Princess Sumaya جامعـــة
University الأميـــرة سميّـــة
for Technology للتكنولوجيا

University Bookstore

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(Description)

Welcome to the university bookstore. For those in need of essential supplies to keep their studies on track, we have a comprehensive selection of office supplies. Find everything from notebooks, pens, and highlighters to calculators, planners, and sticky notes – everything you need to stay organized and excel in your coursework.

This project will organize and keep track of everything this BookStore . This database will facilitate your way to find different items, look for books of a certain course, know more about the sections of each course, details about employees and vendors and last but not least the departments employees work at and where the courses take places.

{ All four of us were working together on the project from collecting the requirements and analyzing to drawing the ERA and the schema }.

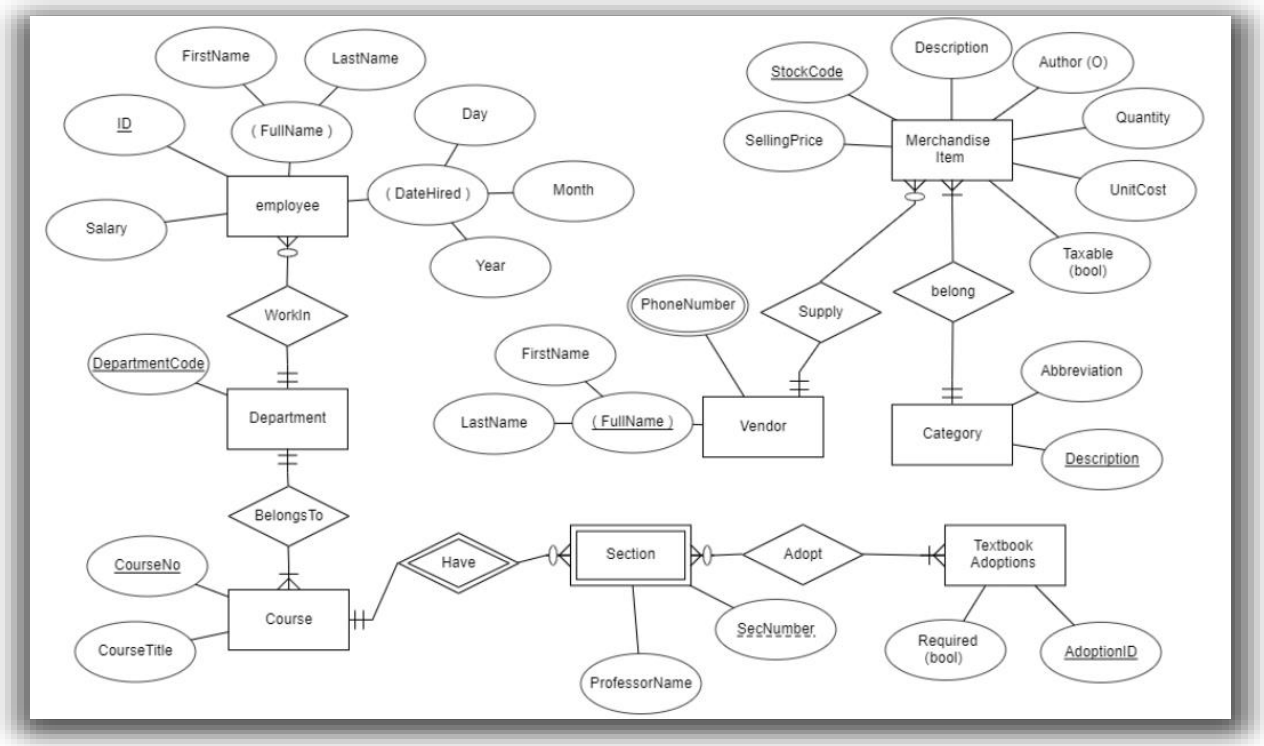
Requirements:

1. Employee: Employees are identified by some stored information in the Database. Such as, first and last name, date hired, salary, the department they work in and employee ID.
2. Merchandise Item: each item consists of a description, author (in case it's a Textbook), available quantity in the store, unit cost, whether it is a taxable item or not, unique stock code, selling price.
3. Category: categories are divided in a one-letter abbreviation and each item will be listed with its letter, and a description of the category.
4. Vendor: each vendor is assigned a phone number and a full name.
5. Department: in our Database each Department is classified with a department code.
6. Course: Each course contains course title and multiple sections.
7. Section: Each section is taught by a professor, belongs to a course, and have a Section number.
8. Textbook Adoptions: it contains an adoption ID and check if the book is required or not.

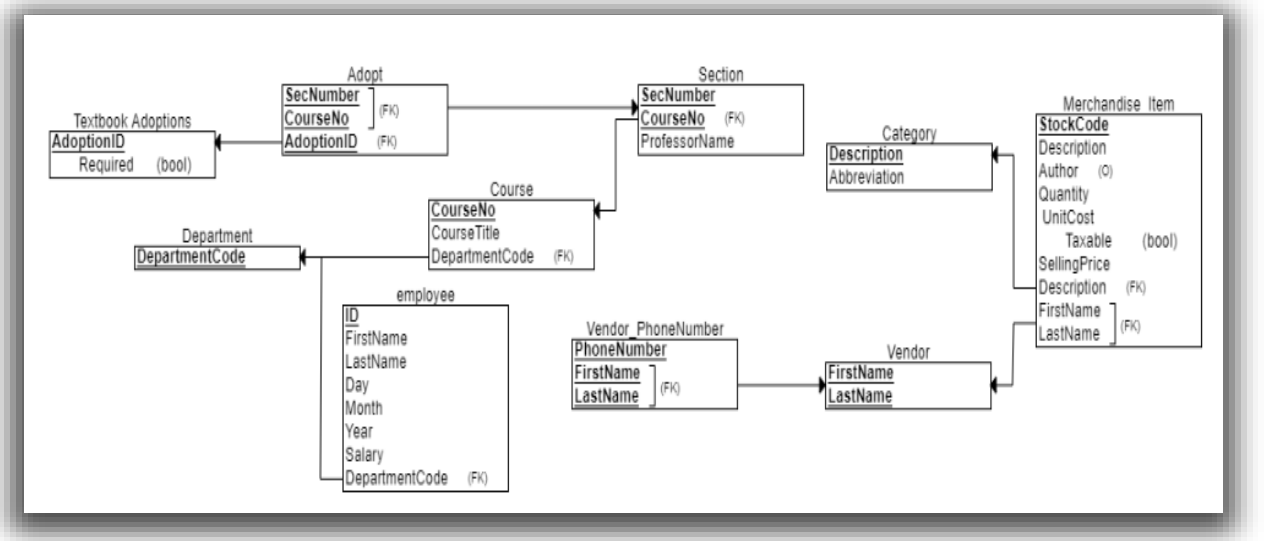
Relationships:

1. Each Employee must work in exactly one Department.
2. Each Department may have one or more employee, and at least one course.
3. Each Textbook may be adopted by none, one or more than one section.
4. Each Section may adopt one or more Textbooks (if required).
5. Each course belongs to exactly one Department.
6. A course can have at least one Section.
7. There's a unique Section (number and course ID) for each course.
8. A department has multiple courses.
9. Each Item belongs to exactly one category and can be supplied by exactly one vendor.
10. Each Vendor may supply many different items.
11. Each category may contain several items.

ER Diagram:



Schema:



Samples:

Employee's Table

ID	FirstName	LastName	D	M	Y	Salary	Department (FK)
20153365	Mira	Osama	05	02	2015	450 JOD	STRG
20182253	Zina	Salem	12	10	2018	525 JOD	IT
20204528	Bisan	Alzamel	10	09	2020	375 JOD	SCI
20123456	Nasser	AlKhalil	27	06	2012	625 JOD	STRG
20126543	Mohamad	Mourad	30	03	2012	630 JOD	CAF

Merchandise Table:

StockCode	SellingPrice	Description	Quantity	UnitCode	Author (O)	Taxable (bool)	VFirstName (FK)	VLastName (FK)	Category (FK)
700	$14.99	Shirt	25	Each		True	Lina	Ibrahim	Clothing
800	$9.95	English	30	Each	HarperLee	True	Ahmad	Khaled	Books
550	$18.50	Hoodie	20	Each		False	Issa	Mohammad	Clothing
400	$8.00	Headphones	15	Each		Ture	Sajed	Amjad	Electronics
150	$1.25	chips	50	Each		True	Dana	Adam	Food

Category Table:

Abbreviation	Description
B	Books
S	Supplies
C	Clothing
F	Food
E	Electronics

Vendors Table:

FirstName	LastName
Ahmad	Khaled
Issa	Mohammad
Lina	Ibrahim
Dana	Adam
Sajed	Amjad

Vendor's phone number Table:

PhoneNumber	FirstName	LastName
0795717855	Ahmad	Khaled
0770978988	Issa	Mohammad
0771212786	Issa	Mohammad
0781878764	Sajed	Amjad
0791233123	Dana	Adam

Department Table:

DepartmentCode
STRG
CAF
LANG
IT
SCI

TextBooks Adoptions Table:

AdoptionsID	Required (bool)
0011	Yes
0012	No
0013	No
0014	No
0015	Yes

Adopt Relationship Table:

AdoptionID (FK)	CourseNumber (FK)	SectionNumber (FK)
0011	201800	001
0015	201850	001
0013	201830	002
0011	201800	002

Sections Table:

ProffesorName	CourseNo (FK)	SectionNo
Mahmoud Majed	201800	001
Amr Loay	201840	001
Karam Farouq	201830	001
Taha Ahmad	201800	002
Yousef Taiseer	201840	002

Course Table:

CourseNumber	CourseTitle	Department (FK)
201800	Physics	SCI
201810	Calculus	SCI
201820	English	LANG
201830	Circuits	ENG
201840	Data Structures	IT

****

Below will be shown some tables inserted in SQL:

```
1 SELECT * FROM Course AS C , Section AS S
2 WHERE S.CourseNo = C.CourseNo
3 ORDER BY C.CDepartment , C.coursetitle DESC;
```

CourseNo	CourseTitle	CDepartment	ProfessorNa...	CourseNo	SecNumber
201840	Data Structures	IT	Amr Loay	201840	1
201840	Data Structures	IT	Yousef Taiseer	201840	2
201800	Physics	SCI	Mahmoud Majed	201800	1
201800	Physics	SCI	Taha Ahmad	201800	2
201830	Circuits	SCI	Karam Farouq	201830	1

Figure 1)Courses and their sections

```
1 SELECT * FROM Employee;
```

ID	FistName	LastName	DateHired	SalaryJOD	Department
20153365	Mira	Osama	05/02/2015	450	STRG
20182253	Zina	Salem	12/10/2018	525	IT
20204528	Bisan	Alzamel	10/09/2020	375	SCI
20123456	Nasser	AlKhalil	27/06/2012	625	STRG
20126543	Mohamad	Mourad	30/03/2012	630	CAF

Figure 2)Employee record

```
1 SELECT * FROM VendorPN AS PN , Vendor AS V
2 WHERE PN.FirstName || ''|| PN.LastName = V.FirstName || ''|| V.LastName
3 ORDER BY V.FirstName || ''|| V.LastName;
```

PhoneNumber	FirstName	LastName	FirstName	LastName
795717855	Ahmad	Khaled	Ahmad	Khaled
791233123	Dana	Adam	Dana	Adam
770978988	Issa	Mohammad	Issa	Mohammad
771212786	Issa	Mohammad	Issa	Mohammad
781878764	Sajed	Amjad	Sajed	Amjad

Figure 3)Vendor's information

```
1 SELECT * FROM MerchandiseItem;
```

St...	Sellin...	Desc...	Quan...	UnitC...	Author	Taxable	VFisr...	VLas...	MCategory
700	14.99	Shirt	25	Each	NULL	False	Lina	Ibrahim	Clothing
800	9.95	English	30	Each	Thatch...	False	Ahmad	Khaled	Books
550	18.5	Hoodie	20	Each	NULL	False	Issa	Moha...	Clothing
400	8	Headp...	15	Each	NULL	False	Sajed	Amjad	Electronics
150	1.25	chips	50	Each	NULL	False	Dana	Adam	Food
710	14.99	Shirt	25	Each	NULL	False	Lina	Ibrahim	Clothing
300	7.99	LANG...	10	Each	West ...	True	Sajed	Amjad	Books
810	9.95	English	6	Each	Irving ...	True	Ahmad	Khaled	Books
200	10.5	English	13	Each	Irving ...	True	Ahmad	Khaled	Books
560	18.5	Hoodie	20	Each	NULL	False	Issa	Moha...	Clothing
410	8	Headp...	15	Each	NULL	False	Sajed	Amjad	Electronics

Figure 4)Item's information

Modifying a record based on a condition

```
1  -- adding a new column called salary tax
2 ALTER TABLE Employee ADD 'salary tax' numeric(3,3);
3
4 -- assume for tax is only on the salaries above 400JODs
5 -- tax = zero otherwize
6 -- we update the recordsas follows
7
8 UPDATE Employee
9 SET 'salary tax' = 0;
10
11 UPDATE Employee
12 SET 'salary tax' = 0.5*salaryjod
13 WHERE salaryjod > 400;
14
15 SELECT *
16 FROM Employee;
```

ID	FistName	LastName	DateHired	SalaryJOD	Department	salary tax
20153365	Mira	Osama	05/02/2015	450	STRG	225
20182253	Zina	Salem	12/10/2018	525	IT	262.5
20204528	Bisan	Alzamel	10/09/2020	375	SCI	0
20123456	Nasser	AlKhalil	27/06/2012	625	STRG	312.5
20126543	Mohamad	Mourad	30/03/2012	630	CAF	315

Deleting a record based on a condition

```
3 SELECT *
4 FROM Employee;
5
6 --here's the Employee record before Deleting a record
7 --delete from Employee where salaryjod < 490;
```

ID	FistName	LastName	DateHired	SalaryJOD	Department	salary tax
20153365	Mira	Osama	05/02/2015	450	STRG	0
20182253	Zina	Salem	12/10/2018	525	IT	26.25
20204528	Bisan	Alzamel	10/09/2020	375	SCI	18.75
20123456	Nasser	AlKhalil	27/06/2012	625	STRG	31.25
20126543	Mohamad	Mourad	30/03/2012	630	CAF	31.5

Figure 5)Before Delete Operation

```
1
2
3 SELECT *
4 FROM Employee;
5
6 DELETE FROM Employee WHERE salaryjod < 490;
7 --here's the Employee record after Deleting a record
```

ID	FistName	LastName	DateHired	SalaryJOD	Department	salary tax
20182253	Zina	Salem	12/10/2018	525	IT	26.25
20123456	Nasser	AlKhalil	27/06/2012	625	STRG	31.25
20126543	Mohamad	Mourad	30/03/2012	630	CAF	31.5

Figure 6)After Delete Operation

Complete each of the following queries.

1) Write a query to perform an outer join on the two tables Category and Merchandise. List the fields Category description and Merchandise description. Include all categories, even those that do not have a matching item in the Merchandise table.

```
select c.Description , m.description
from MerchandiseItem AS m , Category AS c;
```

```
1 SELECT c.Description , m.description
2 FROM MerchandiseItem AS m , Category AS c;
```

Description	Description
Electronics	English
Food	English
Supplies	English
Books	Hoodie
Clothing	Hoodie
Electronics	Hoodie
Food	Hoodie
Supplies	Hoodie
Books	Headphones
Clothing	Headphones
Electronics	Headphones

Figure 7)Q1OuterJoin

2) Create a query that assigns the name of each department and the number of employees in that department. Order the records by Department name. Change the heading of the count column to read Number of Employees.

```
select Department , count(*) AS 'Number Of Employees'
from Employee
group by Department
order by Department
```

```
3 SELECT Department , COUNT(*) AS 'Number Of Employees'
4 FROM Employee
5 GROUP BY Department
6 ORDER BY Department
```

Department	Number Of Employees
CAF	1
IT	1
SCI	1
STRG	2

Figure 8)Q2 Department Employees

3) Prepare a list of taxable items from Irving Publishers, Thatcher's Supplies, or West Publishing. Order this list by vendor name. Include the vendor's name, the stock code, the description, and the selling price in the result

```
select  vfisrtname || ' ' || vlastname AS 'Vendor Name' , stockcode , description , sellingprice
from MerchandiseItem
where taxable = 'True' and (author IN ( 'Irving Publishers', 'Thatcher's Supplies',  'West Publishing'))
order by vfisrtname
```

```
2 SELECT  vfisrtname || ' ' || vlastname AS 'Vendor Name' , stockcode , description , sellingprice
3 FROM MerchandiseItem
4 WHERE taxable = 'True' AND (author IN ( 'Irving Publishers', 'Thatcher's Supplies',  'West Publishing'))
5 ORDER BY vfisrtname
```

Vendor Name	StockCode	Description	SellingPrice
Ahmad Khaled	810	English	9.95
Ahmad Khaled	200	English	10.5
Lina Ibrahim	90	chemistry	19.99
Sajed Amjad	300	LANGUAGE	7.99

Figure 9)Q3 Taxable

4) Create a query on the Adoptions table that asks the user to enter the Department (FIN, MIS, or SDS). The query will then return the Department Code, Course Number, Section Number, Stock Number, and title of every book adopted by that Department. Only include books—not every merchandise item.

```
SELECT
  DISTINCT D.DepartmentCode
   ,C.CourseNo,
  S.secnumber,
  M.Description AS Title
  FROM
   Adopt AS A
   JOIN
  Section AS S ON A.SecNumber = S.SecNumber
  JOIN
  TextbookAdoptions as ta on  ta.adoptionid = A.AdoptionID
  join
  MerchandiseItem AS M
  JOIN
  Course AS C ON A.CourseNo = C.CourseNo
  JOIN
 Department AS D ON C.CDepartment = D.DepartmentCode
 where Title in ('chemistry' , 'English' ,'LANGUAGE' )
```

```
1  SELECT
2     DISTINCT D.DepartmentCode
3      ,C.CourseNo,
4     S.secnumber,
5     M.Description AS Title
6     FROM
7      Adopt AS A
8      JOIN
9     Section AS S ON A.SecNumber = S.SecNumber
10    JOIN
11    TextbookAdoptions AS ta ON  ta.adoptionid = A.AdoptionID
12    JOIN
13    MerchandiseItem AS M
14    JOIN
```

DepartmentCode	CourseNo	SecNumber	Title
SCI	201830	2	English
SCI	201830	2	LANGUAGE
SCI	201800	2	English
SCI	201800	2	LANGUAGE

Figure 10)Q4 Parameter Query

5) Create a query that returns the total inventory amount for all merchandise grouped by vendors. Sort ascending by vendors. Name the columns "Vendor" and "Total Inventory".

```
select vfisrtname || ' ' || vlastname AS Vendor ,  sum(quantity) AS 'Total Inventory'
from MerchandiseItem
group by Vendor
order by Vendor
```

```
1 SELECT vfisrtname || ' ' || vlastname AS Vendor ,  sum(quantity) AS 'Total Inventory'
2 FROM MerchandiseItem
3 GROUP BY Vendor
4 ORDER BY Vendor
```

Vendor	Total Inventory
Ahmad Khaled	49
Dana Adam	55
Issa Mohammad	40
Lina Ibrahim	100
Sajed Amjad	40

Figure 11)Q5 Inventory

6) Create a query that lists all employees (employee ID, last and first name) who earn more than the average salary for all employees. Order by Last name

```
select id , fistname , lastname
from Employee
where salaryjod > (select AVG(salaryjod)
                   from Employee)  order by lastname;
```

```
1 SELECT id , fistname , lastname
2 FROM Employee
3 WHERE salaryjod > (SELECT AVG(salaryjod)
4                    FROM Employee)
5 ORDER BY lastname;
```

ID	FistName	LastName
20123456	Nasser	AlKhalil
20126543	Mohamad	Mourad
20182253	Zina	Salem

Figure 12)Q6 Big Earners

7) Create a query that lists all employees (employee ID, last name, first name, and salary) who earn more than the average salary for their department.

```
select E.id , E.fistname , E.lastname , E.salaryjod
from Employee as E , (select Department , AVG(salaryjod) AS AvgSalary
                      from Employee
                      group by Department)
where salaryjod > AvgSalary
```

```
1 SELECT E.id , E.fistname , E.lastname , E.salaryjod
2 FROM Employee AS E , (SELECT Department , AVG(salaryjod) AS AvgSalary
3                       FROM Employee
4                       GROUP BY Department)
5 WHERE salaryjod > AvgSalary
```

ID	FistName	LastName	SalaryJOD
20123456	Nasser	AlKhalil	625
20126543	Mohamad	Mourad	630
20153365	Mira	Osama	450
20182253	Zina	Salem	525
20123456	Nasser	AlKhalil	625
20126543	Mohamad	Mourad	630
20123456	Nasser	AlKhalil	625
20126543	Mohamad	Mourad	630

Figure 13)Q8 Average