 NVL(SUM(DECODE(code,03,1)),0) AS Writing,

16 (CASE

17 WHEN emp\_name IS NULL THEN '------'

18 ELSE MAX(writing\_da)

19 END

20 ) AS "Latest Date Acquired",

21 (CASE

22 WHEN emp\_name IS NULL THEN '------'

23 ELSE TO\_CHAR(COUNT(\*))

24 END

25 ) AS "Number of Skills"

26 FROM (SELECT emp\_num, fname || ' ' || lname AS emp\_name,

27 skill.name,

28 code,

29 training.date\_acquired,

30 (CASE

31 WHEN code = 01 THEN TO\_CHAR(MAX(date\_acquired), 'DD-MON-YY')

32 ELSE '------'

33 END

34 ) AS java\_da,

35 (CASE

36 WHEN code = 02 THEN TO\_CHAR(MAX(date\_acquired), 'DD-MON-YY')

37 ELSE '------'

38 END

39 ) AS ad\_da,

40 (CASE

41 WHEN code = 03 THEN TO\_CHAR(MAX(date\_acquired), 'DD-MON-YY')

42 ELSE '------'

43 END

44 ) AS writing\_da

45 FROM employee JOIN training USING(emp\_num)

46 JOIN skill USING(code)

47 GROUP BY emp\_num, fname || ' ' || lname, skill.name, training.date\_acquired, code)

48 GROUP BY GROUPING SETS( (emp\_num, emp\_name), ());

ID Employee Name JAVA Latest Date Acquired ADVERTISING Latest Date Acquired WRITING Latest Date Acquired Number of Skills

---- ------------- ----- ------------------- ---------- ------------------ ------ ------------------ ----------

1002 Georgi Facello 1 23-JUN-21 0 ------ 0 ------ 1

1004 Parto Bamford 0 ------ 0 ------ 1 01-JUL-21 1

1008 Anneke Preusig 1 23-JUN-21 0 ------ 1 11-JUL-21 2

1009 Tzvetan Zielinski 0 ------ 1 11-SEP-21 1 01-JUL-21 2

1010 Saniya Peac 0 ------ 0 ------ 3 21-OCT-21 3

--- Number of Train: 2 ------ 1 ------ 6 ------ ------

6 rows selected.

### #9

SQL> COLUMN Department FORMAT A15

SQL> COLUMN Skill FORMAT A15

SQL> SELECT d.name AS "Department", s.name AS "Skill", NVL(count, 0) AS "#training",

2 RANK() OVER (PARTITION BY d.name ORDER BY count DESC NULLS LAST) rank

3 FROM department d

4 CROSS JOIN skill s

5 LEFT JOIN

6 (SELECT d.name dep\_name, s.name skill\_name, COUNT(t.train\_num) count

7 FROM skill s

8 JOIN training t

9 ON s.code = t.code

10 JOIN employee e

11 ON t.emp\_num = e.emp\_num

12 JOIN department d

13 ON e.dept\_code = d.dept\_code

14 GROUP BY d.name, s.name)

15 ON s.name = skill\_name

16 AND d.name = dep\_name;

Department Skill #training RANK

--------------- --------------- ---------- ----------

Finance Writing 1 1

Finance Advertising 1 1

Finance JAVA 0 3

Human Resources Writing 4 1

Human Resources JAVA 0 2

Human Resources Advertising 0 2

Marketing JAVA 2 1

Marketing Writing 1 2

Marketing Advertising 0 3

### #10

SQL> SELECT proj\_number, name, Tot\_Days\_Worked

2 FROM(SELECT \*

3 FROM project JOIN (SELECT proj\_number, Tot\_Days\_Worked,

4 (date\_ended-date\_assigned) AS Assign\_Days\_Worked,

5 ROW\_NUMBER() OVER (PARTITION BY proj\_number ORDER BY date\_assigned) rank

6 FROM assignment JOIN (SELECT proj\_number, SUM(date\_ended - date\_assigned) AS Tot\_Days\_Worked

7 FROM assignment

8 GROUP BY proj\_number

9 HAVING (COUNT(\*) > 5)

10 ORDER BY proj\_number)

11 USING(proj\_number))

12 USING(proj\_number)

13 WHERE rank <= 3)

14 GROUP BY proj\_number, name, tot\_days\_worked

15 HAVING SUM(Assign\_Days\_Worked) >= 60;

PROJ\_NUMBER NAME TOT\_DAYS\_WORKED

----------- -------------------- ---------------

0003 Allosaurus 180

0005 Long Term Restore 175

### #11

SQL> COLUMN Employee FORMAT A20

SQL> COLUMN Managed\_Dept FORMAT A15

SQL> SELECT e.emp\_num ||': '|| e.lname AS "Employee", e.hire\_date,

2 CASE

3 WHEN e.super\_id IS NULL THEN 'ALL'

4 ELSE d.name

5 END AS "Managed\_Dept",

6 s.supervising AS "#Supervising"

7 FROM employee e

8 LEFT JOIN department d

9 ON e.dept\_code = d.dept\_code

10 LEFT JOIN

11 (SELECT super\_id, count(\*) supervising

12 FROM employee

13 WHERE super\_id is NOT NULL

14 GROUP BY super\_id) s

15 ON e.emp\_num = s.super\_id

16 WHERE rownum <= 4

17 ORDER BY e.hire\_date;

Employee HIRE\_DATE Managed\_Dept #Supervising

-------------------- ------------ --------------- ------------

1001 : Piveteau 12-JAN-96 ALL 3

1003 : Simmel 21-NOV-05 Finance 2

1002 : Facello 26-JUN-06 Marketing 2

1004 : Bamford 28-AUG-06 Human Resources 2

### 

### #12

SQL> SELECT type, NVL(client\_count,0) "Project Count", NVL(proj\_count,0) "Client Count"

2 FROM (SELECT 'Educational' AS Type FROM dual UNION ALL

3 SELECT 'Government' AS Type FROM dual UNION ALL

4 SELECT 'Non-Profit' AS Type FROM dual UNION ALL

5 SELECT 'For-Profit' AS Type FROM dual UNION ALL

6 SELECT 'Other' AS Type FROM dual

7 ) type\_table

8 LEFT JOIN (SELECT type, COUNT(DISTINCT client\_id) client\_count, COUNT(DISTINCT proj\_number) proj\_count

9 FROM project FULL OUTER JOIN (SELECT (CASE

10 WHEN LOWER(web\_address) LIKE '%.edu%' THEN 'Educational'

11 WHEN LOWER(web\_address) LIKE '%.gov%' THEN 'Government'

12 WHEN LOWER(web\_address) LIKE '%.org%' THEN 'Non-Profit'

13 WHEN LOWER(web\_address) LIKE '%.com%' THEN 'For-Profit'

14 ELSE 'Other'

15 END) Type, client\_id

16 FROM client)

17 USING(client\_id)

18 GROUP BY type)

19 USING(type);

TYPE Project Count Client Count

----------- ------------- ------------

Educational 1 0

For-Profit 3 5

Other 1 0

Government 0 0

Non-Profit 0 0

### #13

SQL> COLUMN employee FORMAT A30

SQL> COLUMN last\_project FORMAT A15

SQL> SELECT employee, department, proj\_number ||' '|| proj\_name AS "Last\_Project"

2 FROM

3 (SELECT e.emp\_num ||': '|| e.fname ||' '|| e.lname employee, d.name department,

4 p.proj\_number, p.start\_date, p.name proj\_name,

5 ROW\_NUMBER() OVER (PARTITION BY e.emp\_num ORDER BY p.start\_date DESC) rn

6 FROM employee e

7 LEFT JOIN assignment a

8 ON e.emp\_num = a.emp\_num

9 LEFT JOIN project p

10 ON p.proj\_number = a.proj\_number

11 JOIN department d

12 ON e.dept\_code = d.dept\_code

13 WHERE e.emp\_num NOT IN

14 (SELECT a.emp\_num

15 FROM project p, assignment a

16 WHERE p.proj\_number = a.proj\_number

17 AND p.start\_date >= TO\_DATE('2021-08-01','yyyy-mm-dd'))

18 GROUP BY e.emp\_num, e.fname, e.lname, d.name, p.proj\_number, p.start\_date, p.name

19 ORDER BY d.name, e.lname)

20 WHERE rn = 1;

EMPLOYEE DEPARTMENT Last\_Project

------------------------------ --------------- ---------------

1003 : Bezalel Simmel Finance 0003 Allosaurus

1009 : Tzvetan Zielinski Finance 0002 Tarius

1004 : Parto Bamford Human Resources 0003 Allosaurus

1007 : Kyoichi Maliniak Human Resources 0002 Tarius

1010 : Saniya Peac Human Resources

1005 : Georgi Facello Marketing 0003 Allosaurus

1001 : Duangkaew Piveteau Marketing

1008 : Anneke Preusig Marketing

8 rows selected.

### #14

SQL> SELECT DECODE(skill\_name, null, 'Totals:', skill\_name) "Skill Name",

2 DECODE(sum\_proj, null, SUM(sum\_proj), sum\_proj) "# of Projects requiring skill",

3 DECODE(sum\_emp, null, SUM(sum\_emp), sum\_emp) "# of Employee trainings"

4 FROM( SELECT skill\_name, sum\_proj, COUNT(\*) AS sum\_emp

5 FROM training LEFT JOIN (select skill.name skill\_name, COUNT(\*) AS sum\_proj, code

6 FROM project left join skill using(code)

7 GROUP BY skill.name, code)

8 USING(code)

9 group by skill\_name, sum\_proj)

10 GROUP BY GROUPING SETS((skill\_name, sum\_proj, sum\_emp), ());

Skill Name # of Projects requiring skill # of Employee trainings

-------------------- ----------------------------- -----------------------

JAVA 1 2

Writing 3 6

Advertising 1 1

Totals: 5 9

### #15

SQL> SET PAGESIZE 300

SQL> SET LINESIZE 300

SQL> COLUMN table\_name FORMAT A15

SQL> COLUMN column\_name FORMAT A15

SQL> COLUMN constraint\_name FORMAT A30

SQL> COLUMN search\_condition FORMAT A40

SQL> COLUMN FK\_references FORMAT A30

SQL> BREAK ON table\_name

SQL> SELECT c.table\_name, cc.column\_name, c.constraint\_name,

2 Case

3 WHEN c.constraint\_type = 'P' THEN 'PK'

4 WHEN c.constraint\_type = 'R' THEN 'FK'

5 WHEN c.constraint\_type = 'C' AND c.constraint\_name LIKE '%\_CK' THEN 'CK'

6 WHEN c.constraint\_type = 'C' AND c.constraint\_name LIKE '%\_NN' THEN 'NN'

7 WHEN c.constraint\_type = 'U' THEN 'UK'

8 ELSE c.constraint\_type

9 END,

10 c.search\_condition,

11 Case c.constraint\_type

12 WHEN 'R' THEN SUBSTR(c.r\_constraint\_name, 1, INSTR(c.r\_constraint\_name, '\_') - 1)

13 ||':'|| RTRIM(SUBSTR(c.r\_constraint\_name, INSTR(c.r\_constraint\_name, '\_') + 1, LENGTH(c.r\_constraint\_name)), '\_PK')

14 END AS "FK\_references"

15 FROM user\_constraints c

16 JOIN user\_cons\_columns cc

17 ON c.table\_name = cc.table\_name

18 AND c.constraint\_name = cc.constraint\_name

19 ORDER BY c.table\_name, cc.position;

TABLE\_NAME COLUMN\_NAME CONSTRAINT\_NAME CASE SEARCH\_CONDITION FK\_references

--------------- --------------- ------------------------------ ---- ---------------------------------------- ------------------------------

ASSIGNMENT PROJ\_NUMBER ASSIGNMENT\_PROJ\_NUMBER\_FK FK PROJECT:PROJ\_NUMBER

EMP\_NUM ASSIGNMENT\_EMP\_NUM\_FK FK EMPLOYEE:EMP\_NUM

ASSIGN\_NUM ASSIGNMENT\_ASSIGN\_NUM\_PK PK

DATE\_ENDED ASSIGNMENT\_DATE\_ENDED\_CK CK Date\_Ended > Date\_Assigned

DATE\_ENDED ASSIGNMENT\_DATE\_ENDED\_1\_M\_CK CK EXTRACT(MONTH FROM Date\_Ended) - EXTRACT

(MONTH FROM Date\_Assigned) <= 1

DATE\_ASSIGNED ASSIGNMENT\_DATE\_ENDED\_1\_M\_CK CK EXTRACT(MONTH FROM Date\_Ended) - EXTRACT

(MONTH FROM Date\_Assigned) <= 1

DATE\_ASSIGNED ASSIGNMENT\_DATE\_ENDED\_CK CK Date\_Ended > Date\_Assigned

CLIENT CLIENT\_ID CLIENT\_CLIENT\_ID\_PK PK

WEB\_ADDRESS CLIENT\_WEB\_ADDRESS\_UK UK

CONTACT\_LNAME CLIENT\_CONTACT\_LNAME\_NN NN "CONTACT\_LNAME" IS NOT NULL

CONTACT\_FNAME CLIENT\_CONTACT\_FNAME\_NN NN "CONTACT\_FNAME" IS NOT NULL

NAME CLIENT\_NAME\_NN NN "NAME" IS NOT NULL

DEPARTMENT DEPT\_CODE DEPARTMENT\_DEPT\_CODE\_PK PK

NAME DEPARTMENT\_NAME\_NN NN "NAME" IS NOT NULL

LOCATION DEPARTMENT\_LOCATION\_NN NN "LOCATION" IS NOT NULL

EMPLOYEE DEPT\_CODE EMPLOYEE\_DEPT\_CODE\_FK FK DEPARTMENT:DEPT\_CODE

EMP\_NUM EMPLOYEE\_EMP\_NUM\_PK PK

SUPER\_ID EMPLOYEE\_SUPER\_ID\_FK FK EMPLOYEE:EMP\_NUM

FNAME EMPLOYEE\_FNAME\_NN NN "FNAME" IS NOT NULL

LNAME EMPLOYEE\_LNAME\_NN NN "LNAME" IS NOT NULL

PROJECT PROJ\_NUMBER PROJECT\_PROJ\_NUMBER\_PK PK

DEPT\_CODE PROJECT\_DEPT\_CODE\_FK FK DEPARTMENT:DEPT\_CODE

CODE PROJECT\_CODE\_FK FK SKILL:CODE

CLIENT\_ID PROJECT\_CLIENT\_ID\_FK FK CLIENT:CLIENT\_ID

CODE PROJECT\_CODE\_NN NN "CODE" IS NOT NULL

SKILL CODE SKILL\_CODE\_PK PK

NAME SKILL\_NAME\_UK UK

NAME SKILL\_NAME\_NN NN "NAME" IS NOT NULL

TRAINING EMP\_NUM TRAINING\_EMP\_NUM\_FK FK EMPLOYEE:EMP\_NUM

CODE TRAINING\_CODE\_FK FK SKILL:CODE

TRAIN\_NUM TRAINING\_TRAIN\_NUM\_PK PK

31 rows selected.