

DB Implementation Project

Team Members:

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Script #1

Additional constraints defined by us included in our tables:

- [Employee table] Check to ensure that emp_num does not equal super_id; entitled employee_emp_num_ck
- [Assignment table] Employees are not charging more than 180 hours per month to a project (assuming a 45-hour work week for 4 weeks); entitled assignment_hours_used_ck

```
-- dropping all tables
DROP TABLE skill          CASCADE CONSTRAINTS;
DROP TABLE department     CASCADE CONSTRAINTS;
DROP TABLE employee       CASCADE CONSTRAINTS;
DROP TABLE training       CASCADE CONSTRAINTS;
DROP TABLE client         CASCADE CONSTRAINTS;
DROP TABLE project        CASCADE CONSTRAINTS;
DROP TABLE assignment     CASCADE CONSTRAINTS;

--SKILL (Code, Description)

CREATE TABLE skill
(
    code          VARCHAR2(5) PRIMARY KEY,
    description   VARCHAR2(50) NOT NULL);

-- DEPARTMENT (Dept_Code, Name, Location, Phone, Manager_ID@)

CREATE TABLE department
(
    dept_code     NUMBER(3) PRIMARY KEY,
    name          VARCHAR2(20),
    location      VARCHAR2(20),
    phone         VARCHAR2(12),
    manager_id    NUMBER(10));

--EMPLOYEE (Emp_Num, Emp_Last, Emp_First, DOB, Hire_DATE, Super_ID@, Dept_Code@)

CREATE TABLE employee
(
    emp_num       NUMBER(10) PRIMARY KEY,
    emp_last      VARCHAR2(20),
    emp_first     VARCHAR2(20),
    dob          DATE,
    hire_date     DATE DEFAULT sysDATE,
    super_id      NUMBER(10),
    dept_code     NUMBER(2),
    FOREIGN KEY (dept_code) REFERENCES department(dept_code),
    FOREIGN KEY (super_id) REFERENCES employee(emp_num),
    CONSTRAINT employee_hire_date_ck CHECK (((hire_DATE-dob)/365)>=17),
    CONSTRAINT employee_emp_num_super_id_ck CHECK (emp_num != super_id));
```

```

-- TRAINING (Train_Num, Code@, Emp_Num@, Date_Acquired, Name, Comments)

CREATE TABLE training
(
    train_num      NUMBER(3) PRIMARY KEY,
    code           VARCHAR2(5) NOT NULL,
    emp_num        NUMBER(10) NOT NULL,
    date_acquired  DATE NOT NULL,
    name           VARCHAR2(50),
    comments       VARCHAR2(50),
    FOREIGN KEY (code) REFERENCES skill(code),
    FOREIGN KEY (emp_num) REFERENCES employee(emp_num));

-- CLIENT      (Client_ID, Name, Street, City, State, Zip_Code, Industry,
--              Web_Address, Phone, Contact_Name)

CREATE TABLE client
(
    client_ID      VARCHAR2(5) PRIMARY KEY,
    name           VARCHAR2(30) NOT NULL,
    street         VARCHAR2(30) NOT NULL,
    city           VARCHAR2(20) NOT NULL,
    state          VARCHAR2(20) NOT NULL,
    zip_code       NUMBER(5) NOT NULL,
    industry       VARCHAR2(20),
    web_address    VARCHAR2(20),
    phone          VARCHAR2(12) NOT NULL,
    contact_name   VARCHAR2(20) NOT NULL);

-- PROJECT (Proj_number, Name, Start_date, Total_Cost, Dept_Code@, Client_ID@)

CREATE TABLE project
(
    proj_number    VARCHAR2(7) PRIMARY KEY,
    name           VARCHAR2(30) NOT NULL,
    start_DATE     DATE DEFAULT sysdate,
    total_cost     NUMBER(10,2),
    dept_code      NUMBER(2),
    client_ID      VARCHAR2(5),
    FOREIGN KEY (dept_code) REFERENCES department(dept_code),
    FOREIGN KEY (client_id) REFERENCES client(client_id));

```

```
-- ASSIGNMENT      (Assign_Num, Proj_NUMBER@, Emp_Num@, DATE_Assigned, DATE_Ended,  
--                  Hours_Used)
```

```
CREATE TABLE assignment  
(   assign_num      NUMBER(4) PRIMARY KEY,  
   proj_number      VARCHAR2(7),  
   emp_num          NUMBER(10),  
   date_assigned     DATE DEFAULT sysdate,  
   date_ended        DATE,  
   hours_used        NUMBER(5),  
   FOREIGN KEY (proj_number) REFERENCES project(proj_number),  
CONSTRAINT assignment_hours_used_ck    CHECK (hours_used<=180),  
CONSTRAINT assignment_DATE_ended_ck    CHECK (DATE_ended>=DATE_assigned));  
  
ALTER TABLE assignment  
ADD CONSTRAINT assignment_emp_num_FK  
FOREIGN KEY (emp_num) REFERENCES employee(emp_num);
```

PART II A - Script #2

--Adding values into the tables

```
INSERT INTO skill VALUES (1,'Project management');
INSERT INTO skill VALUES (2,'Negotiation');
INSERT INTO skill VALUES (3,'Data analyst');
INSERT INTO skill VALUES (4,'Financial management');
INSERT INTO skill VALUES (5,'Programming');
INSERT INTO skill VALUES (6,'Database administrator');
INSERT INTO skill VALUES (7,'Digital marketing');

INSERT INTO department
VALUES (1,'Executive management','New York City','7185432345', 2015071401);
INSERT INTO department
VALUES (3,'Human resources','New York City','718-217-8932', 2016012911);
INSERT INTO department
VALUES (5,'Finance','Boston','774-790-9182',2007030122);
INSERT INTO department
VALUES (6,'Accounting','Boston','774-813-9013',2004011708);
INSERT INTO department
VALUES (8,'Production','Chicago','312-212-6378', 2017110318);
INSERT INTO department
VALUES (12,'Purchasing','Boston','774-124-8456', 2009031713);
INSERT INTO department
VALUES (16,'R and D','San Francisco','415-890-1234',2010110401);

INSERT INTO employee
VALUES(2015071401,'Aguilera','Christina','18-DEC-1980','14-JUL-2015',NULL,1);
INSERT INTO employee
VALUES(2016012911,'Timberlake','Justin','31-DEC-1981','29-JAN-2016',2015071401,3);
INSERT INTO employee
VALUES(2007030122,'Spears','Britney','2-DEC-1981','1-MAR-2007',2015071401,5);
INSERT INTO employee
VALUES(2004011708,'Knowles','Beyonce','04-SEP-1981','17-JAN-2004',2015071401,6);
INSERT INTO employee
VALUES(2017110318,'McKnight','Brian','05-JUN-1969','3-NOV-2017',2015071401,8);
INSERT INTO employee
VALUES(2009031713,'Lachey','Nick','9-NOV-1973','17-MAR-2009',2015071401,12);
INSERT INTO employee
VALUES(2010110401,'Carter','Aaron','7-DEC-1987','04-NOV-2010',2015071401,16);
INSERT INTO employee
VALUES(2008110514,'Martin','Ricky','24-OCT-1971','5-NOV-2008',2015071401,12);
INSERT INTO employee
VALUES(2012041513,'Lopez','Jennifer','24-DEC-1969','15-APR-2012',2015071401,3);
INSERT INTO employee
VALUES(2011011012,'Smith','Will','25-SEP-1968','10-JAN-2011',2015071401,16);
INSERT INTO employee
```

```

VALUES(2012112604,'Chenna','Sathwik','19-AUG-1983','26-NOV-2012',2016012911,3);
INSERT INTO employee
VALUES(2013121601,'Jilla','Karthik','29-NOV-1984','16-DEC-2013',2016012911,3);
INSERT INTO employee
VALUES(2014062401,'Baba','Naseer','22-NOV-1984','24-JUN-2014',2016012911,3);
INSERT INTO employee
VALUES(2015010611,'Gupta','Chetna','09-JUL-1982','6-JAN-2015',2007030122,5);
INSERT INTO employee
VALUES(2017031204,'Chilkuri','Nagarjuna','22-JAN-1980','12-MAR-2017',2007030122,5);
INSERT INTO employee
VALUES(2016082803,'Arora','Abhilasha','10-FEB-1981','28-AUG-2016',2007030122,5);
INSERT INTO employee
VALUES(2014111611,'Yerragopu','Chandu','19-APR-1980','16-NOV-2014',2004011708,6);
INSERT INTO employee
VALUES(2015010605,'Nanduri','Poojitha','25-SEP-1982','6-JAN-2015',2004011708,6);
INSERT INTO employee
VALUES(2016022204,'Varma','Aditya','06-MAR-1981','22-FEB-2016',2004011708,6);
INSERT INTO employee
VALUES(2012032505,'Kowkuntla','Venky','29-APR-1989','25-MAR-2012',2017110318,8);
INSERT INTO employee
VALUES(2013041613,'KSS','Harish','23-MAY-1988','16-APR-2013',2017110318,8);
INSERT INTO employee
VALUES(2014050821,'Kothakota','Aditya','22-FEB-1980','8-MAY-2014',2017110318,8);
INSERT INTO employee
VALUES(2015062807,'Turlapati','Prabhat','09-JAN-1981','28-JUN-2015',2009031713,12);
INSERT INTO employee
VALUES(2015071803,'Krishna','Priyusha','18-JUL-1982','18-JUL-2015',2009031713,12);
INSERT INTO employee
VALUES(2016081411,'Devnani','Nikhil','16-JUN-1981','14-AUG-2016',2009031713,12);
INSERT INTO employee
VALUES(2017091708,'Boone','Breah','11-JAN-1980','17-SEP-2017',2010110401,16);
INSERT INTO employee
VALUES(2015100506,'William','Taft','12-DEC-1981','5-OCT-2015',2010110401,16);

INSERT INTO training
VALUES(11,'6',2011011012,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(12,'6',2009031713,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(13,'6',2008110514,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(14,'6',2007030122,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(15,'6',2010110401,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(16,'6',2012032505,'26-NOV-2013','Introduction to database management','One day course');
INSERT INTO training
VALUES(25,'6',2012032505,'16-DEC-2014','Advanced database management','Pre-requisite: DB1');
INSERT INTO training

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VALUES(36,'2',2009031713,'16-APR-2015','Negotiations with clients','Weekend intensive');
INSERT INTO training
VALUES(37,'2',2014111611,'16-APR-2015','Negotiations with clients','Weekend intensive');
INSERT INTO training
VALUES(38,'2',2004011708,'16-APR-2015','Negotiations with clients','Weekend intensive');
INSERT INTO training
VALUES(39,'2',2010110401,'16-APR-2015','Negotiations with clients','Weekend intensive');
INSERT INTO training
VALUES(42,'1',2014111611,'24-JUN-2015','Project management essentials','Three-part series');
INSERT INTO training
VALUES(43,'1',2014050821,'24-JUN-2015','Project management essentials','Three-part series');
INSERT INTO training
VALUES(44,'1',2013041613,'24-JUN-2015','Project management essentials','Three-part series');
INSERT INTO training
VALUES(55,'7',2013041613,'6-JAN-2016','Social media marketing','Lunchtime session');
INSERT INTO training
VALUES(56,'7',2015071803,'6-JAN-2016','Social media marketing','Lunchtime session');
INSERT INTO training
VALUES(57,'7',2015010611,'6-JAN-2016','Social media marketing','Lunchtime session');
INSERT INTO training
VALUES(58,'7',2014062401,'6-JAN-2016','Social media marketing','Lunchtime session');
INSERT INTO training
VALUES(67,'5',2015062807,'8-MAY-2016','How to be a programmer','Lunchtime session');
INSERT INTO training
VALUES(68,'5',2011011012,'8-MAY-2016','How to be a programmer','Lunchtime session');
INSERT INTO training
VALUES(69,'5',2009031713,'8-MAY-2016','How to be a programmer','Lunchtime session');
INSERT INTO training
VALUES(70,'1',2015071401,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(71,'1',2016012911,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(72,'1',2017110318,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(73,'1',2008110514,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(74,'1',2014111611,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(75,'1',2012032505,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(76,'1',2014050821,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(77,'1',2016081411,'8-MAY-2016','Advanced project management','One day course');
INSERT INTO training
VALUES(80,'3',2012032505,'25-MAY-2016','Analyzing data like a boss','Lunchtime session');
INSERT INTO training
VALUES(81,'3',2012112604,'25-MAY-2016','Analyzing data like a boss','Lunchtime session');
INSERT INTO training
VALUES(82,'3',2007030122,'25-MAY-2016','Analyzing data like a boss','Lunchtime session');

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INSERT INTO training
VALUES(85,'7',2015062807,'12-JAN-2017','Marketing for print','Lunchtime session');
INSERT INTO training
VALUES(86,'7',2016081411,'12-JAN-2017','Marketing for print','Lunchtime session');
INSERT INTO training
VALUES(87,'7',2016022204,'12-JAN-2017','Marketing for print','Lunchtime session');
INSERT INTO training
VALUES(90,'2',2015071803,'22-FEB-2017','Negotiations with clients','Weekend intensive');
INSERT INTO training
VALUES(96,'4',2017031204,'28-AUG-2017','Finance for beginners','Half day course');
INSERT INTO training
VALUES(97,'4',2016022204,'28-AUG-2017','Finance for beginners','Half day course');
INSERT INTO training
VALUES(98,'4',2016081411,'28-AUG-2017','Finance for beginners','Half day course');

INSERT INTO client
VALUES('BAC21','Bank of America - ATL','435 Peachtree Avenue','Atlanta','GA',30301,'Banking','bankofamerica.com','526-526-5555','Warren Buffett');
INSERT INTO client
VALUES('BAC34','Bank of America - PIT','47 Forbes Avenue','Pittsburgh','PA',15213,'Banking','bankofamerica.com','475-598-6324','Jack Bogle');
INSERT INTO client
VALUES('BAC65','Bank of America - SEA','999 Pike Place','Seattle','WA',98105,'Banking','bankofamerica.com','638-962-4256','Paul Tudor Jones');
INSERT INTO client
VALUES('JPM02','JP Morgan - NYC','785 W 121st','New York City','NY',10007,'Finance','jpmorgan.com','345-578-8889','George Soros');
INSERT INTO client
VALUES('JPM05','JP Morgan - CHI','45 Wabash Avenue','Chicago','IL',60612,'Finance','jpmorgan.com','123-526-8579','Ray Dalio');
INSERT INTO client
VALUES('CRS07','Credit Suisse - NYC','57 Fashion Avenue','New York City','NY',10004,'Finance','creditsuisse.com','634-748-9634','Carl Icahn');
INSERT INTO client
VALUES('CRS11','Credit Suisse - SF','5246 Geary Boulevard','San Francisco','CA',94112,'Finance','creditsuisse.com','410-526-0014','David Swensen');
INSERT INTO client
VALUES('BNY03','Bank of New York Mellon','524354 W 52nd Street','New York City','NY',10020,'Banking','bny.com','417-859-4689','Mary Callahan');
INSERT INTO client
VALUES('MOS01','Morgan Stanley','5123 Wall Street','New York City','NY',10027,'Finance','morganstanley.com','635-685-7586','Charles Schwab');
INSERT INTO client
VALUES('MOR01','Morningstar','2 Chicago Avenue','Chicago','IL',60176,'Finance','morningstar.com','124-546-8596','John Templeton');

INSERT INTO project
VALUES('145-BAC','BOA Account reconciliation','18-MAY-2016',20000,5,'BAC21');
INSERT INTO project
VALUES('901-BAC','BOA Lean operations','07-JAN-2017',NULL,5,'BAC21');
INSERT INTO project

```



```

VALUES('145-JPM','JPM Account reconciliation','16-FEB-2016',200000,6,'JPM02');
INSERT INTO project
VALUES('211-JPM','JPM Financial consolidation','18-MAY-2012',50000,5,'JPM05');
INSERT INTO project
VALUES('014-CRS','CRS Account rationalization','25-JAN-2011',65000,6,'CRS11');
INSERT INTO project
VALUES('114-CRS','CRS Process improvement','7-JUN-2016',100000,5,'CRS11');
INSERT INTO project
VALUES('122-BNY','BNY Special project','5-OCT-2016',NULL,16,'BNY03');
INSERT INTO project
VALUES('065-MOS','MOS Account reconciliation','18-JUL-2012',150000,5,'MOS01');
INSERT INTO project
VALUES('123-MOS','MOS Financial consolidation','5-AUG-2016',750000,6,'MOS01');
INSERT INTO project
VALUES('226-MOS','MOS Strategic tax planning','4-JUN-2016',NULL,5,'MOS01');
INSERT INTO project
VALUES('438-TEC','Big Data Analytics','4-SEP-2016',NULL,16,'JPM05');

```

```

INSERT INTO assignment
VALUES(0984,'145-JPM',2012112604,'6-MAR-2016','17-MAR-2017',6);
INSERT INTO assignment
VALUES(0991,'122-BNY',2014111611,'17-OCT-2016','31-OCT-2016',48);
INSERT INTO assignment
VALUES(1000,'901-BAC',2007030122,'1-MAY-2017','31-MAY-2017',82);
INSERT INTO assignment
VALUES(1001,'901-BAC',2015010611,'1-MAY-2017','31-MAY-2017',155);
INSERT INTO assignment
VALUES(1002,'065-MOS',2016012911,'1-MAY-2017','31-MAY-2017',148);
INSERT INTO assignment
VALUES(1010,'145-BAC',2014111611,'4-JUN-2017','30-JUN-2017',111);
INSERT INTO assignment
VALUES(1012,'901-BAC',2007030122,'1-JUN-2017','30-JUN-2017',160);
INSERT INTO assignment
VALUES(1013,'901-BAC',2015010611,'1-JUN-2017','30-JUN-2017',65);
INSERT INTO assignment
VALUES(1020,'145-BAC',2014111611,'1-JUL-2017','31-JUL-2017',65);
INSERT INTO assignment
VALUES(1023,'145-BAC',2012112604,'1-JUL-2017','31-JUL-2017',86);
INSERT INTO assignment
VALUES(1029,'065-MOS',2016012911,'1-JUL-2017','31-JUL-2017',96);
INSERT INTO assignment
VALUES(1034,'901-BAC',2007030122,'1-AUG-2017','31-AUG-2017',24);
INSERT INTO assignment
VALUES(1042,'065-MOS',2016012911,'1-AUG-2017','31-AUG-2017',25);
INSERT INTO assignment
VALUES(1044,'145-BAC',2014111611,'1-AUG-2017','31-AUG-2017',48);
INSERT INTO assignment
VALUES(1045,'145-BAC',2012112604,'1-AUG-2017','31-AUG-2017',96);
INSERT INTO assignment

```

```

VALUES(1046,'145-BAC',2009031713,'1-AUG-2017','31-AUG-2017',48);
INSERT INTO assignment
VALUES(1051,'065-MOS',2016012911,'1-SEP-2017','30-SEP-2017',124);
INSERT INTO assignment
VALUES(1054,'438-TEC',2010110401,'10-SEP-2017','30-SEP-2017',95);
INSERT INTO assignment
VALUES(1057,'438-TEC',2009031713,'10-SEP-2017','30-SEP-2017',56);
INSERT INTO assignment
VALUES(1059,'438-TEC',2014111611,'10-SEP-2017','30-SEP-2017',122);
INSERT INTO assignment
VALUES(1072,'438-TEC',2016022204,'10-SEP-2017','30-SEP-2017',74);
INSERT INTO assignment
VALUES(1076,'438-TEC',2008110514,'10-SEP-2017','30-SEP-2017',85);
INSERT INTO assignment
VALUES(1082,'438-TEC',2008110514,'10-OCT-2017','30-OCT-2017',26);
INSERT INTO assignment
VALUES(1084,'438-TEC',2016022204,'10-OCT-2017','31-OCT-2017',52);
INSERT INTO assignment
VALUES(1087,'438-TEC',2014111611,'10-OCT-2017','31-OCT-2017',142);
INSERT INTO assignment
VALUES(1094,'438-TEC',2009031713,'10-OCT-2017','31-OCT-2017',75);
INSERT INTO assignment
VALUES(1097,'438-TEC',2010110401,'10-OCT-2017','31-OCT-2017',81);
INSERT INTO assignment
VALUES(1103,'901-BAC',2007030122,'1-OCT-2017','31-OCT-2017',85);
INSERT INTO assignment
VALUES(1006,'065-MOS',2016012911,'1-OCT-2017','31-OCT-2017',135);
INSERT INTO assignment
VALUES(1109,'065-MOS',2016012911,'1-NOV-2017','30-NOV-2017',51);
INSERT INTO assignment
VALUES(1113,'901-BAC',2015010611,'1-NOV-2017','30-NOV-2017',16);
INSERT INTO assignment
VALUES(1117,'438-TEC',2009031713,'10-NOV-2017','30-NOV-2017',8);
INSERT INTO assignment
VALUES(1119,'438-TEC',2010110401,'10-NOV-2017','30-NOV-2017',10);
INSERT INTO assignment
VALUES(1123,'438-TEC',2014111611,'10-NOV-2017','30-NOV-2017',66);
INSERT INTO assignment
VALUES(1126,'438-TEC',2016022204,'10-NOV-2017','30-NOV-2017',6);
INSERT INTO assignment
VALUES(1127,'438-TEC',2008110514,'10-NOV-2017','30-NOV-2017',14);
INSERT INTO assignment
VALUES(1131,'438-TEC',2008110514,'1-DEC-2017',NULL,NULL);
INSERT INTO assignment
VALUES(1132,'438-TEC',2016022204,'1-DEC-2017',NULL,NULL);
INSERT INTO assignment
VALUES(1133,'438-TEC',2014111611,'1-DEC-2017',NULL,NULL);
INSERT INTO assignment
VALUES(1134,'438-TEC',2009031713,'1-DEC-2017',NULL,NULL);

```

```
INSERT INTO assignment
VALUES(1135,'438-TEC',2010110401,'1-DEC-2017',NULL,NULL);
INSERT INTO assignment
VALUES(1136,'065-MOS',2016012911,'1-DEC-2017',NULL,NULL);
```

PART II A - Displaying table content

```
SQL> SELECT *  
      2 FROM skill;
```

CODE	DESCRIPTION
1	Project management
2	Negotiation
3	Data analyst
4	Financial management
5	Programming
6	Database administrator
7	Digital marketing

7 rows selected.

```
SQL> SELECT *  
      2 FROM department;
```

DEPT_CODE	NAME	LOCATION	PHONE	MANAGER_ID
1	Executive management	New York City	7185432345	2015071401
3	Human resources	New York City	718-217-8932	2016012911
5	Finance	Boston	774-790-9182	2007030122
6	Accounting	Boston	774-813-9013	2004011708
8	Production	Chicago	312-212-6378	2017110318
12	Purchasing	Boston	774-124-8456	2009031713
16	R and D	San Francisco	415-890-1234	2010110401

7 rows selected.

```
SQL> select *
      2  from employee;
```

EMP_NUM	EMP_LAST	EMP_FIRST	DOB	HIRE_DATE	SUPER_ID	DEPT_CODE
2015071401	Aguilera	Christina	18-DEC-80	14-JUL-15		1
2016012911	Timberlake	Justin	31-DEC-81	29-JAN-16	2015071401	3
2007030122	Spears	Britney	02-DEC-81	01-MAR-07	2015071401	5
2004011708	Knowles	Beyonce	04-SEP-81	17-JAN-04	2015071401	6
2017110318	McKnight	Brian	05-JUN-69	03-NOV-17	2015071401	8
2009031713	Lachey	Nick	09-NOV-73	17-MAR-09	2015071401	12
2010110401	Carter	Aaron	07-DEC-87	04-NOV-10	2015071401	16
2008110514	Martin	Ricky	24-OCT-71	05-NOV-08	2015071401	12
2012041513	Lopez	Jennifer	24-DEC-69	15-APR-12	2015071401	3
2011011012	Smith	Will	25-SEP-68	10-JAN-11	2015071401	16
2012112604	Chenna	Sathwik	19-AUG-83	26-NOV-12	2016012911	3
2013121601	Jilla	Karthik	29-NOV-84	16-DEC-13	2016012911	3
2014062401	Baba	Naseer	22-NOV-84	24-JUN-14	2016012911	3
2015010611	Gupta	Chetna	09-JUL-82	06-JAN-15	2007030122	5
2017031204	Chilkuri	Nagarjuna	22-JAN-80	12-MAR-17	2007030122	5
2016082803	Arora	Abhilahsa	10-FEB-81	28-AUG-16	2007030122	5
2014111611	Yerragopu	Chandu	19-APR-80	16-NOV-14	2004011708	6
2015010605	Nanduri	Poojitha	25-SEP-82	06-JAN-15	2004011708	6
2016022204	Varma	Aditya	06-MAR-81	22-FEB-16	2004011708	6
2012032505	Kowkuntla	Venky	29-APR-89	25-MAR-12	2017110318	8
2013041613	KSS	Harish	23-MAY-88	16-APR-13	2017110318	8
2014050821	Kothakota	Aditya	22-FEB-80	08-MAY-14	2017110318	8
2015062807	Turlapati	Prabhat	09-JAN-81	28-JUN-15	2009031713	12
2015071803	Krishna	Priyusha	18-JUL-82	18-JUL-15	2009031713	12
2016081411	Devnani	Nikhil	16-JUN-81	14-AUG-16	2009031713	12
2017091708	Boone	Breah	11-JAN-80	17-SEP-17	2010110401	16
2015100506	William	Taft	12-DEC-81	05-OCT-15	2010110401	16

27 rows selected.

```
SQL> select *
      2 from training;
```

TRAIN_NUM	CODE	EMP_NUM	DATE_ACQUIRED	NAME	COMMENTS
11	6	2011011012	26-NOV-13	Introduction to database management	One day course
12	6	2009031713	26-NOV-13	Introduction to database management	One day course
13	6	2008110514	26-NOV-13	Introduction to database management	One day course
14	6	2007030122	26-NOV-13	Introduction to database management	One day course
15	6	2010110401	26-NOV-13	Introduction to database management	One day course
16	6	2012032505	26-NOV-13	Introduction to database management	One day course
25	6	2012032505	16-DEC-14	Advanced database management	Pre-requisite: DB1
36	2	2009031713	16-APR-15	Negotiations with clients	Weekend intensive
37	2	2014111611	16-APR-15	Negotiations with clients	Weekend intensive
38	2	2004011708	16-APR-15	Negotiations with clients	Weekend intensive
39	2	2010110401	16-APR-15	Negotiations with clients	Weekend intensive
42	1	2014111611	24-JUN-15	Project management essentials	Three-part series
43	1	2014050821	24-JUN-15	Project management essentials	Three-part series
44	1	2013041613	24-JUN-15	Project management essentials	Three-part series
55	7	2013041613	06-JAN-16	Social media marketing	Lunchtime session
56	7	2015071803	06-JAN-16	Social media marketing	Lunchtime session
57	7	2015010611	06-JAN-16	Social media marketing	Lunchtime session
58	7	2014062401	06-JAN-16	Social media marketing	Lunchtime session
67	5	2015062807	08-MAY-16	How to be a programmer	Lunchtime session
68	5	2011011012	08-MAY-16	How to be a programmer	Lunchtime session
69	5	2009031713	08-MAY-16	How to be a programmer	Lunchtime session
70	1	2015071401	08-MAY-16	Advanced project management	One day course
71	1	2016012911	08-MAY-16	Advanced project management	One day course
72	1	2017110318	08-MAY-16	Advanced project management	One day course
73	1	2008110514	08-MAY-16	Advanced project management	One day course
74	1	2014111611	08-MAY-16	Advanced project management	One day course
75	1	2012032505	08-MAY-16	Advanced project management	One day course
76	1	2014050821	08-MAY-16	Advanced project management	One day course
77	1	2016081411	08-MAY-16	Advanced project management	One day course
80	3	2012032505	25-MAY-16	Analyzing data like a boss	Lunchtime session
81	3	2012112604	25-MAY-16	Analyzing data like a boss	Lunchtime session
82	3	2007030122	25-MAY-16	Analyzing data like a boss	Lunchtime session
85	7	2015062807	12-JAN-17	Marketing for print	Lunchtime session
86	7	2016081411	12-JAN-17	Marketing for print	Lunchtime session
87	7	2016022204	12-JAN-17	Marketing for print	Lunchtime session
90	2	2015071803	22-FEB-17	Negotiations with clients	Weekend intensive
96	4	2017031204	28-AUG-17	Finance for beginners	Half day course
97	4	2016022204	28-AUG-17	Finance for beginners	Half day course
98	4	2016081411	28-AUG-17	Finance for beginners	Half day course

39 rows selected.

```
SQL> select *
      2  from client;
```

CLIENT_ID	NAME	STREET	CITY	STATE	ZIP_CODE	INDUSTRY	WEB_ADDRESS	PHONE	CONTACT_NAME
BAC21	Bank of America - ATL	435 Peachtree Avenue	Atlanta	GA	30301	Banking	bankofamerica.com	526-526-5555	Warren Buffett
BAC34	Bank of America - PIT	47 Forbes Avenue	Pittsburgh	PA	15213	Banking	bankofamerica.com	475-598-6324	Jack Bogle
BAC65	Bank of America - SEA	999 Pike Place	Seattle	WA	98105	Banking	bankofamerica.com	638-962-4256	Paul Tudor Jones
JPM02	JP Morgan - NYC	785 W 121st	New York City	NY	10007	Finance	jpmorgan.com	345-578-8889	George Soros
JPM05	JP Morgan - CHI	45 Wabash Avenue	Chicago	IL	60612	Finance	jpmorgan.com	123-526-8579	Ray Dalio
CRS07	Credit Suisse - NYC	57 Fashion Avenue	New York City	NY	10004	Finance	creditsuisse.com	634-748-9634	Carl Icahn
CRS11	Credit Suisse - SF	5246 Geary Boulevard	San Francisco	CA	94112	Finance	creditsuisse.com	410-526-0014	David Swensen
BNY03	Bank of New York Mellon	524354 W 52nd Street	New York City	NY	10020	Banking	bnny.com	417-859-4689	Mary Callahan
MOS01	Morgan Stanley	5123 Wall Street	New York City	NY	10027	Finance	morganstanley.com	635-685-7586	Charles Schwab
MOR01	Morningstar	2 Chicago Avenue	Chicago	IL	60176	Finance	morningstar.com	124-546-8596	John Templeton

10 rows selected.

```
SQL> select *
      2  from project;
```

PROJ_NUMBER	NAME	START_DATE	TOTAL_COST	DEPT_CODE	CLIENT_ID
145-BAC	BOA Account reconciliation	18-MAY-16	20000	5	BAC21
901-BAC	BOA Lean operations	07-JAN-17		5	BAC21
145-JPM	JPM Account reconciliation	16-FEB-16	200000	6	JPM02
211-JPM	JPM Financial consolidation	18-MAY-12	50000	5	JPM05
014-CRS	CRS Account rationalization	25-JAN-11	65000	6	CRS11
114-CRS	CRS Process improvement	07-JUN-16	100000	5	CRS11
122-BNY	BNY Special project	05-OCT-16		16	BNY03
065-MOS	MOS Account reconciliation	18-JUL-12	150000	5	MOS01
123-MOS	MOS Financial consolidation	05-AUG-16	750000	6	MOS01
226-MOS	MOS Strategic tax planning	04-JUN-16		5	MOS01
438-TEC	Big Data Analytics	04-SEP-16		16	JPM05

11 rows selected.

```
SQL> select *
      2  from assignment;
```

ASSIGN_NUM	PROJ_NUMBER	EMP_NUM	DATE_ASSI	DATE_ENDE	HOURS_USED
984	145-JPM	2012112604	06-MAR-16	17-MAR-17	6
991	122-BNY	2014111611	17-OCT-16	31-OCT-16	48
1000	901-BAC	2007030122	01-MAY-17	31-MAY-17	82
1001	901-BAC	2015010611	01-MAY-17	31-MAY-17	155
1002	065-MOS	2016012911	01-MAY-17	31-MAY-17	148
1010	145-BAC	2014111611	04-JUN-17	30-JUN-17	111
1012	901-BAC	2007030122	01-JUN-17	30-JUN-17	160
1013	901-BAC	2015010611	01-JUN-17	30-JUN-17	65
1020	145-BAC	2014111611	01-JUL-17	31-JUL-17	65
1023	145-BAC	2012112604	01-JUL-17	31-JUL-17	86
1029	065-MOS	2016012911	01-JUL-17	31-JUL-17	96
1034	901-BAC	2007030122	01-AUG-17	31-AUG-17	24
1042	065-MOS	2016012911	01-AUG-17	31-AUG-17	25
1044	145-BAC	2014111611	01-AUG-17	31-AUG-17	48
1045	145-BAC	2012112604	01-AUG-17	31-AUG-17	96
1046	145-BAC	2009031713	01-AUG-17	31-AUG-17	48
1051	065-MOS	2016012911	01-SEP-17	30-SEP-17	124
1054	438-TEC	2010110401	10-SEP-17	30-SEP-17	95
1057	438-TEC	2009031713	10-SEP-17	30-SEP-17	56
1059	438-TEC	2014111611	10-SEP-17	30-SEP-17	122
1072	438-TEC	2016022204	10-SEP-17	30-SEP-17	74
1076	438-TEC	2008110514	10-SEP-17	30-SEP-17	85
1082	438-TEC	2008110514	10-OCT-17	30-OCT-17	26
1084	438-TEC	2016022204	10-OCT-17	31-OCT-17	52
1087	438-TEC	2014111611	10-OCT-17	31-OCT-17	142
1094	438-TEC	2009031713	10-OCT-17	31-OCT-17	75
1097	438-TEC	2010110401	10-OCT-17	31-OCT-17	81
1103	901-BAC	2007030122	01-OCT-17	31-OCT-17	85
1006	065-MOS	2016012911	01-OCT-17	31-OCT-17	135
1109	065-MOS	2016012911	01-NOV-17	30-NOV-17	51
1113	901-BAC	2015010611	01-NOV-17	30-NOV-17	16
1117	438-TEC	2009031713	10-NOV-17	30-NOV-17	8
1119	438-TEC	2010110401	10-NOV-17	30-NOV-17	10
1123	438-TEC	2014111611	10-NOV-17	30-NOV-17	66
1126	438-TEC	2016022204	10-NOV-17	30-NOV-17	6
1127	438-TEC	2008110514	10-NOV-17	30-NOV-17	14
1131	438-TEC	2008110514	01-DEC-17		
1132	438-TEC	2016022204	01-DEC-17		
1133	438-TEC	2014111611	01-DEC-17		
1134	438-TEC	2009031713	01-DEC-17		
1135	438-TEC	2010110401	01-DEC-17		
1136	065-MOS	2016012911	01-DEC-17		

42 rows selected.

PART II B - Queries

Query 1

```
SQL> SET LINESIZE 300
SQL> SET PAGESIZE 50
SQL> COLUMN employee format A35
SQL> COLUMN skill format A25
SQL> COLUMN 'date acquired' format A15
SQL> SELECT e.emp_num||': '||e.emp_first||' '||e.emp_last as "EMPLOYEE",
  2   s.description AS "SKILL",
  3   COUNT(t.train_num) as "NUMBER_OF_TRAININGS",
  4   MAX(t.date_acquired) as "DATE_ACQUIRED",
  5   ROUND(months_between(sysdate,max(t.date_acquired)),0) as "MONTHS_PASSED"
  6 FROM employee e
  7 LEFT JOIN (training t left join skill s on t.code=s.code) on t.emp_num=e.emp_num
  8 GROUP BY e.emp_num,t.code,s.description,e.emp_first,e.emp_last
  9 ORDER BY e.emp_num;
```

EMPLOYEE	SKILL	NUMBER_OF_TRAININGS	DATE_ACQUIRED	MONTHS_PASSED
2004011708: Beyonce Knowles	Negotiation	1	16-APR-15	32
2007030122: Britney Spears	Data analyst	1	25-MAY-16	18
	Database administrator	1	26-NOV-13	48
2008110514: Ricky Martin	Project management	1	08-MAY-16	19
	Database administrator	1	26-NOV-13	48
2009031713: Nick Lachey	Negotiation	1	16-APR-15	32
	Programming	1	08-MAY-16	19
	Database administrator	1	26-NOV-13	48
2010110401: Aaron Carter	Negotiation	1	16-APR-15	32
	Database administrator	1	26-NOV-13	48
2011011012: Will Smith	Programming	1	08-MAY-16	19
	Database administrator	1	26-NOV-13	48
2012032505: Venky Kowkuntla	Project management	1	08-MAY-16	19
	Data analyst	1	25-MAY-16	18
	Database administrator	2	16-DEC-14	36
2012041513: Jennifer Lopez		0		
2012112604: Sathwik Chenna	Data analyst	1	25-MAY-16	18
2013041613: Harish KSS	Project management	1	24-JUN-15	29
	Digital marketing	1	06-JAN-16	23
2013121601: Karthik Jilla		0		
2014050821: Aditya Kothakota	Project management	2	08-MAY-16	19
2014062401: Naseer Baba	Digital marketing	1	06-JAN-16	23
2014111611: Chandu Yerragopu	Project management	2	08-MAY-16	19
	Negotiation	1	16-APR-15	32
2015010605: Poojitha Nanduri		0		
2015010611: Chetna Gupta	Digital marketing	1	06-JAN-16	23
2015062807: Prabhat Turlapati	Programming	1	08-MAY-16	19
	Digital marketing	1	12-JAN-17	11
2015071401: Christina Aguilera	Project management	1	08-MAY-16	19
2015071803: Priyusha Krishna	Negotiation	1	22-FEB-17	9
	Digital marketing	1	06-JAN-16	23
2015100506: Taft William		0		
2016012911: Justin Timberlake	Project management	1	08-MAY-16	19
2016022204: Aditya Varma	Financial management	1	28-AUG-17	3
	Digital marketing	1	12-JAN-17	11
2016081411: Nikhil Devnani	Project management	1	08-MAY-16	19
	Financial management	1	28-AUG-17	3
	Digital marketing	1	12-JAN-17	11
2016082803: Abhilasha Arora		0		
2017031204: Nagarjuna Chilkuri	Financial management	1	28-AUG-17	3
2017091708: Breah Boone		0		
2017110318: Brian McKnight	Project management	1	08-MAY-16	19

42 rows selected.

Query 2

```
SQL> COLUMN employee format A45
SQL> COLUMN 'department name' format A30
SQL> SELECT LEVEL,
  2 LPAD(' ', 3*(LEVEL - 1)) || emp_num || ': ' ||
  3 emp_first || ' ' || emp_last as "EMPLOYEE",
  4 d.name as "DEPARTMENT_NAME"
  5 FROM employee e
  6 LEFT JOIN department d on e.dept_code=d.dept_code
  7 START WITH emp_num = 2015071401
  8 CONNECT BY PRIOR emp_num = super_id;
```

LEVEL	EMPLOYEE	DEPARTMENT_NAME
1	2015071401: Christina Aguilera	Executive management
2	2004011708: Beyonce Knowles	Accounting
3	2014111611: Chandu Yerragopu	Accounting
3	2015010605: Poojitha Nanduri	Accounting
3	2016022204: Aditya Varma	Accounting
2	2007030122: Britney Spears	Finance
3	2015010611: Chetna Gupta	Finance
3	2016082803: Abhilasha Arora	Finance
3	2017031204: Nagarjuna Chilkuri	Finance
2	2008110514: Ricky Martin	Purchasing
2	2009031713: Nick Lachey	Purchasing
3	2015062807: Prabhat Turlapati	Purchasing
3	2015071803: Priyusha Krishna	Purchasing
3	2016081411: Nikhil Devnani	Purchasing
2	2010110401: Aaron Carter	R and D
3	2015100506: Taft William	R and D
3	2017091708: Breah Boone	R and D
2	2011011012: Will Smith	R and D
2	2012041513: Jennifer Lopez	Human resources
2	2016012911: Justin Timberlake	Human resources
3	2012112604: Sathwik Chenna	Human resources
3	2013121601: Karthik Jilla	Human resources
3	2014062401: Naseer Baba	Human resources
2	2017110318: Brian McKnight	Production
3	2012032505: Venky Kowkuntla	Production
3	2013041613: Harish KSS	Production
3	2014050821: Aditya Kothakota	Production

27 rows selected.

Query 3

```
SQL> COLUMN 'PROJECT START DATE' format A25
SQL> COLUMN month format A12
SQL> BREAK ON REPORT ON "PROJECT NAME" ON "PROJECT START DATE" SKIP 1
SQL> COMPUTE SUM LABEL 'Total' OF "EMPLOYEES ASSIGNED" ON "PROJECT NAME" SKIP 1
SQL> COMPUTE SUM LABEL 'Total ' OF "MONTHLY HOURS" ON "PROJECT NAME" SKIP 1
SQL> SELECT p.name as "PROJECT_NAME",
  2 p.start_date as "PROJECT_START_DATE",
  3 TO_CHAR(a.date_assigned,'mm')||'-'||initcap(to_char(a.date_assigned,'month')) as "MONTH",
  4 COUNT(a.emp_num) as "EMPLOYEES ASSIGNED",
  5 SUM(a.hours_used) as "MONTHLY_HOURS"
  6 FROM assignment a
  7 JOIN project p on a.proj_number=p.proj_number
  8 WHERE p.total_cost is null
  9 GROUP BY p.name, p.start_date, to_char(a.date_assigned,'mm')||'-'||initcap(to_char(a.date_assigned,'month'))
 10 ORDER BY p.name, p.start_date, MONTH;
```

PROJECT_NAME	PROJECT_START_DATE	MONTH	EMPLOYEES_ASSIGNED	MONTHLY_HOURS
BNY Special project	05-OCT-16	10-October	1	48
*****			-----	-----
Total			1	48
BOA Lean operations	07-JAN-17	05-May	2	237
		06-June	2	225
		08-August	1	24
		10-October	1	85
		11-November	1	16
*****			-----	-----
Total			7	587
Big Data Analytics	04-SEP-16	09-September	5	432
		10-October	5	376
		11-November	5	104
		12-December	5	
*****			-----	-----
Total			20	912

10 rows selected.

Query 4

```
SQL> ALTER TABLE employee
2 ADD bonus_amt number(5);
```

Table altered.

```
SQL> UPDATE employee
2 SET bonus_amt = 200*
3 (SELECT COUNT(distinct proj_number)as number_of_projects
4 FROM project p
5 WHERE extract(year from start_date)=extract(year from sysdate)-1
6 AND proj_number IN
7 (SELECT proj_number from assignment group BY proj_number having sum(hours_used)>40));
```

27 rows updated.

```
SQL> SET PAGESIZE 300
SQL> SET LINESIZE 300
SQL> SELECT *
2 FROM employee;
```

EMP_NUM	EMP_LAST	EMP_FIRST	DOB	HIRE_DATE	SUPER_ID	DEPT_CODE	BONUS_AMT
2015071401	Aguilera	Christina	18-DEC-80	14-JUL-15		1	600
2016012911	Timberlake	Justin	31-DEC-81	29-JAN-16	2015071401	3	600
2007030122	Spears	Britney	02-DEC-81	01-MAR-07	2015071401	5	600
2004011708	Knowles	Beyonce	04-SEP-81	17-JAN-04	2015071401	6	600
2017110318	McKnight	Brian	05-JUN-69	03-NOV-17	2015071401	8	600
2009031713	Lachey	Nick	09-NOV-73	17-MAR-09	2015071401	12	600
2010110401	Carter	Aaron	07-DEC-87	04-NOV-10	2015071401	16	600
2008110514	Martin	Ricky	24-OCT-71	05-NOV-08	2015071401	12	600
2012041513	Lopez	Jennifer	24-DEC-69	15-APR-12	2015071401	3	600
2011011012	Smith	Will	25-SEP-68	10-JAN-11	2015071401	16	600
2012112604	Chenna	Sathwik	19-AUG-83	26-NOV-12	2016012911	3	600
2013121601	Jilla	Karthik	29-NOV-84	16-DEC-13	2016012911	3	600
2014062401	Baba	Naseer	22-NOV-84	24-JUN-14	2016012911	3	600
2015010611	Gupta	Chetna	09-JUL-82	06-JAN-15	2007030122	5	600
2017031204	Chilkuri	Nagarjuna	22-JAN-80	12-MAR-17	2007030122	5	600
2016082803	Arora	Abhilasha	10-FEB-81	28-AUG-16	2007030122	5	600
2014111611	Yerragopu	Chandu	19-APR-80	16-NOV-14	2004011708	6	600
2015010605	Nanduri	Poojitha	25-SEP-82	06-JAN-15	2004011708	6	600
2016022204	Varma	Aditya	06-MAR-81	22-FEB-16	2004011708	6	600
2012032505	Kowkuntla	Venky	29-APR-89	25-MAR-12	2017110318	8	600
2013041613	KSS	Harish	23-MAY-88	16-APR-13	2017110318	8	600
2014050821	Kothakota	Aditya	22-FEB-80	08-MAY-14	2017110318	8	600
2015062807	Turlapati	Prabhat	09-JAN-81	28-JUN-15	2009031713	12	600
2015071803	Krishna	Priyusha	18-JUL-82	18-JUL-15	2009031713	12	600
2016081411	Devnani	Nikhil	16-JUN-81	14-AUG-16	2009031713	12	600
2017091708	Boone	Breah	11-JAN-80	17-SEP-17	2010110401	16	600
2015100506	William	Taft	12-DEC-81	05-OCT-15	2010110401	16	600