

## 1. Overview

This document describes a database that a Book Store could use to record customers' orders. Most of the assignments in this class are based on this database, so you should study it carefully.

## 2. The Pioneer Book Store Database

The Pioneer Book Store sells products such as books, videos, computers, printers, DVDs, and CDs. The Pioneer Book Store has decided to create a database that stores data about employees, the products sold, and the details of its sales process.

The Pioneer Book Store Database is used first to record customers' orders. The database then stores information about these products.

Assume that The Pioneer Book Store designs a database with the following tables:

- **Employee:** The employee table describes the employees who help run the Store. An employee ID identifies each employee. For each employee, we store the employee's name (Last Name, First Name), employee ID (unique), store ID, and current salary.
- **Product:** The product table contains a list of the products that can be sold. To identify each product, there is a product name, product ID, vendor ID which identifies the vendor who supplies the product, and category ID which identifies the category to which this product belongs to. There is also a list price field that shows the price that the vendor charges to supply one unit of this product.
- **Customer:** The customer table is a list of customers. For each customer, we store a customer ID (unique), customer name (Last Name, First Name), customer phone number, customer email, and customer address.
- **Category:** The category table contains a list of product categories. Each product belongs to a category, and a category ID identifies each category. For each category of product, we store a category ID (unique) and a category name.
- **Orders:** The orders table contains information pertaining to the orders of all customers. A customer can place several orders. For each order, we store the order ID (unique), customer ID, Store ID, and date of order.
- **OrderItems:** The orderitems table contains the details of an order. A customer may order many different products (and several units of each product) in the same order. No product is ordered twice in the same order – instead, the quantity of each product ordered is listed along with the selling price of each item.
- **Vendor:** The vendor table contains a list of vendors who supply the products. The vendor ID identifies each vendor. For each vendor, we store a vendor ID (unique), vendor name, and vendor email (unique).
- **Address:** The Address table maintains the details of the address of each customer.
- **Store:** The Store table contains details of a Store. For each Store, we record a Store ID (unique), the region ID, and the region name.

### 3. Tables in the Pioneer Book Store Database

The Pioneer Book Store Database contains the kinds of entities together with the attributes listed below:

- **Employee:** The following information is held in the table:
  - *employee\_id* contains a unique integer for each row in the table
  - *store\_id* contains the id of the employee
  - *first\_name* contains the first name of the employee
  - *last\_name* contains the last name of the employee
  - *phone* contains the phone of the employee
  - *email* contains the email address of the employee
  - *salary* contains the salary of the employee
  - *mgr* contains the id of the manager
- **Product:** The Product table holds the details of the products. The following items are held in this table:
  - *product\_id* contains a unique integer for each row in the table
  - *category\_id* contains the category id of the product
  - *product\_code* contains the code of the product
  - *product\_name* contains the name of the product
  - *description* contains the description of the product
  - *list\_price* contains the price of the product
  - *discount\_percent* contains the discount percent offered for the product
  - *date\_added* contains the date the product was added to the database
  - *vendor\_id* contains the vendor id of the product
- **Customer:** The customer table holds the details of the customers. The following items are held in this table:
  - *customer\_id* contains a unique integer for each row in the table
  - *first\_name* contains the first name of the customer
  - *last\_name* contains the last name of the customer
  - *email\_address* contains the email address of the customer
  - *shipping\_address\_id* contains the shipping address of the customer
  - *billing\_address\_id* contains the billing address of the customer
  - *password* contains the password of the customer
- **Category:** The category table holds the details of the categories. The category table stores the following:
  - *category\_id* contains a unique integer for each row in the table
  - *category\_name* contains the description of the category
- **Orders:** Data about a customer's order is divided into two tables: Order and OrderItems. The orders table stores the following:
  - *order\_id* contains a unique integer for each row in the table
  - *customer\_id* identifies which customer placed each order
  - *employee\_id* contains the id of the employee
  - *store\_id* contains the id of the employee
  - *order\_date* contains the date the order was placed
  - *ship\_amount* contains the shipment amount
  - *tax\_amount* contains the tax amount
  - *Ship\_date* contains the date the shipment was placed

- *Shipping\_address\_id* contains the id of the shipment address
- *card\_type* contains the type of the card
- *card\_number* contains the number of the card
- *card\_expires* contains the expiration date of the card
- *billing\_address\_id* contains the id of the billing address
- **OrderItems:** The order details table records the following:
  - *order\_id* contains the order id
  - *item\_id* contains the item id
  - *product\_id* contains the id of each product
  - *quantity* contains the quantity of each product
  - *item\_price* contains price of each product
  - *discount\_amount* contains the current price reduction offered for the product
- **Vendor:** The vendor table holds the details of the vendors. The following items are held in this table:
  - *vendor\_id* contains a unique integer for each row in the table
  - *company\_name* contains the name of the company
  - *contact\_fname* contains the first name of contact person
  - *contact\_lname* contains the last name of the contact person
  - *address* contains the address of the vendor
  - *city* contains the city of the vendor
  - *state* contains the state of the vendor
  - *zip* contains the zip code of the vendor
  - *phone* contains the phone number of the vendor
  - *fax* contains the fax number of the vendor
  - *email* contains the email address of the vendor
- **Address:** The address table maintains the details of the address of each customer. The following items are held in this table are the following:
  - *address\_id* contains a unique integer for each row in the table
  - *customer\_id* contains the id of the customer
  - *line1* contains the details of the address
  - *line2* contains the details of the address
  - *city* contains the city of the customer
  - *state* contains the state of the customer
  - *zip\_code* contains the zip code of the customer
  - *phone* contains the phone number of the customer
  - *disabled* contains information about current addresses
- **Store:** The Store table holds the details of the Stores. The following information is held in the table:
  - *store\_id* contains unique characters for each row in the table
  - *store\_id* contains the zip code of the Store
  - *region\_id* contains the id of the region
  - *region\_name* contains the name of the region

The full set of normalized tables for the Pioneer Book Store Database is as follows:

### Schema

**Employee** (employee\_id, store\_id, last\_name, first\_name, phone, email, salary)

**Product** (product\_id, category\_id, product\_code, product\_name, description, list\_price, discount\_percent, dateadded, vendor\_id)

**Customer** (customer\_id, emailaddress, password, first\_name, last\_name, shipping\_address\_id, billing\_address\_id)

**Category** (category\_id, category\_name)

**Orders** (order\_id, customer\_id, employee\_id, store\_id, order\_date, ship\_amount, tax\_amount, ship\_date, shipping\_address\_id, cardt\_ype, card\_number, card\_expires, billing\_address\_id)

**Orderitems** (item\_id, order\_id, product\_id, item\_price, discount\_amount, quantity)

**Vendor** (vendor\_id, company\_name, contact\_lname, contact\_fname, address, city, state, zip, phone, fax, email)

**Address** (address\_id, customer\_id, line1, line2, city, state, zip\_code, phone, disabled)

**Store** (store\_id, store\_id, region\_id, region\_name)

**Administrators** (admin\_id, email\_address, password, first\_name, last\_name)

### 4. Tables for the Pioneer Book Store Database

employee_id	store_id	first_name	last_name	phone	email	salary	mgr
55447	S7	Marwan	Lee	206-527-0012	Marwan.Lee@PSB.com	2800.00	78397
66447	S5	John	Alexander	206-527-0014	John.Alexander@PBS.com	2500.00	88887
73447	S3	Mary	Stuart	206-527-0012	Mary.Stuart@PSB.com	2800.00	78397
73557	S3	William	Orange	206-527-0013	William.Orange@PBS.com	3400.00	78397
78397	S1	Anne	Stuart	206-527-0010	Anne.Stuart@PBS.com	6000.00	NULL
88447	S4	John	Griffith	206-527-0014	John.Griffith@PBS.com	4500.00	88887
88887	S2	George	Stuart	206-527-0011	George.Stuart@PBS.com	3000.00	78397
99887	S6	George	Victor	206-527-0011	George.victor@PBS.com	3000.00	78397

EMPLOYEE table

customer_id	email_address	password	first_name	last_name	shipping_address_id	billing_address_id
11119	allan.sherwood@yahoo.com	650215acec746f0e32bdfff387439eefc1358737	Allan	Sherwood	1	2
22229	barryz@gmail.com	3f563468d42a448cb1e56924529f6e7bbe529cc7	Barry	Zimmer	3	3
33339	christineb@solarone.com	ed19f5c0833094026a2f1e9e6f08a35d26037066	Christine	Brown	4	4
44449	david.goldstein@hotmail.com	b444ac06613fc8d63795be9ad0beaf55011936ac	David	Goldstein	5	6
55559	erinv@gmail.com	109f4b3c50d7b0df729d299bc6f8e9ef9066971f	Erin	Valentino	7	7
66669	frankwilson@sbcglobal.net	3ebfa301dc59196f18593c45e519287a23297589	Frank Lee	Wilson	8	8
77779	gary_hernandez@yahoo.com	1ff2b3704aede04eecb51e50ca698efd50a1379b	Gary	Hernandez	9	10
88889	heatheresway@mac.com	911ddc3b8f9a13b5499b6bc4638a2b4f3f68bf23	Heather	Esway	11	12

CUSTOMER table

product_id	category_id	product_code	product_name	description	list_price	discount_percent	date_added	vendor_id
1234	11	comp1230	Dell XPS 8700	Dell XPS 8700 Desktop , Intel Core i7, 4GB Grap...	999.00	20.00	2014-10-30 09:32:40	2
2234	11	comp3450	Lenovo H50 Desktop	Lenovo H50 Desktop , Intel Core i7, 2GB Graphics	1199.00	30.00	2014-12-05 16:33:13	2
3234	11	comp1760	HP Envy 750qe Desktop	HP Envy 750qe Desktop , Intel Core i7, 4GB Gra...	2517.00	52.00	2015-02-04 11:04:31	2
4234	11	lap3450	Toshiba Satellite S55T	Toshiba Satellite S55T Touchscreen Laptop , Int...	989.99	20.00	2015-06-01 11:12:59	2
5234	11	lap3423	HP Pavilion 15t Star	HP Pavilion 15t Star Wars Special Edition Touchs...	1299.00	0.00	2015-07-30 13:58:35	3
6234	11	lap9000	Dell Inspiron 17 5000	Dell Inspiron 17 5000 Series Touchscreen Lapto...	1415.00	39.00	2015-07-30 14:12:41	2
7234	21	CD3467	Classical Music	The best classical music	99.99	30.00	2015-06-01 11:29:35	3
8234	21	CD7689	Pop 3	The best popular music	49.99	25.00	2015-07-30 14:18:33	5
9234	51	video1234	2412: The Return	Aliens return	14.99	30.00	2015-07-30 12:46:40	5
10234	51	video4567	Z Files	Series on mysterious activities	49.99	15.00	2015-07-30 13:14:15	3
11234	41	book9907	Modern Science	A description of modern science	19.95	20.00	2014-10-30 09:32:40	5
12234	41	book6789	Chemistry	Introduction to Chemistry	30.00	20.00	2013-10-30 09:32:40	5
13234	31	DVD12356	Space Force 9	Adventures of heroes	13.95	20.00	2012-10-30 10:32:50	9
14234	31	DVD6789	From Another Planet	Alien from another planet lands on Earth	49.99	20.00	2012-10-30 10:34:30	9
15234	31	DVD8779	Supernova	A star explodes	25.99	15.00	2011-10-30 10:32:40	5
16234	61	print2345	HP Color LaserJet	HP Color LaserJet Enterprise M553n Printer	599.00	20.00	2015-10-30 09:35:20	5
18234	61	print7687	HP LaserJet Pro	HP LaserJet Pro M277dw Multifunction Color Pri...	200.99	20.00	2011-10-30 10:34:30	5
19234	61	print4356	HP LaserJet Pro	HP LaserJet Pro M225dw Black and White Multif...	500.99	15.00	2012-10-30 10:32:40	5

PRODUCT table

order_id	customer_id	employee_id	store_id	order_date	ship_amount	tax_amount	ship_date	ship_address_id	card_type	card_number	card_expires	billing_address_id
1	11119	88447	S1	2015-03-28 09:40:28	5.00	32.32	2015-03-30 15:32:51	1	Visa	4111111111111111	04/2020	2
2	22229	78397	S2	2015-03-28 11:23:20	5.00	0.00	2015-03-29 12:52:14	3	Visa	4012888888881881	08/2019	3
3	11119	73447	S2	2015-03-29 09:44:58	10.00	89.92	2015-03-31 09:11:41	1	Visa	4111111111111111	04/2017	2
4	33339	88887	S2	2015-03-30 15:22:31	5.00	0.00	2015-04-02 16:32:21	4	American Express	378282246300005	04/2016	4
5	44449	88887	S3	2015-03-31 05:43:11	5.00	0.00	2015-04-02 16:32:21	5	Visa	4111111111111333	03/2019	6
6	55559	73447	S4	2015-03-31 38:37:22	5.00	0.00	2015-04-02 16:32:21	7	Discover	6011111111111117	04/2019	7
7	66669	73447	S4	2015-04-01 23:11:12	15.00	0.00	2015-04-03 10:21:35	8	MasterCard	5555555555554444	04/2019	8
8	77779	88887	S2	2015-04-02 11:26:38	5.00	0.00	2015-04-03 10:21:35	9	Visa	4012888888881991	04/2019	10
9	44449	88447	S4	2015-04-03 12:22:31	5.00	0.00	2015-04-03 12:22:31	5	Visa	4111111111111333	03/2019	6
10	22229	88447	S5	2015-05-03 12:22:31	5.00	0.00	2015-05-03 12:22:31	3	Visa	4012888888881881	08/2019	3
11	22229	78397	S2	2015-06-03 12:22:31	5.00	0.00	2015-06-03 12:22:31	3	Visa	4012888888881881	08/2019	3

ORDERS table

item_id	order_id	product_id	item_price	discount_amount	quantity
3	2	4234	989.99	197.80	1
4	3	3234	2517.00	1308.84	1
5	3	1234	999.00	199.87	1
6	3	5234	1299.00	0.00	1
7	4	2234	1199.00	359.70	2
8	4	13234	13.95	2.79	1
9	5	5234	1299.00	0.00	1
10	6	5234	1299.00	0.00	1
11	7	1234	999.00	199.87	1
12	7	7234	99.99	29.97	1
13	7	9234	14.99	4.20	1
14	8	10234	49.99	7.49	1
15	9	1234	999.00	199.87	1
16	9	14234	49.99	9.99	1
17	10	15234	25.99	3.89	1
18	10	16234	120.00	24.00	1
20	2	11234	19.95	3.99	1
21	2	6234	1415.00	551.46	1
22	11	18234	200.99	40.00	1
23	7	19234	500.99	75.18	1

ORDERITEMS table

vendor_id	company_name	contact_name	contact_name	address	city	state	zip	phone	fax	email
1	All Merchandises	Huntington	Anne	1515 NW Market Street	Seattle	WA	98107	206-325-6755	206-329-9675	LAT@business.com
2	Computer Group	Tadema	Ken	6123 15th Avenue NW	Seattle	WA	98107	206-325-7866	206-329-9786	ES@business.com
3	Foundation of America	Swanson	Sally	506 Prospect Street	Seattle	WA	98109	206-325-8977	206-329-9897	Foundation@business.com
4	book Group	Lee	Andrew	1102 3rd Street	Kirkland	WA	98033	425-746-5433	425-745-5433	Andrew.Lee@somewhere.com
5	HP Products	Harrison	Denise	533 10th Avenue	Kirkland	WA	98033	425-746-4322	425-746-4422	Denise.Harrison@somewhere.com
6	New York Brokerage	Smith	Mark	621 Roy Street	Seattle	WA	98109	206-325-9088	206-329-9908	NYB@business.com
7	Walsh Store	Walsh	Denesha	6712 24th Avenue NE	Redmond	WA	98053	425-635-7566	425-635-7555	Denesha.Walsh@somewhere.com
8	Chris Company	Bancroft	Chris	12605 NE 6th Street	Bellevue	WA	98005	425-635-9788	425-639-9978	Chris.Bancroft@somewhere.com
9	Harely Benton	Nelson	Fred	2512 Lucky Street	San Francisco	CA	94110	415-422-2121	415-429-9212	SA@business.com
10	Eastman Corporation	Garner	Patty	2515 Lucky Street	San Francisco	CA	94110	415-422-3232	415-429-9323	GA@business.com

VENDOR table

store_id	store_zip	region_id	region_name
S1	60600	C	Chicagoland
S2	35400	T	Tristate
S3	60640	C	Chicagoland
S4	46307	T	Tristate
S5	47374	I	Indiana
S6	47401	I	Indiana
S7	55401	N	North

STORE table

category_id	category_name
11	Computer
21	CD
31	DVD
41	Book
51	Video
61	printer

CATEGORY table

address_id	customer_id	line1	line2	city	state	zip_code	Phone	disabled
1	11119	100 East Ridgewood Ave.		Paramus	NJ	07652	201-653-4472	0
2	11119	21 Rosewood Rd.		Woodcliff Lake	NJ	07677	201-653-4472	0
3	22229	16285 Wendell St.		Omaha	NE	68135	402-896-2576	0
4	33339	19270 NW Cornell Rd.		Beaverton	OR	97006	503-654-1291	0
5	44449	186 Vermont St.	Apt. 2	San Francisco	CA	94110	415-292-6651	0
6	44449	1374 46th Ave.		San Francisco	CA	94129	415-292-6651	0
7	55559	6982 Palm Ave.		Fresno	CA	93711	559-431-2398	0
8	66669	23 Mountain View St.		Denver	CO	80208	303-912-3852	0
9	77779	7361 N. 41st St.	Apt. B	New York	NY	10012	212-335-2093	0
10	77779	3829 Broadway Ave.	Suite 2	New York	NY	10012	212-239-1208	0
11	88889	2381 Buena Vista St.		Los Angeles	CA	90023	213-772-5033	0
12	88889	291 W. Hollywood Blvd.		Los Angeles	CA	90024	213-391-2938	0

ADDRESS table

## 5. Data Dictionary for the Pioneer Book Store Database

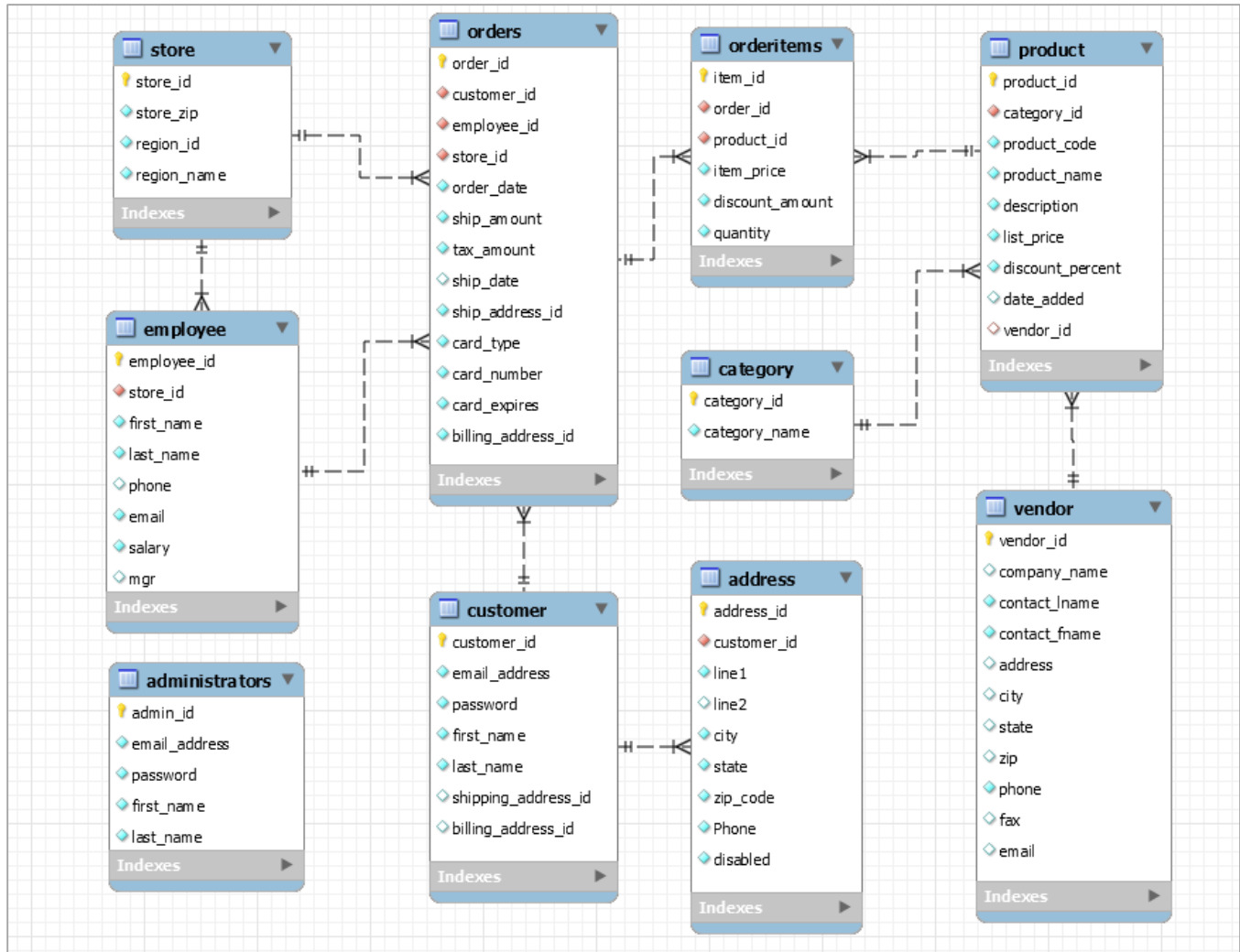
Table Name	Attribute Name	Data Type	Range	PK or FK	FK Referenced Table
CUSTOMER	customer_id	INT (4)		PK	
	first_name	VARCHAR (60)			
	last_name	VARCHAR (60)			
	Email_address	VARCHAR (100)	NIQUE		
	shipping_address_id	INT (5)			
	billing_address_id	INT (5)			
	password	VARCHAR (60)			
PRODUCT	product_id	INT (4)		PK	
	category_id	INT (4)		FK	CATEGORY
	product_code	VARCHAR (10)	UNIQUE		
	product_name	VARCHAR (50)			
	description	TEXT			
	list_price	DECIMAL (10,2)			
	Discount_percent	DECIMAL (10,2)			
	Date_added	DATETIME	NULL		
	vendor_id	INT (2)	FK		VENDOR
CATEGORY	category_id	INT (4)		PK	
	category_name	VARCHAR (50)	UNIQUE		
VENDOR	vendorid	INT	PK		
	company_name	VARCHAR (100)			
	contact_fname	VARCHAR (25)			
	Contact_lname	VARCHAR (25)			
	address	VARCHAR (35)			
	city	VARCHAR (35)			
	state	VARCHAR (2)			
	zip	VARCHAR (5)			
	phone	CHAR (12)			
	fax	CHAR (12)			
	email	VARCHAR (100)			
ADDRESS	address_id	VARCHAR (4)		PK	
	customer_id	VARCHAR (10)		FK	CUSTOMER
	line1				
	line2				
	city				
	state				
	zip_code				
	phone				
	disabled	VARCHAR (10)			
STORE	store_id	VARCHAR (3)		PK	
	store_id	CHAR (5)			
	region_id	CHAR (5)			
	region_name	CHAR (25)			

ORDERS	order_id	INT (4)		PK	
	customer_id	INT (4)		FK	CUSTOMER
	employee_id	INT (4)		FK	EMPLOYEE
	store_id	VARCHAR (3)		FK	STORE
	order_date	DATETIME			
	Ship_amount	DECIMAL (10,2)			
	tax_amount	DECIMAL (10,2)			
	ship_date	DATETIME			
	Shipping_address_id	INT (4)			
	Cardt_type	VARCHAR (50)			
	Card_number	CHAR (16)			
	Card_expires	VARCHAR (7)			
	bill_address_id	INT (4)		FK	CATEGORY
ORDERITEMS	order_id	INT (4)		PK FK	ORDERS
	item_id	INT (4)		PK	
	product_id	INT (4)		FK	PRODUCT
	quantity	INT (3)			
	item_price	DECIMAL (10,2)			
	discount_amount	DECIMAL (10,2)			
EMPLOYEE	employee_id	INT (4)		PK	EMPLOYEE
	store_id	VARCHAR (3)		FK	STORE
	first_name	CHAR (25)			
	last_name	CHAR (25)			
	phone	CHAR (12)			
	email	VARCHAR (100)	UNIQUE		
	salary	DECIMAL (10,2)			
	mgr	INT (4)			



## 6. The E-R diagram

The next E-R diagram shows the relations between all of the tables.



ER schema diagram for the Pioneer Book Store Database