

23K-6005

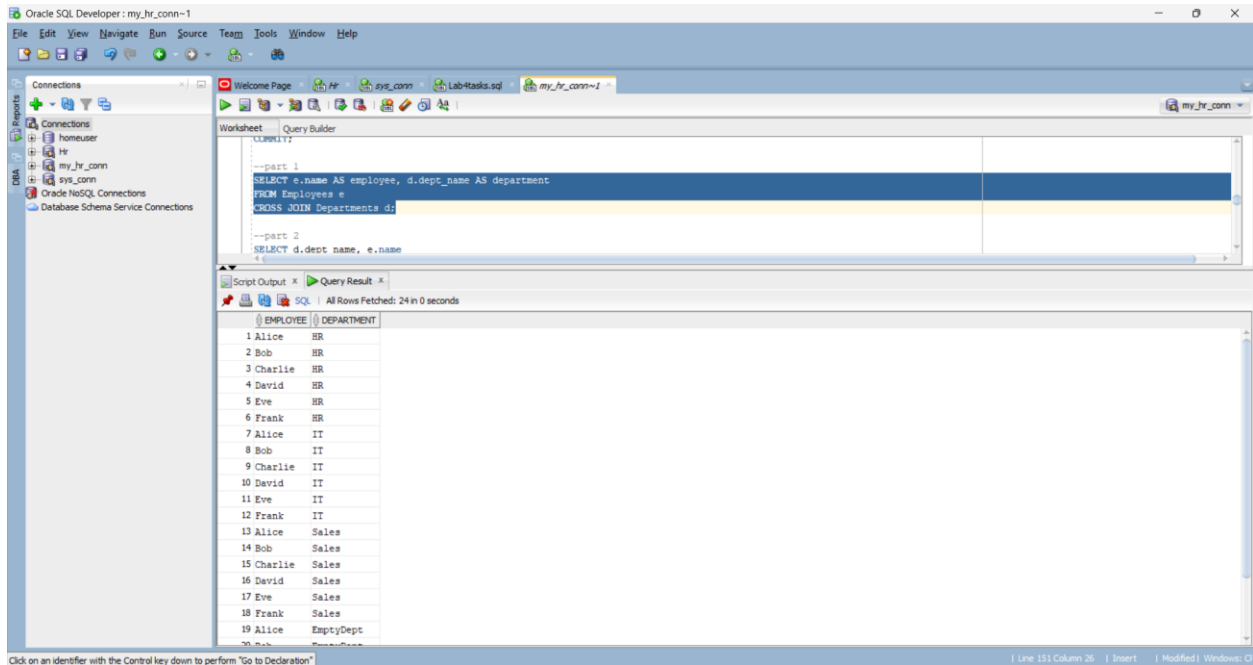
HARIS AHMED

BSAI-5A

DATABASE LAB 05:

IN LAB TASKS

1)



2)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections: homeuser, hr, my_hr_conn, sys_conn, Oracle NetSQL Connections, Database Schema Service Connections

Worksheet: Query Builder

```

--part 1
SELECT e.name AS employee, d.dept_name AS department
FROM Employees e
CROSS JOIN Departments d;

--part 2
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 3
SELECT e.name AS employee, m.name AS manager
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id;

--part 4
SELECT e.name
FROM Employees e
LEFT OUTER JOIN Projects p ON e.project_id = p.project_id
WHERE p.project_id IS NULL;

--part 5

```

Script Output x Query Result x

All Rows Fetched: 6 in 0 seconds

DEPT_NAME	NAME
1 HR	Alice
2 HR	Bob
3 IT	Charlie
4 IT	David
5 Sales	Eve
6 EmptyDept	(null)

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 156 Column 54 | Insert | Modified | Windows: O

3)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections: homeuser, hr, my_hr_conn, sys_conn, Oracle NetSQL Connections, Database Schema Service Connections

Worksheet: Query Builder

```

--part 1
SELECT e.name AS employee, d.dept_name AS department
FROM Employees e
CROSS JOIN Departments d;

--part 2
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 3
SELECT e.name AS employee, m.name AS manager
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id;

--part 4
SELECT e.name
FROM Employees e
LEFT OUTER JOIN Projects p ON e.project_id = p.project_id
WHERE p.project_id IS NULL;

--part 5

```

Script Output x Query Result x

All Rows Fetched: 3 in 0 seconds

EMPLOYEE	MANAGER
1 Charlie	Alice
2 Bob	Alice
3 David	Charlie

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 161 Column 50 | Insert | Modified | Windows: O

4)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NetSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```
--part 1
SELECT e.name AS employee, d.dept_name AS department
FROM Employees e
CROSS JOIN Departments d;

--part 2
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 3
SELECT e.name AS employee, m.name AS manager
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id;

--part 4
SELECT e.name
FROM Employees e
LEFT OUTER JOIN Projects p ON e.project_id = p.project_id
WHERE p.project_id IS NULL;

--part 5
```

Script Output x Query Result x

All Rows Fetched: 3 in 0 seconds

NAME
1 Charlie
2 David
3 Frank

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 167 Column 28 | Insert | Modified | Windows: O

5)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NetSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```
--part 5
SELECT s.name, c.name
FROM Students s
JOIN Enrollments e USING (student_id)
JOIN Courses c USING (course_id);

--part 6
SELECT c.name AS customer, o.order_id
FROM Customers c
LEFT OUTER JOIN Orders o ON c.customer_id = o.customer_id;

--part 7
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 8
SELECT t.name AS teacher, s.name AS subject
FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
```

Script Output x Query Result x

All Rows Fetched: 5 in 0 seconds

NAME	NAME_1
1 Student3 Math	
2 Student1 Math	
3 Student2 Physics	
4 Student1 Chemistry	
5 Student3 Biology	

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 173 Column 34 | Insert | Modified | Windows: O

6)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet

```
--part 5
SELECT s.name, c.name
FROM Students s
JOIN Enrollments e USING (student_id)
JOIN Courses c USING (course_id);

--part 6
SELECT c.name AS customer, o.order_id
FROM Customers c
LEFT OUTER JOIN Orders o ON c.customer_id = o.customer_id;

--part 7
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 8
SELECT t.name AS teacher, s.name AS subject
FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;
```

Script Output x Query Result x

SQL All Rows Fetched: 3 in 0 seconds

CUSTOMER	ORDER_ID
1 Cust1	1
2 Cust2	2
3 Cust3	(null)

Click on an identifier with the Control key down to perform "Go to Declaration"

Line: 178 Column: 59 | Insert | Modified | Windows: O

7)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet

```
--part 5
SELECT s.name, c.name
FROM Students s
JOIN Enrollments e USING (student_id)
JOIN Courses c USING (course_id);

--part 6
SELECT c.name AS customer, o.order_id
FROM Customers c
LEFT OUTER JOIN Orders o ON c.customer_id = o.customer_id;

--part 7
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 8
SELECT t.name AS teacher, s.name AS subject
FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;
```

Script Output x Query Result x

SQL All Rows Fetched: 6 in 0 seconds

DEPT_NAME	NAME
1 HR	Alice
2 HR	Bob
3 IT	Charlie
4 IT	David
5 Sales	Eve
6 EmptyDept	(null)

Click on an identifier with the Control key down to perform "Go to Declaration"

Line: 183 Column: 54 | Insert | Modified | Windows: O

8)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```
--part 5
SELECT s.name, c.name
FROM Students s
JOIN Enrollments e USING (student_id)
JOIN Courses c USING (course_id);

--part 6
SELECT c.name AS customer, o.order_id
FROM Customers c
LEFT OUTER JOIN Orders o ON c.customer_id = o.customer_id;

--part 7
SELECT d.dept_name, e.name
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id;

--part 8
SELECT t.name AS teacher, s.name AS subject
FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name;
```

Script Output x Query Result x

All Rows Fetched: 6 in 0 seconds

TEACHER	SUBJECT
1 Sir Ali	Algebra
2 Ma Bob	Algebra
3 Dr Charlie	Algebra
4 Sir Ali	Quantum
5 Ma Bob	Quantum
6 Dr Charlie	Quantum

Click on an identifier with the Control key down to perform "Go to Declaration"

Line: 188 Column: 23 | Insert | Modified | Windows: O

9)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```
FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name;

--part 10
SELECT s.name AS student, c.name AS course, t.name AS teacher
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id;

--part 11
SELECT s.name AS student, t.name AS teacher
FROM Students s
JOIN Teachers t ON s.city = t.city;

--part 12
SELECT e.name AS employee, m.name AS manager
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id;
```

Script Output x Query Result x

All Rows Fetched: 4 in 0 seconds

DEPT_NAME	TOTAL_EMPLOYEES
1 IT	2
2 HR	2
3 EmptyDept	0
4 Sales	1

Click on an identifier with the Control key down to perform "Go to Declaration"

Line: 194 Column: 22 | Insert | Modified | Windows: O

10)

The screenshot shows the Oracle SQL Developer interface. The query in the Worksheet is as follows:

```

FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name;

--part 10
SELECT s.name AS student, c.name AS course, t.name AS teacher
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id;

--part 11
SELECT s.name AS student, t.name AS teacher
FROM Students s
JOIN Teachers t ON s.city = t.city;

--part 12
SELECT e.name AS employee, m.name AS manager

```

The Query Result pane shows 5 rows fetched in 0 seconds:

STUDENT	COURSE	TEACHER
1 Student1 Chemistry	Sir Ali	
2 Student1 Math	Sir Ali	
3 Student2 Physics	Ms Bob	
4 Student3 Biology	Dr Charlie	
5 Student3 Math	Sir Ali	

POST LAB TASKS

11)

The screenshot shows the Oracle SQL Developer interface. The query in the Worksheet is as follows:

```

FROM Teachers t
CROSS JOIN Subjects s;

--part 9
SELECT d.dept_name, COUNT(e.employee_id) AS total_employees
FROM Departments d
LEFT OUTER JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name;

--part 10
SELECT s.name AS student, c.name AS course, t.name AS teacher
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id;

--part 11
SELECT s.name AS student, t.name AS teacher
FROM Students s
JOIN Teachers t ON s.city = t.city;

--part 12
SELECT e.name AS employee, m.name AS manager

```

The Query Result pane shows 3 rows fetched in 0 seconds:

STUDENT	TEACHER
1 Student3 Sir Ali	
2 Student1 Sir Ali	
3 Student2 Ms Bob	

12)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```

--part 12
SELECT e.name AS employee, m.name AS manager
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id;

--part 13
SELECT e.name
FROM Employees e
WHERE e.dept_id IS NULL;

--part 14
SELECT d.dept_name, AVG(e.salary) AS avg_salary
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING AVG(e.salary) > 50000;

--part 15
SELECT e.name, e.salary, d.dept_name
FROM Employees e

```

Script Output x Query Result x

SQL All Rows Fetched: 6 in 0 seconds

EMPLOYEE	MANAGER
1 Charlie	Alice
2 Bob	Alice
3 David	Charlie
4 Frank	(null)
5 Eve	(null)
6 Alice	(null)

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 211 Column 61 | Insert | Modified | Windows: O

13)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- hr
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet Query Builder

```

FROM Students s
JOIN Teachers t ON s.city = t.city;

--part 12
SELECT e.name AS employee, m.name AS manager
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id;

--part 13
SELECT e.name
FROM Employees e
WHERE e.dept_id IS NULL;

--part 14
SELECT d.dept_name, AVG(e.salary) AS avg_salary
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING AVG(e.salary) > 50000;

--part 15
SELECT e.name, e.salary, d.dept_name
FROM Employees e

```

Script Output x Query Result x

SQL All Rows Fetched: 1 in 0 seconds

NAME
1 Frank

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 216 Column 25 | Insert | Modified | Windows: O

14)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

homeuser
my_hr_conn
sys_conn
Oracle NoSQL Connections
Database Schema Service Connections

Worksheet Query Builder

```
--part 14
SELECT d.dept_name, AVG(e.salary) AS avg_salary
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING AVG(e.salary) > 50000;

--part 15
SELECT e.name, e.salary, d.dept_name
FROM Employees e
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.salary > (SELECT AVG(salary) FROM Employees WHERE dept_id = e.dept_id);

--part 16
SELECT d.dept_name
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING MIN(e.salary) >= 30000;

--part 17
SELECT s.name AS student, c.name AS course
FROM Students s
```

Script Output x Query Result x

All Rows Fetched: 2 in 0 seconds

DEPT_NAME	AVG_SALARY
IT	55000
HR	55000

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 223 Column 30 | Insert | Modified | Windows: O

15)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

homeuser
my_hr_conn
sys_conn
Oracle NoSQL Connections
Database Schema Service Connections

Worksheet Query Builder

```
--part 14
SELECT d.dept_name, AVG(e.salary) AS avg_salary
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING AVG(e.salary) > 50000;

--part 15
SELECT e.name, e.salary, d.dept_name
FROM Employees e
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.salary > (SELECT AVG(salary) FROM Employees WHERE dept_id = e.dept_id);

--part 16
SELECT d.dept_name
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING MIN(e.salary) >= 30000;

--part 17
SELECT s.name AS student, c.name AS course
FROM Students s
```

Script Output x Query Result x

All Rows Fetched: 2 in 0 seconds

DEPT_NAME	AVG_SALARY
IT	55000
HR	55000

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 229 Column 80 | Insert | Modified | Windows: O

16)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet

```
--part 14
SELECT d.dept_name, AVG(e.salary) AS avg_salary
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING AVG(e.salary) > 50000;

--part 15
SELECT e.name, e.salary, d.dept_name
FROM Employees e
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.salary > (SELECT AVG(salary) FROM Employees WHERE dept_id = e.dept_id);

--part 16
SELECT d.dept_name
FROM Departments d
JOIN Employees e ON d.dept_id = e.dept_id
GROUP BY d.dept_name
HAVING MIN(e.salary) >= 30000;

--part 17
SELECT s.name AS student, c.name AS course
FROM Students s
```

Script Output x Query Result x

All Rows Fetched: 3 in 0 seconds

DEPT_NAME
1 IT
2 HR
3 Sales

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 236 Column 31 | Insert | Modified | Windows: O

17)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

- homeuser
- my_hr_conn
- sys_conn
- Oracle NoSQL Connections
- Database Schema Service Connections

Worksheet

```
--part 17
SELECT s.name AS student, c.name AS course
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
WHERE s.city = 'Labore!';

--part 18
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.hire_date BETWEEN TO_DATE('2020-01-01', 'YYYY-MM-DD')
AND TO_DATE('2023-01-01', 'YYYY-MM-DD');

--part 19
SELECT s.name
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id
WHERE t.name = 'Sir Ali!';
```

Script Output x Query Result x

All Rows Fetched: 4 in 0 seconds

STUDENT	COURSE
1 Student1	Math
2 Student1	Chemistry
3 Student3	Math
4 Student3	Biology

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 243 Column 25 | Insert | Modified | Windows: O

18)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

my_hr_conn

Lab-4tasks.sql

Worksheet

```
--part 17
SELECT s.name AS student, c.name AS course
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
WHERE s.city = 'Lahore';

--part 18
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.hire_date BETWEEN TO_DATE('2020-01-01', 'YYYY-MM-DD')
AND TO_DATE('2023-01-01', 'YYYY-MM-DD');

--part 19
SELECT s.name
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id
WHERE t.name = 'Sir Ali';
```

Script Output

Query Result

All Rows Fetched: 3 in 0 seconds

	EMPLOYEE	MANAGER	DEPT_NAME
1	Charlie	Alice	IT
2	Bob	Alice	HR
3	David	Charlie	IT

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 252 Column 1 | Insert | Modified | Windows: O

19)

Oracle SQL Developer: my_hr_conn-1

File Edit View Navigate Run Source Team Tools Window Help

Connections

my_hr_conn

Lab-4tasks.sql

Worksheet

```
--part 18
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.hire_date BETWEEN TO_DATE('2020-01-01', 'YYYY-MM-DD')
AND TO_DATE('2023-01-01', 'YYYY-MM-DD');

--part 19
SELECT s.name
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id
WHERE t.name = 'Sir Ali';

--part 20
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.dept_id = m.dept_id;
```

Script Output

Query Result

All Rows Fetched: 3 in 0 seconds

	NAME
1	Student1
2	Student1
3	Student3

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 260 Column 26 | Insert | Modified | Windows: O

20)

The screenshot shows the Oracle SQL Developer interface with three SQL queries and their results.

Query 18:

```
--part 18
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
LEFT OUTER JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.hire_date BETWEEN TO_DATE('2020-01-01', 'YYYY-MM-DD')
AND TO_DATE('2023-01-01', 'YYYY-MM-DD');
```

Query 19:

```
--part 19
SELECT s.name
FROM Students s
JOIN Enrollments e ON s.student_id = e.student_id
JOIN Courses c ON e.course_id = c.course_id
JOIN Teachers t ON c.teacher_id = t.teacher_id
WHERE t.name = 'Sir Ali';
```

Query 20:

```
--part 20
SELECT e.name AS employee, m.name AS manager, d.dept_name
FROM Employees e
JOIN Employees m ON e.manager_id = m.employee_id
JOIN Departments d ON e.dept_id = d.dept_id
WHERE e.dept_id = m.dept_id;
```

Query Result:

EMPLOYEE	MANAGER	DEPT_NAME
1 Bob	Alice	HR
2 David	Charlie	IT

Click on an identifier with the Control key down to perform "Go to Declaration"

Line 267 Column 29 | Insert | Modified | Windows: C