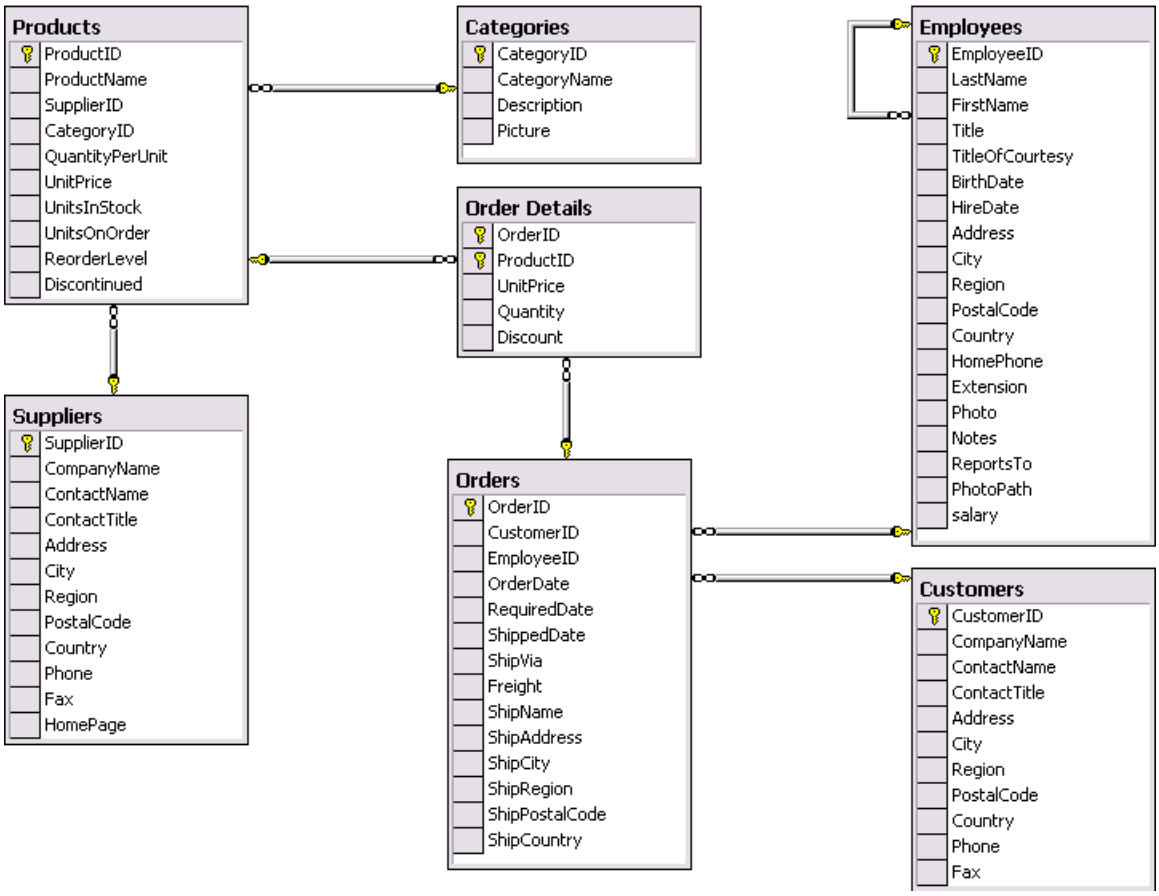
Cairo University
Faculty of Computers and Artificial Intelligence
Information Systems Department

Database Systems
2021-2022
Quiz 1 – SQL
Model 1

Name: ----------ID: ----------



Given the above schema from Northwind database, write the corresponding SQL query:

1. Get the number of orders for each customer living in Germany. Display the results in ascending order according to the number of orders. (2 Marks)
   Solution:

```
SELECT ContactName,COUNT(Orders.OrderID) as NumberofOrders
From Customers,Orders,[Order Details]
WHERE Customers.CustomerID = Orders.CustomerID
AND Orders.OrderID = [Order Details].OrderID
AND Customers.Country = 'Germany'
GROUP BY ContactName
ORDER BY COUNT(Orders.OrderID)
```

Sample table: salesman

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

Sample table: customer

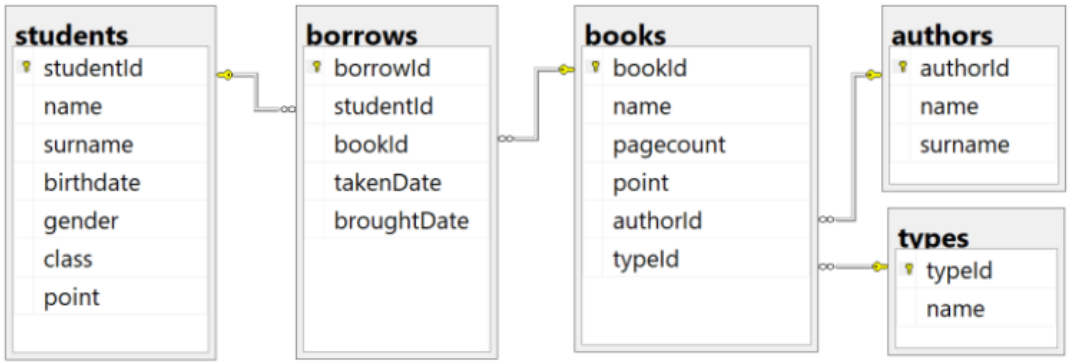
customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

Using the above tables, write the corresponding SQL query:

2. Find the salesperson and customer who belongs to same city. The customer's name should contain the letter 'i'. **(1 Mark)**

   Solution:

```
SELECT salesman.name AS "Salesman",
customer.cust_name, customer.city
FROM salesman,customer
WHERE salesman.city=customer.city and cust_name like '%i%';
```



Given the above schema, write the corresponding SQL query:

3. List the students whose name Perez and surname does not contain "a" character.
   Solution: (1 Mark)

```
Select * from students
where name = 'Perez' and surname not like '%a%'
```

4. List the book's name and its author information, its page count must be more than 300.
   (1 Mark)
   Solution:

```
Select authors.name, authors.surname, books.name as bookName
from authors,books
where authors.authorId = books.authorId and pagecount >300
```

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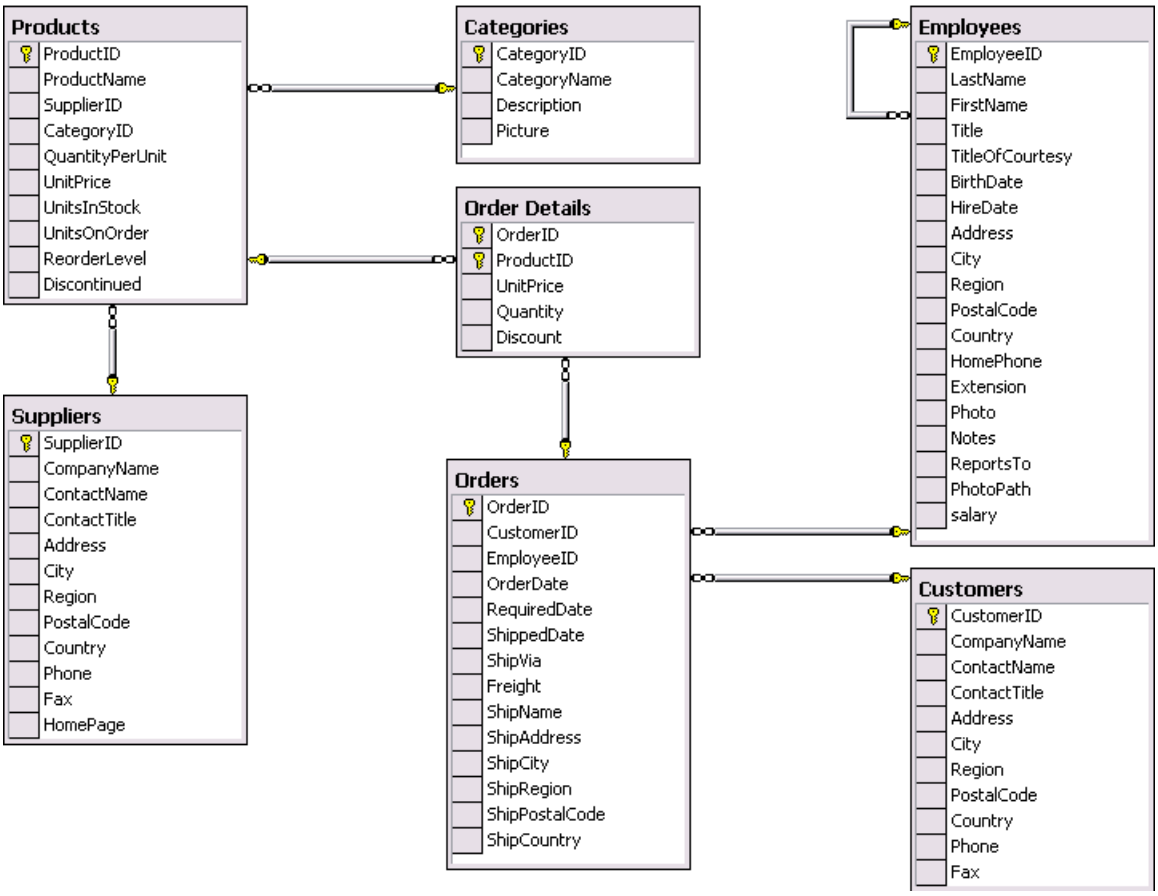
Database Systems
2021-2022
Quiz 1 – SQL
Model 2

Name: ----------ID: ----------



Given the above schema from Northwind database, write the corresponding SQL query:

1. For each country, show how many orders were requested by customers whose job titles are managers (Marketing Manager, Accounting Manager,….). Display the results in descending order according to the number of orders. (2 Marks)

```
SELECT Customers.Country , Count(OrderID) "Number Of Orders"
FROM Customers,Orders
WHERE Customers.CustomerID = Orders.CustomerID
AND Customers.ContactTitle like '%Manager'
GROUP BY Customers.Country
ORDER BY Count (OrderID) DESC
```

2. From the following table, write a SQL query to find those employees who earn more than the average salary. Return employee ID, first name, last name. Sort the results descending. (1 Mark)

```
SELECT employee_id, first_name,last_name
FROM employees
WHERE salary >
(SELECT AVG(salary)
FROM employees)
Order by…;
```

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY	COMMISSION_PCT	MANAGER_ID
100	Steven	King	SKING	515.123.4567	2003-06-17	AD_PRES	24000.00	0.00	0
101	Neena	Kochhar	NKOCHHAR	515.123.4568	2005-09-21	AD_VP	17000.00	0.00	100
102	Lex	De Haan	LDEHAAN	515.123.4569	2001-01-13	AD_VP	17000.00	0.00	100
103	Alexander	Hunold	AHUNOLD	590.423.4567	2006-01-03	IT_PROG	9000.00	0.00	102
104	Bruce	Ernst	BERNST	590.423.4568	2007-05-21	IT_PROG	6000.00	0.00	103
105	David	Austin	DAUSTIN	590.423.4569	2005-06-25	IT_PROG	4800.00	0.00	103
106	Valli	Pataballa	VPATABAL	590.423.4560	2006-02-05	IT_PROG	4800.00	0.00	103

Consider the below table and answer the following questions:

Table Name: products

PRO_ID	PRO_NAME	PRO_PRICE	PRO_COMPANY_CODE
101	Motherboard	3200	15
102	KeyBoard	450	16
103	ZIP drive	250	14
104	Speaker	550	16
105	Monitor	5000	11
106	DVD drive	900	12
107	CD drive	800	12
108	Printer	2600	13
109	Refill cartridge	350	13
110	Mouse	250	12

3. Write a SQL query to calculate the average price of the items of each company. Return average price and company code. (1 Mark)

```
SELECT AVG(pro_price), pro_company_code

FROM products

    GROUP BY pro_company_code;
```

4. Write a SQL query to find the cheapest item(s). Return pro_name and, pro_price. (1 Mark)

```
SELECT pro_name, pro_price

FROM products

    WHERE pro_price = (SELECT MIN(pro_price) FROM products);
```

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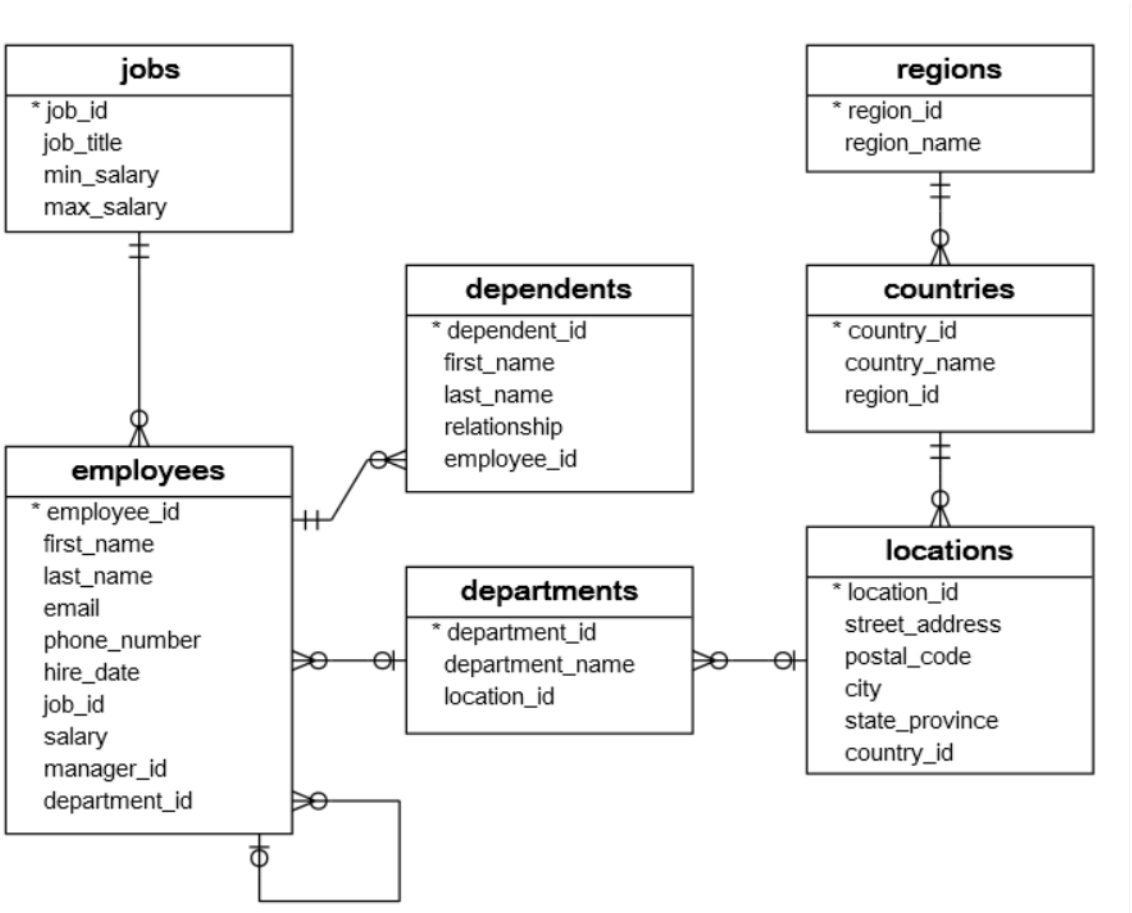
2021-2022
Quiz 1 – SQL
Model 3

Name: ----------ID: ----------



Given the above schema, write the corresponding SQL query:

1. Finds departments name that do not have any employee with the salary greater than 10,000. **(1 Mark)**
   Solution:

```
SELECT department_name
```

```
FROM  departments d
WHERE NOT EXISTS( SELECT * FROM employees e WHERE salary > 10000 AND
e.department_id = d.department_id)
ORDER BY department_name;
```

Sample table: salesman

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

Sample table: customer

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

Using the above tables, write the corresponding SQL query:

2. Find those salespersons who do not live in the same city where their customers live and received a commission from the company more than 12%. Return Customer Name, customer city, Salesman, salesman city, commission. (2 Marks)
   Solution:

```
SELECT a.cust_name AS "Customer Name",
a.city, b.name AS "Salesman", b.city,b.commission
FROM customer a
INNER JOIN salesman b
ON a.salesman_id=b.salesman_id
```

```
    WHERE b.commission>.12
          AND a.city<>b.city;
```

Consider the following table, Answer the below questions:

Table Name: nobel_win

YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1970	Physics	Hannes Alfven	Sweden	Scientist
1970	Physics	Louis Neel	France	Scientist
1970	Chemistry	Luis Federico Leloir	France	Scientist
1970	Physiology	Ulf von Euler	Sweden	Scientist
1970	Physiology	Bernard Katz	Germany	Scientist
1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1970	Economics	Paul Samuelson	USA	Economist
1970	Physiology	Julius Axelrod	USA	Scientist
1971	Physics	Dennis Gabor	Hungary	Scientist
1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1971	Peace	Willy Brandt	Germany	Chancellor
1971	Literature	Pablo Neruda	Chile	Linguist

```
1971 Economics                Simon Kuznets
      Russia                 Economist

1978 Peace                    Anwar al-Sadat
      Egypt                  President

1978 Peace                    Menachem Begin
      Israel                 Prime Minister

1987 Chemistry                Donald J. Cram
      USA                    Scientist

1987 Chemistry                Jean-Marie Lehn
      France                 Scientist

1987 Physiology               Susumu Tonegawa
      Japan                  Scientist

1994 Economics                Reinhard
Selten                              Germany                 Economist

1994 Peace                    Yitzhak Rabin
      Israel                 Prime Minister

1987 Physics                  Johannes Georg Bednorz
      Germany                Scientist

1987 Literature               Joseph Brodsky
      Russia                 Linguist

1987 Economics                Robert Solow
      USA                    Economist

1994 Literature               Kenzaburo Oe
      Japan                  Linguist
```

3. Write a SQL query to find the Nobel Prize winner 'Dennis Gabor'. Return year, subject. (1 Mark)

   Solution:

```
SELECT year, subject
  FROM nobel_win
      WHERE winner = 'Dennis Gabor';
```

4. Write a SQL query to find the Nobel Prize winners in 1970 excluding the subjects Physiology and Economics. Return year, subject, winner, country, and category. (1 Mark)

   Solution:

```sql
SELECT *
 FROM nobel_win
   WHERE year=1970
        AND subject NOT IN('Physiology','Economics');
```

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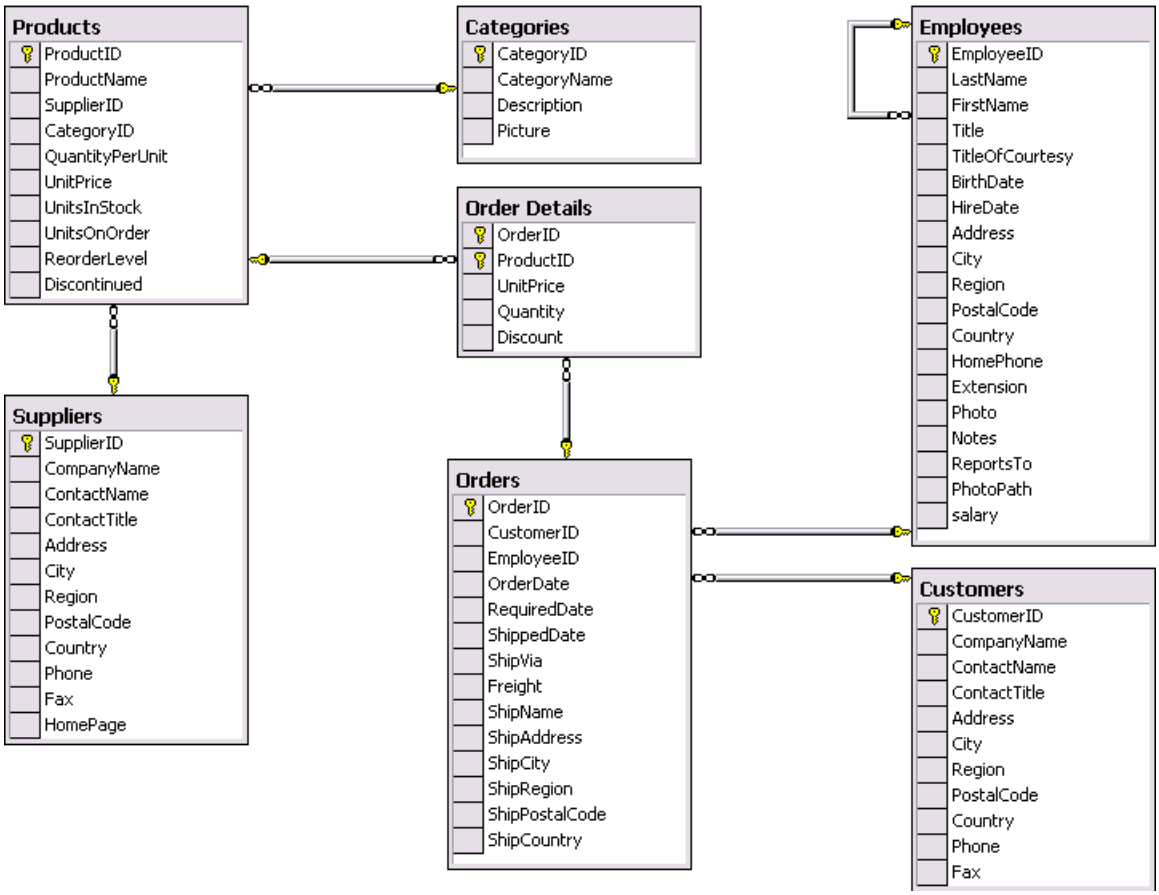
Quiz 1 – SQL
Model 4

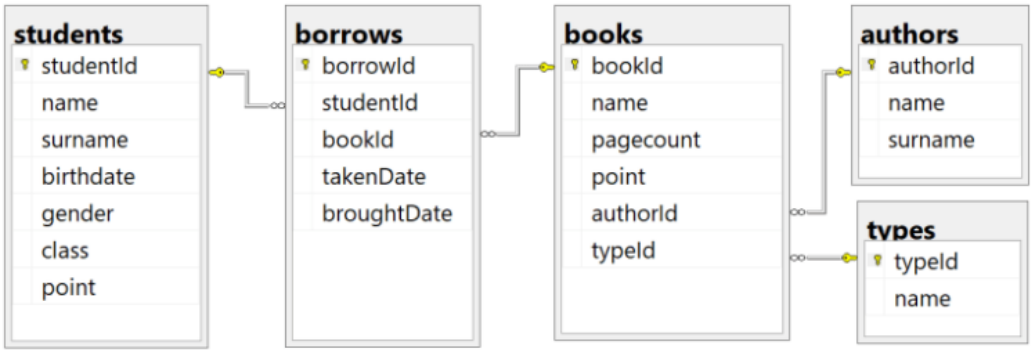
Name: ----------ID: ----------



Given the above schema from Northwind database, write the corresponding SQL query:

1. Display the first name, job title and the city of all employees not working as Sales Representatives and living in the same city as the employee with first name: Nancy. Sort the result by the first name of the employees in descending order. (2 Marks)
   Solution:

```
SELECT FirstName, Title, City
FROM Employees
WHERE Title <> 'Sales Representative'
AND City = (SELECT City
FROM Employees
WHERE FirstName = 'Nancy')
ORDER BY FirstName desc
```



Given the above schema, write the corresponding SQL query:

2. List books that have never been read. **(1 Mark)**
   Solution:

```
Select * from books
 where bookId not in (Select bookId from borrows)
```

3. List the name and surname of the students and the number of books they read sorted by BookCount. Also list the students who have never read a book. (1 Mark)
   Solution:

```
Select name,surname,count(borrowsno) BookCount
from students left join borrows
```

```
on students.studentId = borrows.studentId

group by students.studentId,name,surname

order by BookCount
```

Consider the below table and answer the following questions:

Table Name: products

PRO_ID	PRO_NAME	PRO_PRICE	PRO_COMPANY_CODE
101	Motherboard	3200	15
102	KeyBoard	450	16
103	ZIP drive	250	14
104	Speaker	550	16
105	Monitor	5000	11
106	DVD drive	900	12
107	CD drive	800	12
108	Printer	2600	13
109	Refill cartridge	350	13
110	Mouse	250	12

4. Write a SQL query to select a range of products whose price is in the range Rs.200 to Rs.600. Begin and end values are included. (1 Mark)
   Solution:

```sql
SELECT * FROM products
WHERE pro_price BETWEEN 200 AND 600;
```

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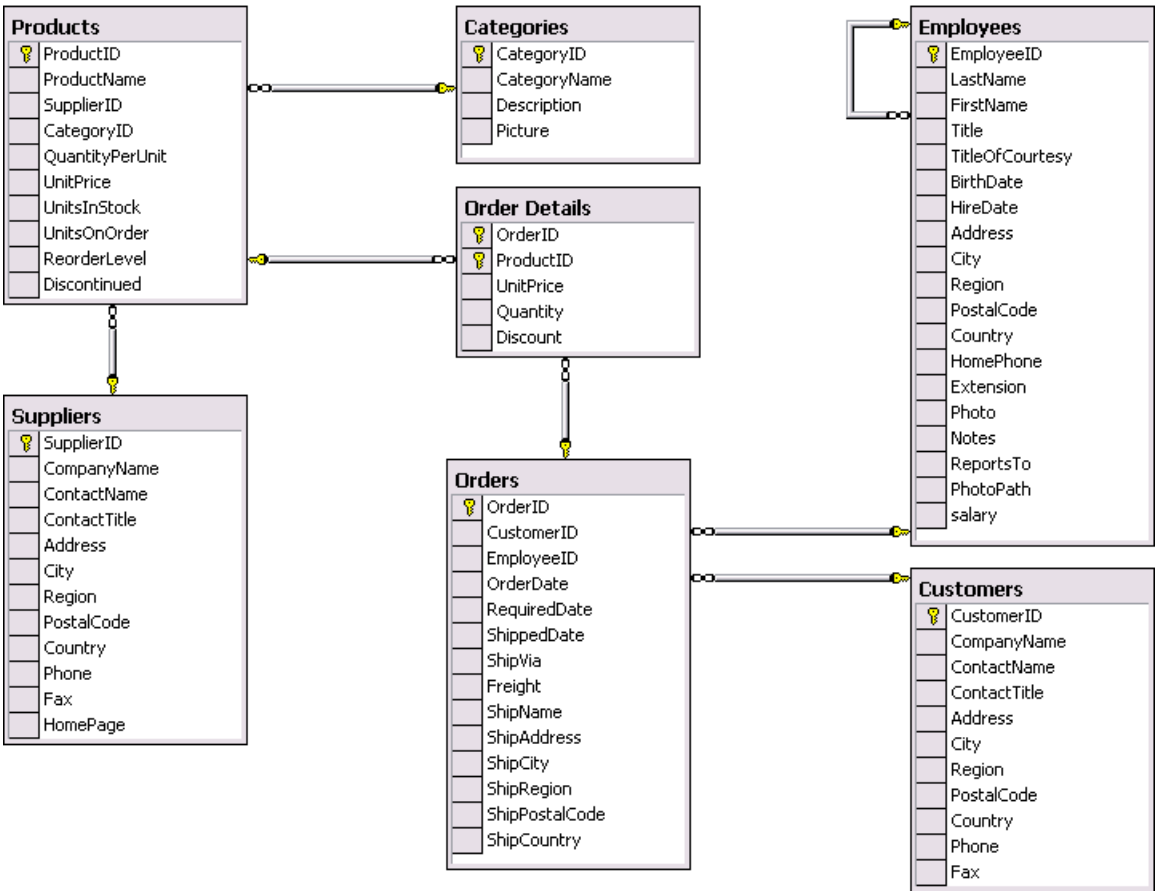
Database Systems
2021-2022
Quiz 1 – SQL
Model 5

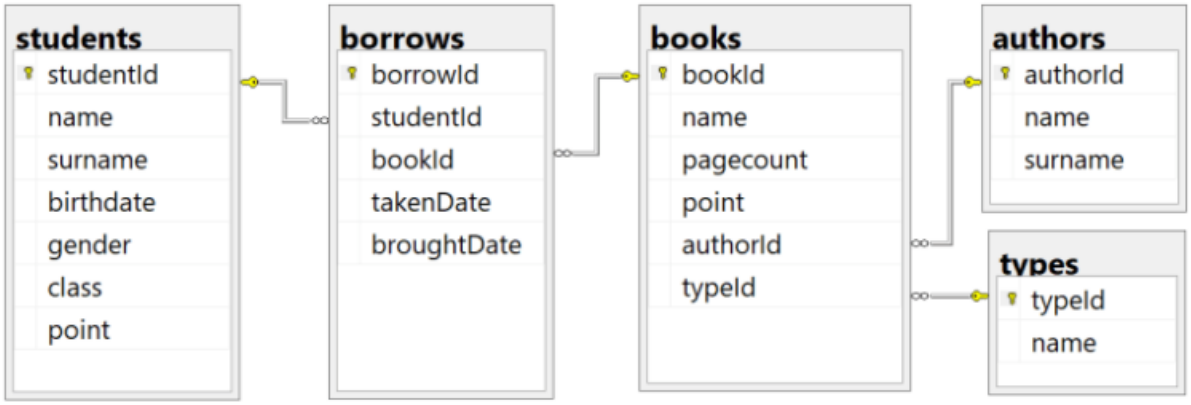
Name: ----------ID: ----------



Given the above schema from Northwind database, write the corresponding SQL query:

1. Get the first name, country and the hire date of all employees who were hired before 1993 and are working in the same country as the employee with first name: Andrew. Display the result in ascending order by the first name of the employees. (2 Marks)

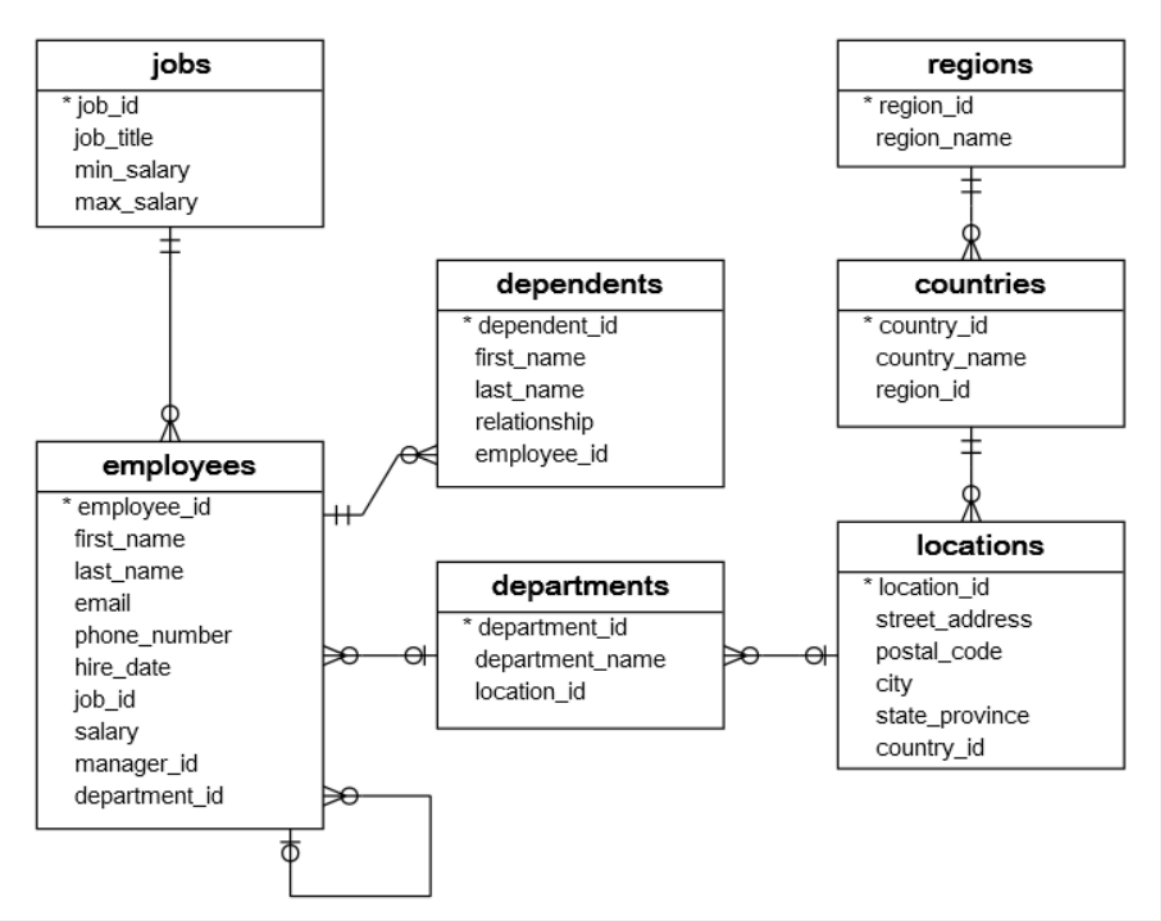
```sql
SELECT FirstName, Country, HireDate
FROM Employees
WHERE Year (HireDate) < 1993
AND Country = (SELECT Country
FROM Employees
WHERE Title = 'Sales Manager')
ORDER BY Title
```



Given the above schema, write the corresponding SQL query:

2. Add the writers named Ernest Dowson and Mother Goose to the authors table. (1 Mark)

```sql
Insert into authors(name,surname)
values('Ernest','Dowson'), ('Mother','Goose')
```



Given the above schema, write the corresponding SQL query:

3. Finds all employees who have at least one dependent. (1 Mark)

```
SELECT *

FROM employees

WHERE EXISTS( SELECT * FROM dependents WHERE dependents.employee_id =
employees.employee_id);
```

Consider the below table and answer the following questions:

Table Name: products

PRO_ID	PRO_NAME	PRO_PRICE	PRO_COMPANY_CODE
101	Motherboard	3200	15
102	KeyBoard	450	16
103	ZIP drive	250	14
104	Speaker	550	16
105	Monitor	5000	11
106	DVD drive	900	12
107	CD drive	800	12
108	Printer	2600	13
109	Refill cartridge	350	13
110	Mouse	250	12

`

4. Write a SQL query to find the items whose prices are higher than or equal to $250. Order the result by product price in descending, then product name in ascending. (1 Mark)

```
SELECT pro_name, pro_price

FROM products

WHERE pro_price >= 250

      ORDER BY pro_price DESC, pro_name;
```

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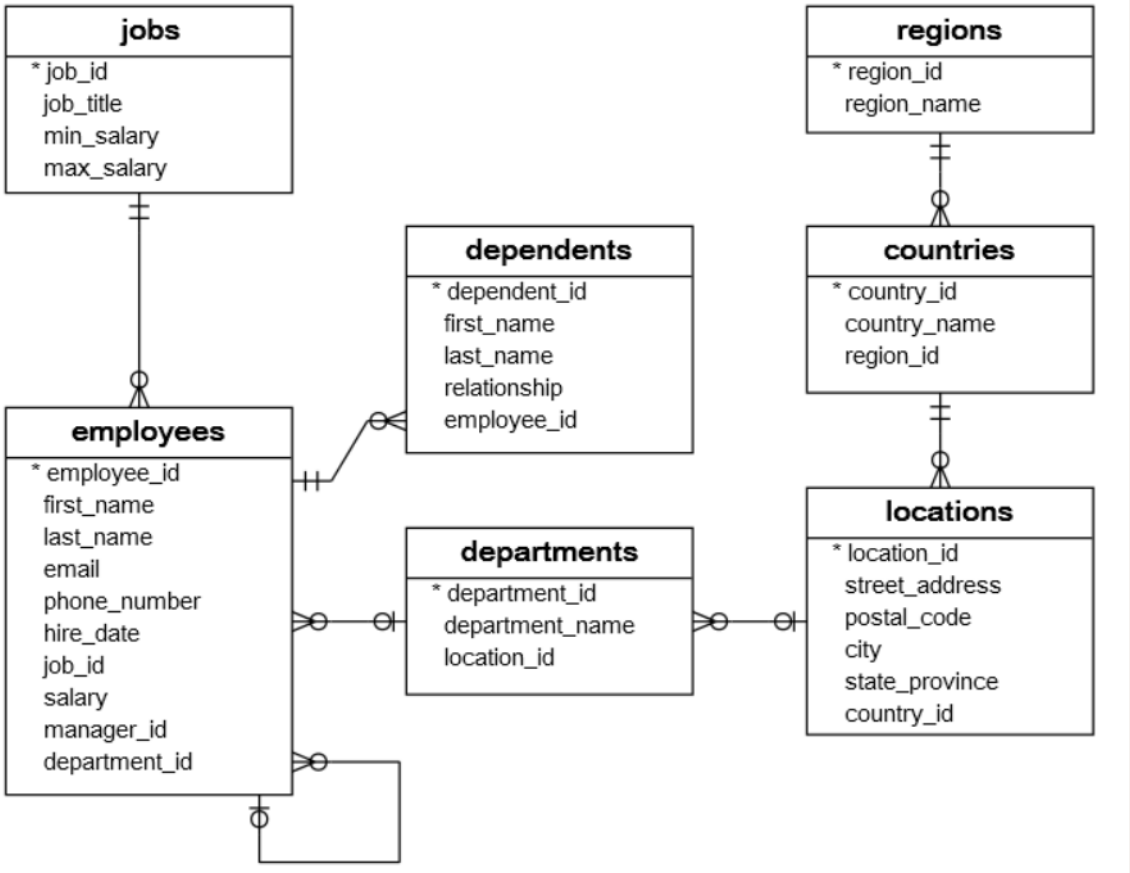
2021-2022
Quiz 1 – SQL
Model 6

Name: ----------ID: ----------



Given the above schema, write the corresponding SQL query:

1. Find the department that has employees with the lowest salary greater than 10000, Sort result by lowest salary. (2 Marks)

   Solution:

```
SELECT e.department_id, department_name, MIN(salary)
FROM employees e INNER JOIN departments d
ON d.department_id = e.department_id
GROUP BY e.department_id
HAVING MIN(salary) >= 10000
ORDER BY MIN(salary);
```

Sample table: salesman

salesman_id	name	city	commission
5001	James Hoog	New York	0.15
5002	Nail Knite	Paris	0.13
5005	Pit Alex	London	0.11
5006	Mc Lyon	Paris	0.14
5007	Paul Adam	Rome	0.13
5003	Lauson Hen	San Jose	0.12

Sample table: customer

customer_id	cust_name	city	grade	salesman_id
3002	Nick Rimando	New York	100	5001
3007	Brad Davis	New York	200	5001
3005	Graham Zusi	California	200	5002
3008	Julian Green	London	300	5002
3004	Fabian Johnson	Paris	300	5006
3009	Geoff Cameron	Berlin	100	5003
3003	Jozy Altidor	Moscow	200	5007

Using the above tables, write the corresponding SQL query:

2. Make a list in ascending order for the salesmen who work either for one or more customers or not yet join under any of the customers. **(1 Mark)**
   Solution:

```
SELECT a.cust_name,a.city,a.grade,
b.name AS "Salesman", b.city
FROM customer a
RIGHT OUTER JOIN salesman b
ON b.salesman_id=a.salesman_id
     ORDER BY b.salesman_id;
```

Consider the following table, Answer the below questions:

Table Name: nobel_win

YEAR	SUBJECT	WINNER	COUNTRY	CATEGORY
1970	Physics	Hannes Alfven	Sweden	Scientist
1970	Physics	Louis Neel	France	Scientist
1970	Chemistry	Luis Federico Leloir	France	Scientist
1970	Physiology	Ulf von Euler	Sweden	Scientist
1970	Physiology	Bernard Katz	Germany	Scientist
1970	Literature	Aleksandr Solzhenitsyn	Russia	Linguist
1970	Economics	Paul Samuelson	USA	Economist
1970	Physiology	Julius Axelrod	USA	Scientist
1971	Physics	Dennis Gabor	Hungary	Scientist
1971	Chemistry	Gerhard Herzberg	Germany	Scientist
1971	Peace	Willy Brandt	Germany	Chancellor
1971	Literature	Pablo Neruda	Chile	Linguist
1971	Economics	Simon Kuznets	Russia	Economist
1978	Peace	Anwar al-Sadat	Egypt	President

```
1978 Peace                     Menachem Begin
      Israel                  Prime Minister

1987 Chemistry                 Donald J. Cram
      USA                     Scientist

1987 Chemistry                 Jean-Marie Lehn
      France                  Scientist

1987 Physiology                Susumu Tonegawa
      Japan                   Scientist

1994 Economics                 Reinhard
Selten                               Germany                Economist

1994 Peace                     Yitzhak Rabin
      Israel                  Prime Minister

1987 Physics                   Johannes Georg Bednorz
      Germany                 Scientist

1987 Literature                Joseph Brodsky
      Russia                  Linguist

1987 Economics                 Robert Solow
      USA                     Economist

1994 Literature                Kenzaburo Oe
      Japan                   Linguist
```

3. Write a SQL query to find the Nobel Prize winners in 'Physics' since the year 1950. Return winner. (1 Mark)

   Solution:

```
SELECT winner

FROM nobel_win

WHERE year>=1950

      AND subject='Physics';
```

4. Write a SQL query to find the Nobel Prize winners for the subject not started with the letter 'P'. Return year, subject, winner, country, and category. Order the result by year, descending. (1 Mark)

   Solution:

```
SELECT *

 FROM nobel_win
```

```
 WHERE subject NOT LIKE 'P%'

    ORDER BY year DESC, winner;
```

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Information Systems Department

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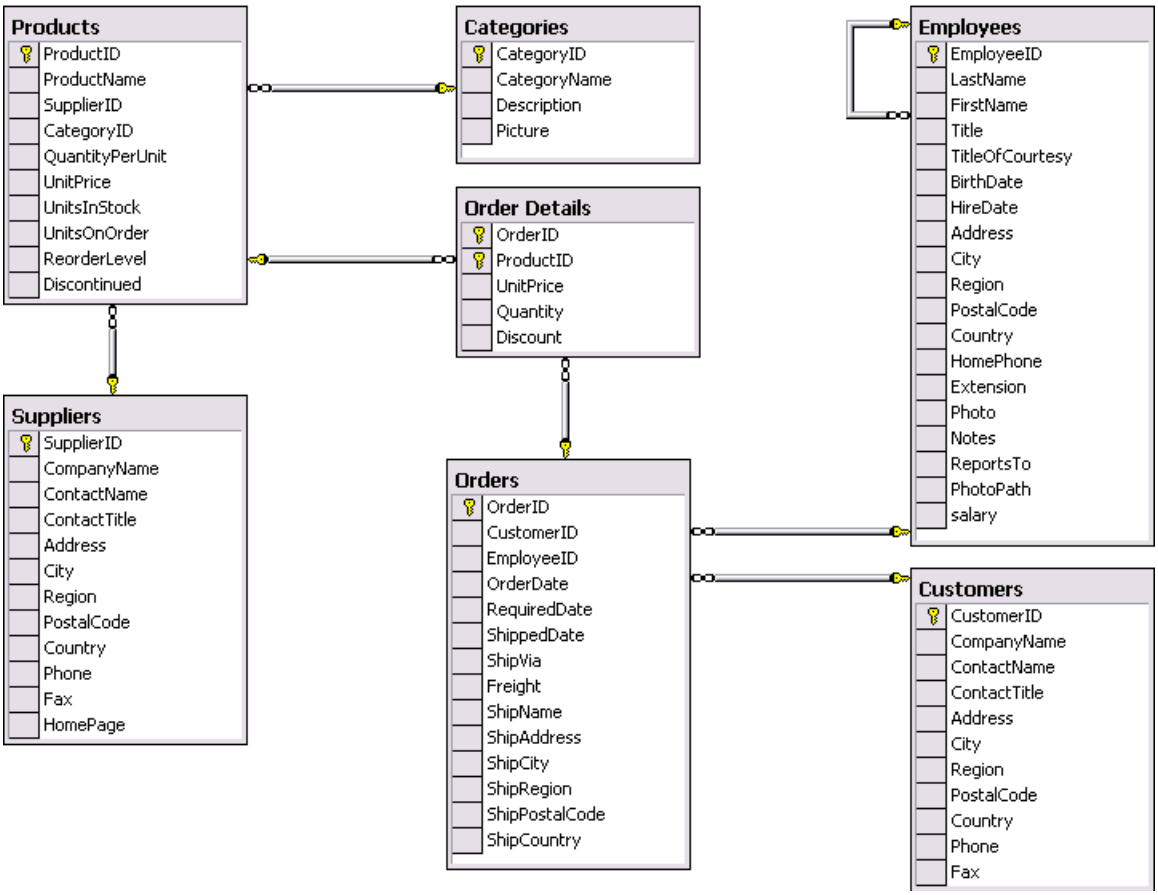
2021-2022
Quiz 1 – SQL
Model 7

Name: ----------ID: ----------



Using Northwind database, write the corresponding SQL queries:

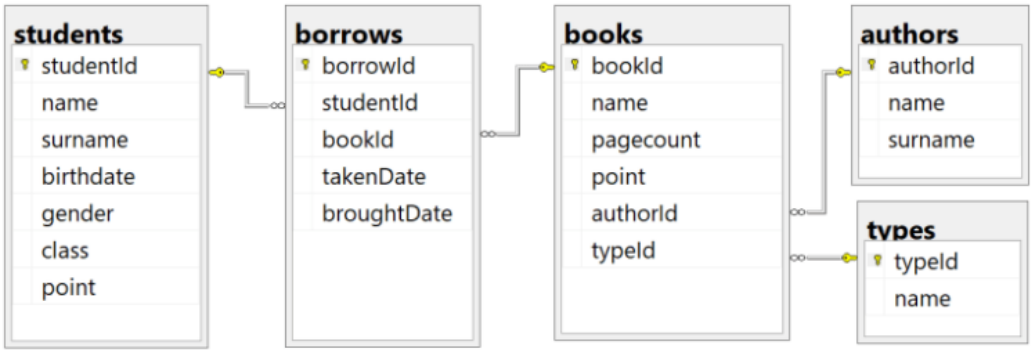
1. Change the country for all employees who their phone number starts with (206) into "United States". **(1 Mark)**
   Solution:
   UPDATE Employees

SET Country = 'United States'
WHERE HomePhone LIKE '(206)%'

2. Get the total quantity ordered for each displayed product name with unit price higher than 30. Restrict the result for those products having total ordered quantity in the range between 1000 and 1500. Label any un-named column(s) with a meaningful name(s). **(2 Marks)**

   Solution:

```
SELECT Products.ProductName , Sum(Quantity) As TotalQuantityOrdered
FROM Products, [Order Details]
WHERE Products.ProductID = [Order Details].ProductID
AND Products.UnitPrice > 30
GROUP BY Products.ProductName
HAVING Sum (Quantity) BETWEEN 1000 AND 1500
```



Given the above schema, write the corresponding SQL query:

3. List books that have never been read. **(1 Mark)**
   Solution:

```
Select * from books
 where bookId not in (Select bookId from borrows)
```

4. Add the writers named Ernest Dowson and Mother Goose to the authors table. **(1 Mark)**
   Solution:

```
Insert into authors(name,surname)
values('Ernest','Dowson'), ('Mother','Goose')
```