**DB Implementation Project**

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| --- | --- | --- |
| **Name** | **Andrew ID** | **Email ID** |
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**Script #1**

/\*Table Creation Statement\*/

DROP TABLE Skill CASCADE CONSTRAINTS;

DROP TABLE Training CASCADE CONSTRAINTS;

DROP TABLE Department CASCADE CONSTRAINTS;

DROP TABLE Employee CASCADE CONSTRAINTS;

DROP TABLE Client CASCADE CONSTRAINTS;

DROP TABLE Project CASCADE CONSTRAINTS;

DROP TABLE Assignment CASCADE CONSTRAINTS;

CREATE TABLE Skill

(Code Number(3),

Description Varchar2(50),

CONSTRAINT Skill\_Code\_PK PRIMARY KEY(Code));

CREATE TABLE Employee

(Emp\_Num Number(5),

Emp\_Last Varchar2(25),

Emp\_First Varchar2(25),

DOB Date,

Hire\_Date Date DEFAULT SYSDATE,

Super\_ID Number(5),

Dept\_Code Number(3),

CONSTRAINT Employee\_EmpNum\_PK PRIMARY KEY(Emp\_Num),

CONSTRAINT Employee\_SuperID\_FK FOREIGN KEY(Super\_ID)

REFERENCES Employee(Emp\_Num),

CONSTRAINT Employee\_Age\_CK

CHECK((EXTRACT(YEAR from Hire\_Date)- EXTRACT(YEAR from DOB)) > 18));

CREATE TABLE Training

(Train\_Num Number(5),

Code Number(3),

Emp\_Num Number(5),

Date\_Acquired DATE,

Name Varchar2(20),

Comments varchar2(200),

CONSTRAINT Training\_TrainNum\_PK PRIMARY KEY(Train\_Num),

CONSTRAINT Training\_Code\_FK FOREIGN KEY(Code)

REFERENCES Skill(Code),

CONSTRAINT Training\_EmpNum\_FK FOREIGN KEY(Emp\_Num)

REFERENCES Employee(Emp\_Num));

CREATE TABLE Department

(Dept\_Code Number(3),

Name Varchar2(20),

Location Varchar2(100),

Phone Char(12),

Manager\_ID Number(5)CONSTRAINT Department\_Manager\_ID\_CK NOT NULL,

CONSTRAINT Department\_DeptCode\_PK PRIMARY KEY(Dept\_Code),

CONSTRAINT Department\_ManagerID\_FK FOREIGN KEY(Manager\_ID)

REFERENCES Employee(Emp\_Num));

CREATE TABLE Client

(Client\_ID Number(3),

Name Varchar2(50),

Street Varchar2(25),

City Varchar2(25),

State Char(2),

Zip\_Code Char(5),

Industry Varchar2(20),

Web\_Address Varchar2(100),

Phone Char(12),

Contact\_Name Varchar2(50),

CONSTRAINT Client\_ClientID\_PK PRIMARY KEY(Client\_ID),

CONSTRAINT Client\_Phone\_CK

CHECK (REGEXP\_LIKE(Phone,'^([0-9]{3}-[0-9]{3}-[0-9]{4}|[0-9]{10})$')),

CONSTRAINT Client\_State\_CK

CHECK (REGEXP\_LIKE(State,'^([A-Z]{2})$')));

CREATE TABLE Project

(Proj\_Number Number(3),

Name Varchar2(50),

Start\_Date Date DEFAULT SYSDATE,

Total\_Cost Number(10,2) DEFAULT NULL,

Dept\_Code Number(3) CONSTRAINT Project\_Dept\_Code\_CK NOT NULL,

Client\_ID Number(3),

CONSTRAINT Project\_ProjNumber\_PK PRIMARY KEY(Proj\_Number),

CONSTRAINT Project\_DeptCode\_FK FOREIGN KEY(Dept\_Code)

REFERENCES Department(Dept\_Code),

CONSTRAINT Project\_ClientID\_FK FOREIGN KEY(Client\_ID)

REFERENCES Client(Client\_ID),

CONSTRAINT Project\_TotalCost\_CK

CHECK (Total\_Cost > 0 OR Total\_Cost IS NULL),

CONSTRAINT Project\_DeptCode\_CK

CHECK (Dept\_Code != 111));

CREATE TABLE Assignment

(Assign\_Num Number(3),

Proj\_Number Number(3),

Emp\_Num Number(5),

Date\_Assigned Date DEFAULT SYSDATE,

Date\_Ended Date,

Hours\_Used Number(10),

CONSTRAINT Assignment\_AssignNum\_PK PRIMARY KEY(Assign\_Num),

CONSTRAINT Assignment\_ProjNumber\_FK FOREIGN KEY(Proj\_Number)

REFERENCES Project(Proj\_Number),

CONSTRAINT Assignment\_EmpNum\_FK FOREIGN KEY(Emp\_Num)

REFERENCES Employee(Emp\_Num),

CONSTRAINT Assignment\_DateAssigned\_DateEnded\_CK

CHECK (Date\_Ended >= Date\_Assigned OR Date\_Ended IS NULL),

CONSTRAINT Assignment\_DateAssigned\_DateEnded\_HoursUsed\_CK

CHECK (EXTRACT(MONTH FROM Date\_Assigned) = EXTRACT(MONTH FROM Date\_Ended) OR (Date\_Ended IS NULL AND Hours\_Used IS NULL)));

COMMIT;

/\*Table Manipulation - Constraint Addition\*/

ALTER TABLE Employee

ADD CONSTRAINT Employee\_DeptCode\_FK FOREIGN KEY(Dept\_Code)

REFERENCES Department(Dept\_Code);

COMMIT;

**Script #2**

/\*Table Manipulation – Insert Statements\*/

INSERT INTO SKILL VALUES(801,'Corporate Finance');

INSERT INTO SKILL VALUES(456,'Market Investment');

INSERT INTO SKILL VALUES(303,'Accounting');

INSERT INTO SKILL VALUES(245,'Digital Marketing');

INSERT INTO SKILL VALUES(404,'Marketing Strategy');

INSERT INTO SKILL VALUES(397,'Retail Marketing');

INSERT INTO SKILL VALUES(780,'Strategic Planning');

INSERT INTO SKILL VALUES(656,'Org Design Development');

INSERT INTO SKILL VALUES(345,'Decision Making');

INSERT INTO SKILL VALUES(196,'Risk Analysis');

INSERT INTO SKILL VALUES(701,'Data Visualization');

INSERT INTO SKILL VALUES(901,'Database Management');

INSERT INTO SKILL VALUES(501,'Internet Technologies');

INSERT INTO SKILL VALUES(401,'Text Analytics');

INSERT INTO SKILL VALUES(305,'Cybersecurity Techniques');

INSERT INTO SKILL VALUES(601,'Machine Learning');

INSERT INTO EMPLOYEE VALUES(26500,'Shelar','Deepanita','08-Oct-1987','20-Oct-2014',NULL,NULL);

INSERT INTO EMPLOYEE VALUES(26772,'Dai','Jingyan','11-Feb-1992','18-May-2017',26500,NULL);

INSERT INTO EMPLOYEE VALUES(27759,'Harris','Scott','29-Sep-1982','25-Apr-2018',26500,NULL);

INSERT INTO EMPLOYEE VALUES(17930,'Whitestar','Mary','23-Mar-1974','14-Mar-2017',26500,NULL);

INSERT INTO EMPLOYEE VALUES(23314,'Gates','Bob','14-Jul-1974','01-Jun-2015',26500,NULL);

INSERT INTO EMPLOYEE VALUES(20143,'Limaye','Mandar','11-Feb-1987','18-May-2019',26500,NULL);

INSERT INTO EMPLOYEE VALUES(17214,'Bhalerao','Pranav','17-Feb-1989','01-Nov-2017',26772,NULL);

INSERT INTO EMPLOYEE VALUES(15543,'Bertram','Jaret','09-Dec-1987','20-Jun-2018',27759,NULL);

INSERT INTO EMPLOYEE VALUES(13434,'Newton','Steve','01-Dec-1988','05-Feb-2017',27759,NULL);

INSERT INTO EMPLOYEE VALUES(18900,'Jones','Amelia','15-Apr-1988','12-Nov-2019',27759,NULL);

INSERT INTO EMPLOYEE VALUES(19604,'Wheeler','Howard','06-Feb-1988','20-Oct-2019',17930,NULL);

INSERT INTO EMPLOYEE VALUES(18225,'Evans','Stan','16-Dec-1988','07-Nov-2013',23314,NULL);

INSERT INTO EMPLOYEE VALUES(32173,'Milton','Kelly','11-Aug-1984','20-Oct-2016',23314,NULL);

INSERT INTO EMPLOYEE VALUES(10168,'Corman','Chris','06-Aug-1982','10-Nov-2018',20143,NULL);

INSERT INTO EMPLOYEE VALUES(15312,'Carter','Henry','08-Oct-1975','05-Apr-2018',19604,NULL);

INSERT INTO EMPLOYEE VALUES(15652,'Ganders','Benet','13-Feb-1989','01-Sep-2019',19604,NULL);

INSERT INTO EMPLOYEE VALUES(15172,'Joshi','Amey','24-Sep-1991','20-Oct-2015',18225,NULL);

INSERT INTO EMPLOYEE VALUES(10153,'Roditi','Adam','11-Feb-1988','18-May-2016',32173,NULL);

INSERT INTO EMPLOYEE VALUES(11171,'Shah','Vijay','05-Mar-1987','19-Mar-2017',32173,NULL);

INSERT INTO EMPLOYEE VALUES(12315,'Anderson','Maran','22-Apr-1997','09-Jan-2018',10168,NULL);

INSERT INTO EMPLOYEE VALUES(12203,'Getz','Bill','28-May-1988','01-Nov-2018',10168,NULL);

INSERT INTO EMPLOYEE VALUES(15313,'Gada','Jill','23-Nov-1984','14-Jan-2019',10168,NULL);

INSERT INTO TRAINING VALUES(97338,656,17214,'23-Jul-2018','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(49637,656,26772,'23-Jul-2018','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(88375,656,26772,'12-Nov-2019','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(32613,656,17214,'11-Aug-2018','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(84594,801,13434,'23-Mar-2018','Formal Workshop','Average Performance');

INSERT INTO TRAINING VALUES(55482,303,15543,'15-Jul-2018','University Course','Excellent Perfomace');

INSERT INTO TRAINING VALUES(69876,456,15543,'10-Aug-2018','University Workshop','Average Performance');

INSERT INTO TRAINING VALUES(26201,303,15543,'24-Jun-2019','University Course','Excellent Perfomace');

INSERT INTO TRAINING VALUES(58851,801,27759,'30-Jul-2018','Formal Workshop','Average Performance');

INSERT INTO TRAINING VALUES(48141,801,27759,'11-Sep-2019','Internal Training','Average Performance');

INSERT INTO TRAINING VALUES(55626,245,15312,'13-Aug-2018','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(45887,404,15312,'04-Apr-2019','University Course','Average Performance');

INSERT INTO TRAINING VALUES(44513,245,15652,'24-Nov-2019','Online Workshop','Average Performance');

INSERT INTO TRAINING VALUES(70943,397,15652,'30-Oct-2019','Internal Training','Excellent Perfomace');

INSERT INTO TRAINING VALUES(77494,404,15652,'30-Sep-2019','University Course','Good Performace');

INSERT INTO TRAINING VALUES(72823,245,17930,'21-Jun-2018','Online Workshop','Good Performace');

INSERT INTO TRAINING VALUES(60386,397,19604,'23-Nov-2019','Internal Training','Excellent Perfomace');

INSERT INTO TRAINING VALUES(69897,345,10168,'24-Jan-2019','External Training','Good Performace');

INSERT INTO TRAINING VALUES(22692,196,10168,'11-Jun-2019','University Course','Good Performace');

INSERT INTO TRAINING VALUES(19457,345,10168,'14-Feb-2019','External Training','Excellent Perfomace');

INSERT INTO TRAINING VALUES(27424,196,12203,'21-Feb-2019','University Course','Excellent Perfomace');

INSERT INTO TRAINING VALUES(13782,196,12315,'21-Mar-2018','University Workshop','Good Performace');

INSERT INTO TRAINING VALUES(64454,345,15313,'21-May-2019','External Training','Improvement Needed');

INSERT INTO TRAINING VALUES(97409,196,20143,'12-Jun-2019','University Course','Good Performace');

INSERT INTO TRAINING VALUES(53977,701,11171,'20-Apr-2018','Technical Training','Good Performace');

INSERT INTO TRAINING VALUES(24178,305,11171,'12-Jul-2018','Technical Training','Excellent Perfomace');

INSERT INTO TRAINING VALUES(34019,601,11171,'02-Feb-2019','University Course','Needs Improvement');

INSERT INTO TRAINING VALUES(34631,305,18225,'06-Dec-2015','Online Course','Good Performace');

INSERT INTO TRAINING VALUES(89748,305,18225,'26-Apr-2018','Online Course','Average Performance');

INSERT INTO TRAINING VALUES(52551,401,32173,'17-May-2017','Internal Training','Excellent Perfomace');

INSERT INTO TRAINING VALUES(94743,701,32173,'12-Aug-2019','Online Workshop','Excellent Perfomace');

INSERT INTO TRAINING VALUES(11243,601,32173,'21-Sep-2019','University Course','Needs Improvement');

INSERT INTO TRAINING VALUES(89809,501,23314,'16-Jul-2017','External Training','Good Performace');

INSERT INTO TRAINING VALUES(89541,701,15172,'16-Dec-2018','Online Workshop','Improvement Needed');

INSERT INTO TRAINING VALUES(82069,401,10153,'21-Jul-2019','Internal Training','Excellent Perfomace');

INSERT INTO DEPARTMENT VALUES(888,'Strategy and Risk','Boston','738-323-2456',20143);

INSERT INTO DEPARTMENT VALUES(777,'Technology','Pittsburgh','242-434-3456',23314);

INSERT INTO DEPARTMENT VALUES(555,'Marketing and Sales','Chicago','993-404-5441',17930);

INSERT INTO DEPARTMENT VALUES(222,'Financial Advisory','New York','344-456-7889',27759);

INSERT INTO DEPARTMENT VALUES(111,'Administration','New York','344-678-9789',26772);

INSERT INTO DEPARTMENT VALUES(100,'Executive','New York','455-121-0923',26500);

INSERT INTO CLIENT VALUES(988,'Media.net','Darlington St','New York','NY','35785','AdTech','www.media.net','344-706-2911','Cathy Horton');

INSERT INTO CLIENT VALUES(703,'Kansai','Bleecker Street','Rochestor','NY','47992','Chemical','www.kansai.com','792-283-8494','Nathalie Neill');

INSERT INTO CLIENT VALUES(457,'Lutron','Whiteman St','Philadelphia','PA','13343','Electronic','www.lutron.com','140-582-6540','Teddie Meza');

INSERT INTO CLIENT VALUES(871,'Mastercard','Sixth Avenue','Chicago','IL','94322','Finance','www.mastercard.us','232-892-6246','Tiah Tierney');

INSERT INTO CLIENT VALUES(368,'Bank of America','Bonard Ave','Boston','MA','13434','Finance','www.bankofamerica.com','502-810-3411','Shaunna Beattie');

INSERT INTO CLIENT VALUES(233,'Barclays','Hobart St','New Jersey','NJ','38909','Finance','www.banking.barclaysus.com','785-406-1536','Keely Garza');

INSERT INTO CLIENT VALUES(790,'Facebook','Fifth Avenue','Los Angeles','CA','35744','AdTech','www.facebook.com','330-926-4793','Amy Bridges');

INSERT INTO CLIENT VALUES(667,'Netflix','Murray Ave','Los Angeles','CA','24754','Media','www.netflix.com','446-407-9902','Emyr Miles');

INSERT INTO CLIENT VALUES(791,'Spotify','Carlson St','New York','NY','56782','Media','www.spotify.com','344-429-7830','Brenda Donald');

INSERT INTO CLIENT VALUES(234,'Amazon','Madison St','Seattle','WA','40601','Technology','www.amazon.com','640-815-1982','Ewan Estrada');

INSERT INTO CLIENT VALUES(355,'Google','Beacon Street','San Francisco','CA','34678','Technology','www.google.com','812-405-9110','Raul Mccormick');

INSERT INTO PROJECT VALUES(477,'Customer Credit Improvement','12-May-2019',400000,222,871);

INSERT INTO PROJECT VALUES(523,'Online Banking Revenue','11-Oct-2019',NULL,222,368);

INSERT INTO PROJECT VALUES(916,'Lead Gen Marketing','04-Aug-2017',550000,555,988);

INSERT INTO PROJECT VALUES(418,'Programtatic Buying','12-Jun-2018',900000,555,988);

INSERT INTO PROJECT VALUES(793,'Customer Behaviour Ads','06-Sep-2019',750000,555,790);

INSERT INTO PROJECT VALUES(737,'Device Specific Plans','04-Mar-2019',1200000,555,667);

INSERT INTO PROJECT VALUES(417,'Distribution Reorganization','01-Mar-2018',500000,888,703);

INSERT INTO PROJECT VALUES(929,'LED Efficiency Improvment','02-Dec-2018',700000,888,457);

INSERT INTO PROJECT VALUES(735,'Dimmer Upgrade','18-Jul-2016',1900000,777,457);

INSERT INTO PROJECT VALUES(891,'Credit Card Fraud','26-Jan-2017',2500000,777,871);

INSERT INTO PROJECT VALUES(331,'Mobile Payment Portal','17-Aug-2017',NULL,777,871);

INSERT INTO PROJECT VALUES(323,'Streaming Platform Upgrade','18-Jul-2019',NULL,777,790);

INSERT INTO PROJECT VALUES(997,'History Based Playlist','10-Sep-2019',1200000,777,791);

INSERT INTO PROJECT VALUES(545,'Shopping Habit Recognization','06-Apr-2016',2800000,777,234);

INSERT INTO PROJECT VALUES(123,'Gift Suggestion Systems','02-Oct-2019',NULL,777,234);

INSERT INTO ASSIGNMENT VALUES(944,123,10153,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(541,123,11171,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(584,123,32173,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(992,331,11171,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(560,331,32173,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(962,523,13434,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(914,523,15543,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(304,523,27759,'01-Nov-2019',NULL,NULL);

INSERT INTO ASSIGNMENT VALUES(424,929,10168,'01-Jan-2019','31-Jan-2019',121);

INSERT INTO ASSIGNMENT VALUES(957,331,11171,'05-Oct-2019','31-Oct-2019',120);

INSERT INTO ASSIGNMENT VALUES(425,891,23314,'01-Apr-2017','29-Apr-2017',111);

INSERT INTO ASSIGNMENT VALUES(377,735,23314,'01-Aug-2016','31-Aug-2016',108);

INSERT INTO ASSIGNMENT VALUES(102,545,18225,'01-May-2016','31-May-2016',98);

INSERT INTO ASSIGNMENT VALUES(904,929,10168,'01-Feb-2019','27-Feb-2019',90);

INSERT INTO ASSIGNMENT VALUES(309,123,10153,'05-Oct-2019','31-Oct-2019',90);

INSERT INTO ASSIGNMENT VALUES(289,418,15312,'01-Jul-2018','31-Jul-2018',85);

INSERT INTO ASSIGNMENT VALUES(708,735,15172,'01-Aug-2016','31-Aug-2016',82);

INSERT INTO ASSIGNMENT VALUES(143,123,11171,'05-Oct-2019','31-Oct-2019',81);

INSERT INTO ASSIGNMENT VALUES(327,891,15172,'01-Feb-2017','28-Feb-2017',80);

INSERT INTO ASSIGNMENT VALUES(409,997,10153,'11-Sep-2019','30-Sep-2019',77);

INSERT INTO ASSIGNMENT VALUES(789,997,32173,'01-Oct-2019','21-Oct-2019',77);

INSERT INTO ASSIGNMENT VALUES(412,417,12315,'03-Mar-2018','31-Mar-2018',75);

INSERT INTO ASSIGNMENT VALUES(256,929,10168,'02-Dec-2018','31-Dec-2018',72);

INSERT INTO ASSIGNMENT VALUES(864,737,17930,'01-May-2019','20-May-2019',70);

INSERT INTO ASSIGNMENT VALUES(101,737,15312,'08-Mar-2019','31-Mar-2019',69);

INSERT INTO ASSIGNMENT VALUES(278,891,23314,'01-Feb-2017','28-Feb-2017',68);

INSERT INTO ASSIGNMENT VALUES(622,737,15312,'01-May-2019','25-May-2019',67);

INSERT INTO ASSIGNMENT VALUES(717,545,23314,'01-Jun-2016','30-Jun-2016',66);

INSERT INTO ASSIGNMENT VALUES(831,735,11171,'01-Sep-2018','30-Sep-2018',66);

INSERT INTO ASSIGNMENT VALUES(681,891,15172,'01-Mar-2017','31-Mar-2017',65);

INSERT INTO ASSIGNMENT VALUES(521,737,15312,'01-Apr-2019','30-Apr-2019',62);

INSERT INTO ASSIGNMENT VALUES(507,331,18225,'01-Sep-2017','27-Sep-2017',60);

INSERT INTO ASSIGNMENT VALUES(297,891,23314,'01-Mar-2017','31-Mar-2017',59);

INSERT INTO ASSIGNMENT VALUES(903,331,32173,'05-Oct-2019','31-Oct-2019',59);

INSERT INTO ASSIGNMENT VALUES(251,735,18225,'01-Aug-2016','31-Aug-2016',55);

INSERT INTO ASSIGNMENT VALUES(279,735,10153,'15-Aug-2018','31-Aug-2018',55);

INSERT INTO ASSIGNMENT VALUES(702,523,13434,'13-Oct-2019','31-Oct-2019',55);

INSERT INTO ASSIGNMENT VALUES(107,523,15543,'15-Oct-2019','31-Oct-2019',55);

INSERT INTO ASSIGNMENT VALUES(308,331,18225,'20-Aug-2017','31-Aug-2017',54);

INSERT INTO ASSIGNMENT VALUES(612,331,15172,'17-Aug-2017','31-Aug-2017',51);

INSERT INTO ASSIGNMENT VALUES(670,331,15172,'01-Sep-2017','27-Sep-2017',51);

INSERT INTO ASSIGNMENT VALUES(437,123,32173,'03-Oct-2019','31-Oct-2019',45);

INSERT INTO ASSIGNMENT VALUES(244,735,23314,'20-Jul-2016','31-Jul-2016',44);

INSERT INTO ASSIGNMENT VALUES(199,735,32173,'01-Sep-2018','30-Sep-2018',44);

INSERT INTO ASSIGNMENT VALUES(216,735,11171,'21-Aug-2018','31-Aug-2018',43);

INSERT INTO ASSIGNMENT VALUES(161,418,15312,'12-Jun-2018','30-Jun-2018',40);

INSERT INTO ASSIGNMENT VALUES(624,737,17930,'11-Mar-2019','31-Mar-2019',40);

INSERT INTO ASSIGNMENT VALUES(504,793,15652,'07-Sep-2019','30-Sep-2019',37);

INSERT INTO ASSIGNMENT VALUES(367,997,32173,'15-Sep-2019','30-Sep-2019',37);

INSERT INTO ASSIGNMENT VALUES(638,735,23314,'01-Sep-2016','10-Sep-2016',36);

INSERT INTO ASSIGNMENT VALUES(848,418,15312,'01-Aug-2018','23-Aug-2018',36);

INSERT INTO ASSIGNMENT VALUES(448,929,12203,'01-Jan-2019','31-Jan-2019',36);

INSERT INTO ASSIGNMENT VALUES(329,545,18225,'06-Apr-2016','30-Apr-2016',35);

INSERT INTO ASSIGNMENT VALUES(869,916,17930,'01-Sep-2017','15-Sep-2017',32);

INSERT INTO ASSIGNMENT VALUES(551,997,10153,'01-Oct-2019','21-Oct-2019',30);

INSERT INTO ASSIGNMENT VALUES(458,323,11171,'19-Jul-2019','31-Jul-2019',29);

INSERT INTO ASSIGNMENT VALUES(441,477,27759,'17-May-2019','31-May-2019',28);

INSERT INTO ASSIGNMENT VALUES(913,735,15172,'01-Sep-2016','10-Sep-2016',27);

INSERT INTO ASSIGNMENT VALUES(968,891,15172,'01-Apr-2017','29-Apr-2017',27);

INSERT INTO ASSIGNMENT VALUES(171,891,23314,'27-Jan-2017','31-Jan-2017',25);

INSERT INTO ASSIGNMENT VALUES(852,477,15543,'01-Jun-2019','10-Jun-2019',25);

INSERT INTO ASSIGNMENT VALUES(767,735,18225,'01-Sep-2016','10-Sep-2016',24);

INSERT INTO ASSIGNMENT VALUES(132,735,32173,'24-Aug-2018','31-Aug-2018',24);

INSERT INTO ASSIGNMENT VALUES(552,331,23314,'01-Sep-2017','27-Sep-2017',23);

INSERT INTO ASSIGNMENT VALUES(930,735,10153,'01-Oct-2018','10-Oct-2018',23);

INSERT INTO ASSIGNMENT VALUES(826,545,18225,'01-Jun-2016','30-Jun-2016',22);

INSERT INTO ASSIGNMENT VALUES(842,735,32173,'01-Oct-2018','10-Oct-2018',22);

INSERT INTO ASSIGNMENT VALUES(459,891,15172,'28-Jan-2017','31-Jan-2017',21);

INSERT INTO ASSIGNMENT VALUES(959,916,17930,'06-Aug-2017','31-Aug-2017',20);

INSERT INTO ASSIGNMENT VALUES(237,545,23314,'01-May-2016','31-May-2016',19);

INSERT INTO ASSIGNMENT VALUES(218,735,18225,'24-Jul-2016','31-Jul-2016',19);

INSERT INTO ASSIGNMENT VALUES(932,929,12203,'01-Feb-2019','27-Feb-2019',18);

INSERT INTO ASSIGNMENT VALUES(993,735,11171,'01-Oct-2018','10-Oct-2018',17);

INSERT INTO ASSIGNMENT VALUES(766,737,17930,'01-Apr-2019','30-Apr-2019',17);

INSERT INTO ASSIGNMENT VALUES(795,477,27759,'01-Jun-2019','10-Jun-2019',17);

INSERT INTO ASSIGNMENT VALUES(954,545,18225,'01-Jul-2016','09-Jul-2016',14);

INSERT INTO ASSIGNMENT VALUES(895,417,12315,'01-Apr-2018','17-Apr-2018',14);

INSERT INTO ASSIGNMENT VALUES(938,545,23314,'15-Apr-2016','30-Apr-2016',13);

INSERT INTO ASSIGNMENT VALUES(773,545,23314,'01-Jul-2016','09-Jul-2016',13);

INSERT INTO ASSIGNMENT VALUES(510,735,10153,'01-Sep-2018','30-Sep-2018',12);

INSERT INTO ASSIGNMENT VALUES(349,929,12203,'02-Dec-2018','31-Dec-2018',12);

INSERT INTO ASSIGNMENT VALUES(980,323,11171,'01-Aug-2019','19-Aug-2019',12);

INSERT INTO ASSIGNMENT VALUES(729,735,15172,'18-Jul-2016','31-Jul-2016',11);

INSERT INTO ASSIGNMENT VALUES(333,331,23314,'21-Aug-2017','31-Aug-2017',11);

INSERT INTO ASSIGNMENT VALUES(403,477,15543,'13-May-2019','31-May-2019',11);

INSERT INTO ASSIGNMENT VALUES(198,523,27759,'17-Oct-2019','31-Oct-2019',11);

COMMIT;

/\*Table Manipulation – Update Statements\*/

UPDATE EMPLOYEE SET Dept\_Code = 100 WHERE Emp\_Num = 26500;

UPDATE EMPLOYEE SET Dept\_Code = 111 WHERE Emp\_Num = 26772;

UPDATE EMPLOYEE SET Dept\_Code = 222 WHERE Emp\_Num = 27759;

UPDATE EMPLOYEE SET Dept\_Code = 555 WHERE Emp\_Num = 17930;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 23314;

UPDATE EMPLOYEE SET Dept\_Code = 888 WHERE Emp\_Num = 20143;

UPDATE EMPLOYEE SET Dept\_Code = 111 WHERE Emp\_Num = 17214;

UPDATE EMPLOYEE SET Dept\_Code = 222 WHERE Emp\_Num = 15543;

UPDATE EMPLOYEE SET Dept\_Code = 222 WHERE Emp\_Num = 13434;

UPDATE EMPLOYEE SET Dept\_Code = 222 WHERE Emp\_Num = 18900;

UPDATE EMPLOYEE SET Dept\_Code = 555 WHERE Emp\_Num = 19604;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 18225;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 32173;

UPDATE EMPLOYEE SET Dept\_Code = 888 WHERE Emp\_Num = 10168;

UPDATE EMPLOYEE SET Dept\_Code = 555 WHERE Emp\_Num = 15312;

UPDATE EMPLOYEE SET Dept\_Code = 555 WHERE Emp\_Num = 15652;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 15172;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 10153;

UPDATE EMPLOYEE SET Dept\_Code = 777 WHERE Emp\_Num = 11171;

UPDATE EMPLOYEE SET Dept\_Code = 888 WHERE Emp\_Num = 12315;

UPDATE EMPLOYEE SET Dept\_Code = 888 WHERE Emp\_Num = 12203;

UPDATE EMPLOYEE SET Dept\_Code = 888 WHERE Emp\_Num = 15313;

COMMIT;

**Content of Tables**

**Table Name: SKILL**

SQL> SELECT \* FROM SKILL;

CODE DESCRIPTION

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

801 Corporate Finance

456 Market Investment

245 Digital Marketing

404 Marketing Strategy

397 Retail Marketing

780 Strategic Planning

656 Org Design Development

345 Decision Making

196 Risk Analysis

701 Data Visualization

901 Database Management

501 Internet Technologies

401 Text Analytics

305 Cybersecurity Techniques

601 Machine Learning

15 rows selected.

**Table Name: EMPLOYEE**

SQL> COLUMN Emp\_Last FORMAT A11;

SQL> COLUMN Emp\_First FORMAT A11;

SQL> SELECT \* FROM EMPLOYEE;

EMP\_NUM EMP\_LAST EMP\_FIRST DOB HIRE\_DATE SUPER\_ID DEPT\_CODE

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

26500 Shelar Deepanita 08-OCT-87 20-OCT-14 100

26772 Dai Jingyan 11-FEB-92 18-MAY-17 26500 111

27759 Harris Scott 29-SEP-82 25-APR-18 26500 222

17930 Whitestar Mary 23-MAR-74 14-MAR-17 26500 555

23314 Gates Bob 14-JUL-74 01-JUN-15 26500 777

20143 Limaye Mandar 11-FEB-87 18-MAY-19 26500 888

17214 Bhalerao Pranav 17-FEB-89 01-NOV-17 26772 111

15543 Bertram Jaret 09-DEC-87 20-JUN-18 27759 222

13434 Newton Steve 01-DEC-88 05-FEB-17 27759 222

18900 Jones Amelia 15-APR-88 12-NOV-19 27759 222

19604 Wheeler Howard 06-FEB-88 20-OCT-19 17930 555

18225 Evans Stan 16-DEC-88 07-NOV-13 23314 777

32173 Milton Kelly 11-AUG-84 20-OCT-16 23314 777

10168 Corman Chris 06-AUG-82 10-NOV-18 20143 888

15312 Carter Henry 08-OCT-75 05-APR-18 19604 555

15652 Ganders Benet 13-FEB-89 01-SEP-19 19604 555

15172 Joshi Amey 24-SEP-91 20-OCT-15 18225 777

10153 Roditi Adam 11-FEB-88 18-MAY-16 32173 777

11171 Shah Vijay 05-MAR-87 19-MAR-17 32173 777

12315 Anderson Maran 22-APR-97 09-JAN-18 10168 888

12203 Getz Bill 28-MAY-88 01-NOV-18 10168 888

15313 Gada Jill 23-NOV-84 14-JAN-19 10168 888

22 rows selected.

**Table Name: TRAINING**

SQL> COLUMN Train\_Num FORMAT 99999;

SQL> COLUMN Date\_Acquired FORMAT A15;

SQL> COLUMN Name FORMAT A20;

SQL> COLUMN Comments FORMAT A20;

SQL> SELECT \* FROM TRAINING;

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

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

97338 656 17214 23-JUL-18 Online Workshop Excellent Perfomace

49637 656 26772 23-JUL-18 Online Workshop Excellent Perfomace

88375 656 26772 12-NOV-19 Online Workshop Excellent Perfomace

32613 656 17214 11-AUG-18 Online Workshop Excellent Perfomace

84594 801 13434 23-MAR-18 Formal Workshop Average Performance

69876 456 15543 10-AUG-18 University Workshop Average Performance

58851 801 27759 30-JUL-18 Formal Workshop Average Performance

48141 801 27759 11-SEP-19 Internal Training Average Performance

55626 245 15312 13-AUG-18 Online Workshop Excellent Perfomace

45887 404 15312 04-APR-19 University Course Average Performance

44513 245 15652 24-NOV-19 Online Workshop Average Performance

70943 397 15652 30-OCT-19 Internal Training Excellent Perfomace

77494 404 15652 30-SEP-19 University Course Good Performace

72823 245 17930 21-JUN-18 Online Workshop Good Performace

60386 397 19604 23-NOV-19 Internal Training Excellent Perfomace

69897 345 10168 24-JAN-19 External Training Good Performace

22692 196 10168 11-JUN-19 University Course Good Performace

19457 345 10168 14-FEB-19 External Training Excellent Perfomace

27424 196 12203 21-FEB-19 University Course Excellent Perfomace

13782 196 12315 21-MAR-18 University Workshop Good Performace

64454 345 15313 21-MAY-19 External Training Improvement Needed

97409 196 20143 12-JUN-19 University Course Good Performace

53977 701 11171 20-APR-18 Technical Training Good Performace

24178 305 11171 12-JUL-18 Technical Training Excellent Perfomace

34019 601 11171 02-FEB-19 University Course Needs Improvement

34631 305 18225 06-DEC-15 Online Course Good Performace

89748 305 18225 26-APR-18 Online Course Average Performance

52551 401 32173 17-MAY-17 Internal Training Excellent Perfomace

94743 701 32173 12-AUG-19 Online Workshop Excellent Perfomace

11243 601 32173 21-SEP-19 University Course Needs Improvement

89809 501 23314 16-JUL-17 External Training Good Performace

89541 701 15172 16-DEC-18 Online Workshop Improvement Needed

82069 401 10153 21-JUL-19 Internal Training Excellent Perfomace

33 rows selected.

**Table Name: DEPARTMENT**

SQL> COLUMN Location FORMAT A13;

SQL> SELECT \* FROM DEPARTMENT;

DEPT\_CODE NAME LOCATION PHONE MANAGER\_ID

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

888 Strategy and Risk Boston 738-323-2456 20143

777 Technology Pittsburgh 242-434-3456 23314

555 Marketing and Sales Chicago 993-404-5441 17930

222 Financial Advisory New York 344-456-7889 27759

111 Administration New York 344-678-9789 26772

100 Executive New York 455-121-0923 26500

6 rows selected.

**Table Name: CLIENT**

SQL> COLUMN State FORMAT A5;

SQL> COLUMN Zip\_Code FORMAT A10;

SQL> COLUMN Industry FORMAT A15;

SQL> COLUMN Street FORMAT A15;

SQL> COLUMN City FORMAT A15;

SQL> COLUMN Web\_Address FORMAT A27;

SQL> COLUMN Contact\_Name FORMAT A15;

SQL> COLUMN Name FORMAT A15;

SQL> SELECT \* FROM CLIENT;

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

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

988 Media.net Darlington St New York NY 35785 AdTech www.media.net 344-706-2911 Cathy Horton

703 Kansai Bleecker Street Rochestor NY 47992 Chemical www.kansai.com 792-283-8494 Nathalie Neill

457 Lutron Whiteman St Philadelphia PA 13343 Electronic www.lutron.com 140-582-6540 Teddie Meza

871 Mastercard Sixth Avenue Chicago IL 94322 Finance www.mastercard.us 232-892-6246 Tiah Tierney

368 Bank of America Bonard Ave Boston MA 13434 Finance www.bankofamerica.com 502-810-3411 Shaunna Beattie

233 Barclays Hobart St New Jersey NJ 38909 Finance www.banking.barclaysus.com 785-406-1536 Keely Garza

790 Facebook Fifth Avenue Los Angeles CA 35744 AdTech www.facebook.com 330-926-4793 Amy Bridges

667 Netflix Murray Ave Los Angeles CA 24754 Media www.netflix.com 446-407-9902 Emyr Miles

791 Spotify Carlson St New York NY 56782 Media www.spotify.com 344-429-7830 Brenda Donald

234 Amazon Madison St Seattle WA 40601 Technology www.amazon.com 640-815-1982 Ewan Estrada

355 Google Beacon Street San Francisco CA 34678 Technology www.google.com 812-405-9110 Raul Mccormick

11 rows selected.

**Table Name: PROJECT**

SQL> COLUMN Name FORMAT A30;

SQL> SELECT \* FROM PROJECT;

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

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

477 Customer Credit Improvement 12-MAY-19 400000 222 871

523 Online Banking Revenue 11-OCT-19 222 368

916 Lead Gen Marketing 04-AUG-17 550000 555 988

418 Programtatic Buying 12-JUN-18 900000 555 988

793 Customer Behaviour Ads 06-SEP-19 750000 555 790

737 Device Specific Plans 04-MAR-19 1200000 555 667

417 Distribution Reorganization 01-MAR-18 500000 888 703

929 LED Efficiency Improvment 02-DEC-18 700000 888 457

735 Dimmer Upgrade 18-JUL-16 1900000 777 457

891 Credit Card Fraud 26-JAN-17 2500000 777 871

331 Mobile Payment Portal 17-AUG-17 777 871

323 Streaming Platform Upgrade 18-JUL-19 777 790

997 History Based Playlist 10-SEP-19 1200000 777 791

545 Shopping Habit Recognization 06-APR-16 2800000 777 234

123 Gift Suggestion Systems 02-OCT-19 777 234

15 rows selected.

**Table Name: ASSIGNMENT**

SQL> COLUMN Hours\_Used FORMAT 99999;

SQL> SELECT \* FROM ASSIGNMENT;

ASSIGN\_NUM PROJ\_NUMBER EMP\_NUM DATE\_ASSI DATE\_ENDE HOURS\_USED

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

944 123 10153 01-NOV-19

541 123 11171 01-NOV-19

584 123 32173 01-NOV-19

992 331 11171 01-NOV-19

560 331 32173 01-NOV-19

962 523 13434 01-NOV-19

914 523 15543 01-NOV-19

304 523 27759 01-NOV-19

424 929 10168 01-JAN-19 31-JAN-19 121

957 331 11171 05-OCT-19 31-OCT-19 120

425 891 23314 01-APR-17 29-APR-17 111

377 735 23314 01-AUG-16 31-AUG-16 108

102 545 18225 01-MAY-16 31-MAY-16 98

904 929 10168 01-FEB-19 27-FEB-19 90

309 123 10153 05-OCT-19 31-OCT-19 90

289 418 15312 01-JUL-18 31-JUL-18 85

708 735 15172 01-AUG-16 31-AUG-16 82

143 123 11171 05-OCT-19 31-OCT-19 81

327 891 15172 01-FEB-17 28-FEB-17 80

409 997 10153 11-SEP-19 30-SEP-19 77

789 997 32173 01-OCT-19 21-OCT-19 77

412 417 12315 03-MAR-18 31-MAR-18 75

256 929 10168 02-DEC-18 31-DEC-18 72

864 737 17930 01-MAY-19 20-MAY-19 70

101 737 15312 08-MAR-19 31-MAR-19 69

278 891 23314 01-FEB-17 28-FEB-17 68

622 737 15312 01-MAY-19 25-MAY-19 67

717 545 23314 01-JUN-16 30-JUN-16 66

831 735 11171 01-SEP-18 30-SEP-18 66

681 891 15172 01-MAR-17 31-MAR-17 65

521 737 15312 01-APR-19 30-APR-19 62

507 331 18225 01-SEP-17 27-SEP-17 60

297 891 23314 01-MAR-17 31-MAR-17 59

903 331 32173 05-OCT-19 31-OCT-19 59

251 735 18225 01-AUG-16 31-AUG-16 55

279 735 10153 15-AUG-18 31-AUG-18 55

702 523 13434 13-OCT-19 31-OCT-19 55

107 523 15543 15-OCT-19 31-OCT-19 55

308 331 18225 20-AUG-17 31-AUG-17 54

612 331 15172 17-AUG-17 31-AUG-17 51

670 331 15172 01-SEP-17 27-SEP-17 51

437 123 32173 03-OCT-19 31-OCT-19 45

244 735 23314 20-JUL-16 31-JUL-16 44

199 735 32173 01-SEP-18 30-SEP-18 44

216 735 11171 21-AUG-18 31-AUG-18 43

161 418 15312 12-JUN-18 30-JUN-18 40

624 737 17930 11-MAR-19 31-MAR-19 40

504 793 15652 07-SEP-19 30-SEP-19 37

367 997 32173 15-SEP-19 30-SEP-19 37

638 735 23314 01-SEP-16 10-SEP-16 36

848 418 15312 01-AUG-18 23-AUG-18 36

448 929 12203 01-JAN-19 31-JAN-19 36

329 545 18225 06-APR-16 30-APR-16 35

869 916 17930 01-SEP-17 15-SEP-17 32

551 997 10153 01-OCT-19 21-OCT-19 30

458 323 11171 19-JUL-19 31-JUL-19 29

441 477 27759 17-MAY-19 31-MAY-19 28

913 735 15172 01-SEP-16 10-SEP-16 27

968 891 15172 01-APR-17 29-APR-17 27

171 891 23314 27-JAN-17 31-JAN-17 25

852 477 15543 01-JUN-19 10-JUN-19 25

767 735 18225 01-SEP-16 10-SEP-16 24

132 735 32173 24-AUG-18 31-AUG-18 24

552 331 23314 01-SEP-17 27-SEP-17 23

930 735 10153 01-OCT-18 10-OCT-18 23

826 545 18225 01-JUN-16 30-JUN-16 22

842 735 32173 01-OCT-18 10-OCT-18 22

459 891 15172 28-JAN-17 31-JAN-17 21

959 916 17930 06-AUG-17 31-AUG-17 20

237 545 23314 01-MAY-16 31-MAY-16 19

218 735 18225 24-JUL-16 31-JUL-16 19

932 929 12203 01-FEB-19 27-FEB-19 18

993 735 11171 01-OCT-18 10-OCT-18 17

766 737 17930 01-APR-19 30-APR-19 17

795 477 27759 01-JUN-19 10-JUN-19 17

954 545 18225 01-JUL-16 09-JUL-16 14

895 417 12315 01-APR-18 17-APR-18 14

938 545 23314 15-APR-16 30-APR-16 13

773 545 23314 01-JUL-16 09-JUL-16 13

510 735 10153 01-SEP-18 30-SEP-18 12

349 929 12203 02-DEC-18 31-DEC-18 12

980 323 11171 01-AUG-19 19-AUG-19 12

729 735 15172 18-JUL-16 31-JUL-16 11

333 331 23314 21-AUG-17 31-AUG-17 11

403 477 15543 13-MAY-19 31-MAY-19 11

198 523 27759 17-OCT-19 31-OCT-19 11

86 rows selected.

**SQL Queries & Results**

* **Question 1**

The company’s human resources department needs information on the current training levels of the employees. They need information that shows, for each employee, and his/her acquired skills, the number of times he or she received training for that skill, the most recent date of the training, and the number of months (full months only) that have passed since the most recent training for the skill. Include all employees in the output, even if they have not received any training yet.

SQL> /\*Q.1\*/

SQL> COLUMN Employee FORMAT A25

SQL> COLUMN Skill FORMAT A5

SQL> COLUMN Description FORMAT A25

SQL> COLUMN Train\_Count FORMAT A11

SQL> COLUMN Months\_passed FORMAT A15

SQL>

SQL> SELECT Emp\_Num ||': '|| Emp\_First ||' '|| Emp\_Last AS Employee, NVL(TO\_CHAR(Code),'NA') AS Skill, NVL(Description,'NA') AS Description,

2 NVL(TO\_CHAR(COUNT(Train\_Num)),'NA') AS Train\_Count,

3 NVL(TO\_CHAR(MAX(Date\_Acquired)),'NA') AS Recent\_Date,

4 NVL(TO\_CHAR(TRUNC(MONTHS\_BETWEEN(SYSDATE,MAX(Date\_Acquired)))),'NA') AS Months\_passed

5 FROM Employee LEFT JOIN Training USING (Emp\_Num)

6 LEFT JOIN Skill USING (Code)

7 GROUP BY Emp\_Num||': '||Emp\_First||' '||Emp\_Last, Code, Description

8 ORDER BY Employee;

EMPLOYEE SKILL DESCRIPTION TRAIN\_COUNT RECENT\_DATE MONTHS\_PASSED

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

10153: Adam Roditi 401 Text Analytics 1 21-JUL-19 4

10168: Chris Corman 196 Risk Analysis 1 11-JUN-19 5

10168: Chris Corman 345 Decision Making 2 14-FEB-19 9

11171: Vijay Shah 305 Cybersecurity Techniques 1 12-JUL-18 16

11171: Vijay Shah 601 Machine Learning 1 02-FEB-19 10

11171: Vijay Shah 701 Data Visualization 1 20-APR-18 19

12203: Bill Getz 196 Risk Analysis 1 21-FEB-19 9

12315: Maran Anderson 196 Risk Analysis 1 21-MAR-18 20

13434: Steve Newton 801 Corporate Finance 1 23-MAR-18 20

15172: Amey Joshi 701 Data Visualization 1 16-DEC-18 11

15312: Henry Carter 245 Digital Marketing 1 13-AUG-18 15

15312: Henry Carter 404 Marketing Strategy 1 04-APR-19 7

15313: Jill Gada 345 Decision Making 1 21-MAY-19 6

15543: Jaret Bertram 456 Market Investment 1 10-AUG-18 15

15652: Benet Ganders 245 Digital Marketing 1 24-NOV-19 0

15652: Benet Ganders 397 Retail Marketing 1 30-OCT-19 1

15652: Benet Ganders 404 Marketing Strategy 1 30-SEP-19 2

17214: Pranav Bhalerao 656 Org Design Development 2 11-AUG-18 15

17930: Mary Whitestar 245 Digital Marketing 1 21-JUN-18 17

18225: Stan Evans 305 Cybersecurity Techniques 2 26-APR-18 19

18900: Amelia Jones NA NA 0 NA NA

19604: Howard Wheeler 397 Retail Marketing 1 23-NOV-19 0

20143: Mandar Limaye 196 Risk Analysis 1 12-JUN-19 5

23314: Bob Gates 501 Internet Technologies 1 16-JUL-17 28

26500: Deepanita Shelar NA NA 0 NA NA

26772: Jingyan Dai 656 Org Design Development 2 12-NOV-19 0

27759: Scott Harris 801 Corporate Finance 2 11-SEP-19 2

32173: Kelly Milton 401 Text Analytics 1 17-MAY-17 30

32173: Kelly Milton 601 Machine Learning 1 21-SEP-19 2

32173: Kelly Milton 701 Data Visualization 1 12-AUG-19 3

30 rows selected.

* **Question 2**

Due to a recent re-organization, the company needs a list that shows who supervises who. List all the employees in the company clearly indicating the organizational hierarchy. Include the “level” of the hierarchy each employee is at and the department name of the employee.

SQL> /\*Q.2\*/

SQL> COLUMN Employee FORMAT A30;

SQL>

SQL> SELECT LEVEL,

2 LPAD(' ', 3\*(LEVEL - 1)) || Emp\_Num || ' ' || Emp\_First || ' ' || Emp\_Last AS "Employee" , Name AS Department\_Name

3 FROM Employee LEFT JOIN Department USING(Dept\_Code)

4 START WITH Emp\_Num = 26500

5 CONNECT BY PRIOR Emp\_Num = Super\_ID;

LEVEL Employee DEPARTMENT\_NAME

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

1 26500 Deepanita Shelar Executive

2 17930 Mary Whitestar Marketing and Sales

3 19604 Howard Wheeler Marketing and Sales

4 15312 Henry Carter Marketing and Sales

4 15652 Benet Ganders Marketing and Sales

2 20143 Mandar Limaye Strategy and Risk

3 10168 Chris Corman Strategy and Risk

4 12203 Bill Getz Strategy and Risk

4 12315 Maran Anderson Strategy and Risk

4 15313 Jill Gada Strategy and Risk

2 23314 Bob Gates Technology

3 18225 Stan Evans Technology

4 15172 Amey Joshi Technology

3 32173 Kelly Milton Technology

4 10153 Adam Roditi Technology

4 11171 Vijay Shah Technology

2 26772 Jingyan Dai Administration

3 17214 Pranav Bhalerao Administration

2 27759 Scott Harris Financial Advisory

3 13434 Steve Newton Financial Advisory

3 15543 Jaret Bertram Financial Advisory

3 18900 Amelia Jones Financial Advisory

22 rows selected.

* **Question 3**

For every ongoing project (i.e., a project with total cost being NULL) provide the project name, project start date. In addition, for each month of the project list the number of employees assigned that month and hours spent on the project that month. At the end provide an overall total of the number of employees assigned to the project and the total hours spent on the project.

SQL> /\*Q.3\*/

SQL> COLUMN Proj\_Name FORMAT A30

SQL> COLUMN Hours\_Used FORMAT A10

SQL> COLUMN Assigned\_Month FORMAT A10

SQL>

SQL> BREAK ON Proj\_Number ON Proj\_Name ON Start\_Date

SQL>

SQL> SELECT Proj\_Number, Proj\_Name, Start\_Date, Assign\_Year, Assigned\_Month, Hours\_Used

2 FROM(

3 SELECT Proj\_Number, Name AS Proj\_Name, Start\_Date, EXTRACT(YEAR FROM Date\_Assigned) AS Assign\_Year, EXTRACT(MONTH FROM Date\_Assigned),

4 DECODE(TO\_CHAR(Date\_Assigned , 'MONTH'), NULL, '--Total--', TO\_CHAR(Date\_Assigned , 'MONTH')) AS Assigned\_Month,

5 COUNT(DISTINCT Emp\_Num) EmployeeNum, NVL(TO\_CHAR(SUM(Hours\_Used)),0) AS Hours\_Used

6 FROM Project JOIN Assignment USING (Proj\_Number)

7 WHERE Total\_Cost is NULL

8 GROUP BY GROUPING SETS((Proj\_Number, Name, Start\_Date, EXTRACT(YEAR FROM Date\_Assigned), EXTRACT(MONTH FROM Date\_Assigned), TO\_CHAR(Date\_Assigned , 'MONTH')),

9 (Proj\_Number, Name))

10 ORDER BY Proj\_Number, EXTRACT(YEAR FROM Date\_Assigned), EXTRACT(MONTH FROM Date\_Assigned));

PROJ\_NUMBER PROJ\_NAME START\_DATE ASSIGN\_YEAR ASSIGNED\_M HOURS\_USED

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

123 Gift Suggestion Systems 02-OCT-19 2019 OCTOBER 216

2019 NOVEMBER 0

--Total-- 216

323 Streaming Platform Upgrade 18-JUL-19 2019 JULY 29

2019 AUGUST 12

--Total-- 41

331 Mobile Payment Portal 17-AUG-17 2017 AUGUST 116

2017 SEPTEMBER 134

2019 OCTOBER 179

2019 NOVEMBER 0

--Total-- 429

523 Online Banking Revenue 11-OCT-19 2019 OCTOBER 121

2019 NOVEMBER 0

--Total-- 121

14 rows selected.

* **Question 4**

The company has decided to adopt a bonus policy for their employees. Each employee will receive a bonus of $200 for every project started last calendar year, on which they have charged at least 40 hours. As a result, management has asked you to update the employee records to include their current bonus information. In order to accomplish this, you will have to add another column to the EMPLOYEE table (i.e., column BONUS\_AMT), before you update the data. After the single Update statement is performed, list the contents of the Employee table.

SQL> /\*Q.4\*/

SQL> ALTER TABLE Employee

2 ADD (Bonus\_Amt number(5,2) DEFAULT 0.00);

Table altered.

SQL> COLUMN Employee FORMAT A23

SQL> SELECT Emp\_Num||': '||Emp\_First||' '||Emp\_Last AS Employee, Bonus\_Amt AS Bonus FROM Employee;

EMPLOYEE BONUS

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

26500: Deepanita Shelar 0

26772: Jingyan Dai 0

27759: Scott Harris 0

17930: Mary Whitestar 0

23314: Bob Gates 0

20143: Mandar Limaye 0

17214: Pranav Bhalerao 0

15543: Jaret Bertram 0

13434: Steve Newton 0

18900: Amelia Jones 0

19604: Howard Wheeler 0

18225: Stan Evans 0

32173: Kelly Milton 0

10168: Chris Corman 0

15312: Henry Carter 0

15652: Benet Ganders 0

15172: Amey Joshi 0

10153: Adam Roditi 0

11171: Vijay Shah 0

12315: Maran Anderson 0

12203: Bill Getz 0

15313: Jill Gada 0

22 rows selected.

SQL> UPDATE Employee E1

2 SET Bonus\_Amt = (SELECT Bonus\_Value FROM (SELECT Emp\_Num ,COUNT(DISTINCT Proj\_Number), SUM(Hours\_Used), COUNT(DISTINCT Proj\_Number)\*200 AS Bonus\_Value

3 FROM Assignment JOIN Employee USING(Emp\_Num)

4 JOIN Project USING(Proj\_Number)

5 WHERE EXTRACT(YEAR FROM Start\_Date) = (EXTRACT(YEAR FROM SYSDATE)- 1)

6 GROUP BY Emp\_Num

7 HAVING SUM(Hours\_Used) >=40) E2

8 where E1.Emp\_Num = E2.Emp\_Num )

9 WHERE Emp\_Num = (SELECT Emp\_Num FROM (SELECT Emp\_Num ,COUNT(DISTINCT Proj\_Number), SUM(Hours\_Used), COUNT(DISTINCT Proj\_Number)\*200 AS Bonus\_Value

10 FROM Assignment JOIN Employee USING(Emp\_Num)

11 JOIN Project USING(Proj\_Number)

12 WHERE EXTRACT(YEAR FROM Start\_Date) = (EXTRACT(YEAR FROM SYSDATE)- 1)

13 GROUP BY Emp\_Num

14 HAVING SUM(Hours\_Used) >=40) E2

15 where E1.Emp\_Num = E2.Emp\_Num );

4 rows updated.

SQL> COLUMN Employee FORMAT A23

SQL> SELECT Emp\_Num||': '||Emp\_First||' '||Emp\_Last AS Employee, Bonus\_Amt AS Bonus FROM Employee;

EMPLOYEE BONUS

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

26500: Deepanita Shelar 0

26772: Jingyan Dai 0

27759: Scott Harris 0

17930: Mary Whitestar 0

23314: Bob Gates 0

20143: Mandar Limaye 0

17214: Pranav Bhalerao 0

15543: Jaret Bertram 0

13434: Steve Newton 0

18900: Amelia Jones 0

19604: Howard Wheeler 0

18225: Stan Evans 0

32173: Kelly Milton 0

10168: Chris Corman 200

15312: Henry Carter 200

15652: Benet Ganders 0

15172: Amey Joshi 0

10153: Adam Roditi 0

11171: Vijay Shah 0

12315: Maran Anderson 200

12203: Bill Getz 200

15313: Jill Gada 0

22 rows selected.

* **Question 5**

For each employee hired last calendar year, list the name and the hire date of the employee, name of training received (if any), date of the training, and the number of days between the hire date and the training. Also include number of projects that employee worked on so far.

SQL> /\*Q.5\*/

SQL>

SQL> COLUMN Training\_Date FORMAT A14

SQL> COLUMN Employee FORMAT A23

SQL> COLUMN Days\_Between FORMAT A12

SQL>

SQL> BREAK ON Employee

SQL> SELECT Emp\_Num||': '||Emp\_First||' '||Emp\_Last AS Employee, Hire\_Date,

2 NVL(TO\_CHAR(Name),'NA') AS Training\_Name,

3 NVL(TO\_CHAR(Date\_Acquired),'NA') AS Training\_Date,

4 NVL(TO\_CHAR(Date\_Acquired-Hire\_Date), 'NA') AS Days\_Between, COUNT(DISTINCT Proj\_Number) AS Proj\_Count

5 FROM Employee LEFT JOIN Training USING(Emp\_Num)

6 LEFT JOIN Assignment USING(Emp\_Num)

7 WHERE EXTRACT(YEAR FROM Hire\_Date)=(EXTRACT(YEAR FROM SYSDATE)- 1)

8 GROUP BY Emp\_Num||': '||Emp\_First||' '||Emp\_Last, Hire\_Date, Name, Date\_Acquired, Date\_Acquired-Hire\_Date

9 ORDER BY Employee;

EMPLOYEE HIRE\_DATE TRAINING\_NAME TRAINING\_DATE DAYS\_BETWEEN PROJ\_COUNT

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

10168: Chris Corman 10-NOV-18 External Training 24-JAN-19 75 1

10-NOV-18 External Training 14-FEB-19 96 1

10-NOV-18 University Course 11-JUN-19 213 1

12203: Bill Getz 01-NOV-18 University Course 21-FEB-19 112 1

12315: Maran Anderson 09-JAN-18 University Workshop 21-MAR-18 71 1

15312: Henry Carter 05-APR-18 Online Workshop 13-AUG-18 130 2

05-APR-18 University Course 04-APR-19 364 2

15543: Jaret Bertram 20-JUN-18 University Workshop 10-AUG-18 51 2

27759: Scott Harris 25-APR-18 Formal Workshop 30-JUL-18 96 2

25-APR-18 Internal Training 11-SEP-19 504 2

10 rows selected.

* **Question 6**

Some projects are discontinued for certain period of time and resumed later. Find out project name and start date of those projects that have discontinuous activity. Indicate whether the “discontinued” projects have been completed (i.e., your output should clearly indicate this by “completed” or “on-going” value in a column).

**NOTE:** As the project was discontinued and resumed again at a later date there would be no entries in the assignment table for some months before the project was resumed again. This is how we determine if the project was discontinued.

SQL> /\*Q.6\*/

SQL>

SQL> COLUMN Project\_Details FORMAT A30

SQL> COLUMN Start\_Date FORMAT A15

SQL>

SQL>

SQL> SELECT DISTINCT Proj\_Number ||': '|| Name AS Project\_Details, Start\_Date, Status

2 FROM(

3 SELECT Proj\_Number, Name, Start\_Date, Assign\_Num, Date\_Assigned, Date\_Ended,

4 (CASE WHEN Total\_Cost IS NULL THEN 'On-going' ELSE 'Completed' END) AS Status,

5 LAG(DATE\_ASSIGNED,1) OVER (PARTITION BY PROJ\_NUMBER ORDER BY DATE\_ASSIGNED) AS Last\_Assign

6 FROM Project JOIN Assignment USING (Proj\_Number)

7 )

8 WHERE TRUNC(MONTHS\_BETWEEN(DATE\_ASSIGNED,Last\_Assign)) > 1;

PROJECT\_DETAILS START\_DATE STATUS

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

735: Dimmer Upgrade 18-JUL-16 Completed

331: Mobile Payment Portal 17-AUG-17 On-going

* **Question 7**

We need a summary of project information for each quarter of this year. For each quarter include: number of projects started in the quarter, number of employees working on those projects in the quarter, number of hours spent on average per project.

SQL> /\*Q.7\*/

SQL>

SQL> COLUMN Avg\_Hour FORMAT A10

SQL>

SQL> SELECT ('Quarter '|| Quarter) AS Quarter, Proj\_Count, COUNT(DISTINCT Emp\_Num) Emp\_Count,

2 NVL(TO\_CHAR(SUM(Hours\_Used)/COUNT(DISTINCT(Proj\_Number))),'NA') Avg\_Hour

3 FROM

4 ((SELECT Quarter, COUNT(Proj\_Number) Proj\_Count

5 FROM

6 (SELECT rownum months, NTILE(4) OVER (ORDER BY rownum) AS Quarter

7 FROM dual CONNECT BY rownum <=12)

8 LEFT JOIN

9 (SELECT \* FROM Project

10 WHERE EXTRACT(YEAR FROM Start\_Date)=EXTRACT(YEAR FROM SYSDATE))

11 ON months = EXTRACT(MONTH FROM Start\_Date)

12 GROUP BY Quarter)

13 JOIN

14 (SELECT Quarter, Proj\_Number, Assign\_Num, Emp\_Num, Hours\_Used

15 FROM

16 (SELECT rownum months, NTILE(4) OVER (ORDER BY rownum) AS Quarter

17 FROM dual CONNECT BY rownum <=12)

18 LEFT JOIN

19 (SELECT \* FROM Assignment

20 WHERE EXTRACT(YEAR FROM Date\_Assigned)=EXTRACT(YEAR FROM SYSDATE))

21 ON months = EXTRACT(MONTH FROM Date\_Assigned))

22 USING (Quarter))

23 GROUP BY Quarter, Proj\_Count

24 ORDER BY Quarter;

QUARTER PROJ\_COUNT EMP\_COUNT AVG\_HOUR

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

Quarter 1 1 4 187

Quarter 2 1 4 148.5

Quarter 3 3 4 64

Quarter 4 2 6 155.75

* **Question 8**

For each employee and each skill, list the number of times the employee had training and the latest date (most recent) when the employee acquired that particular skill. Also, provide the number of trainings provided/attended for each skill, and the number of skills acquired by each employee.

**NOTE:** As our database has 16 skills, we had to divide the output in 4 queries to display the column for all skills. The last column in all 4 outputs show the Total number of skills of each employee as required by the problem statement not the sum of 4 columns that query displays.

SQL> /\*Q.8\*/

SQL> COLUMN ID FORMAT A5

SQL> COLUMN "Employee Name" FORMAT A20

SQL> COLUMN "Latest Date Acquired" Heading 'Latest|Date|Acquired' FORMAT A12

SQL> COLUMN "Corporate Finance" Heading 'Corporate|Finance'

SQL> COLUMN "Market Investment" Heading 'Market|Investment'

SQL> COLUMN "Accouting" Heading 'Accouting'

SQL> COLUMN "Digital Marketing" Heading 'Digital|Marketing'

SQL> COLUMN "Marketing Strategy" Heading 'Marketing|Strategy'

SQL> COLUMN "Retail Marketing" Heading 'Retail|Marketing'

SQL> COLUMN "Strategic Planning" Heading 'Strategic|Planning'

SQL> COLUMN "Org Design Devlopment" Heading 'Org Design|Devlopment'

SQL> COLUMN "Decision Making" Heading 'Decision|Making'

SQL> COLUMN "Risk Analysis" Heading 'Risk|Analysis'

SQL> COLUMN "Data Visualization" Heading 'Data|Visualization'

SQL> COLUMN "Database Management" Heading 'Database|Management'

SQL> COLUMN "Internet Technologies" Heading 'Internet|Technologies'

SQL> COLUMN "Text Analytics" Heading 'Text|Analytics'

SQL> COLUMN "Cybersecurity Techniques" Heading 'Cybersecurity|Techniques'

SQL> COLUMN "Machine Learning" Heading 'Machine|Learning'

SQL>

SQL> SELECT DECODE(Emp\_Num, NULL,NULL, EMP\_NUM )AS ID,

2 DECODE(Emp\_First || ' ' || Emp\_Last, NULL, 'Number of Training' , Emp\_First || ' ' || Emp\_Last) AS "Employee Name",

3 SUM(DECODE(Code,801,1,0)) AS "Corporate Finance",

4 (CASE

5 WHEN SUM(DECODE(Code,801,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

6 WHEN SUM(DECODE(Code,801,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 801, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

7 END) AS "Latest Date Acquired",

8 SUM(DECODE(Code,456,1,0)) AS "Market Investment",

9 (CASE

10 WHEN SUM(DECODE(Code,456,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

11 WHEN SUM(DECODE(Code,456,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 456, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

12 END) AS "Latest Date Acquired",

13 SUM(DECODE(Code,303,1,0)) AS "Accouting",

14 (CASE

15 WHEN SUM(DECODE(Code,303,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

16 WHEN SUM(DECODE(Code,303,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 303, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

17 END) AS "Latest Date Acquired",

18 SUM(DECODE(Code,245,1,0)) AS "Digital Marketing",

19 (CASE

20 WHEN SUM(DECODE(Code,245,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

21 WHEN SUM(DECODE(Code,245,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 245, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

22 END) AS "Latest Date Acquired",

23 (CASE

24 WHEN Emp\_Num IS NOT NULL THEN COUNT(Train\_Num)

25 END) AS "Number of Skills:"

26 FROM Training RIGHT OUTER JOIN Employee USING(Emp\_Num)

27 GROUP BY GROUPING SETS ((Emp\_Num,Emp\_First || ' ' || Emp\_Last),())

28 ORDER BY Emp\_Num;

Latest Latest Latest Latest

Corporate Date Market Date Date Digital Date

ID Employee Name Finance Acquired Investment Acquired Accouting Acquired Marketing Acquired Number of Skills:

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

10153 Adam Roditi 0 --------- 0 --------- 0 --------- 0 --------- 1

10168 Chris Corman 0 --------- 0 --------- 0 --------- 0 --------- 3

11171 Vijay Shah 0 --------- 0 --------- 0 --------- 0 --------- 3

12203 Bill Getz 0 --------- 0 --------- 0 --------- 0 --------- 1

12315 Maran Anderson 0 --------- 0 --------- 0 --------- 0 --------- 1

13434 Steve Newton 1 03/23/18 0 --------- 0 --------- 0 --------- 1

15172 Amey Joshi 0 --------- 0 --------- 0 --------- 0 --------- 1

15312 Henry Carter 0 --------- 0 --------- 0 --------- 1 08/13/18 2

15313 Jill Gada 0 --------- 0 --------- 0 --------- 0 --------- 1

15543 Jaret Bertram 0 --------- 1 08/10/18 0 --------- 0 --------- 1

15652 Benet Ganders 0 --------- 0 --------- 0 --------- 1 11/24/19 3

17214 Pranav Bhalerao 0 --------- 0 --------- 0 --------- 0 --------- 2

17930 Mary Whitestar 0 --------- 0 --------- 0 --------- 1 06/21/18 1

18225 Stan Evans 0 --------- 0 --------- 0 --------- 0 --------- 2

18900 Amelia Jones 0 --------- 0 --------- 0 --------- 0 --------- 0

19604 Howard Wheeler 0 --------- 0 --------- 0 --------- 0 --------- 1

20143 Mandar Limaye 0 --------- 0 --------- 0 --------- 0 --------- 1

23314 Bob Gates 0 --------- 0 --------- 0 --------- 0 --------- 1

26500 Deepanita Shelar 0 --------- 0 --------- 0 --------- 0 --------- 0

26772 Jingyan Dai 0 --------- 0 --------- 0 --------- 0 --------- 2

27759 Scott Harris 2 09/11/19 0 --------- 0 --------- 0 --------- 2

32173 Kelly Milton 0 --------- 0 --------- 0 --------- 0 --------- 3

Number of Training 3 1 0 3

23 rows selected.

SQL>

SQL> SELECT DECODE(Emp\_Num, NULL,NULL, EMP\_NUM )AS ID,

2 DECODE(Emp\_First || ' ' || Emp\_Last, NULL, 'Number of Training' , Emp\_First || ' ' || Emp\_Last) AS "Employee Name",

3 SUM(DECODE(Code,404,1,0)) AS "Marketing Strategy",

4 (CASE

5 WHEN SUM(DECODE(Code,404,1,0)) = 0 AND EMP\_NUM IS NOT NULL THEN '---------'

6 WHEN SUM(DECODE(Code,404,1,0)) != 0 AND EMP\_NUM IS NOT NULL THEN MAX(DECODE(Code, 404, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

7 END) AS "Latest Date Acquired",

8 SUM(DECODE(Code,397,1,0)) AS "Retail Marketing",

9 (CASE

10 WHEN SUM(DECODE(Code,397,1,0)) = 0 AND EMP\_NUM IS NOT NULL THEN '---------'

11 WHEN SUM(DECODE(Code,397,1,0)) != 0 AND EMP\_NUM IS NOT NULL THEN MAX(DECODE(Code, 397, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

12 END) AS "Latest Date Acquired",

13 SUM(DECODE(Code,780,1,0)) AS "Strategic Planning",

14 (CASE

15 WHEN SUM(DECODE(Code,780,1,0)) = 0 AND EMP\_NUM IS NOT NULL THEN '---------'

16 WHEN SUM(DECODE(Code,780,1,0)) != 0 AND EMP\_NUM IS NOT NULL THEN MAX(DECODE(Code, 780, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

17 END) AS "Latest Date Acquired",

18 SUM(DECODE(Code,656,1,0)) AS "Org Design Devlopment",

19 (CASE

20 WHEN SUM(DECODE(Code,656,1,0)) = 0 AND EMP\_NUM IS NOT NULL THEN '---------'

21 WHEN SUM(DECODE(Code,656,1,0)) != 0 AND EMP\_NUM IS NOT NULL THEN MAX(DECODE(Code, 656, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

22 END) AS "Latest Date Acquired",

23 (CASE

24 WHEN Emp\_Num IS NOT NULL THEN COUNT(Train\_Num)

25 END) AS "Number of Skills:"

26 FROM Training RIGHT OUTER JOIN Employee USING(Emp\_Num)

27 GROUP BY GROUPING SETS ((Emp\_Num,Emp\_First || ' ' || Emp\_Last),())

28 ORDER BY Emp\_Num;

Latest Latest Latest Latest

Marketing Date Retail Date Strategic Date Org Design Date

ID Employee Name Strategy Acquired Marketing Acquired Planning Acquired Devlopment Acquired Number of Skills:

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

10153 Adam Roditi 0 --------- 0 --------- 0 --------- 0 --------- 1

10168 Chris Corman 0 --------- 0 --------- 0 --------- 0 --------- 3

11171 Vijay Shah 0 --------- 0 --------- 0 --------- 0 --------- 3

12203 Bill Getz 0 --------- 0 --------- 0 --------- 0 --------- 1

12315 Maran Anderson 0 --------- 0 --------- 0 --------- 0 --------- 1

13434 Steve Newton 0 --------- 0 --------- 0 --------- 0 --------- 1

15172 Amey Joshi 0 --------- 0 --------- 0 --------- 0 --------- 1

15312 Henry Carter 1 04/04/19 0 --------- 0 --------- 0 --------- 2

15313 Jill Gada 0 --------- 0 --------- 0 --------- 0 --------- 1

15543 Jaret Bertram 0 --------- 0 --------- 0 --------- 0 --------- 1

15652 Benet Ganders 1 09/30/19 1 10/30/19 0 --------- 0 --------- 3

17214 Pranav Bhalerao 0 --------- 0 --------- 0 --------- 2 08/11/18 2

17930 Mary Whitestar 0 --------- 0 --------- 0 --------- 0 --------- 1

18225 Stan Evans 0 --------- 0 --------- 0 --------- 0 --------- 2

18900 Amelia Jones 0 --------- 0 --------- 0 --------- 0 --------- 0

19604 Howard Wheeler 0 --------- 1 11/23/19 0 --------- 0 --------- 1

20143 Mandar Limaye 0 --------- 0 --------- 0 --------- 0 --------- 1

23314 Bob Gates 0 --------- 0 --------- 0 --------- 0 --------- 1

26500 Deepanita Shelar 0 --------- 0 --------- 0 --------- 0 --------- 0

26772 Jingyan Dai 0 --------- 0 --------- 0 --------- 2 11/12/19 2

27759 Scott Harris 0 --------- 0 --------- 0 --------- 0 --------- 2

32173 Kelly Milton 0 --------- 0 --------- 0 --------- 0 --------- 3

Number of Training 2 2 0 4

23 rows selected.

SQL> SELECT DECODE(Emp\_Num, NULL,NULL, EMP\_NUM )AS ID,

2 DECODE(Emp\_First || ' ' || Emp\_Last, NULL, 'Number of Training' , Emp\_First || ' ' || Emp\_Last) AS "Employee Name",

3 SUM(DECODE(Code,345,1,0)) AS "Decision Making",

4 (CASE

5 WHEN SUM(DECODE(Code,345,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

6 WHEN SUM(DECODE(Code,345,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 345, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

7 END) AS "Latest Date Acquired",

8 SUM(DECODE(Code,196,1,0)) AS "Risk Analysis",

9 (CASE

10 WHEN SUM(DECODE(Code,196,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

11 WHEN SUM(DECODE(Code,196,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 196, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

12 END) AS "Latest Date Acquired",

13 SUM(DECODE(Code,701,1,0)) AS "Data Visualization",

14 (CASE

15 WHEN SUM(DECODE(Code,701,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

16 WHEN SUM(DECODE(Code,701,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 701, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

17 END) AS "Latest Date Acquired",

18 SUM(DECODE(Code,901,1,0)) AS "Database Management",

19 (CASE

20 WHEN SUM(DECODE(Code,901,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

21 WHEN SUM(DECODE(Code,901,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 901, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

22 END) AS "Latest Date Acquired",

23 (CASE

24 WHEN Emp\_Num IS NOT NULL THEN COUNT(Train\_Num)

25 END) AS "Number of Skills:"

26 FROM Training RIGHT OUTER JOIN Employee USING(Emp\_Num)

27 GROUP BY GROUPING SETS ((Emp\_Num,Emp\_First || ' ' || Emp\_Last),())

28 ORDER BY Emp\_Num;

Latest Latest Latest Latest

Decision Date Risk Date Data Date Database Date

ID Employee Name Making Acquired Analysis Acquired Visualization Acquired Management Acquired Number of Skills:

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

10153 Adam Roditi 0 --------- 0 --------- 0 --------- 0 --------- 1

10168 Chris Corman 2 02/14/19 1 06/11/19 0 --------- 0 --------- 3

11171 Vijay Shah 0 --------- 0 --------- 1 04/20/18 0 --------- 3

12203 Bill Getz 0 --------- 1 02/21/19 0 --------- 0 --------- 1

12315 Maran Anderson 0 --------- 1 03/21/18 0 --------- 0 --------- 1

13434 Steve Newton 0 --------- 0 --------- 0 --------- 0 --------- 1

15172 Amey Joshi 0 --------- 0 --------- 1 12/16/18 0 --------- 1

15312 Henry Carter 0 --------- 0 --------- 0 --------- 0 --------- 2

15313 Jill Gada 1 05/21/19 0 --------- 0 --------- 0 --------- 1

15543 Jaret Bertram 0 --------- 0 --------- 0 --------- 0 --------- 1

15652 Benet Ganders 0 --------- 0 --------- 0 --------- 0 --------- 3

17214 Pranav Bhalerao 0 --------- 0 --------- 0 --------- 0 --------- 2

17930 Mary Whitestar 0 --------- 0 --------- 0 --------- 0 --------- 1

18225 Stan Evans 0 --------- 0 --------- 0 --------- 0 --------- 2

18900 Amelia Jones 0 --------- 0 --------- 0 --------- 0 --------- 0

19604 Howard Wheeler 0 --------- 0 --------- 0 --------- 0 --------- 1

20143 Mandar Limaye 0 --------- 1 06/12/19 0 --------- 0 --------- 1

23314 Bob Gates 0 --------- 0 --------- 0 --------- 0 --------- 1

26500 Deepanita Shelar 0 --------- 0 --------- 0 --------- 0 --------- 0

26772 Jingyan Dai 0 --------- 0 --------- 0 --------- 0 --------- 2

27759 Scott Harris 0 --------- 0 --------- 0 --------- 0 --------- 2

32173 Kelly Milton 0 --------- 0 --------- 1 08/12/19 0 --------- 3

Number of Training 3 4 3 0

23 rows selected.

SQL> SELECT DECODE(Emp\_Num, NULL,NULL, EMP\_NUM )AS ID,

2 DECODE(Emp\_First || ' ' || Emp\_Last, NULL, 'Number of Training' , Emp\_First || ' ' || Emp\_Last) AS "Employee Name",

3 SUM(DECODE(Code,501,1,0)) AS "Internet Technologies",

4 (CASE

5 WHEN SUM(DECODE(Code,501,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

6 WHEN SUM(DECODE(Code,501,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 501, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

7 END) AS "Latest Date Acquired",

8 SUM(DECODE(Code,401,1,0)) AS "Text Analytics",

9 (CASE

10 WHEN SUM(DECODE(Code,401,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

11 WHEN SUM(DECODE(Code,401,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 401, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

12 END) AS "Latest Date Acquired",

13 SUM(DECODE(Code,305,1,0)) AS "Cybersecurity Techniques",

14 (CASE

15 WHEN SUM(DECODE(Code,305,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

16 WHEN SUM(DECODE(Code,305,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 305, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

17 END) AS "Latest Date Acquired",

18 SUM(DECODE(Code,601,1,0)) AS "Machine Learning",

19 (CASE

20 WHEN SUM(DECODE(Code,601,1,0)) = 0 AND Emp\_Num IS NOT NULL THEN '---------'

21 WHEN SUM(DECODE(Code,601,1,0)) != 0 AND Emp\_Num IS NOT NULL THEN MAX(DECODE(Code, 601, TO\_CHAR(Date\_Acquired, 'MM/DD/YY')))

22 END) AS "Latest Date Acquired",

23 (CASE

24 WHEN Emp\_Num IS NOT NULL THEN COUNT(Train\_Num)

25 END) AS "Number of Skills:"

26 FROM Training RIGHT OUTER JOIN Employee USING(Emp\_Num)

27 GROUP BY GROUPING SETS ((Emp\_Num,Emp\_First || ' ' || Emp\_Last),())

28 ORDER BY Emp\_Num;

Latest Latest Latest Latest

Internet Date Text Date Cybersecurity Date Machine Date

ID Employee Name Technologies Acquired Analytics Acquired Techniques Acquired Learning Acquired Number of Skills:

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

10153 Adam Roditi 0 --------- 1 07/21/19 0 --------- 0 --------- 1

10168 Chris Corman 0 --------- 0 --------- 0 --------- 0 --------- 3

11171 Vijay Shah 0 --------- 0 --------- 1 07/12/18 1 02/02/19 3

12203 Bill Getz 0 --------- 0 --------- 0 --------- 0 --------- 1

12315 Maran Anderson 0 --------- 0 --------- 0 --------- 0 --------- 1

13434 Steve Newton 0 --------- 0 --------- 0 --------- 0 --------- 1

15172 Amey Joshi 0 --------- 0 --------- 0 --------- 0 --------- 1

15312 Henry Carter 0 --------- 0 --------- 0 --------- 0 --------- 2

15313 Jill Gada 0 --------- 0 --------- 0 --------- 0 --------- 1

15543 Jaret Bertram 0 --------- 0 --------- 0 --------- 0 --------- 1

15652 Benet Ganders 0 --------- 0 --------- 0 --------- 0 --------- 3

17214 Pranav Bhalerao 0 --------- 0 --------- 0 --------- 0 --------- 2

17930 Mary Whitestar 0 --------- 0 --------- 0 --------- 0 --------- 1

18225 Stan Evans 0 --------- 0 --------- 2 12/06/15 0 --------- 2

18900 Amelia Jones 0 --------- 0 --------- 0 --------- 0 --------- 0

19604 Howard Wheeler 0 --------- 0 --------- 0 --------- 0 --------- 1

20143 Mandar Limaye 0 --------- 0 --------- 0 --------- 0 --------- 1

23314 Bob Gates 1 07/16/17 0 --------- 0 --------- 0 --------- 1

26500 Deepanita Shelar 0 --------- 0 --------- 0 --------- 0 --------- 0

26772 Jingyan Dai 0 --------- 0 --------- 0 --------- 0 --------- 2

27759 Scott Harris 0 --------- 0 --------- 0 --------- 0 --------- 2

32173 Kelly Milton 0 --------- 1 05/17/17 0 --------- 1 09/21/19 3

Number of Training 1 2 3 2

23 rows selected.

* **Question 9**

For each department and each skill combination, list the number of trainings completed within the department that was associated with the particular skill. Also provide a rank of each skill within each department. The rank should be based on the number of trainings completed for that skill. Same rank should be given when the number of trainings is the same.

SQL> /\*Q.9\*/

SQL> COLUMN Train\_Count FORMAT 9999

SQL> COLUMN Skill FORMAT A30

SQL> BREAK ON Dept\_Code ON Dept\_Name

SQL>

SQL> SELECT Dept\_Code, Name AS Dept\_Name, Code || ': ' || Description AS Skill, COUNT(Train\_Num) AS Train\_Count,

2 RANK() OVER (PARTITION BY Dept\_Code ORDER BY COUNT(Train\_NUM) DESC) AS Skill\_Rank

3 FROM

4 (SELECT Dept\_Code, Name, Code, Description

5 FROM Department CROSS JOIN Skill)

6 LEFT JOIN

7 (SELECT Train\_Num, Dept\_Code, Code, Emp\_Num

8 FROM Training JOIN Employee USING (Emp\_Num)

9 JOIN Department USING (Dept\_Code))

10 USING (Dept\_Code, Code)

11 GROUP BY Dept\_Code, Name, Code || ': ' || Description

12 ORDER BY Dept\_Code, Skill\_Rank, Skill;

DEPT\_CODE DEPT\_NAME SKILL TRAIN\_COUNT SKILL\_RANK

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

100 Executive 196: Risk Analysis 0 1

245: Digital Marketing 0 1

305: Cybersecurity Techniques 0 1

345: Decision Making 0 1

397: Retail Marketing 0 1

401: Text Analytics 0 1

404: Marketing Strategy 0 1

456: Market Investment 0 1

501: Internet Technologies 0 1

601: Machine Learning 0 1

656: Org Design Development 0 1

701: Data Visualization 0 1

780: Strategic Planning 0 1

801: Corporate Finance 0 1

901: Database Management 0 1

111 Administration 656: Org Design Development 4 1

196: Risk Analysis 0 2

245: Digital Marketing 0 2

305: Cybersecurity Techniques 0 2

345: Decision Making 0 2

397: Retail Marketing 0 2

401: Text Analytics 0 2

404: Marketing Strategy 0 2

456: Market Investment 0 2

501: Internet Technologies 0 2

601: Machine Learning 0 2

701: Data Visualization 0 2

780: Strategic Planning 0 2

801: Corporate Finance 0 2

901: Database Management 0 2

222 Financial Advisory 801: Corporate Finance 3 1

456: Market Investment 1 2

196: Risk Analysis 0 3

245: Digital Marketing 0 3

305: Cybersecurity Techniques 0 3

345: Decision Making 0 3

397: Retail Marketing 0 3

401: Text Analytics 0 3

404: Marketing Strategy 0 3

501: Internet Technologies 0 3

601: Machine Learning 0 3

656: Org Design Development 0 3

701: Data Visualization 0 3

780: Strategic Planning 0 3

901: Database Management 0 3

555 Marketing and Sales 245: Digital Marketing 3 1

397: Retail Marketing 2 2

404: Marketing Strategy 2 2

196: Risk Analysis 0 4

305: Cybersecurity Techniques 0 4

345: Decision Making 0 4

401: Text Analytics 0 4

456: Market Investment 0 4

501: Internet Technologies 0 4

601: Machine Learning 0 4

656: Org Design Development 0 4

701: Data Visualization 0 4

780: Strategic Planning 0 4

801: Corporate Finance 0 4

901: Database Management 0 4

777 Technology 305: Cybersecurity Techniques 3 1

701: Data Visualization 3 1

401: Text Analytics 2 3

601: Machine Learning 2 3

501: Internet Technologies 1 5

196: Risk Analysis 0 6

245: Digital Marketing 0 6

345: Decision Making 0 6

397: Retail Marketing 0 6

404: Marketing Strategy 0 6

456: Market Investment 0 6

656: Org Design Development 0 6

780: Strategic Planning 0 6

801: Corporate Finance 0 6

901: Database Management 0 6

888 Strategy and Risk 196: Risk Analysis 4 1

345: Decision Making 3 2

245: Digital Marketing 0 3

305: Cybersecurity Techniques 0 3

397: Retail Marketing 0 3

401: Text Analytics 0 3

404: Marketing Strategy 0 3

456: Market Investment 0 3

501: Internet Technologies 0 3

601: Machine Learning 0 3

656: Org Design Development 0 3

701: Data Visualization 0 3

780: Strategic Planning 0 3

801: Corporate Finance 0 3

901: Database Management 0 3

90 rows selected.

* **Question 10**

For each employee, list ID and name, his/her supervisor’s ID and name (concatenate ID and name for both employees and supervisors), any training each employee has had, and the skill(s) associated with the training. For the employee’s training, list the name of training, training date, skill(s) obtained through the training, and the number of months since the training date. In addition, provide the number of trainings each employee has had

SQL> /\*Q.10\*/

SQL>

SQL> COLUMN Employee FORMAT A25;

SQL> COLUMN Supervisor FORMAT A25;

SQL> COLUMN Training\_Info FORMAT A40;

SQL> COLUMN Skill FORMAT A25;

SQL> COLUMN Total\_Courses FORMAT 9999;

SQL> COLUMN Months\_Passed FORMAT 9999;

SQL>

SQL> BREAK ON Employee ON Supervisor ON Total\_Courses

SQL>

SQL> SELECT E1.Emp\_Num || ': ' || E1.Emp\_First || ' ' || E1.Emp\_Last AS Employee, DECODE(E1.Super\_ID, NULL,'NA', E1.Super\_ID || ': ' || E2.Emp\_First || ' ' || E2.Emp\_Last) AS Supervisor ,

2 COUNT(T.Train\_Num) OVER(PARTITION BY E1.Emp\_Num || ': ' || E1.Emp\_First || ' ' || E1.Emp\_Last) AS Total\_Courses,

3 DECODE(T.Train\_Num, NULL, 'NA', T.Train\_Num || ': ' || T.Name || ', ' || T.Date\_Acquired) AS Training\_Info , NVL(S.Description,'NA') AS Skill,

4 NVL(ROUND(MONTHS\_BETWEEN(sysdate,T.Date\_Acquired),0),0) AS Months\_Passed

5 FROM Employee E1 LEFT OUTER JOIN Employee E2 ON E1.Super\_ID = E2.Emp\_Num

6 LEFT OUTER JOIN Training T ON T.Emp\_Num = E1.Emp\_Num

7 LEFT OUTER JOIN Skill S ON T.Code = S.Code

8 ORDER BY E1.Emp\_Num || ': ' || E1.Emp\_First || ' ' || E1.Emp\_Last;

EMPLOYEE SUPERVISOR TOTAL\_COURSES TRAINING\_INFO SKILL MONTHS\_PASSED

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

10153: Adam Roditi 32173: Kelly Milton 1 82069: Internal Training, 21-JUL-19 Text Analytics 4

10168: Chris Corman 20143: Mandar Limaye 3 69897: External Training, 24-JAN-19 Decision Making 10

22692: University Course, 11-JUN-19 Risk Analysis 6

19457: External Training, 14-FEB-19 Decision Making 10

11171: Vijay Shah 32173: Kelly Milton 3 34019: University Course, 02-FEB-19 Machine Learning 10

53977: Technical Training, 20-APR-18 Data Visualization 19

24178: Technical Training, 12-JUL-18 Cybersecurity Techniques 17

12203: Bill Getz 10168: Chris Corman 1 27424: University Course, 21-FEB-19 Risk Analysis 9

12315: Maran Anderson 10168: Chris Corman 1 13782: University Workshop, 21-MAR-18 Risk Analysis 20

13434: Steve Newton 27759: Scott Harris 1 84594: Formal Workshop, 23-MAR-18 Corporate Finance 20

15172: Amey Joshi 18225: Stan Evans 1 89541: Online Workshop, 16-DEC-18 Data Visualization 12

15312: Henry Carter 19604: Howard Wheeler 2 45887: University Course, 04-APR-19 Marketing Strategy 8

55626: Online Workshop, 13-AUG-18 Digital Marketing 16

15313: Jill Gada 10168: Chris Corman 1 64454: External Training, 21-MAY-19 Decision Making 6

15543: Jaret Bertram 27759: Scott Harris 1 69876: University Workshop, 10-AUG-18 Market Investment 16

15652: Benet Ganders 19604: Howard Wheeler 3 77494: University Course, 30-SEP-19 Marketing Strategy 2

44513: Online Workshop, 24-NOV-19 Digital Marketing 0

70943: Internal Training, 30-OCT-19 Retail Marketing 1

17214: Pranav Bhalerao 26772: Jingyan Dai 2 32613: Online Workshop, 11-AUG-18 Org Design Development 16

97338: Online Workshop, 23-JUL-18 Org Design Development 16

17930: Mary Whitestar 26500: Deepanita Shelar 1 72823: Online Workshop, 21-JUN-18 Digital Marketing 17

18225: Stan Evans 23314: Bob Gates 2 89748: Online Course, 26-APR-18 Cybersecurity Techniques 19

34631: Online Course, 06-DEC-15 Cybersecurity Techniques 48

18900: Amelia Jones 27759: Scott Harris 0 NA NA 0

19604: Howard Wheeler 17930: Mary Whitestar 1 60386: Internal Training, 23-NOV-19 Retail Marketing 0

20143: Mandar Limaye 26500: Deepanita Shelar 1 97409: University Course, 12-JUN-19 Risk Analysis 6

23314: Bob Gates 26500: Deepanita Shelar 1 89809: External Training, 16-JUL-17 Internet Technologies 29

26500: Deepanita Shelar NA 0 NA NA 0

26772: Jingyan Dai 26500: Deepanita Shelar 2 88375: Online Workshop, 12-NOV-19 Org Design Development 1

49637: Online Workshop, 23-JUL-18 Org Design Development 16

27759: Scott Harris 26500: Deepanita Shelar 2 48141: Internal Training, 11-SEP-19 Corporate Finance 3

58851: Formal Workshop, 30-JUL-18 Corporate Finance 16

32173: Kelly Milton 23314: Bob Gates 3 11243: University Course, 21-SEP-19 Machine Learning 2

52551: Internal Training, 17-MAY-17 Text Analytics 31

94743: Online Workshop, 12-AUG-19 Data Visualization 4

35 rows selected.

* **Question 11**

The firm defines utilization as the number of hours worked since employment divided by the number of hours available. It also awards the best utilized employee with $10,000, second best with $9000 and so on till the fifth best with $6000. Given that each employee can work only 40 hours-per-week, list the top five employees with highest utilization. Also list the utilization rate and the assigned award/bonus.

SQL> /\*Q.11\*/

SQL>

SQL> SELECT Rank, Emp\_Num||': '||Emp\_First||' '||Emp\_Last AS Employee, Util\_Rate,

2 (CASE Rank WHEN 1 THEN '$10,000'

3 WHEN 2 THEN ' $9,000'

4 WHEN 3 THEN ' $8,000'

5 WHEN 4 THEN ' $7,000'

6 WHEN 5 THEN ' $6,000'

7 ELSE '$0.00' END) AS Bonus

8 FROM

9 (SELECT Emp\_Num, Emp\_First, Emp\_Last, ROUND(SUM(Hours\_Used)/((SYSDATE - Hire\_Date)/7\*40),3) AS Util\_Rate,

10 RANK() OVER (ORDER BY SUM(Hours\_Used)/((SYSDATE - Hire\_Date)/7\*40) DESC) AS Rank

11 FROM

12 Employee JOIN Assignment USING (Emp\_Num)

13 GROUP BY Emp\_Num, Emp\_First, Emp\_Last, (SYSDATE - Hire\_Date)/7\*40)

14 WHERE Rank <=5;

RANK EMPLOYEE UTIL\_RATE BONUS

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1 10168: Chris Corman .128 $10,000

2 15312: Henry Carter .103 $9,000

3 15652: Benet Ganders .07 $8,000

4 11171: Vijay Shah .065 $7,000

5 23314: Bob Gates .063 $6,000

* **Question 12**

Create a single query that accesses the system catalog to retrieve information about your database tables and their columns, as well as any constraints on those columns. Include the following:

a. Table name

b. Column name

c. Constraint name

d. Constraint type. Instead of the Oracle’s one letter codes, use the two letter indicators

e. Search condition (for any check constraints)

f. Table and column that each FK references

SQL> /\*Q.12\*/

SQL> COLUMN Table\_Name FORMAT A10;

SQL> COLUMN Column\_Name FORMAT A15;

SQL> COLUMN Constraint\_Name FORMAT A48;

SQL> COLUMN Type FORMAT A5;

SQL> COLUMN Search\_Condition FORMAT A55;

SQL> COLUMN Reffered\_Column FORMAT A15;

SQL> COLUMN Reffered\_Table FORMAT A15;

SQL>

SQL> BREAK ON Table\_Name ON Column\_Name

SQL>

SQL> SELECT Table\_Name, Column\_Name, Constraint\_Name, Type, Search\_Condition, Reffered\_Table, Reffered\_Column

2 FROM(

3 SELECT DISTINCT(UTC.Table\_Name) AS Table\_Name, UTC.Column\_Id, UTC.Column\_Name AS Column\_Name, UCC.Constraint\_Name AS Constraint\_Name,

4 DECODE(UC.Constraint\_Type,'C','CK','P','PK','R','FK','U','UK',UC.Constraint\_Type) AS Type, UC.Search\_Condition\_Vc AS Search\_Condition,

5 Reffered\_Table, Reffered\_Column

6 FROM User\_Tab\_Columns UTC LEFT OUTER JOIN User\_Cons\_Columns UCC ON UTC.Column\_Name = UCC.Column\_Name AND UTC.Table\_Name = UCC.Table\_Name

7 LEFT OUTER JOIN User\_Constraints UC ON UCC.Constraint\_Name = UC.Constraint\_Name

8 LEFT OUTER JOIN(SELECT DISTINCT(UTC1.Table\_Name) AS Reffered\_Table, UTC1.Column\_Name AS Reffered\_Column, UCC1.CONSTRAINT\_NAME AS Constraint\_Refering

9 FROM User\_Tab\_Columns UTC1 LEFT OUTER JOIN User\_Cons\_Columns UCC1

10 ON UTC1.Column\_Name = UCC1.Column\_Name AND UTC1.Table\_Name = UCC1.Table\_Name)

11 ON UC.R\_Constraint\_Name = Constraint\_Refering

12 ORDER BY Table\_Name, UTC.Column\_Id);

TABLE\_NAME COLUMN\_NAME CONSTRAINT\_NAME TYPE SEARCH\_CONDITION REFFERED\_TABLE REFFERED\_COLUMN

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

ASSIGNMENT ASSIGN\_NUM ASSIGNMENT\_ASSIGNNUM\_PK PK

PROJ\_NUMBER ASSIGNMENT\_PROJNUMBER\_FK FK PROJECT PROJ\_NUMBER

EMP\_NUM ASSIGNMENT\_EMPNUM\_FK FK EMPLOYEE EMP\_NUM

DATE\_ASSIGNED ASSIGNMENT\_DATEASSIGNED\_DATEENDED\_CK CK Date\_Ended >= Date\_Assigned OR Date\_Ended IS NULL

ASSIGNMENT\_DATEASSIGNED\_DATEENDED\_HOURSUSED\_CK CK EXTRACT(MONTH FROM Date\_Assigned) = EXTRACT(MONTH FROM

Date\_Ended) OR (Date\_Ended IS NULL AND Hours\_Used IS NU

LL)

DATE\_ENDED ASSIGNMENT\_DATEASSIGNED\_DATEENDED\_CK CK Date\_Ended >= Date\_Assigned OR Date\_Ended IS NULL

ASSIGNMENT\_DATEASSIGNED\_DATEENDED\_HOURSUSED\_CK CK EXTRACT(MONTH FROM Date\_Assigned) = EXTRACT(MONTH FROM

Date\_Ended) OR (Date\_Ended IS NULL AND Hours\_Used IS NU

LL)

HOURS\_USED ASSIGNMENT\_DATEASSIGNED\_DATEENDED\_HOURSUSED\_CK CK EXTRACT(MONTH FROM Date\_Assigned) = EXTRACT(MONTH FROM

Date\_Ended) OR (Date\_Ended IS NULL AND Hours\_Used IS NU

LL)

CLIENT CLIENT\_ID CLIENT\_CLIENTID\_PK PK

NAME

STREET

CITY

STATE CLIENT\_STATE\_CK CK REGEXP\_LIKE(State,'^([A-Z]{2})$')

ZIP\_CODE

INDUSTRY

WEB\_ADDRESS

PHONE CLIENT\_PHONE\_CK CK REGEXP\_LIKE(Phone,'^([0-9]{3}-[0-9]{3}-[0-9]{4}|[0-9]{1

0})$')

CONTACT\_NAME

DEPARTMENT DEPT\_CODE DEPARTMENT\_DEPTCODE\_PK PK

NAME

LOCATION

PHONE

MANAGER\_ID DEPARTMENT\_MANAGERID\_FK FK EMPLOYEE EMP\_NUM

DEPARTMENT\_MANAGER\_ID\_CK CK "MANAGER\_ID" IS NOT NULL

EMPLOYEE EMP\_NUM EMPLOYEE\_EMPNUM\_PK PK

EMP\_LAST

EMP\_FIRST

DOB EMPLOYEE\_AGE\_CK CK (EXTRACT(YEAR from Hire\_Date)- EXTRACT(YEAR from DOB))

> 18

HIRE\_DATE EMPLOYEE\_AGE\_CK CK (EXTRACT(YEAR from Hire\_Date)- EXTRACT(YEAR from DOB))

> 18

SUPER\_ID EMPLOYEE\_SUPERID\_FK FK EMPLOYEE EMP\_NUM

DEPT\_CODE EMPLOYEE\_DEPTCODE\_FK FK DEPARTMENT DEPT\_CODE

BONUS\_AMT

PROJECT PROJ\_NUMBER PROJECT\_PROJNUMBER\_PK PK

NAME

START\_DATE

TOTAL\_COST PROJECT\_TOTALCOST\_CK CK Total\_Cost>0 OR Total\_Cost IS NULL

DEPT\_CODE PROJECT\_DEPTCODE\_CK CK Dept\_Code != 1

PROJECT\_DEPTCODE\_FK FK DEPARTMENT DEPT\_CODE

PROJECT\_DEPT\_CODE\_CK CK "DEPT\_CODE" IS NOT NULL

CLIENT\_ID PROJECT\_CLIENTID\_FK FK CLIENT CLIENT\_ID

SKILL CODE SKILL\_CODE\_PK PK

DESCRIPTION

TRAINING TRAIN\_NUM TRAINING\_TRAINNUM\_PK PK

CODE TRAINING\_CODE\_FK FK SKILL CODE

EMP\_NUM TRAINING\_EMPNUM\_FK FK EMPLOYEE EMP\_NUM

DATE\_ACQUIRED

NAME

COMMENTS

48 rows selected.

SQL> spool off