1) Consider the following tables:

EMP (EmployeeID INT PRIMARY KEY, Name VARCHAR(100), Salary DECIMAL(15, 2), DepartmentNumber INT, ManagerID INT, JobTitle VARCHAR(100), FOREIGN KEY (DepartmentNumber) REFERENCES DEPARTMENT(DepartmentID), FOREIGN KEY (ManagerID) REFERENCES EMP(EmployeeID));	DEPARTMENT (DepartmentID INT PRIMARY KEY, DepartmentName VARCHAR(100), Location VARCHAR(100));	JOB (JobTitle VARCHAR(100) PRIMARY KEY);

Write a SQL query to

i) Retrieve the names and salaries of all employees from the `EMP` table.
ii) Retrieve the employee IDs and names of all employees whose salary is greater than 50,000.
iii) Find the average salary of employees in the `EMP` table.
iv) Retrieve the department numbers and the count of employees in each department from the `EMP` table.
v) Retrieve the names of employees along with the names of their respective managers. Assume the `EMP` table has a `ManagerID` column that references the `EmployeeID`.
vi) Retrieve the employee IDs of employees whose salary is greater than the average salary of the company.
vii) Increase the salary of all employees in department 10 by 10%.
viii) Delete all employees from the `EMP` table who are in department 5 and have a salary less than 40,000.
ix) Create a table `DEPARTMENT` with columns `DepartmentID`, `DepartmentName`, and `Location`.
x) nsert a new employee with the following details into the `EMP` table: EmployeeID = 101, Name = 'John Doe', Salary = 60000, DepartmentNumber = 1, ManagerID = 100.
xi) Retrieve the employee IDs and a new column `SalaryCategory` which classifies salaries

into 'High', 'Medium', and 'Low'. Use thresholds of 70,000 for High, 50,000 for Medium, and below 50,000 for Low.

xii) Retrieve the employee IDs and names of employees who have the highest salary in their respective departments.

xiii) Retrieve distinct department numbers from the `EMP` table.

xiv) Retrieve all distinct job titles from the `EMP` table and another table `JOB` which has a `JobTitle` column.

xv) Retrieve the employee IDs of employees who work in a department with at least one other employee.

xv) SELECT E1.EmployeeID FROM EMP E1 WHERE EXISTS (SELECT 1 FROM EMP E2 WHERE E2.DepartmentNumber = E1.DepartmentNumber AND E2.EmployeeID != E1.EmployeeID);

2) Write a query to retrieve the names and department names of all employees.

EMP Table:

EmployeeID	Name	DepartmentNumber
101	John	1
102	Jane	2
103	Alice	1

DEPARTMENT Table:

DepartmentID	DepartmentName
1	IT
2	Finance

(This Table is common for 2-5 Questions)

3) Given the following data, write a query to find the output.

4) Write a query to retrieve the Cartesian product of the `EMP` and `DEPARTMENT` tables.

EMP Table:

EmployeeID	Name	DepartmentNumber
101	John	1
102	Jane	2
103	Alice	1

DEPARTMENT Table:

DepartmentID	DepartmentName
1	IT
2	Finance

5) Write a query to retrieve the names of employees who belong to department 1 or department 2.

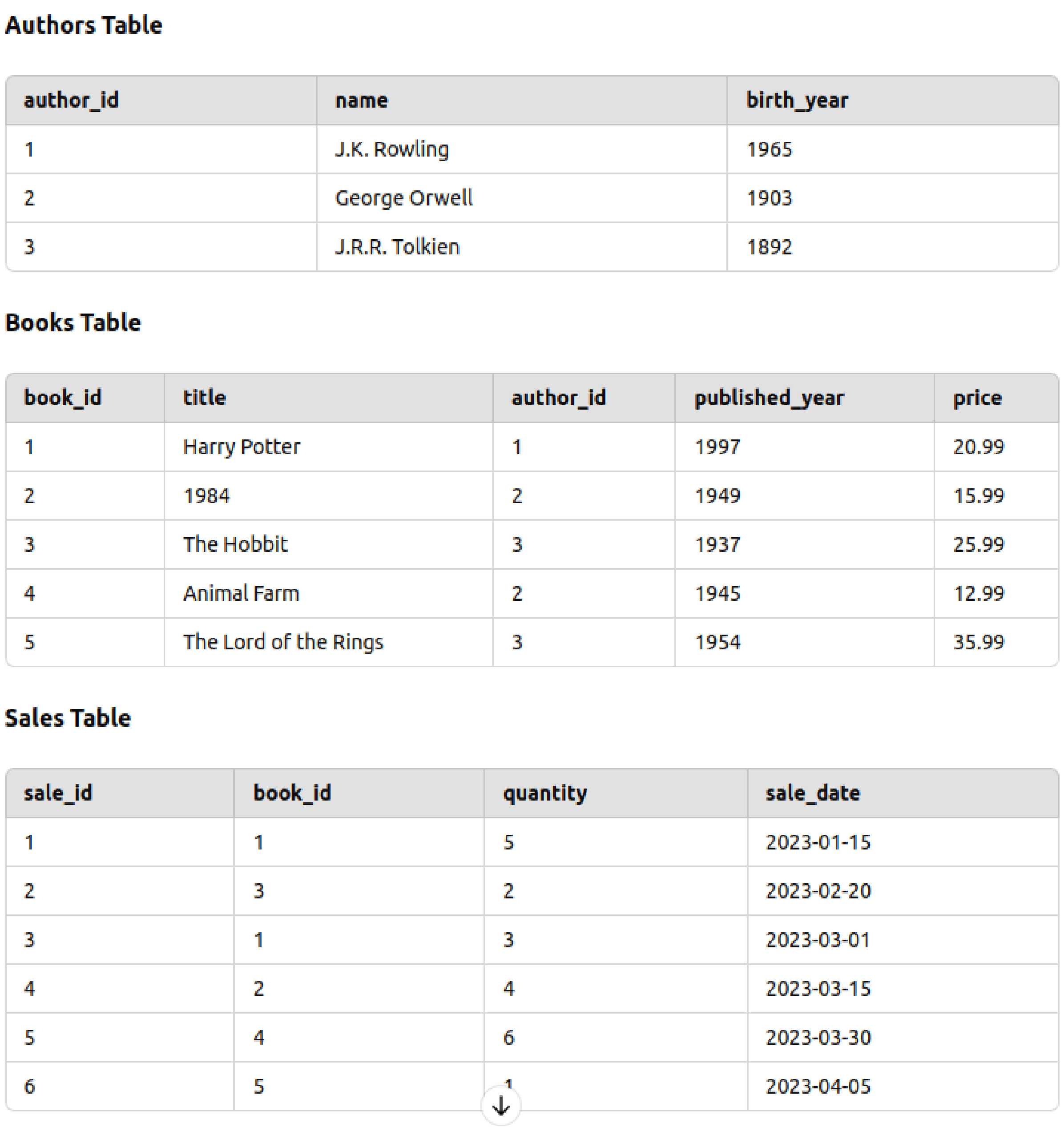
6) Write a query to retrieve the names of employees whose salary is greater than any employee in department 1.

EMP Table:

EmployeeID	Name	Salary	DepartmentNumber
101	John	60000	1
102	Jane	55000	2
103	Alice	50000	1

Table common for Question 7

7) Write a query to retrieve the names of employees whose name starts with 'J'.
8) Consider the following tables:



Authors Table

author_id	name	birth_year
1	J.K. Rowling	1965
2	George Orwell	1903
3	J.R.R. Tolkien	1892

Books Table

book_id	title	author_id	published_year	price
1	Harry Potter	1	1997	20.99
2	1984	2	1949	15.99
3	The Hobbit	3	1937	25.99
4	Animal Farm	2	1945	12.99
5	The Lord of the Rings	3	1954	35.99

Sales Table

sale_id	book_id	quantity	sale_date
1	1	5	2023-01-15
2	3	2	2023-02-20
3	1	3	2023-03-01
4	2	4	2023-03-15
5	4	6	2023-03-30
6	5	1	2023-04-05

```
i) SELECT a.name, SUM(s.quantity * b.price) AS total_sales
FROM Authors a
JOIN Books b ON a.author_id = b.author_id
JOIN Sales s ON b.book_id = s.book_id
GROUP BY a.name
ORDER BY total_sales DESC;
```

Question: What is the output of the above query?

A) J.K. Rowling - $167.92, George Orwell - $128.90, J.R.R. Tolkien - $87.97

B) J.K. Rowling - $167.92, George Orwell - $103.92, J.R.R. Tolkien - $103.96
C) J.K. Rowling - $125.94, George Orwell - $103.92, J.R.R. Tolkien - $103.96
D) J.K. Rowling - $125.94, George Orwell - $128.90, J.R.R. Tolkien - $87.97

```
ii) SELECT b.title, SUM(s.quantity) AS total_quantity
FROM Books b
JOIN Sales s ON b.book_id = s.book_id
GROUP BY b.title
ORDER BY total_quantity DESC
LIMIT 1;
```

Question: What is the output of the above query?

A) Harry Potter - 8
B) 1984 - 4
C) Animal Farm - 6
D) The Hobbit - 2

```
iii) SELECT a.name
FROM Authors a
LEFT JOIN Books b ON a.author_id = b.author_id
LEFT JOIN Sales s ON b.book_id = s.book_id
WHERE s.sale_id IS NULL;
```

Question: What is the output of the above query?

A) J.K. Rowling
B) George Orwell
C) J.R.R. Tolkien
D) No authors

```
iv) SELECT b.title
FROM Books b
LEFT JOIN Sales s ON b.book_id = s.book_id
WHERE s.sale_id IS NULL;
```

Question: What is the output of the above query?

1. A) Harry Potter, 1984, The Hobbit, Animal Farm, The Lord of the Rings
2. B) Harry Potter
3. C) No books
4. D) The Lord of the Rings

v)

```
SELECT a.name
FROM Authors a
JOIN Books b ON a.author_id = b.author_id
GROUP BY a.name
HAVING COUNT(b.book_id) > 1;
```

Question: What is the output of the above query?

1. A) J.K. Rowling
2. B) George Orwell
3. C) J.R.R. Tolkien
4. D) George Orwell and J.R.R. Tolkien

vi)

```
SELECT b.title
FROM Books b
JOIN Sales s ON b.book_id = s.book_id
WHERE b.published_year > 1950
GROUP BY b.title;
```

Question: What is the output of the above query?

1. A) Harry Potter, The Lord of the Rings
2. B) Harry Potter
3. C) 1984
4. D) The Hobbit

vii)

```
SELECT b.title, SUM(s.quantity * b.price) AS total_sales
FROM Books b
JOIN Sales s ON b.book_id = s.book_id
WHERE b.published_year < 1950
GROUP BY b.title;
```

Question: What is the output of the above query?

1. A) 1984 - $63.96, Animal Farm - $77.94, The Hobbit - $51.98
2. B) 1984 - $63.96, Animal Farm - $77.94
3. C) 1984 - $63.96, The Hobbit - $51.98
4. D) Animal Farm - $77.94, The Hobbit - $51.98

-

viii)

```
SELECT b.title AS name
FROM Books b
WHERE b.published_year > 1950
UNION
SELECT a.name
FROM Authors a
WHERE a.birth_year > 1950;
```

Question: What is the output of the above query?

1. A) Harry Potter, J.K. Rowling, The Lord of the Rings
2. B) Harry Potter, The Lord of the Rings
3. C) J.K. Rowling, George Orwell
4. D) Harry Potter, The Lord of the Rings, J.K. Rowling

ix)

```
SELECT b.title AS name
FROM Books b
WHERE b.published_year < 1950
INTERSECT
SELECT a.name
FROM Authors a
WHERE a.birth_year < 1950;
```

Question: What is the output of the above query?

1. A) 1984
2. B) George Orwell
3. C) No results
4. D) Animal Farm
