

# DB Implementation Project

95-703C: Database Management

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Group Number: 4

-----PartII.A-----

---Script#1

```
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 CHAR(4),  
Description VARCHAR2(30),  
CONSTRAINT skill_code_pk PRIMARY KEY (code));
```

```
CREATE TABLE DEPARTMENT  
(dept_code CHAR(2),  
name VARCHAR2(50),  
location VARCHAR2(30),  
phone CHAR(20),  
manager_id CHAR(3),  
CONSTRAINT department_dept_code_pk PRIMARY KEY(dept_code));
```

```
CREATE TABLE EMPLOYEE
(emp_num CHAR(3),
emp_last VARCHAR2(12),
emp_first VARCHAR2(12),
DOB DATE,
hire_date DATE DEFAULT SYSDATE,
super_id CHAR(3),
dept_code CHAR(2),
CONSTRAINT employee_emp_num_pk PRIMARY KEY(emp_num),
CONSTRAINT employee_super_id_fk FOREIGN KEY (super_id) REFERENCES employee (emp_num),
CONSTRAINT employee_dept_code_fk FOREIGN KEY (dept_code) REFERENCES department (dept_code),
CONSTRAINT employee_dob_ck CHECK (EXTRACT(YEAR FROM HIRE_DATE) - EXTRACT(YEAR FROM DOB)>17));
```

```
CREATE TABLE TRAINING
(train_num CHAR(4),
code CHAR(4),
emp_num CHAR(3),
date_acquired DATE,
name VARCHAR2(30),
comments VARCHAR2(30),
CONSTRAINT training_train_num_pk PRIMARY KEY (train_num),
CONSTRAINT training_emp_num_fk FOREIGN KEY(Emp_Num) REFERENCES Employee(Emp_Num),
CONSTRAINT training_code_fk FOREIGN KEY(code) REFERENCES skill(code));
```

```
CREATE TABLE Client
(Client_ID VARCHAR2(5),
Name VARCHAR2(30),
Street VARCHAR2(40),
City VARCHAR2(25),
State CHAR(2),
Zip_code CHAR(5),
Industry VARCHAR2(25),
Web_Address VARCHAR2(25),
Phone VARCHAR2(12),
Contact_Name VARCHAR2(25),
CONSTRAINT Client_Client_ID_PK PRIMARY KEY (Client_ID));
```

```
CREATE TABLE Project
(Proj_Number VARCHAR2(10),
Name VARCHAR2(30),
Start_Date DATE DEFAULT SYSDATE,
Total_Cost NUMBER(6,2),
Dept_Code CHAR(2),
Client_ID VARCHAR2(5),
CONSTRAINT Project_Proj_Number_PK PRIMARY KEY(Proj_Number),
CONSTRAINT Project_Dept_Code_FK FOREIGN KEY(Dept_Code) REFERENCES Department(Dept_Code),
CONSTRAINT Project_Client_ID_FK FOREIGN KEY(Client_ID) REFERENCES Client(Client_ID),
CONSTRAINT Project_Dept_Code_CK CHECK(Dept_Code <> '05'));
```

```
CREATE TABLE Assignment
(Assign_Num VARCHAR2(10),
Proj_Number VARCHAR2(10),
Emp_Num CHAR(3),
Date_Assigned DATE DEFAULT SYSDATE,
Date_Ended DATE,
Hours_Used NUMBER(5),
CONSTRAINT Assignment_Assign_Num_PK PRIMARY KEY(Assign_Num),
CONSTRAINT Assignment_Proj_Num_FK FOREIGN KEY(Proj_Number) REFERENCES Project(Proj_Number),
CONSTRAINT Assignment_Emp_Num_FK FOREIGN KEY(Emp_Num) REFERENCES Employee(Emp_Num),
CONSTRAINT Assignemnt_Date_Ended_CK CHECK(Date_Ended > Date_Assigned),
CONSTRAINT Assignment_hours_used_CK CHECK (hours_used <= 160));

ALTER TABLE DEPARTMENT
ADD CONSTRAINT department_manager_id_fk FOREIGN KEY (MANAGER_ID) REFERENCES employee (emp_num);
```

-----PartII.A-----

---Script#2

```
INSERT INTO Client VALUES ('C506','Pfizer','212 Bellefonte  
St.','Pittsburgh','PA','15232','pharmacy','www.pfizer.com','412-334-112','Jim');
```

```
INSERT INTO Client VALUES ('C502','Merck','2000 Galloping Hill  
Rd','Kenilworth','NJ','07033','pharmacy','www.merck.com','800-444-2080','Jimmy');
```

```
INSERT INTO Client VALUES ('C510','Goldman','125 High Street','Boston','MA','02110','Bank','www.goldman.com','617-204-  
2000','Scott');
```

```
INSERT INTO Client VALUES ('C512','Evercore','55 East 52nd Street','New  
York','NY','10055','Bank','www.evercore.com','212-857-3100','Sophia');
```

```
INSERT INTO Client VALUES ('C530','Twitter','1355 Market Street','San  
Francisco','CA','94103','Internet','www.twitter.com','415-222-9670','Dorsey');
```

```
INSERT INTO Client VALUES ('C542','Facebook','1601 Willow Road','Menlo  
Park','CA','94025','Internet','www.facebook.com','650-543-4800','Mark');
```

```
INSERT INTO Client VALUES ('C538','Walmart','702 SW 8th  
Street','Bentonville','AR','72716','Retail','www.walmart.com','479-273-4000','Biggs');
```

```
INSERT INTO Client VALUES ('C532','JCPenny','6501 Legacy Drive','Plano','TX','75024','Retail','www.jcpenny.com','972-  
431-1000','Cobe');
```

```
INSERT INTO Client VALUES ('C591','Kroger','1014 Vine Street','Cincinnati','OH','45202','Retail','www.kroger.com','513-  
762-4000','Michael');
```

```
INSERT INTO Client VALUES ('C580','Pepsi','700 Anderson Hill  
Road','Purchase','NY','10577','Food','www.kroger.com','914-253-2000','Albert');
```

```
INSERT INTO SKILL VALUES ('0001','Python');
```

```
INSERT INTO SKILL VALUES ('0002','R');
```

```
INSERT INTO SKILL VALUES ('0003','Power Point');
```

```
INSERT INTO SKILL VALUES ('0004','JAVA');
```

```
INSERT INTO SKILL VALUES ('0005','Excel');
```

```

INSERT INTO SKILL VALUES ('0006', 'SAS');

INSERT INTO DEPARTMENT VALUES ('01', 'Strategy Development', '100 Academy Ave, Pittsburgh', '412-888-0274', NULL);
INSERT INTO DEPARTMENT VALUES ('02', 'Marketing', '100 Academy Ave, Pittsburgh', '412-888-0394', NULL);
INSERT INTO DEPARTMENT VALUES ('03', 'IT ', '100 Academy Ave, Pittsburgh', '412-888-0305', NULL);
INSERT INTO DEPARTMENT VALUES ('04', 'Design', '100 Academy Ave, Pittsburgh', '412-888-0463', NULL);
INSERT INTO DEPARTMENT VALUES ('05', 'Administration', '100 Academy Ave, Pittsburgh', '412-512-0463', NULL);


INSERT INTO EMPLOYEE VALUES ('504', 'Wu', 'Chien-Shiung', DATE'1976-08-06', DATE '2017-05-13', null, '01');
INSERT INTO EMPLOYEE VALUES ('507', 'Hodgkin', 'Dorothy', DATE '1979-12-11', DATE'2013-03-04', '504', '02');
INSERT INTO EMPLOYEE VALUES ('511', 'Meitner', 'Lise', DATE '1980-05-19', DATE'2013-03-06', '504', '03');
INSERT INTO EMPLOYEE VALUES ('501', 'Pascal', 'Blaise', DATE'1970-10-01', DATE'2015-09-05', '504', '01');
INSERT INTO EMPLOYEE VALUES ('514', 'Bohr', 'Niels', DATE'1980-01-08', DATE'2008-03-10', '504', '04');
INSERT INTO EMPLOYEE VALUES ('502', 'Herschel', 'Caroline', DATE'1975-03-12', DATE '2009-01-23', '501', '01');
INSERT INTO EMPLOYEE VALUES ('503', 'Halley', 'Edmond', DATE'1974-05-22', DATE'2016-05-13', '501', '01');
INSERT INTO EMPLOYEE VALUES ('505', 'Fermi', 'Enrico', DATE '1980-04-12', DATE'2016-03-04', '501', '01');
INSERT INTO EMPLOYEE VALUES ('506', 'Seydoux', 'Geraldine', DATE'1979-10-08', DATE'2017-03-04', '501', '01');
INSERT INTO EMPLOYEE VALUES ('508', 'John', 'Snow', DATE'1980-10-18', DATE '2016-08-12', '501', '01');
INSERT INTO EMPLOYEE VALUES ('509', 'Daubechies', 'Ingrid', DATE'1982-01-18', DATE '2012-03-12', '507', '02');
INSERT INTO EMPLOYEE VALUES ('510', 'Kepler', 'Johannes', DATE '1985-03-20', DATE'2017-03-12', '507', '02');
INSERT INTO EMPLOYEE VALUES ('512', 'Faraday', 'Michael', DATE'1980-02-17', DATE '2014-02-20', '511', '03');
INSERT INTO EMPLOYEE VALUES ('513', 'Franklin', 'Melissa', DATE'1982-05-21', DATE'2016-03-05', '511', '03');
INSERT INTO EMPLOYEE VALUES ('515', 'Copernicus', 'Nicolaus', DATE'1986-02-12', DATE'2006-01-14', '514', '04');
INSERT INTO EMPLOYEE VALUES ('516', 'Amy', 'Huang', DATE'1989-03-21', DATE'2015-04-20', '504', '05');
INSERT INTO EMPLOYEE VALUES ('517', 'Jin', 'Hesien', DATE'1978-02-23', DATE '2016-05-21', '516', '05');

```

```
UPDATE Department
SET Manager_ID = '501'
WHERE Dept_Code = '01';

UPDATE Department
SET Manager_ID = '502'
WHERE Dept_Code = '02';

UPDATE Department
SET Manager_ID = '503'
WHERE Dept_Code = '03';

UPDATE Department
SET Manager_ID = '504'
WHERE Dept_Code = '04';

UPDATE Department
SET Manager_ID = '504'
WHERE Dept_Code = '05';
```



```
INSERT INTO TRAINING VALUES ('1001', '0001', '501', DATE '2015-01-11', 'Introduction to Python', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1002', '0001', '502', DATE '2016-02-01', 'Upper Level of Python', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1003', '0002', '502', DATE '2015-03-21', 'Introduction to R', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1004', '0002', '502', DATE '2016-10-21', 'Upper Level of R', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1005', '0003', '505', DATE '2017-05-01', 'Introduction to Power Point', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1006', '0003', '506', DATE '2017-06-08', 'Upper Level of Power Point', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1007', '0004', '507', DATE '2015-08-23', 'Introduction to JAVA', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1008', '0004', '508', DATE '2016-08-31', 'Upper Level of JAVA', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1009', '0005', '509', DATE '2014-01-30', 'Introduction to Excel', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1010', '0005', '510', DATE '2017-10-21', 'Upper Level of Excel', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1011', '0006', '515', DATE '2016-11-06', 'Introduction to SAS', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1012', '0006', '512', DATE '2015-12-23', 'Upper Level of SAS', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1033', '0001', '513', DATE '2016-05-11', 'Introduction to Python', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1034', '0006', '513', DATE '2017-01-01', 'Introduction to SAS', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1035', '0004', '513', DATE '2016-10-23', 'Introduction to JAVA', 'For 1st Grade');
INSERT INTO TRAINING VALUES ('1036', '0002', '508', DATE '2016-09-21', 'Upper Level of R', 'For 2nd Grade');
INSERT INTO TRAINING VALUES ('1037', '0005', '510', DATE '2017-04-28', 'Introduction to Excel', 'For 1st Grade');
```

```
INSERT INTO Project VALUES ('H1255','Product Launch','01-JUL-2016',8000,'01','C538');
INSERT INTO Project VALUES ('H1240','Organization Design','17-MAY-2014',5000,'03','C538');
INSERT INTO Project VALUES ('H2315','Market Research','25-JAN-2009',3000,'04','C538');
INSERT INTO Project VALUES ('H0988','IPO Evaluation','22-Oct-2013',1000,'02','C512');
INSERT INTO Project VALUES ('H5490','System Implementation','06-SEP-2017',NULL,'01','C542');
INSERT INTO Project VALUES ('H8877','Market Research','06-NOV-2017',NULL,'04','C542');
INSERT INTO Project VALUES ('H0045','Customer Focus Group','23-JUN-2017',3000,'03','C542');
INSERT INTO Project VALUES ('H1145','Market Research','05-Jul-2016',3000,'01','C530');
INSERT INTO Project VALUES ('H7611','New Service Testing','25-Mar-2017',5400,'02','C510');
INSERT INTO Project VALUES ('H3961','Performance Evaluation','21-NOV-2017',6000,'01','C510');
INSERT INTO Project VALUES ('H0908','New Drug Testing','25-Aug-2010',9500,'04','C506');
INSERT INTO Project VALUES ('H1314','Marketing Strategy','21-Sep-2016',5000,'02','C506');
INSERT INTO Project VALUES ('H1300','New Drug Testing','08-JUN-2017',3500,'01','C502');
INSERT INTO Project VALUES ('H9666','Customer Satisfaction Survey','01-Sep-2014',5000,'02','C532');
INSERT INTO Project VALUES ('H9641','Market Research','21-Dec-2016',6700,'01','C532');
INSERT INTO Project VALUES ('H8166','Competitor Analysis','20-Sep-2017',5300,'01','C591');
INSERT INTO Project VALUES ('H3126','Market Research','01-Sep-2013',5300,'01','C580');
```

```
INSERT INTO Assignment VALUES ('HC1111','H1255','501','01-JUL-2016','31-JUL-2016',10);
INSERT INTO Assignment VALUES ('HC1112','H1255','501','01-AUG-2016','31-AUG-2016',15);
INSERT INTO Assignment VALUES ('HC1113','H1255','501','01-SEP-2016','13-SEP-2016',20);
INSERT INTO Assignment VALUES ('HC1114','H1255','502','01-AUG-2016','31-AUG-2016',7);
INSERT INTO Assignment VALUES ('HC1115','H1255','502','01-SEP-2016','13-SEP-2016',8);
INSERT INTO Assignment VALUES ('HC1116','H1255','503','15-AUG-2016','31-AUG-2016',20);
INSERT INTO Assignment VALUES ('HC1117','H1255','503','01-SEP-2016','13-SEP-2016',20);
INSERT INTO Assignment VALUES ('HC1118','H1240','511','17-MAY-2014','31-MAY-2014',3);
INSERT INTO Assignment VALUES ('HC1166','H1240','512','17-MAY-2016','31-MAY-2016',4);
INSERT INTO Assignment VALUES ('HC1155','H1240','509','17-MAY-2016','31-MAY-2016',10);
INSERT INTO Assignment VALUES ('HC1119','H2315','514','25-JAN-2009','31-JAN-2009',15);
INSERT INTO Assignment VALUES ('HC1120','H2315','514','01-FEB-2009','28-FEB-2009',10);
INSERT INTO Assignment VALUES ('HC1121','H2315','514','01-MAR-2009','21-MAR-2009',8);
INSERT INTO Assignment VALUES ('HC1124','H0988','509','22-OCT-2013','31-OCT-2013',20);
INSERT INTO Assignment VALUES ('HC1125','H0988','509','15-DEC-2013','31-DEC-2013',5);
INSERT INTO Assignment VALUES ('HC1126','H0988','507','22-OCT-2013','31-OCT-2013',12);
INSERT INTO Assignment VALUES ('HC1128','H5490','506','01-OCT-2017','31-OCT-2017',5);
INSERT INTO Assignment VALUES ('HC1129','H5490','506','01-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1130','H5490','504','06-SEP-2017','30-SEP-2017',10);
INSERT INTO Assignment VALUES ('HC1131','H5490','504','01-OCT-2017','31-OCT-2017',12);
INSERT INTO Assignment VALUES ('HC1132','H5490','504','01-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1133','H5490','503','06-SEP-2017','30-SEP-2017',8);
INSERT INTO Assignment VALUES ('HC1134','H5490','503','01-OCT-2017','31-OCT-2017',15);
INSERT INTO Assignment VALUES ('HC1135','H5490','503','01-DEC-2017',NULL,NULL);
```

```
INSERT INTO Assignment VALUES ('HC1170','H5490','501','01-OCT-2017','31-OCT-2017',3);
INSERT INTO Assignment VALUES ('HC1171','H5490','501','01-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1138','H0045','513','23-JUN-2017','30-JUN-2017',8);
INSERT INTO Assignment VALUES ('HC1139','H0045','513','01-JUL-2017','31-JUL-2017',5);
INSERT INTO Assignment VALUES ('HC1140','H0045','513','01-AUG-2017','30-AUG-2017',10);
INSERT INTO Assignment VALUES ('HC1141','H0045','513','01-SEP-2017','30-SEP-2017',7);
INSERT INTO Assignment VALUES ('HC1142','H1145','502','05-Jul-2016','31-Jul-2016',50);
INSERT INTO Assignment VALUES ('HC1143','H1145','501','01-AUG-2016','31-AUG-2016',55);
INSERT INTO Assignment VALUES ('HC1144','H7611','507','05-MAR-2017','31-MAR-2017',13);
INSERT INTO Assignment VALUES ('HC1145','H7611','509','05-MAR-2017','31-MAR-2017',15);
INSERT INTO Assignment VALUES ('HC1147','H8877','501','21-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1148','H8877','502','21-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1149','H8877','503','21-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1150','H8877','504','21-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1151','H8877','506','21-DEC-2017',NULL,NULL);
INSERT INTO Assignment VALUES ('HC1152','H0908','514','25-Aug-2010','31-Aug-2010',5);
INSERT INTO Assignment VALUES ('HC1153','H0908','514','01-NOV-2010','30-NOV-2010',15);
INSERT INTO Assignment VALUES ('HC1154','H1314','507','21-Sep-2016','30-Sep-2016',45);
INSERT INTO Assignment VALUES ('HC1188','H1314','507','01-OCT-2016','31-OCT-2016',10);
INSERT INTO Assignment VALUES ('HC1156','H1314','509','01-OCT-2016','31-OCT-2016',15);
INSERT INTO Assignment VALUES ('HC1158','H9666','507','01-Sep-2014','30-Sep-2014',36);
INSERT INTO Assignment VALUES ('HC1159','H9666','507','01-OCT-2014','15-OCT-2014',20);
INSERT INTO Assignment VALUES ('HC1160','H9666','509','01-OCT-2014','15-OCT-2014',18);
INSERT INTO Assignment VALUES ('HC1161','H9641','503','21-Dec-2016','31-Dec-2016',21);
INSERT INTO Assignment VALUES ('HC1162','H8166','504','20-Sep-2017','30-Sep-2017',28);
```

```
INSERT INTO Assignment VALUES ('HC1163','H8166','504','01-Oct-2017','31-Oct-2017',10);
INSERT INTO Assignment VALUES ('HC1164','H8166','504','01-NOV-2017','20-NOV-2017',20);
INSERT INTO Assignment VALUES ('HC1165','H8166','506','01-NOV-2017','20-NOV-2017',20);
INSERT INTO Assignment VALUES ('HC1181','H3126','502','01-Sep-2013','30-Sep-2013',8);
INSERT INTO Assignment VALUES ('HC1167','H3126','502','01-Oct-2013','31-Oct-2013',5);
INSERT INTO Assignment VALUES ('HC1168','H3126','502','01-NOV-2013','30-NOV-2013',10);
INSERT INTO Assignment VALUES ('HC1169','H3126','502','01-DEC-2013','25-DEC-2013',4);
INSERT INTO Assignment VALUES ('HC1172','H5490','508','06-SEP-2017','30-SEP-2017',32);
INSERT INTO Assignment VALUES ('HC1173','H5490','508','01-OCT-2017','31-OCT-2017',10);
INSERT INTO Assignment VALUES ('HC1174','H5490','508','01-NOV-2017','30-NOV-2017',40);
INSERT INTO Assignment VALUES ('HC1175','H1255','508','15-NOV-2016','30-NOV-2016',40);
INSERT INTO Assignment VALUES ('HC1176','H1255','508','01-DEC-2016','31-DEC-2016',21);
INSERT INTO Assignment VALUES ('HC1177','H8877','501','06-NOV-2017','30-NOV-2017',15);
INSERT INTO Assignment VALUES ('HC1178','H8877','502','06-NOV-2017','30-NOV-2017',30);
```

-----PartII.A-----

---Table Content

--SKILL

Code	Description
-----	
0001	Python
0002	R
0003	Power Point
0004	JAVA
0005	Excel
0006	SAS

--DEPARTMENT

Department Code	Department Name	Location	Phone	Manager ID
-----				
01	Strategy Development	100 Academy Ave, Pittsburgh	412-888-0274	501
02	Marketing	100 Academy Ave, Pittsburgh	412-888-0394	502
03	IT	100 Academy Ave, Pittsburgh	412-888-0305	503
04	Design	100 Academy Ave, Pittsburgh	412-888-0463	504
05	Administration	100 Academy Ave, Pittsburgh	412-512-0463	504

--EMPLOYEE

Employee#	Last Name	First Name	DOB	Hire Date	Supervisor ID	Department Code
-----	-----	-----	-----	-----	-----	-----
504	Wu	Chien-Shiung	06-AUG-76	13-MAY-17		01
507	Hodgkin	Dorothy	11-DEC-79	04-MAR-13	504	02
511	Meitner	Lise	19-MAY-80	06-MAR-13	504	03
501	Pascal	Blaise	01-OCT-70	05-SEP-15	504	01
514	Bohr	Niels	08-JAN-80	10-MAR-08	504	04
502	Herschel	Caroline	12-MAR-75	23-JAN-09	501	01
503	Halley	Edmond	22-MAY-74	13-MAY-16	501	01
505	Fermi	Enrico	12-APR-80	04-MAR-16	501	01
506	Seydoux	Geraldine	08-OCT-79	04-MAR-17	501	01
508	John	Snow	18-OCT-80	12-AUG-16	501	01
509	Daubechies	Ingrid	18-JAN-82	12-MAR-12	507	02
510	Kepler	Johannes	20-MAR-85	12-MAR-17	507	02
512	Faraday	Michael	17-FEB-80	20-FEB-14	511	03
513	Franklin	Melissa	21-MAY-82	05-MAR-16	511	03
515	Copernicus	Nicolaus	12-FEB-86	14-JAN-06	514	04
516	Amy	Huang	21-MAR-89	20-APR-15	504	05
517	Jin	Hesien	23-FEB-78	21-MAY-16	516	05

--TRAINING

Training#	Skill Code	Employee#	Acquired Date	Training Name	Comments
1001	0001	501	11-JAN-15	Introduction to Python	For 1st Grade
1002	0001	502	01-FEB-16	Upper Level of Python	For 2nd Grade
1003	0002	502	21-MAR-15	Introduction to R	For 1st Grade
1004	0002	502	21-OCT-16	Upper Level of R	For 2nd Grade
1005	0003	505	01-MAY-17	Introduction to Power Point	For 1st Grade
1006	0003	506	08-JUN-17	Upper Level of Power Point	For 2nd Grade
1007	0004	507	23-AUG-15	Introduction to JAVA	For 1st Grade
1008	0004	508	31-AUG-16	Upper Level of JAVA	For 2nd Grade
1009	0005	509	30-JAN-14	Introduction to Excel	For 1st Grade
1010	0005	510	21-OCT-17	Upper Level of Excel	For 2nd Grade
1011	0006	515	06-NOV-16	Introduction to SAS	For 1st Grade
1012	0006	512	23-DEC-15	Upper Level of SAS	For 2nd Grade
1033	0001	513	11-MAY-16	Introduction to Python	For 1st Grade
1034	0006	513	01-JAN-17	Introduction to SAS	For 1st Grade
1035	0004	513	23-OCT-16	Introduction to JAVA	For 1st Grade
1036	0002	508	21-SEP-16	Upper Level of R	For 2nd Grade
1037	0005	510	28-APR-17	Introduction to Excel	For 1st Grade



--CLIENT

ID	Name	Street	City	State	Zip_Code	Industry	Website	Phone	Contact
C506	Pfizer	212 Bellefonte St.	Pittsburgh	PA	15232	pharmacy	www.pfizer.com	412-334-112	Jim
C502	Merck	2000 Galloping Hill Rd	Kenilworth	NJ	07033	pharmacy	www.merck.com	800-444-2080	Jimmy
C510	Goldman	125 High Street	Boston	MA	02110	Bank	www.goldman.com	617-204-2000	Scott
C512	Evercore	55 East 52nd Street	New York	NY	10055	Bank	www.evercore.com	212-857-3100	Sophia
C530	Twitter	1355 Market Street	San Francisco	CA	94103	Internet	www.twitter.com	415-222-9670	Dorsey
C542	Facebook	1601 Willow Road	Menlo Park	CA	94025	Internet	www.facebook.com	650-543-4800	Mark
C538	Walmart	702 SW 8th Street	Bentonville	AR	72716	Retail	www.walmart.com	479-273-4000	Biggs
C532	JCPenny	6501 Legacy Drive	Plano	TX	75024	Retail	www.jcpenny.com	972-431-1000	Cobe
C591	Kroger	1014 Vine Street	Cincinnati	OH	45202	Retail	www.kroger.com	513-762-4000	Michael
C580	Pepsi	700 Anderson Hill Road	Purchase	NY	10577	Food	www.kroger.com	914-253-2000	Albert

--PROJECT

Project #	Name	Start_Date	Cost	Dept_Code	Client_ID
H1255	Product Launch	01-JUL-16	8000	01	C538
H1240	Organization Design	17-MAY-14	5000	03	C538
H2315	Market Research	25-JAN-09	3000	04	C538
H0988	IPO Evaluation	22-OCT-13	1000	02	C512
H5490	System Implementation	06-SEP-17	NA	01	C542
H8877	Market Research	06-NOV-17	NA	04	C542
H0045	Customer Focus Group	23-JUN-17	3000	03	C542
H1145	Market Research	05-JUL-16	3000	01	C530
H7611	New Service Testing	25-MAR-17	5400	02	C510
H3961	Performance Evaluation	21-NOV-17	6000	01	C510
H0908	New Drug Testing	25-AUG-10	9500	04	C506
H1314	Marketing Strategy	21-SEP-16	5000	02	C506
H1300	New Drug Testing	08-JUN-17	3500	01	C502
H9666	Customer Satisfaction Survey	01-SEP-14	5000	02	C532
H9641	Market Research	21-DEC-16	6700	01	C532
H8166	Competitor Analysis	20-SEP-17	5300	01	C591
H3126	Market Research	01-SEP-13	5300	01	C580

--ASSIGNMENT

Assign#	Project #	Emp_Num	Assigned Date	Ended Date	Used hours
-----	-----	-----	-----	-----	-----
HC1111	H1255	501	01-JUL-16	31-JUL-16	10
HC1112	H1255	501	01-AUG-16	31-AUG-16	15
HC1113	H1255	501	01-SEP-16	13-SEP-16	20
HC1114	H1255	502	01-AUG-16	31-AUG-16	7
HC1115	H1255	502	01-SEP-16	13-SEP-16	8
HC1116	H1255	503	15-AUG-16	31-AUG-16	20
HC1117	H1255	503	01-SEP-16	13-SEP-16	20
HC1118	H1240	511	17-MAY-14	31-MAY-14	3
HC1166	H1240	512	17-MAY-16	31-MAY-16	4
HC1155	H1240	509	17-MAY-16	31-MAY-16	10
HC1119	H2315	514	25-JAN-09	31-JAN-09	15
HC1120	H2315	514	01-FEB-09	28-FEB-09	10
HC1121	H2315	514	01-MAR-09	21-MAR-09	8
HC1124	H0988	509	22-OCT-13	31-OCT-13	20
HC1125	H0988	509	15-DEC-13	31-DEC-13	5
HC1126	H0988	507	22-OCT-13	31-OCT-13	12
HC1128	H5490	506	01-OCT-17	31-OCT-17	5
HC1129	H5490	506	01-DEC-17	NA	NA
HC1130	H5490	504	06-SEP-17	30-SEP-17	10
HC1131	H5490	504	01-OCT-17	31-OCT-17	12
HC1132	H5490	504	01-DEC-17	NA	NA

HC1133	H5490	503	06-SEP-17	30-SEP-17	8
HC1134	H5490	503	01-OCT-17	31-OCT-17	15
HC1135	H5490	503	01-DEC-17	NA	NA
HC1170	H5490	501	01-OCT-17	31-OCT-17	3
HC1171	H5490	501	01-DEC-17	NA	NA
HC1138	H0045	513	23-JUN-17	30-JUN-17	8
HC1139	H0045	513	01-JUL-17	31-JUL-17	5
HC1140	H0045	513	01-AUG-17	30-AUG-17	10
HC1141	H0045	513	01-SEP-17	30-SEP-17	7
HC1142	H1145	502	05-JUL-16	31-JUL-16	50
HC1143	H1145	501	01-AUG-16	31-AUG-16	55
HC1144	H7611	507	05-MAR-17	31-MAR-17	13
HC1145	H7611	509	05-MAR-17	31-MAR-17	15
HC1147	H8877	501	21-DEC-17	NA	NA
HC1148	H8877	502	21-DEC-17	NA	NA
HC1149	H8877	503	21-DEC-17	NA	NA
HC1150	H8877	504	21-DEC-17	NA	NA
HC1151	H8877	506	21-DEC-17	NA	NA
HC1152	H0908	514	25-AUG-10	31-AUG-10	5
HC1153	H0908	514	01-NOV-10	30-NOV-10	15
HC1154	H1314	507	21-SEP-16	30-SEP-16	45
HC1188	H1314	507	01-OCT-16	31-OCT-16	10
HC1156	H1314	509	01-OCT-16	31-OCT-16	15
HC1158	H9666	507	01-SEP-14	30-SEP-14	36
HC1159	H9666	507	01-OCT-14	15-OCT-14	20

HC1160	H9666	509	01-OCT-14	15-OCT-14	18
HC1161	H9641	503	21-DEC-16	31-DEC-16	21
HC1162	H8166	504	20-SEP-17	30-SEP-17	28
HC1163	H8166	504	01-OCT-17	31-OCT-17	10
HC1164	H8166	504	01-NOV-17	20-NOV-17	20
HC1165	H8166	506	01-NOV-17	20-NOV-17	20
HC1181	H3126	502	01-SEP-13	30-SEP-13	8
HC1167	H3126	502	01-OCT-13	31-OCT-13	5
HC1168	H3126	502	01-NOV-13	30-NOV-13	10
HC1169	H3126	502	01-DEC-13	25-DEC-13	4
HC1172	H5490	508	06-SEP-17	30-SEP-17	32
HC1173	H5490	508	01-OCT-17	31-OCT-17	10
HC1174	H5490	508	01-NOV-17	30-NOV-17	40
HC1175	H1255	508	15-NOV-16	30-NOV-16	40
HC1176	H1255	508	01-DEC-16	31-DEC-16	21
HC1177	H8877	501	06-NOV-17	30-NOV-17	15
HC1178	H8877	502	06-NOV-17	30-NOV-17	30

-----PartII.B-----

---Q1

SQL> COLUMN "ID" FORMAT A5

SQL> COLUMN "Employee" FORMAT A20

SQL> COLUMN "Skill Name" FORMAT A11

SQL> COLUMN "# Training" FORMAT A15

SQL> COLUMN "Most Recent" FORMAT A10

SQL>

SQL> BREAK ON "ID" ON"Employee"

SQL> SELECT Emp\_Num "ID", Emp\_Last||' '||Emp\_First "Employee", NVL(Description,'NA') "Skill Name",  
2 NVL(DECODE(COUNT(Train\_Num),0,NULL,COUNT(Train\_Num)),0) AS "# Training",  
3 NVL(TO\_CHAR(MAX(Date\_Acquired)), 'NA') AS "Most Recent",  
4 NVL(TRUNC(MONTHS\_BETWEEN(SYSDATE,MAX(Date\_Acquired)),0),0) AS "Months Passed"  
5 FROM Employee LEFT OUTER JOIN Training USING (Emp\_Num)  
6 LEFT OUTER JOIN Skill USING (Code)  
7 GROUP BY Emp\_Num,Emp\_Last,Emp\_First,Code,description  
8 ORDER BY 1;

ID	Employee	Skill Name	# Training	Most Recent	Months Passed
501	Pascal Blaise	Python	1	11-JAN-15	34
502	Herschel Caroline	Python	1	01-FEB-16	22
		R	2	21-OCT-16	13
503	Halley Edmond	NA	0	NA	0
504	Wu Chien-Shiung	NA	0	NA	0
505	Fermi Enrico	Power Point	1	01-MAY-17	7
506	Seydoux Geraldine	Power Point	1	08-JUN-17	5
507	Hodgkin Dorothy	JAVA	1	23-AUG-15	27
508	John Snow	R	1	21-SEP-16	14
		JAVA	1	31-AUG-16	15
509	Daubechies Ingrid	Excel	1	30-JAN-14	46
510	Kepler Johannes	Excel	2	21-OCT-17	1
511	Meitner Lise	NA	0	NA	0
512	Faraday Michael	SAS	1	23-DEC-15	23
513	Franklin Melissa	Python	1	11-MAY-16	18
		JAVA	1	23-OCT-16	13
		SAS	1	01-JAN-17	11
514	Bohr Niels	NA	0	NA	0
515	Copernicus Nicolaus	SAS	1	06-NOV-16	13
516	Amy Huang	NA	0	NA	0
517	Jin Hesien	NA	0	NA	0

21 rows selected.

---Q2

SQL> COLUMN "Employee" FORMAT A40

SQL> COLUMN "Dept\_Name" FORMAT A30

SQL>

SQL> SELECT LEVEL,

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

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

4 START WITH Emp\_Num = (SELECT Emp\_Num

5                                FROM Employee

6                                WHERE Super\_ID IS NULL)

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



LEVEL	Employee	Dept_Name
1	504 Wu Chien-Shiung	Strategy Development
2	501 Pascal Blaise	Strategy Development
3	502 Herschel Caroline	Strategy Development
3	503 Halley Edmond	Strategy Development
3	505 Fermi Enrico	Strategy Development
3	506 Seydoux Geraldine	Strategy Development
3	508 John Snow	Strategy Development
2	507 Hodgkin Dorothy	Marketing
3	509 Daubechies Ingrid	Marketing
3	510 Kepler Johannes	Marketing
2	511 Meitner Lise	IT
3	512 Faraday Michael	IT
3	513 Franklin Melissa	IT
2	514 Bohr Niels	Design
3	515 Copernicus Nicolaus	Design
2	516 Amy Huang	Administration
3	517 Jin Hesien	Administration

17 rows selected.

---Q3

SQL> COLUMN "Project #" FORMAT A13

SQL> COLUMN "Project Name" FORMAT A30

SQL> COLUMN "# hour" FORMAT A15

SQL> COLUMN "Month" FORMAT A10

SQL>

SQL> BREAK ON "Project #" ON "Project Name" ON "Start Date" ON "Year"

SQL>

SQL> SELECT Proj\_number"Project #",Name"Project Name",start\_date"Start Date",EXTRACT(YEAR FROM Date\_Assigned)"Year",

2 NVL(TO\_CHAR(EXTRACT(MONTH FROM Date\_Assigned)), 'sub-total')"Month",COUNT(DISTINCT Emp\_Num) "#  
Employee",NVL(TO\_CHAR(SUM(Hours\_Used)), 'Not completed')"# hour"

3 FROM Project JOIN Assignment USING (Proj\_number)

4 WHERE Total\_Cost IS NULL

5 GROUP BY GROUPING SETS(

6 (Proj\_number,Name,start\_date,EXTRACT(YEAR FROM Date\_Assigned),EXTRACT(MONTH FROM Date\_Assigned)),

7 (Proj\_number,Name,start\_date)

8 )

9 ORDER BY 1,4;

Project #	Project Name	Start Date	Year	Month	# Employee	# hour
-----						
H5490	System Implementation	06-SEP-17	2017	9	3	50
				10	5	45
				11	1	40
				12	4	Not completed
				sub-total	5	135
H8877	Market Research	06-NOV-17	2017	11	2	45
				12	5	Not completed
				sub-total	5	45

8 rows selected.

---Q4

SQL> ALTER TABLE Employee

2 ADD BONUS\_AMT NUMBER(6,2);

Table altered.

SQL>

SQL> UPDATE Employee e

2 SET BONUS\_AMT = (

3 SELECT NVL(bonus,0)"Bonus"

4 FROM Employee LEFT OUTER JOIN

5 (SELECT Emp\_Num, 200\*COUNT(DISTINCT Proj\_Number)bonus

6 FROM Assignment JOIN Project USING(Proj\_Number)

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

8 AND

9 (Emp\_Num,Proj\_Number) IN (SELECT Emp\_Num, Proj\_Number

10 FROM Assignment JOIN Project USING(Proj\_Number)

11 GROUP BY Proj\_Number, Emp\_Num

12 HAVING SUM(Hours\_used) >= 40)

13 GROUP BY Emp\_num

14 ORDER BY 1,2)

15 USING(Emp\_Num)

16 WHERE e.Emp\_Num = Emp\_Num

17 );

17 rows updated.

```
SQL> COLUMN Emp_Num FORMAT A10
```

```
SQL> COLUMN Emp_Last FORMAT A10
```

```
SQL> COLUMN Emp_First FORMAT A15
```

```
SQL> COLUMN Super_ID FORMAT A10
```

```
SQL> SELECT *
```

```
2 FROM Employee
```

```
3 ORDER BY Emp_Num;
```

EMP_NUM	EMP_LAST	EMP_FIRST	DOB	HIRE_DATE	SUPER_ID	DEPT_CODE	BONUS_AMT
501	Pascal	Blaise	01-OCT-70	05-SEP-15	504	01	400
502	Herschel	Caroline	12-MAR-75	23-JAN-09	501	01	200
503	Halley	Edmond	22-MAY-74	13-MAY-16	501	01	200
504	Wu	Chien-Shiung	06-AUG-76	13-MAY-17		01	200
505	Fermi	Enrico	12-APR-80	04-MAR-16	501	01	0
506	Seydoux	Geraldine	08-OCT-79	04-MAR-17	501	01	0
507	Hodgkin	Dorothy	11-DEC-79	04-MAR-13	504	02	200
508	John	Snow	18-OCT-80	12-AUG-16	501	01	400
509	Daubechies	Ingrid	18-JAN-82	12-MAR-12	507	02	0
510	Kepler	Johannes	20-MAR-85	12-MAR-17	507	02	0
511	Meitner	Lise	19-MAY-80	06-MAR-13	504	03	0
512	Faraday	Michael	17-FEB-80	20-FEB-14	511	03	0
513	Franklin	Melissa	21-MAY-82	05-MAR-16	511	03	0
514	Bohr	Niels	08-JAN-80	10-MAR-08	504	04	0
515	Copernicus	Nicolaus	12-FEB-86	14-JAN-06	514	04	0
516	Amy	Huang	21-MAR-89	20-APR-15	504	05	0
517	Jin	Hesien	23-FEB-78	21-MAY-16	516	05	0

```
17 rows selected.
```

---Q5

SQL> COLUMN "Emp\_Num" FORMAT A7

SQL> COLUMN Name FORMAT A40

SQL> COLUMN "Name" FORMAT A20

SQL> COLUMN "Training" FORMAT A30

SQL>

SQL> BREAK ON "Emp\_Num" ON "Name" ON "Hired Date" ON "# project"

SQL> SELECT Emp\_Num"Emp\_Num", Emp\_Last||' '||Emp\_First"Name", Hire\_Date"Hired Date", COUNT(DISTINCT Proj\_Number)"#  
project", Name"Training", Date\_acquired"Date Acquired",

2 (Date\_Acquired-Hire\_Date)"# days"

3 FROM Employee JOIN Training USING(Emp\_Num)

4 LEFT OUTER JOIN Assignment USING(Emp\_Num)

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

6 GROUP BY Emp\_Num, Emp\_Last, Emp\_First, Hire\_Date, Name, Date\_acquired

7 ORDER BY 1;

Emp_Num	Name	Hired Date	# project	Training	Date Acquire	# days
505	Fermi Enrico	04-MAR-16	0	Introduction to Power Point	01-MAY-17	423
508	John Snow	12-AUG-16	2	Upper Level of JAVA	31-AUG-16	19
				Upper Level of R	21-SEP-16	40
513	Franklin Melissa	05-MAR-16	1	Introduction to JAVA	23-OCT-16	232
				Introduction to Python	11-MAY-16	67
				Introduction to SAS	01-JAN-17	302

6 rows selected.

---Q6

SQL> COLUMN "Project Name" FORMAT A30

SQL> COLUMN "Project ID" FORMAT A10

SQL> COLUMN "Start Date" FORMAT A20

SQL> COLUMN "Completeness" FORMAT A15

SQL> SELECT proj\_number "Project ID", NAME "Project Name", START\_DATE "Start Date", COMPLETENESS "Completeness"

```
  2 FROM project join (SELECT proj_number, CASE (EXTRACT (YEAR FROM MAX(NVL(DATE_ENDED, SYSDATE))) - EXTRACT(YEAR FROM START_DATE))
  3                               WHEN 0 THEN (extract (MONTH FROM MAX(NVL(DATE_ENDED, SYSDATE))) - extract (MONTH FROM START_DATE) + 1)
  4                               ELSE (extract (MONTH FROM MAX(NVL(DATE_ENDED, SYSDATE))) - extract (MONTH FROM START_DATE) + 12*(EXTRACT (YEAR
FROM MAX(NVL(DATE_ENDED, SYSDATE))) - EXTRACT(YEAR FROM START_DATE)))
  5                               END AS "PROJECT_LENGTH",
  6                               CASE (EXTRACT (YEAR FROM MAX(NVL(DATE_ENDED, SYSDATE))) - EXTRACT(YEAR FROM START_DATE))
  7                               WHEN 0 THEN COUNT(DISTINCT (EXTRACT(MONTH FROM NVL(DATE_ENDED, SYSDATE))))
  8                               ELSE COUNT(DISTINCT EXTRACT(MONTH FROM NVL(DATE_ENDED, SYSDATE)) || EXTRACT(YEAR FROM NVL(DATE_ENDED, SYSDATE)))
  9                               END AS "ASSIGNMENT_LENGTH",
10                               CASE MAX(NVL(DATE_ENDED, SYSDATE))
11                               WHEN SYSDATE THEN 'ON-GOING'
12                               ELSE 'COMPLETED' END AS "COMPLETENESS"
13 FROM project join assignment using (proj_number)
14 GROUP BY proj_number, START_DATE)
15 using (proj_number)
16 WHERE PROJECT_LENGTH != ASSIGNMENT_LENGTH;
```

Project ID	Project Name	Start Date	Completeness
H0908	New Drug Testing	25-AUG-10	COMPLETED
H0988	IPO Evaluation	22-OCT-13	COMPLETED
H1240	Organization Design	17-MAY-14	COMPLETED
H1255	Product Launch	01-JUL-16	COMPLETED

4 rows selected.

---Q7

```
SQL> COLUMN "Quarter" FORMAT A15
SQL> COLUMN "# of Projects" FORMAT 99
SQL> COLUMN "# of Employee" FORMAT 99
SQL> COLUMN "Average Hours" FORMAT 999
SQL> SELECT START_QUARTER "Quarter", count(DISTINCT T2.proj_number) "# of Projects", NVL(SUM(num_employee), 0) "# of Employee",
2         NVL(AVG(TOTAL), 0) "Average Hours"
3 FROM (SELECT proj_number, CASE WHEN EXTRACT(MONTH FROM START_DATE) < 4 THEN '1st quarter'
4         WHEN (6 < EXTRACT(MONTH FROM START_DATE) and EXTRACT(MONTH FROM START_DATE) < 10)
5         THEN '3rd quarter'
6         WHEN 9 < EXTRACT(MONTH FROM START_DATE) THEN '4th quarter'
7         else '2nd quarter'
8         END AS "START_QUARTER"
9 FROM project JOIN ASSIGNMENT USING (PROJ_NUMBER)
10 GROUP BY PROJ_NUMBER, START_DATE) T1
11 LEFT OUTER JOIN (SELECT proj_number, CASE WHEN EXTRACT(MONTH FROM START_DATE) < 4 THEN '1st quarter'
12         WHEN (6 < EXTRACT(MONTH FROM START_DATE) and EXTRACT(MONTH FROM START_DATE) < 10)
13         THEN '3rd quarter'
14         WHEN 9 < EXTRACT(MONTH FROM START_DATE) THEN '4th quarter'
15         else '2nd quarter'
16         END AS "START_QUARTER",
17         count(DISTINCT EMP_num) num_employee,
18         SUM(HOURS_USED) TOTAL
19 FROM project JOIN ASSIGNMENT USING (PROJ_NUMBER)
20 WHERE EXTRACT(YEAR FROM START_DATE) = (EXTRACT(YEAR FROM SYSDATE) - 1)
21 GROUP BY PROJ_NUMBER, START_DATE) T2 USING (START_QUARTER)
22 GROUP BY START_QUARTER
23 ORDER BY START_QUARTER;
```



Quarter	# of Projects	# of Employee	Average Hours
-----	-----	-----	-----
1st quarter	0	0	0
2nd quarter	0	0	0
3rd quarter	3	64	112
4th quarter	1	3	21

4 rows selected.

---Q8

SQL> COLUMN "Employee Name" FORMAT A20

SQL> COLUMN "java" FORMAT 99

SQL> COLUMN "R" FORMAT 99

SQL> COLUMN "PTN" FORMAT 99

SQL> COLUMN "EXL" FORMAT 99

SQL> COLUMN "SAS" FORMAT 99

SQL> COLUMN "PPT" FORMAT 99

SQL> COLUMN "Latest Acquired Date" HEADING "Latest |Acquired |Date" FORMAT A9

SQL>

```
SQL> select ID, "EMPLOYEE NAME", PTN, PYTHON_DATE "Latest Acquired Date", R, r_date "Latest Acquired Date",
2         "PPT", pp_date "Latest Acquired Date", java, JAVA_date "Latest Acquired Date",
3         "EXL", EXCEL_date "Latest Acquired Date",
4         "SAS" , SAS_date "Latest Acquired Date", "# of Skills"
5 from (SELECT DECODE(emp_num, NULL, '          ', emp_num) "ID",
6         DECODE("Employee Name", NULL, 'Number of Trainings:', "Employee Name") "EMPLOYEE NAME",
7         SUM(DECODE (CODE, 0001, 1, 0)) "PTN",
8         SUM(DECODE (CODE, 0002, 1, 0)) "R",
9         SUM(DECODE (CODE, 0003, 1, 0)) "PPT",
10        SUM(DECODE (CODE, 0004, 1, 0)) "JAVA", SUM(DECODE (CODE, 0005, 1, 0)) "EXL",
11        SUM(DECODE (CODE, 0006, 1, 0)) "SAS",
12        COUNT(DISTINCT CODE) "# of Skills"
13 FROM (SELECT EMP_FIRST ||' '|| EMP_LAST "Employee Name", EMP_NUM
14        FROM EMPLOYEE) join training using (emp_num) join skill using (code)
15 GROUP BY GROUPING SETS (("Employee Name", EMP_NUM), ())) t1
```

```
16 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) python_date
17     from training
18     where code = 0001
19     group by emp_num)t2 on (t2.emp_num = t1.ID)
20 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) r_date
21     from training
22     where code = 0002
23     group by emp_num)t3 on (t3.emp_num = t1.ID)
24 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) pp_date
25     from training
26     where code = 0003
27     group by emp_num)t4 on (t4.emp_num = t1.ID)
28 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) JAVA_date
29     from training
30     where code = 0004
31     group by emp_num)t5 on (t5.emp_num = t1.ID)
32 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) EXCEL_date
33     from training
34     where code = 0005
35     group by emp_num)t6 on (t6.emp_num = t1.ID)
36 LEFT OUTER join (select emp_num, MAX(DATE_ACQUIRED) SAS_date
37     from training
38     where code = 0006
39     group by emp_num)t7 on (t7.emp_num = t1.ID)
40 ORDER BY ID DESC NULLS LAST;
```

ID	EMPLOYEE NAME	Latest Acquired	Latest Acquired	Latest Acquired	Latest Acquired	Latest Acquired	Latest Acquired	# of Skills
		PTN Date	R Date	PPT Date	JAVA Date	EXL Date	SAS Date	
515	Nicolaus Copernicus	0	0	0	0	0	1 06-NOV-16	1
513	Melissa Franklin	1 11-MAY-16	0	0	1 23-OCT-16	0	1 01-JAN-17	3
512	Michael Faraday	0	0	0	0	0	1 23-DEC-15	1
510	Johannes Kepler	0	0	0	0	2 21-OCT-17	0	1
509	Ingrid Daubechies	0	0	0	0	1 30-JAN-14	0	1
508	Snow John	0	1 21-SEP-16	0	1 31-AUG-16	0	0	2
507	Dorothy Hodgkin	0	0	0	1 23-AUG-15	0	0	1
506	Geraldine Seydoux	0	0	1 08-JUN-17	0	0	0	1
505	Enrico Fermi	0	0	1 01-MAY-17	0	0	0	1
502	Caroline Herschel	1 01-FEB-16	2 21-OCT-16	0	0	0	0	2
501	Blaise Pascal	1 11-JAN-15	0	0	0	0	0	1
Number of Trainings:		3	3	2	3	3	3	6

12 rows selected.

---Q9

SQL> COLUMN "Department" FORMAT A20

SQL> COLUMN "SKILL" FORMAT A15

SQL> COLUMN "Rank" FORMAT 99

SQL> BREAK ON "Department"

```
SQL> SELECT  NM2 "Department", AA "Skill", NVL(TIMES, 0) "Training Times",
2           RANK () OVER (partition by NM2 ORDER BY TIMES DESC NULLS LAST) AS "Rank"
3 FROM (SELECT T1.NAME NM1, T1.DEPT_CODE, T5.DESCRPTION TT, COUNT (DISTINCT TRAIN_NUM) Times
4       FROM DEPARTMENT T1 JOIN EMPLOYEE T3 ON (T1.DEPT_CODE =T3.DEPT_CODE)
5       JOIN Training T4  ON (T4.Emp_Num=T3.Emp_Num) join skill t5 ON (T4.CODE=T5.CODE)
6       GROUP BY T1.NAME,T5. DESCRPTION, T1.DEPT_CODE) RIGHT OUTER JOIN
7       (SELECT T6.NAME NM2, T7.DESCRPTION AA FROM DEPARTMENT T6 CROSS JOIN SKILL T7  ) ON NM2 = NM1 AND AA = TT
8 ORDER BY 1, 3 desc;
```

Department	Skill	Training Times	Rank
-----			
Administration	Python	0	1
	R	0	1
	JAVA	0	1
	Excel	0	1
	Power Point	0	1
	SAS	0	1
Design	SAS	1	1
	R	0	2
	Excel	0	2
	JAVA	0	2
	Python	0	2
	Power Point	0	2
IT	SAS	2	1
	JAVA	1	2
	Python	1	2
	Power Point	0	4
	Excel	0	4
	R	0	4
Marketing	Excel	3	1
	JAVA	1	2
	R	0	3
	SAS	0	3
	Power Point	0	3
	Python	0	3
Strategy Development	R	3	1
	Power Point	2	2
	Python	2	2
	JAVA	1	4
	SAS	0	5
	Excel	0	5

30 rows selected.

## -----PartII.C-----

### ---Q1

```
SQL> DROP VIEW employeeinfo;
```

```
SQL> CREATE VIEW employeeinfo
```

```
2 AS
3 SELECT EMP.EMP_FIRST ||' '|| EMP.EMP_LAST "Employee", INSTR.EMP_FIRST ||' '|| INSTR.EMP_LAST "Supervisor",
4         training.name, DATE_ACQUIRED, description "Skill", ROUND(MONTHS_BETWEEN(SYSDATE,Date_Acquired)) "Months Passed"
5 FROM employee emp LEFT OUTER join employee instr on (emp.SUPER_ID = instr.emp_num) join training on (emp.emp_num = training.emp_num)
6         join skill using (code)
7 ORDER BY 1;
```

```
SQL> set feedback off linesize 120 pagesize 60
```

```
SQL> TTITLE 'Employee Information'
```

```
SQL> BTITLE CENTER 'End of Employee Information Report' RIGHT 'BY:YATING CHANG, XIAOMENG SUN' FORMAT A60
```

```
SQL> column "EMPLOYEE" HEADING 'Employee Name' format A20
```

```
SQL> column "SUPERVISOR" HEADING 'Supervisor Name' format A20 NULL 'Not Supervised'
```

```
SQL> column "Name" HEADING 'Training Name' format A30
```

```
SQL> column DATE_ACQUIRED heading 'Acquired|Date'
```

```
SQL> column "skill" HEADING 'Skill |Acquired' format A15
```

```
SQL> column "Months Passed" HEADING 'Months|Passed' format 99
```

```
SQL> BREAK ON REPORT ON "Employee" ON "Supervisor"
```

```
SQL> COMPUTE COUNT LABEL 'Number of Trainings' -
```

```
>          OF "NAME" ON "Employee" SKIP 2
```

```
SQL> SELECT *
```

```
2 FROM employeeinfo;
```

## Employee Information

Employee Name	Supervisor Name	Training Name	Acquired Date	Skill Acquired	Months Passed
Blaise Pascal	Chien-Shiung Wu	Introduction to Python	11-JAN-15	Python	35
*****					
Number of Trainings			1		
Caroline Herschel	Blaise Pascal	Upper Level of R	21-OCT-16	R	14
		Introduction to R	21-MAR-15	R	33
		Upper Level of Python	01-FEB-16	Python	22
*****					
Number of Trainings			3		
Dorothy Hodgkin	Chien-Shiung Wu	Introduction to JAVA	23-AUG-15	JAVA	27
*****					
Number of Trainings			1		
Enrico Fermi	Blaise Pascal	Introduction to Power Point	01-MAY-17	Power Point	7
*****					
Number of Trainings			1		
Geraldine Seydoux	Blaise Pascal	Upper Level of Power Point	08-JUN-17	Power Point	6
*****					
Number of Trainings			1		
Ingrid Daubechies	Dorothy Hodgkin	Introduction to Excel	30-JAN-14	Excel	46
*****					



Number of Trainings			1		
Johannes Kepler	Dorothy Hodgkin	Introduction to Excel	28-APR-17	Excel	7
		Upper Level of Excel	21-OCT-17	Excel	2

\*\*\*\*\*

Number of Trainings			2		
Melissa Franklin	Lise Meitner	Introduction to JAVA	23-OCT-16	JAVA	13
		Introduction to SAS	01-JAN-17	SAS	11
		Introduction to Python	11-MAY-16	Python	19

\*\*\*\*\*

Number of Trainings			3		
Michael Faraday	Lise Meitner	Upper Level of SAS	23-DEC-15	SAS	23

\*\*\*\*\*

Number of Trainings			1		
Nicolaus Copernicus	Niels Bohr	Introduction to SAS	06-NOV-16	SAS	13

\*\*\*\*\*

Number of Trainings			1		
Snow John	Blaise Pascal	Upper Level of JAVA	31-AUG-16	JAVA	15
		Upper Level of R	21-SEP-16	R	15

\*\*\*\*\*

Number of Trainings			2		
---------------------	--	--	---	--	--

End of Employee Information Report

BY:YATING CHANG, XIAOMENG SUN

```
SQL> CLEAR BREAK COLUMN COMPUTE
```

```
SQL> TTITLE OFF
```

```
SQL> BTITLE OFF
```

```
SQL> set feedback on linesize 130 pagesize 130
```

## -----PartII.C-----

### ---Q2

```
SQL> DROP VIEW tableInformation;
```

```
SQL>
```

```
SQL> CREATE VIEW tableInformation
```

```
2 AS
3 SELECT a1.table_name, a1.column_name,a2.constraint_name,
4        CASE a4.constraint_type
5            WHEN 'C' THEN 'CK'
6            WHEN 'R' THEN 'FK'
7            WHEN 'P' THEN 'PK'
8        END AS Type,
9        a4.search_condition,a3.table_name refer_table,a3.column_name refer_column
10 FROM user_tab_columns a1 LEFT OUTER JOIN user_cons_columns a2
11                        ON (a1.table_name = a2.table_name AND a1.column_name =a2.column_name)
12                        LEFT OUTER JOIN user_constraints a4 ON (a2.constraint_name = a4.constraint_name)
13                        LEFT OUTER JOIN (SELECT constraint_name,table_name, column_name
14                                        FROM all_cons_columns JOIN all_constraints USING(table_name,constraint_name)
15                                        WHERE table_name IN ('SKILL','TRAINING','DEPARTMENT','EMPLOYEE','CLIENT','PROJECT','ASSIGNMENT')
16                                        AND
17                                        constraint_type = 'P') a3
18                        ON a4.r_constraint_name = a3.constraint_name
19 WHERE a1.table_name IN ('SKILL','TRAINING','DEPARTMENT','EMPLOYEE','CLIENT','PROJECT','ASSIGNMENT')
20 order by a1.table_name,column_ID;
```

```
SQL> SET Feedback off linesize 120 pagesize 62
SQL> TTITLE 'Table Information'
SQL> BTITLE CENTER 'End of Table Information Report' RIGHT 'BY:YATING CHANG, XIAOMENG SUN' FORMAT A60
SQL> COLUMN table_name HEADING 'Table Name' format A13
SQL> COLUMN column_name HEADING 'Column Name' format A15
SQL> COLUMN constraint_name HEADING 'Constraint' format A25
SQL> COLUMN type HEADING 'Type' format A4
SQL> COLUMN search_condition HEADING 'Condition' format A21
SQL> COLUMN refer_table HEADING 'Refer.Table' format A13
SQL> COLUMN refer_column HEADING 'Refer.Column' format A13
SQL> BREAK ON table_name ON column_name;
SQL> SELECT *
      2 FROM tableInformation;
```

Table Information

Table Name	Column Name	Constraint	Type	Condition	Refer.Table	Refer.Column
ASSIGNMENT	ASSIGN_NUM	ASSIGNMENT_ASSIGN_NUM_PK	PK			
	PROJ_NUMBER	ASSIGNMENT_PROJ_NUM_FK	FK		PROJECT	PROJ_NUMBER
	EMP_NUM	ASSIGNMENT_EMP_NUM_FK	FK		EMPLOYEE	EMP_NUM
	DATE_ASSIGNED	ASSIGNMENT_DATE_ENDED_CHK	CK	Date_Ended > Date_Assigned		
	DATE_ENDED	ASSIGNMENT_DATE_ENDED_CHK	CK	Date_Ended > Date_Assigned		
CLIENT	HOURS_USED	ASSIGNMENT_HOURS_USED_CHK	CK	hours_used <= 160		
	CLIENT_ID	CLIENT_CLIENT_ID_PK	PK			
	NAME					
	STREET					
	CITY					
	STATE					
	ZIP_CODE					
	INDUSTRY					
	WEB_ADDRESS					
	PHONE					
	CONTACT_NAME					

DEPARTMENT	DEPT_CODE	DEPARTMENT_DEPT_CODE_PK	PK			
	NAME					
	LOCATION					
	PHONE					
EMPLOYEE	MANAGER_ID	DEPARTMENT_MANAGER_ID_FK	FK		EMPLOYEE	EMP_NUM
	EMP_NUM	EMPLOYEE_EMP_NUM_PK	PK			
	EMP_LAST					
	EMP_FIRST					
	DOB	EMPLOYEE_DOB_CK	CK	EXTRACT(YEAR FROM HIR E_DATE) - EXTRACT(YEA R FROM DOB)>17		
	HIRE_DATE	EMPLOYEE_DOB_CK	CK	EXTRACT(YEAR FROM HIR E_DATE) - EXTRACT(YEA R FROM DOB)>17		
PROJECT	SUPER_ID	EMPLOYEE_SUPER_ID_FK	FK		EMPLOYEE	EMP_NUM
	DEPT_CODE	EMPLOYEE_DEPT_CODE_FK	FK		DEPARTMENT	DEPT_CODE
	BONUS_AMT					
	PROJ_NUMBER	PROJECT_PROJ_NUMBER_PK	PK			
	NAME					
	START_DATE					
	TOTAL_COST					
	DEPT_CODE	PROJECT_DEPT_CODE_FK	FK		DEPARTMENT	DEPT_CODE
		PROJECT_DEPT_CODE_CK	CK	Dept_Code <> '05'		

	CLIENT_ID	PROJECT_CLIENT_ID_FK	FK	CLIENT	CLIENT_ID
SKILL	CODE	SKILL_CODE_PK	PK		
	DESCRIPTION				
TRAINING	TRAIN_NUM	TRAINING_TRAIN_NUM_PK	PK		
	CODE	TRAINING_CODE_FK	FK	SKILL	CODE
	EMP_NUM	TRAINING_EMP_NUM_FK	FK	EMPLOYEE	EMP_NUM
	DATE_ACQUIRED				
	NAME				
	COMMENTS				

End of Table Information Report

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SQL> CLEAR BREAK COLUMN COMPUTE

SQL> TTITLE OFF

SQL> BTITLE OFF

SQL> set feedback on linesize 130 pagesize 130