



National University
Of Computer and Emerging Sciences

Lab Task 3

Name – Muhammad Taha

Roll NO – 23P-0559

SECTION – BCS(4A)

Subject - DATABASE Lab

(1)

(a)

--23P-0559 BCS (4A)

```
SELECT * FROM EMPLOYEES WHERE FIRST NAME LIKE '%A%' OR LAST NAME LIKE '%A';
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-JAN-06	IT PROG	9000	(null)	102	60
115	Alexander	Khoo	AKHOO	515.127.4562	18-MAY-03	PU CLERK	3100	(null)	114	30
121	Adam	Fripp	AFRIPP	650.123.2234	10-APR-05	ST MAN	8200	(null)	100	50
147	Alberto	Errazuriz	AERRAZUR	011.44.1344.429278	10-MAR-05	SA MAN	12000	0.3	100	80
158	Allan	McEwen	AMCEWEN	011.44.1345.829268	01-AUG-04	SA REP	9000	0.35	146	80
167	Amit	Banda	ABANDA	011.44.1346.729268	21-APR-08	SA REP	6200	0.1	147	80
175	Alvssa	Hutton	AHUTTON	011.44.1644.429266	19-MAR-05	SA REP	8800	0.25	149	80
185	Alexis	Bull	ABULL	650.509.2876	20-FEB-05	SH CLERK	4100	(null)	121	50
187	Anthony	Cabrio	ACABRIO	650.509.4876	07-FEB-07	SH CLERK	3000	(null)	121	50
196	Alana	Walsh	AWALSH	650.507.9811	24-APR-06	SH CLERK	3100	(null)	124	50

(b)

--23P-0559 BCS (4A)

```
SELECT * FROM EMPLOYEES WHERE LAST NAME LIKE '%e';
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
109	Daniel	Faviet	DFAVIET	515.124.4169	16-AUG-02	FI ACCOUNT	9000	(null)	108	100
110	John	Chen	JCHEN	515.124.4269	28-SEP-05	FI ACCOUNT	8200	(null)	108	100
119	Karen	Colmenares	KCOLMENA	515.127.4566	10-AUG-07	PU CLERK	2500	(null)	114	30
125	Julia	Nayer	JNAYER	650.124.1214	16-JUL-05	ST CLERK	3200	(null)	120	50
135	Ki	Gee	KGEE	650.127.1734	12-DEC-07	ST CLERK	2400	(null)	122	50
136	Hazel	Philtanker	HPHILTAN	650.127.1634	06-FEB-08	ST CLERK	2200	(null)	122	50
138	Stephen	Stiles	SSTILES	650.121.2034	26-OCT-05	ST CLERK	3200	(null)	123	50
139	John	Seo	JSEO	650.121.2019	12-FEB-06	ST CLERK	2700	(null)	123	50
140	Joshua	Patel	JPATEL	650.121.1834	06-APR-06	ST CLERK	2500	(null)	123	50
142	Curtis	Davies	CDAVIES	650.121.2994	29-JAN-05	ST CLERK	3100	(null)	124	50
149	Eleni	Zlotkev	EZLOTKEY	011.44.1344.429018	29-JAN-08	SA MAN	10500	0.2	100	80
150	Peter	Tucker	PTUCKER	011.44.1344.129268	30-JAN-05	SA REP	10000	0.3	145	80
153	Christopher	Olsen	COLSEN	011.44.1344.498718	30-MAR-06	SA REP	8000	0.2	145	80
158	Allan	McEwen	AMCEWEN	011.44.1345.829268	01-AUG-04	SA REP	9000	0.35	146	80
162	Clara	Vishnev	CVISHNEY	011.44.1346.129268	11-NOV-05	SA REP	10500	0.25	147	80
165	David	Lee	DLEE	011.44.1346.529268	23-FEB-08	SA REP	6800	0.1	147	80
168	Lisa	Ozer	LOZER	011.44.1343.529268	11-MAR-05	SA REP	11500	0.25	148	80
172	Elizabeth	Bates	EBATES	011.44.1343.529268	24-MAR-07	SA REP	7300	0.15	148	80
174	Ellen	Abel	EABEL	011.44.1644.429267	11-MAY-04	SA REP	11000	0.3	149	80
186	Julia	Dellinger	JDELLING	650.509.3876	24-JUN-06	SH CLERK	3400	(null)	121	50
190	Timothy	Gates	TGATES	650.505.3876	11-JUL-06	SH CLERK	2900	(null)	122	50
195	Vance	Jones	VJONES	650.501.4876	17-MAR-07	SH CLERK	2800	(null)	123	50
197	Kevin	Feenev	KFEENEY	650.507.9822	23-MAY-06	SH CLERK	3000	(null)	124	50
200	Jennifer	Whalen	JWHALEN	515.123.4444	17-SEP-03	AD ASST	4400	(null)	101	10
204	Hermann	Baer	HBAER	515.123.8888	07-JUN-02	PR REP	10000	(null)	101	70

(c)

--23P-0559 BCS (4A)

```
SELECT * FROM EMPLOYEES WHERE FIRST NAME LIKE '_l%';
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT_ID
103	Alexander	Hunold	AHUNOLD	590.423.4567	03-JAN-06	IT PROG	9000	(null)	102	60
115	Alexander	Khoo	AKHOO	515.127.4562	18-MAY-03	PU CLERK	3100	(null)	114	30
147	Alberto	Errazuriz	AERRAZUR	011.44.1344.429278	10-MAR-05	SA MAN	12000	0.3	100	80
149	Eleni	Zlotkev	EZLOTKEY	011.44.1344.429018	29-JAN-08	SA MAN	10500	0.2	100	80
155	Oliver	Tuvault	OTUVAULT	011.44.1344.486508	23-NOV-07	SA REP	7000	0.15	145	80
158	Allan	McEwen	AMCEWEN	011.44.1345.829268	01-AUG-04	SA REP	9000	0.35	146	80
162	Clara	Vishnev	CVISHNEY	011.44.1346.129268	11-NOV-05	SA REP	10500	0.25	147	80
172	Elizabeth	Bates	EBATES	011.44.1343.529268	24-MAR-07	SA REP	7300	0.15	148	80
174	Ellen	Abel	EABEL	011.44.1644.429267	11-MAY-04	SA REP	11000	0.3	149	80
175	Alvssa	Hutton	AHUTTON	011.44.1644.429266	19-MAR-05	SA REP	8800	0.25	149	80
185	Alexis	Bull	ABULL	650.509.2876	20-FEB-05	SH CLERK	4100	(null)	121	50
196	Alana	Walsh	AWALSH	650.507.9811	24-APR-06	SH CLERK	3100	(null)	124	50

(d)

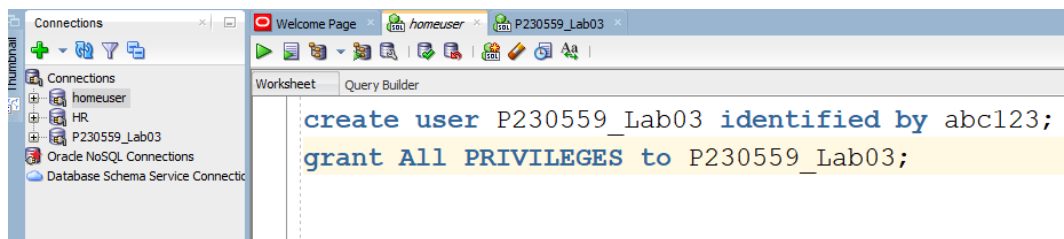
```
--23P-0559 BCS (4A)
```

```
SELECT * FROM EMPLOYEES WHERE FIRST_NAME LIKE ' _l%' AND FIRST_NAME LIKE ' _n%';
```

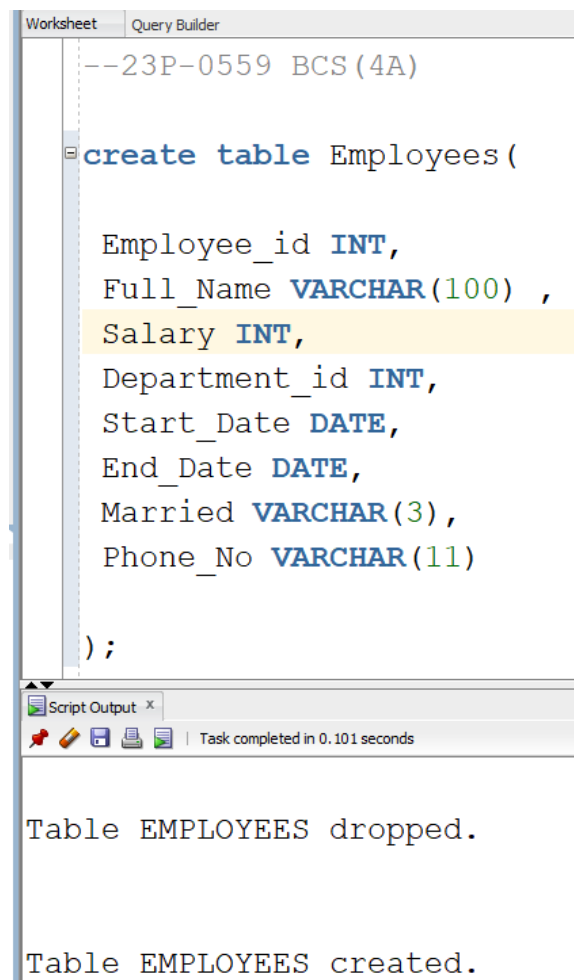
```
SELECT * FROM EMPLOYEES WHERE FIRST_NAME LIKE ' _l_n%';
```

	EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID	DEPARTMENT
1	149	Eleni	Zlotkev	EZLOTKEY	011.44.1344.429018	29-JAN-08	SA MAN	10500	0.2	100	8
2	196	Alana	Walsh	AWALSH	650.507.9811	24-APR-06	SH CLERK	3100	(null)	124	5

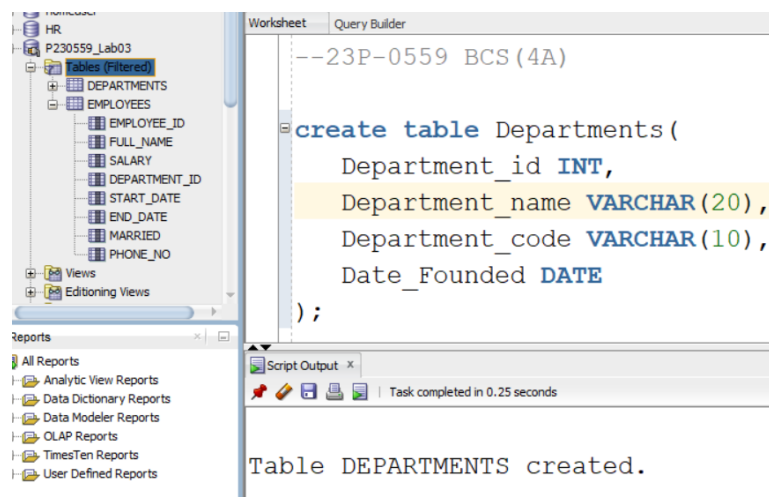
(2)



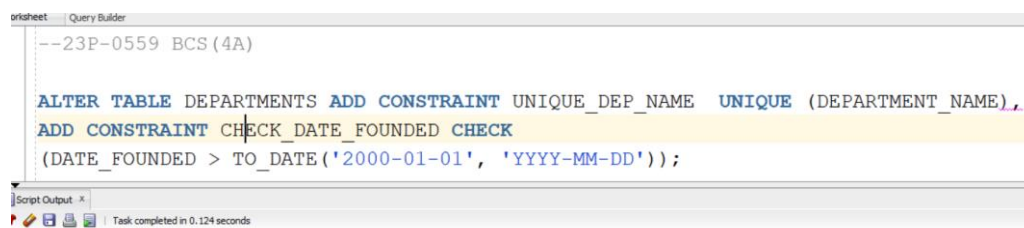
(3)



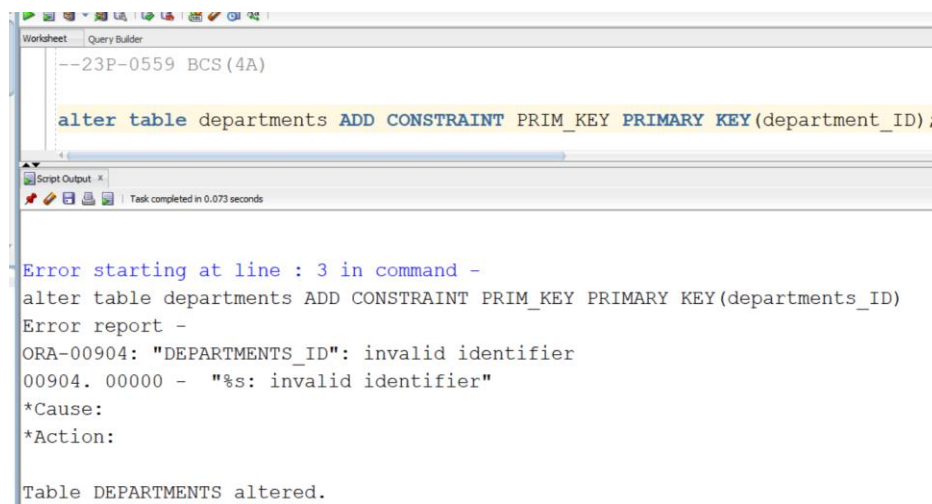
(4)



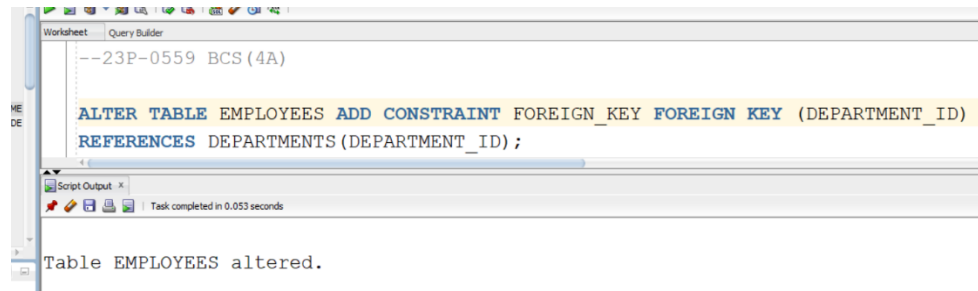
(5)



(6)

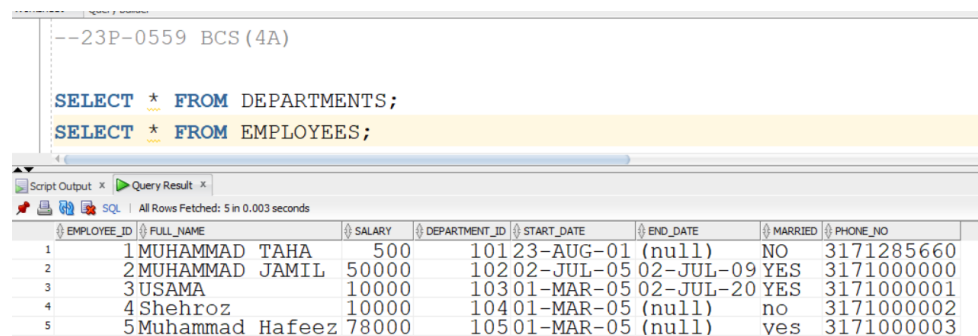


(7)

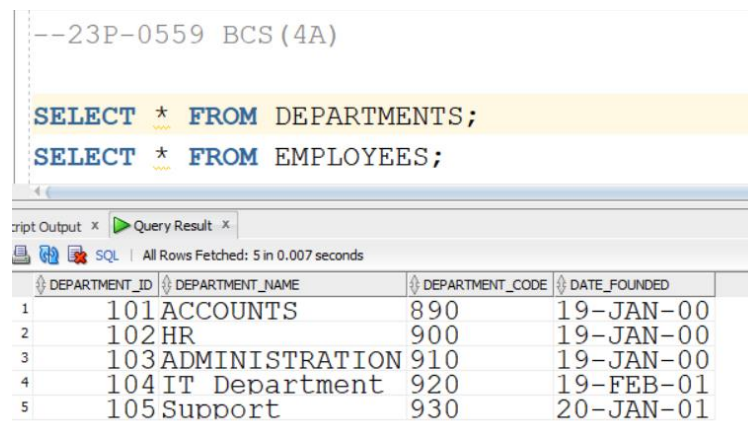


(8)

(a)



(b)



(9)

```
--23P-0559 BCS(4A)

ALTER TABLE DEPARTMENTS ADD SPECIALITY VARCHAR(30) DEFAULT 'None';
SELECT * FROM DEPARTMENTS;
```

	DEPARTMENT_ID	DEPARTMENT_NAME	DEPARTMENT_CODE	DATE_FOUNDED	SPECIALITY
1	101	ACCOUNTS	890	19-JAN-00	None
2	102	HR	900	19-JAN-00	None
3	103	ADMINISTRATION	910	19-JAN-00	None
4	104	IT Department	920	19-FEB-01	None
5	105	Support	930	20-JAN-01	None

(10)

```
Worksheet: Query Builder

--23P-0559 BCS(4A)

CREATE table jobs(
    job_ID int,
    jbo_title varchar(40),
    min_salary int,
    max_salary int
);
```

ORA-01430: column being added already exists in table
01430. 00000 - "column being added already exists in table"
*Cause:
*Action:

Table JOBS created.

(11)

```
--23P-0559 BCS(4A)

ALTER TABLE JOBS MODIFY JOB_ID INT NOT NULL, ADD CONSTRAINT JOB_ID_PRI PRIMARY KEY (JOB_ID);
```

Table JOBS altered.

Table JOBS altered.

(12)

```
Worksheet: Query Builder

--23P-0559 BCS(4A)

ALTER TABLE EMPLOYEES MODIFY EMPLOYEE_ID NOT NULL;
ALTER TABLE EMPLOYEES ADD CONSTRAINT Pk_EMP_ID PRIMARY KEY(EMPLOYEE_ID);

ALTER TABLE JOBS ADD EMPLOYEE_ID INT;
ALTER TABLE JOBS ADD CONSTRAINT FOREIGN KEY IN_JOBS
FOREIGN KEY(EMPLOYEE_ID) REFERENCES EMPLOYEES(EMPLOYEE_ID);
```

Table EMPLOYEES altered.

Table JOBS altered.

(13)

Worksheet | Query Builder

```
--23P-0559 BCS (4A)
```

```
INSERT INTO JOBS (JOB_ID,JOB_TITLE,MIN_SALARY,MAX_SALARY,EMPLOYEE_ID) VALUES  
(3, 'MANAGER',500,500000,2);|  
SELECT* FROM JOBS;
```

Script Output x Query Result x

SQL | All Rows Fetched: 3 in 0.007 seconds

	JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY	EMPLOYEE_ID
1	1	TEACHER	500	80000	5
2	2	OFFICER	500	8000	1
3	3	MANAGER	500	500000	2

(14)

Worksheet | Query Builder

```
--23P-0559 BCS (4A)
```

```
ALTER TABLE DEPARTMENTS DROP COLUMN SPECIALITY;
```

Script Output x Query Result x

Task completed in 0.126 seconds

Error report -

ORA-00001: unique constraint (P230559_LAB03.JOB_ID_PRI) violated

1 row inserted.

1 row inserted.

Table DEPARTMENTS altered.

(15)

Worksheet | Query Builder

```
--23P-0559 BCS (4A)
```

```
TRUNCATE TABLE JOBS;  
SELECT * FROM JOBS;
```

Script Output x Query Result x

SQL | All Rows Fetched: 0 in 0.005 seconds

	JOB_ID	JOB_TITLE	MIN_SAL...	MAX_SAL...	EMPLOYEE...
--	--------	-----------	------------	------------	-------------

(16)

Worksheet | Query Builder

```
--23P-0559 BCS (4A)
```

```
INSERT INTO JOBS (JOB_ID,JOB_TITLE,MIN_SALARY,MAX_SALARY,EMPLOYEE_ID) VALUES  
(4, 'Finance Manager',8200,160000,5);  
  
SELECT * FROM JOBS;
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.003 seconds

	JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY	EMPLOYEE_ID
1	1	Software Engineer	4000	10000	3
2	2	IT Programmer	4500	9000	2
3	3	CEO	500	900000	1
4	4	Finance Manager	8200	160000	5

(17)

```
Worksheet Query Builder
--23P-0559 BCS(4A)

update EMPLOYEES set full_name = upper(FULL_NAME);
-- update the fullname to the capital

ALTER TABLE EMPLOYEES ADD CONSTRAINT CHECK_FULL_NAME CHECK
(FULL_NAME = UPPER(FULL_NAME));
```

Script Output x

Task completed in 0.18 seconds

Table EMPLOYEES altered.

(18)

```
Worksheet Query Builder
--23P-0559 BCS(4A)

Alter table employees modify phone_no unique not null;
```

Script Output x

Task completed in 0.058 seconds

Table EMPLOYEES altered.

Table EMPLOYEES altered.

(19)

```
Worksheet Query Builder
--23P-0559 BCS(4A)

insert into employees (EMPLOYEE_ID,full_name,salary,department_id,start_date,end_date,
married,phone_NO)values(6,'ABDULLAH',90000,105,TO_DATE('2020-11-18','YYYY-MM-DD'),NULL,
'NO',3000000);

select * from EMPLOYEES;
```

Script Output x Query Result x

All Rows Fetched: 6 in 0.003 seconds

EMPLOYEE_ID	FULL_NAME	SALARY	DEPARTMENT_ID	START_DATE	END_DATE	MARRIED	PHONE_NO
1	MUHAMMAD TAHA	500	101	23-AUG-01 (null)		NO	3171285660
2	MUHAMMAD JAMIL	50000	102	02-JUL-05 02-JUL-09	YES	YES	3171000000
3	USAMA	10000	103	01-MAR-05 02-JUL-20	YES	YES	3171000001
4	SHEHROZ	10000	104	01-MAR-05 (null)		no	3171000002
5	MUHAMMAD HAFEEZ	78000	105	01-MAR-05 (null)		ves	3171000003
6	ABDULLAH	90000	105	18-NOV-20 (null)		NO	3000000

(20)

```
Worksheet Query Builder
--23P-0559 BCS(4A)

UPDATE EMPLOYEES SET SALARY = SALARY*3 WHERE SALARY < 1000; --*2 = 100%,*3 = 200%
select * from EMPLOYEES;
--TAHA SALARY BEFORE 500 AFTER 1500
```

Script Output x Query Result x

All Rows Fetched: 6 in 0.003 seconds

EMPLOYEE_ID	FULL_NAME	SALARY	DEPARTMENT_ID	START_DATE	END_DATE	MARRIED	PHONE_NO
1	MUHAMMAD TAHA	1500	101	23-AUG-01 (null)		NO	3171285660
2	MUHAMMAD JAMIL	50000	102	02-JUL-05 02-JUL-09	YES	YES	3171000000
3	USAMA	10000	103	01-MAR-05 02-JUL-20	YES	YES	3171000001
4	SHEHROZ	10000	104	01-MAR-05 (null)		no	3171000002
5	MUHAMMAD HAFEEZ	78000	105	01-MAR-05 (null)		ves	3171000003
6	ABDULLAH	90000	105	18-NOV-20 (null)		NO	3000000

(21)

```
Worksheet | Query Builder
--23P-0559 BCS (4A)

ALTER TABLE EMPLOYEES RENAME COLUMN PHONE_NO TO PHONE_NUMBER;
ALTER TABLE JOBS DROP CONSTRAINT FOREIGN_KEY_IN_JOBS;
RENAME JOBS TO job_details;

ALTER TABLE JOB_DETAILS ADD CONSTRAINT FOREIGN_KEY_IN_JOBS_ID FOREIGN KEY (EMPLOYEE_ID) REFERENCES
EMPLOYEES (EMPLOYEE_ID);

Script Output
Task completed in 0.003 seconds

*Cause:
*Action:

Error starting at line : 7 in command -
ALTER TABLE JOB_DETAILS
```

(22)

```
Worksheet | Query Builder
--23P-0559 BCS (4A)

ALTER TABLE EMPLOYEES ADD CONSTRAINT COMPOSITE_PRIM_KEY PRIMARY KEY(EMPLOYEE_ID, JOB_ID)
--THIS ERROR MEANS THAT JOB_ID DOES NOT EXIST IN THE EMPLOYEES TABLE

Script Output
Task completed in 0.115 seconds

Error starting at line : 3 in command -
ALTER TABLE EMPLOYEES ADD CONSTRAINT COMPOSITE_PRIM_KEY PRIMARY KEY(EMPLOYEE_ID, JOB_ID)
Error report -
ORA-00904: "JOB ID": invalid identifier
00904. 00000 - "%s: invalid identifier"
*Cause:
*Action:
```

(23)

(a)

```
--23P-0559 BCS (4A)

ALTER TABLE JOB_DETAILS ADD STARTING_YEAR INT;
UPDATE JOB_DETAILS SET STARTING_YEAR = 1889 WHERE JOB_ID = 3;

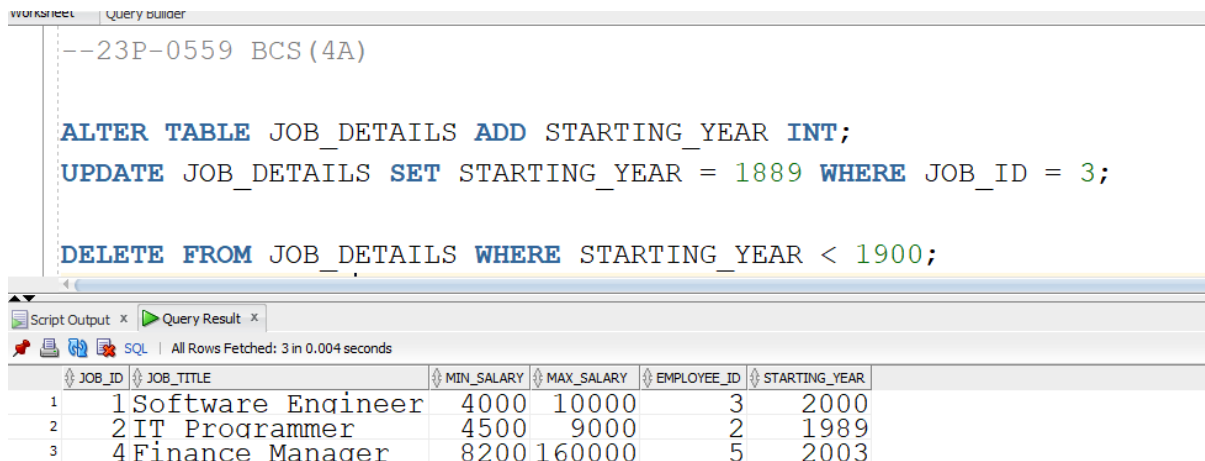
DELETE FROM JOB_DETAILS WHERE STARTING_YEAR < 1900;
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.005 seconds

	JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY	EMPLOYEE_ID	STARTING_YEAR
1	1	Software Engineer	4000	10000	3	2000
2	2	IT Programmer	4500	9000	2	1989
3	3	CEO	500	900000	1	1889
4	4	Finance Manager	8200	160000	5	2003

(b)



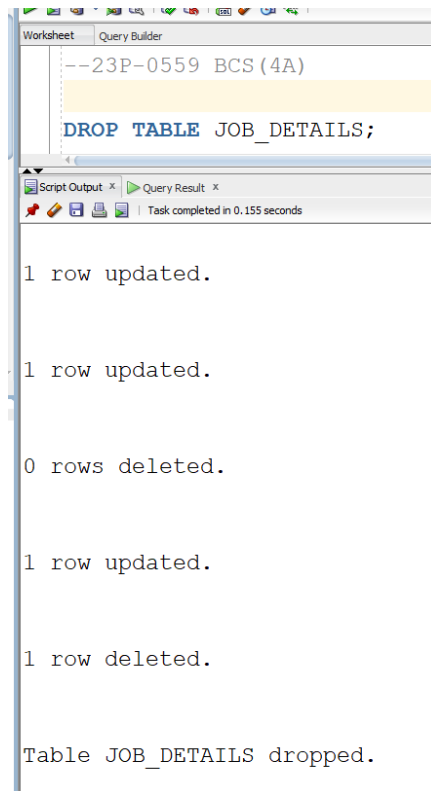
The screenshot shows a database query builder interface. The top section contains the following SQL commands:

```
--23P-0559 BCS (4A)  
  
ALTER TABLE JOB_DETAILS ADD STARTING_YEAR INT;  
UPDATE JOB_DETAILS SET STARTING_YEAR = 1889 WHERE JOB_ID = 3;  
  
DELETE FROM JOB_DETAILS WHERE STARTING_YEAR < 1900;
```

The bottom section displays the query result in a table with 6 columns: JOB_ID, JOB_TITLE, MIN_SALARY, MAX_SALARY, EMPLOYEE_ID, and STARTING_YEAR. The table contains 3 rows of data.

JOB_ID	JOB_TITLE	MIN_SALARY	MAX_SALARY	EMPLOYEE_ID	STARTING_YEAR
1	Software Engineer	4000	10000	3	2000
2	IT Programmer	4500	9000	2	1989
3	Finance Manager	8200	160000	5	2003

(24)



The screenshot shows a database query builder interface. The top section contains the following SQL command:

```
--23P-0559 BCS (4A)  
  
DROP TABLE JOB_DETAILS;
```

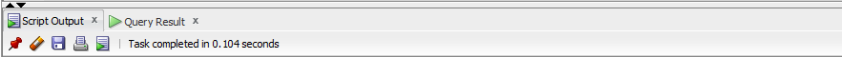
The bottom section displays a list of status messages:

```
1 row updated.  
  
1 row updated.  
  
0 rows deleted.  
  
1 row updated.  
  
1 row deleted.  
  
Table JOB_DETAILS dropped.
```

(25)

```
--23P-0559 BCS(4A)

CREATE INDEX indx_employee_id ON EMPLOYEES(EMPLOYEE_ID);
CREATE INDEX indx_department_id ON EMPLOYEES(DEPARTMENT_ID);
```



Script Output x Query Result x
Task completed in 0.104 seconds

Error starting at line : 5 in command -
CREATE INDEX indx_employee_id ON EMPLOYEES(EMPLOYEE_ID)
Error report -
ORA-01408: such column list already indexed
01408. 00000 - "such column list already indexed"
*Cause:
*Action:

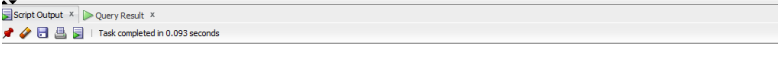
Index INDX_DEPARTMENT_ID created.

(26)

```
--23P-0559 BCS(4A)

create table suppliers(

    Supplier_ID INT NOT NULL PRIMARY KEY,
    SUPPLIER_NAME VARCHAR(25) NOT NULL UNIQUE,
    CONTACT_NAME VARCHAR(25),
    PHONE_NUMBER INT NOT NULL,
    EMAIL INT UNIQUE
);
alter table suppliers modify email varchar(20);
```



Script Output x Query Result x
Task completed in 0.093 seconds

Error starting at line : 119 in command -
alter table suppliers modify email varchar(20) unique
Error report -
ORA-02261: such unique or primary key already exists in the table
02261. 00000 - "such unique or primary key already exists in the table"
*Cause: Self-evident.
*Action: Remove the extra key.

Table SUPPLIERS altered.

(27)

```
--23P-0559 BCS (4A)

create table PRODUCTS (

PRODUCT_ID INT NOT NULL,
Product_Name VARCHAR(25) NOT NULL UNIQUE,
Supplier_ID INT,
Category_ID INT,
CONSTRAINT FOREIGN_KEY_Supplier_ID FOREIGN KEY (Supplier_ID) REFERENCES suppliers(Supplier_ID),
CONSTRAINT PRIMARY_KEY_PID PRIMARY KEY (PRODUCT_ID)
);
```

Script Output x Query Result x

Task completed in 0.141 seconds

```
Category_ID INT,
CONSTRAINT FOREIGN_KEY_Supplier_ID FOREIGN KEY (Supplier_ID) REFERENCES suppliers(Supplier_ID),
CONSTRAINT PRIMARY_KEY_PID PRIMARY KEY (PRODUCT_ID)
)

Error report -
ORA-02267: column type incompatible with referenced column type
02267. 00000 - "column type incompatible with referenced column type"
*Cause:      The datatype of the referencing column is incompatible with the

Table PRODUCTS created.
```

(28)

(a)

Worksheet Query Builder

```
--23P-0559 BCS (4A)

INSERT INTO SUPPLIERS (SUPPLIER_ID,SUPPLIER_NAME,CONTACT_NAME,PHONE_NUMBER,EMAIL) VALUES
(5,'COMPANY B','MUHAMMAD USMAN',32014451,'DUMMY4GMAILCOM');

SELECT * FROM SUPPLIERS;
```

Script Output x Query Result x

All Rows Fetched: 5 in 0.004 seconds

	SUPPLIER_ID	SUPPLIER_NAME	CONTACT_NAME	PHONE_NUMBER	EMAIL
1	1	COMPANY X	MUHAMMAD TAHA	300000	DUMMYGMAILCOM
2	2	COMPANY Y	MUHAMMAD AWAIS	30001	DUMMY1GMAILCOM
3	3	COMPANY Z	MUHAMMAD SALEEM	3004401	DUMMY2GMAILCOM
4	4	COMPANY A	MUHAMMAD ASAD	32014401	DUMMY3GMAILCOM
5	5	COMPANY B	MUHAMMAD USMAN	32014451	DUMMY4GMAILCOM

(b)

Worksheet Query Builder

```
--23P-0559 BCS (4A)

INSERT INTO PRODUCTS (PRODUCT_ID,PRODUCT_NAME,SUPPLIER_ID,CATEGORY_ID) VALUES
(5,'ELECTRONICS',3,4);

SELECT * FROM PRODUCTS;
```

Script Output x Query Result x

All Rows Fetched: 5 in 0.002 seconds

	PRODUCT_ID	PRODUCT_NAME	SUPPLIER_ID	CATEGORY_ID
1	1	GRAPHICS CARD	1	1
2	2	CPU	1	2
3	3	CASING	1	3
4	4	COMPUTER DESK	2	3
5	5	ELECTRONICS	3	4