Ian Matlak

Oneplus Database Design

ProductCategory

PK	ProductCategoryID
FK	WarrentyID
	Type

Product

PK	ProductID
FK	ProductCategoryID
	Price
	ProductName
	ModelNumber
	InStock

OrderDetails

PK	OrderDetailsID
FK	ProductID
FK	OrderID
	Quantity
	Total

Order

PK	OrderID
FK	CustomerID
	OrderDate

Shipping

PK	ShippingID
FK	OrderID
	ShippingCompany

VirtualInvoice

PK	InvoiceID
FK	OrderID
	TotalCost
	TaxRate
	InvoiceDate

Warranty

PK	WarrantyID
	Length
	Description

Customer

PK	CustomerID
	EmailAddress
FK	AddressID
FK	PaymentID
	FirstName
	LastName

Address

PK	AddressID
	ZipCode
	Country
	State
	Address

Payment

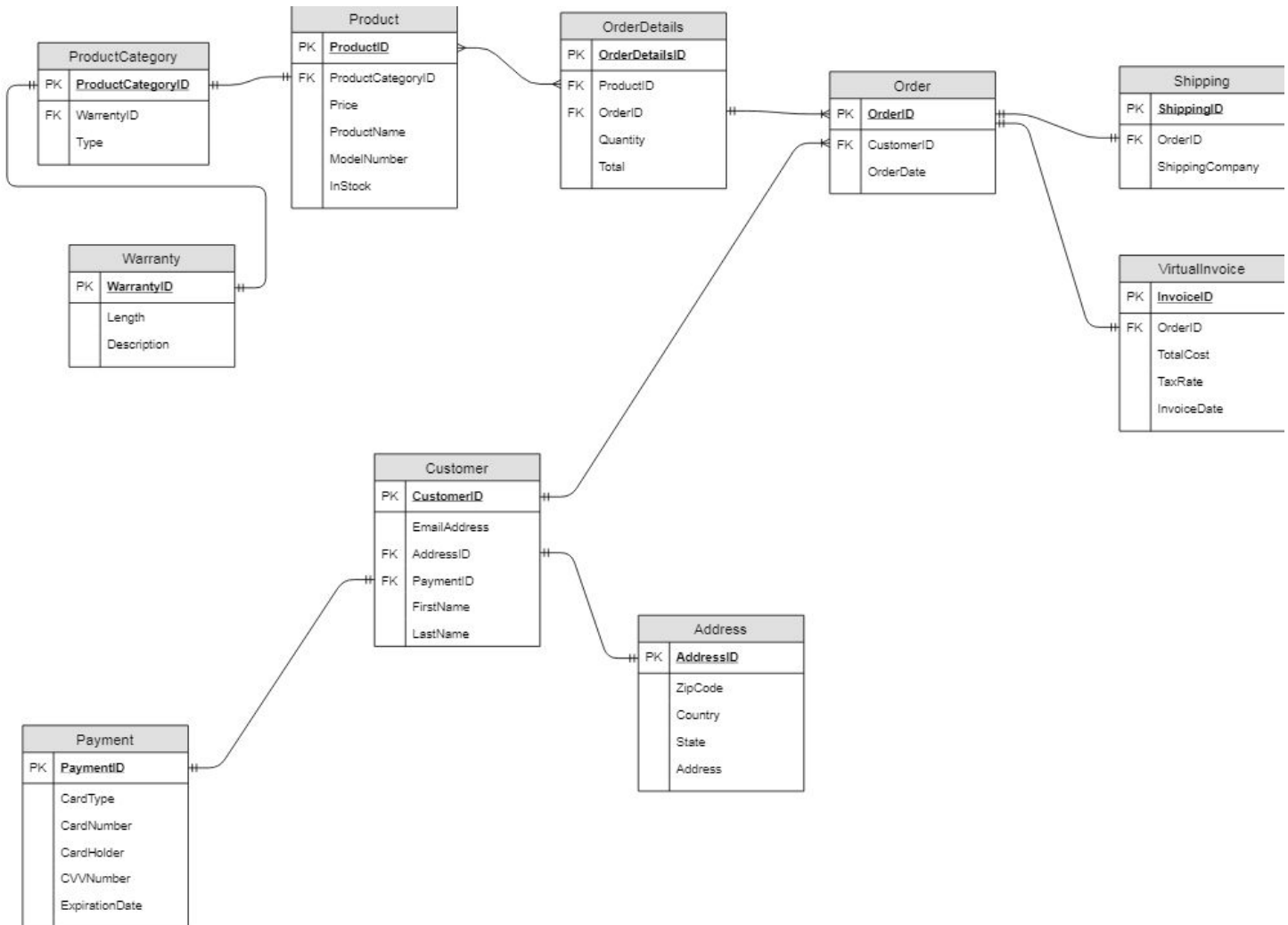| PK	PaymentID
	CardType
	CardNumber
	CardHolder
	CVVNumber
	ExpirationDate

Implementations:

1. Customers can only purchase products online
2. Shipping will be free
3. Confirmation email will be sent after purchase
4. A customer can only have one payment method
5. A customer can only have one primary shipping address
6. Free warranty depending on product
7. Warranty is the same for every item
8. Customer can only purchase items with an account
9. Same Tax for every customer
10. All Invoice updates will be kept

Design Consideration:

- Customers can only purchase products online

- Shipping will be free

- Confirmation email will be sent after purchase

- A customer can only have one payment method

- A customer can only have one primary shipping address

- Free warranty depending on product

- Warranty will be based on product category

Design the Oneplus database with the following tables:

tbl_Payment(PaymentID, CardType,CardNumber, CardHolder, CVVNumber, ExpirationDate)

tbl_Address(AddressID, Zipcode, Country, State, Address)

tbl_Customer(CustomerID, EmailAdress, AddressID, PaymentID, FirstName, LastName)

tbl_Order(OrderID, CustomerID, OrderDate, Total)

tbl_VirtualInvoice(InvoiceID, CustomerID, OrderID, TotalCost, TaxRate, InvoiceDate)

tbl_Shipping(ShippingID, OrderID, ShippingComany)

tbl_WarrantyID(WarrantyID, Length, Description)

tbl_ProductCategory(ProductCategoryID, WarrantyID, Type)

tbl_Product(ProductID, ProductCategoryID, Price, ProductName, ModelNumber, InStock)

tbl_OrderDetails(OrderDetailsID, ProductID, Quanity, OrderID)

The referential integrity constraints are:

AddressID in tbl_Customer must exist in AddressID in tbl_Address

PaymentID in tbl_Customer must exist in PaymentID in tbl_Payment

CustomerID in tbl_Order must exist in CustomerID in tbl_Customer

CustomerID in tbl_VirtualInvoice must exist in CustomerID in tbl_Customer

OrderID in tbl_VirtualInvoice must exist in OrderID in tbl_Order

OrderID in tbl_Shipping must exist in OrderID in tbl_Order

WarrantyID in tbl_ProductCategories must exist in WarrantyID in tbl_WarrantyID

ProductCategoryID in tbl_Product must exist in ProductCategoryID tbl_ProductCategory

ProductID in tbl_OrderDetails must exist in ProductID tbl_Product

OrderID in tbl_OrderDetails must exist in OrderID tbl_Order

PaymentID in tbl_Payment, AddressID in tbl_Address, CustomerID in tbl_Customer, OrderID in tbl_Order, InvoiceID in tbl_VirtualInvoice, ShippingID in tbl_Shipping, WarrantyID in tbl_Warranty, ProductCategoryID in tbl_ProductCategory, ProductID in tbl_Product, OrderDetailsID in tbl_OrderDetails.

PaymentID	Start at 1	Increment by 1
AddressID	Start at 1	Increment by 1
CustomerID	Start at 1	Increment by 1
OrderID	Start at 1	Increment by 1
InvoiceID	Start at 1	Increment by 1
ShippingID	Start at 1	Increment by 1
WarrantyID	Start at 1	Increment by 1
ProductCategoryID	Start at 1	Increment by 1
ProductID	Start at 1	Increment by 1
OrderDetailsID	Start at 1	Increment by 1

tbl_Payment

PaymentID	Int	NOT NULL	PK
CardType	varchar(20)	NOT NULL	
CardNumber	varchar(16)	NOT NULL	
CardHolder	char(25)	NOT NULL	
CVVNumber	char(4)	NOT NULL	
ExpirationDate	char(10)	NOT NULL	

tbl_Address

AddressID	Int	NOT NULL	PK
ZipCode	Int	NOT NULL	
Country	char(20)	NOT NULL	
State	char(20)	NOT NULL	
Address	char(30)	NOT NULL	

tbl_Customer

CustomerID	Int	NOT NULL	PK
EmailAddress	varchar(35)	NOT NULL	
AddressID	Int	NOT NULL	FK
PaymentID	Int	NOT NULL	FK
FirstName	char(20)	NOT NULL	
LastName	char(20)		

tbl_Order

OrderID	Int	NOT NULL	PK
CustomerID	Int	NOT NULL	FK
OrderDate	datetime	NOTNULL	GetDate()
TotalCost	Float	NOT NULL	

tbl_VirtualInvoice

InvoiceID	Int	NOT NULL	PK
OrderID	Int	NOTNULL	FK
TotalCost	float	NOT NULL	
TaxRate	float	NOT NULL	
InvoiceDate	datetime	NOT NULL	GetDate()

tbl_Shipping

ShippingID	Int	NOT NULL	PK
OrderID	Int	NOTNULL	FK
ShippingCompany	varchar(25)	NOT NULL	

tbl_Warranty

WarrantyID	Int	NOT NULL	PK
Length	Int	NOT NULL	
Description	varchar(50)	NOT NULL	

tbl_ProductCategory

ProductCategoryID	Int	NOT NULL	PK
WarrentyID	Int	NOT NULL	FK
Type	varchar(20)	NOT NULL	

tbl_Product

ProductID	Int	NOT NULL	PK
ProductCategoryID	Int	NOT NULL	FK
Price	float	NOTNULL	
ProductName	varchar(25)	NOT NULL	
ModelNumber	varchar(25)	NOT NULL	
InStock	int	NOT NULL	

tbl_OrderDetails

OrderDetailsID	Int	NOT NULL	PK
ProductID	Int	NOT NULL	FK
OrderID	Int	NOT NULL	FK
Quantity	Int	NOT NULL	
Total	float	NOT NULL	

```
CREATE TABLE tbl_opPAYMENT(
PaymentID                 int   not null identity(1,1),
CardType                  varchar(20) not null,
```

```sql
CardNumber                  varchar(16) not null,
CardHolder                  char(25) not null,
CVVNumber                   char(4) not null,
ExpirationDate              char(10) not null,
CONSTRAINT                  opPAYMENT_PK  PRIMARY KEY (PaymentID)
);

CREATE TABLE tbl_opADDRESS(
AddressID                   int   not null identity(1,1),
ZipCode                     int not null,
Country                     char(20) not null,
State                       char(20) not null,
Address                     char(30) not null,
CONSTRAINT                  opADDRESS_PK  PRIMARY KEY (AddressID)
);

CREATE TABLE tbl_opCUSTOMER(
CustomerID                  int   not null identity(1,1),
EmailAddress                varchar(35) not null,
AddressID                   int not null,
PaymentID                   int not null,
FirstName                   char(20) not null,
LastName                    char(20),
CONSTRAINT                  opCUSTOMER_PK  PRIMARY KEY (CustomerID),
CONSTRAINT                  opADDRESS_FK FOREIGN KEY (AddressID)REFERENCES tbl_opADDRESS
(AddressID),
CONSTRAINT                  opPAYMENT_FK FOREIGN KEY (PaymentID) REFERENCES tbl_opPAYMENT
(PaymentID)
);

CREATE TABLE tbl_opORDER(
OrderID                     int   not null identity(1,1),
CustomerID                  int not null,
OrderDate                   datetime null default GetDate(),
TotalCost                   float not null,
CONSTRAINT                  opORDER_PK  PRIMARY KEY (OrderID),
CONSTRAINT                  opCUSTOMER_FK FOREIGN KEY (CustomerID) REFERENCES
tbl_opCUSTOMER(CustomerID)
);

CREATE TABLE tbl_opVIRTUALINVOICE(
InvoiceID                   int   not null identity(1,1),
OrderID                     int not null,
TotalCost                   Float not null,
TaxRate                     Float not null,
InvoiceDate                 datetime null default GetDate(),
CONSTRAINT                  opINVOICE_PK  PRIMARY KEY (InvoiceID),
CONSTRAINT                  opORDER_FK FOREIGN KEY (OrderID) REFERENCES
tbl_opORDER(OrderID)
);

CREATE TABLE tbl_opSHIPPING(
```

```sql
ShippingID                    int   not null identity(1,1),
OrderID                       int not null,
ShippingCompany               varchar(20) not null,
CONSTRAINT                    opSHIPPING_PK  PRIMARY KEY (ShippingID),
CONSTRAINT                    op_SHIPPING_ORDER_FK FOREIGN KEY (OrderID) REFERENCES
tbl_opORDER(OrderID)
);

CREATE TABLE tbl_opWARRANTY(
WarrantyID                    int not null identity(1,1),
Length                        int not null,
Description                   varchar(50) not null,
CONSTRAINT                    opWARRANTY_PK  PRIMARY KEY (WarrantyID),
);

CREATE TABLE tbl_opPRODUCTCATEGORIES(
ProductCategoryID             int   not null identity(1,1),
WarrantyID                    int not null,
Type                          varchar(20) not null,
CONSTRAINT                    opCATEGORY_PK  PRIMARY KEY (ProductCategoryID),
CONSTRAINT                    opWARRANTY_FK FOREIGN KEY (WarrantyID) REFERENCES
tbl_opWARRANTY(WarrantyID)
);

CREATE TABLE tbl_opPRODUCT(
ProductID                     int not null identity(1,1),
ProductCategoryID             int not null,
Price                         float not null,
ProductName                   varchar(25) not null,
ModelNumber                   varchar(25) not null,
InStock                       int not null,
CONSTRAINT                    opPRODUCT_PK  PRIMARY KEY (ProductID),
CONSTRAINT                    opCATEGORY_FK FOREIGN KEY (ProductCategoryID) REFERENCES
tbl_opPRODUCTCATEGORIES(ProductCategoryID)
);

CREATE TABLE tbl_opORDERDETAILS(
OrderDetailsID                int   not null identity(1,1),
ProductID                     int not null,
OrderID                       int not null,
Quantity                      int not null,
Total                         float not null,
CONSTRAINT                    opORDERDETAILS_PK  PRIMARY KEY (OrderDetailsID),
CONSTRAINT                    opPRODUCT_FK FOREIGN KEY (ProductID) REFERENCES
tbl_opPRODUCT(ProductID),
CONSTRAINT                    op_ORDERDETAILS_ORDER_FK FOREIGN KEY (OrderID) REFERENCES
tbl_opORDER(OrderID)
);
```

Populate Sample Data:

PAYMENT

	PaymentID	CardType	CardNumber	CardHolder	CVVNumber	ExpirationDate
1	1	VISA	1325468746523548	Ian Matlak	5543	09/22
2	2	VISA	5461342597864513	Tom Jerry	874	9/33
3	3	VISA	5442342222864513	Bob tiny	564	10/35
4	4	Master Card	6462362425824513	Tiff Key	564	11/22
5	5	VISA	6542368885824587	Kat Tea	564	12/20
6	6	VISA	4442348885824587	Pila Tok	321	01/20
7	7	VISA	5687388854824587	Steph Aner	532	02/22
8	8	VISA	5546318854824587	Ahri Yoe	2435	02/23
9	9	VISA	5543265895555587	Cow Boy	6969	02/33
10	10	VISA	2134652897645311	Eye Dont	6969	02/69

INSERT INTO tbl_opPAYMENT(CardType,CardNumber,CardHolder,CVVNumber,ExpirationDate)
VALUES('VISA','1325468746523548','Ian Matlak','5543','09/22')

ADDRESS

	AddressID	ZipCode	Country	State	Address
1	1	11757	USA	NY	816 N Indiana Ave
2	2	11002	USA	New York	271 N Maple str
3	3	11452	USA	Florida	272 N Easter str
4	4	16552	CND	Ontario	324 W Cool str
5	5	22347	USA	Ohio	224 W terry ave
6	6	22347	USA	New Jersey	222 W apple str
7	7	21324	UK	London	523 W Kares str
8	8	21315	USA	California	5235 W Lone ave
9	9	69696	USA	Texas	7777 W Cow ave
10	10	86548	USA	Ohio	2342 W IDC ave

INSERT INTO tbl_opADDRESS(ZipCode,Country,State,Address)
VALUES('11757','USA','NY','816 N Indiana Ave')

CUSTOMER

	CustomerID	EmailAddress	AddressID	PaymentID	FirstName	LastName
1	1	matlir@farmingdale.edu	1	1	Ian	Matlak
2	2	random@gmail.com	2	2	Tom	Jerry
3	3	random11111@gmail.com	3	3	Bob	tirry
4	4	random342111@gmail.com	4	4	Tiff	Key
5	5	random321@gmail.com	5	5	Kat	Tea
6	6	random2321@gmail.com	6	6	Pila	Tok
7	7	random8651@gmail.com	7	7	Steph	Aner
8	8	random222221@gmail.com	8	8	Ahri	Yoe
9	9	random123@gmail.com	9	9	Cow	Boy
10	10	randomYolo@gmail.com	10	10	Eye	Dont

INSERT INTO tbl_opCUSTOMER(EmailAddress,AddressID,PaymentID,FirstName,LastName)
VALUES('matlir@farmingdale.edu',1,1,'Ian','Matlak')

WARRENTY

	WarrantyID	Length	Description
1	1	3	3 Year Warrenty

INSERT INTO tbl_opWARRANTY(Length,Description)
VALUES(3,'3 Year Warrenty')

CATEGORIES

	ProductCategoryID	WarrantyID	Type
1	1	1	Phone
2	3	1	Accessories

INSERT INTO tbl_opPRODUCTCATEGORIES(WarrantyID,Type)
VALUES(1,'Phone')

PRODUCT

	ProductID	ProductCategoryID	Price	ProductName	ModelNumber	InStock
1	1	1	600	OnePlus 6T	A6013	1
2	2	3	59.99	OnePlus HeadPhones	OPHPA6	4
3	4	3	20	OnePlus Charger	CH25V	22
4	5	3	10	OnePlus Cable	CB10FT	15
5	6	3	30	OnePlus Case	CS6T	2

INSERT INTO tbl_opPRODUCT(ProductCategoryID,Price,ProductName,ModelNumber,InStock)
VALUES(1,600.00,'OnePlus 6T', 'A6013', 1)

ORDERDETAILS

	OrderDetailsID	ProductID	OrderID	Quantity	Total
1	1	1	1	1	600
2	2	2	1	2	119.98
3	9	1	1	1	600
4	10	1	1	1	600
5	11	2	1	1	59.99
6	12	2	1	3	179.97
7	14	1	1	2	1200
8	17	6	1	2	60
9	18	6	2	2	60
10	19	1	3	1	600
11	20	2	4	1	59.99
12	24	2	5	1	59.99
13	25	2	5	1	59.99
14	27	1	6	3	1800
15	28	1	7	3	1800
16	29	6	7	3	90
17	30	6	8	3	90
18	31	1	8	1	600
19	32	2	9	1	59.99
20	33	5	10	5	50
21	34	4	11	3	60
22	35	1	12	1	600

INSERT INTO tbl_opORDERDETAILS(ProductID,OrderID,Quantity,Total)
VALUES(1,1,1,600)

ORDER

	OrderID	CustomerID	OrderDate	TotalCost
1	1	1	2019-04-26 20:07:24.807	3419.94
2	2	2	2019-05-07 21:41:09.463	60
3	3	3	2019-05-07 21:44:27.783	600
4	4	4	2019-05-07 21:44:50.863	59.99
5	5	3	2019-05-07 21:55:11.120	119.98
6	6	4	2019-05-07 21:58:05.597	1800
7	7	5	2019-05-07 21:59:45.480	1890
8	8	6	2019-05-07 22:02:44.740	690
9	9	7	2019-05-07 22:03:54.417	59.99
10	10	8	2019-05-07 22:04:04.407	50
11	11	9	2019-05-07 22:04:26.803	60
12	12	10	2019-05-07 22:04:35.970	600

INSERT INTO tbl_opORDER(CustomerID,OrderDate,TotalCost)
VALUES(1,GETDATE(),600)

SHIPPING

	ShippingID	OrderID	ShippingCompany
1	1	1	FedEx
2	3	3	FedEx
3	6	6	FedEx
4	7	7	FedEx
5	15	5	FedEx
6	18	9	FedEx
7	19	10	FedEx
8	20	15	FedEx
9	22	2	FedEx
10	23	8	FedEx

INSERT INTO tbl_opSHIPPING(OrderID, ShippingCompany)
VALUES(1,'FedEx')

VIRTUALINVOICE

	InvoiceID	OrderID	TotalCost	TaxRate	InvoiceDate
1	1	1	781.89	0.086	2019-04-29 23:12:23.187
2	8	1	113.51828	0.086	2019-05-06 16:30:06.343
3	9	1	165.11828	0.086	2019-05-06 16:35:36.630
4	10	1	170.27742	0.086	2019-05-06 16:41:11.413
5	11	1	185.75484	0.086	2019-05-06 16:42:13.230
6	12	1	3648.89484	0.086	2019-05-07 03:04:57.347
7	13	1	3714.05484	0.086	2019-05-07 21:37:08.003
8	14	2	65.16	0.086	2019-05-07 21:41:09.487
9	15	3	651.6	0.086	2019-05-07 21:44:28.003
10	16	4	65.14914	0.086	2019-05-07 21:44:50.883
11	17	4	65.14914	0.086	2019-05-07 21:51:00.840
12	18	5	65.14914	0.086	2019-05-07 21:55:11.133
13	19	5	130.29828	0.086	2019-05-07 21:57:16.830
14	20	6	1954.8	0.086	2019-05-07 21:59:39.627
15	21	7	1954.8	0.086	2019-05-07 22:01:29.580
16	22	7	2052.54	0.086	2019-05-07 22:02:31.763
17	23	8	97.74	0.086	2019-05-07 22:02:44.770
18	24	8	749.34	0.086	2019-05-07 22:03:12.760
19	25	9	65.14914	0.086	2019-05-07 22:03:54.437
20	26	10	54.3	0.086	2019-05-07 22:04:04.430
21	27	11	65.16	0.086	2019-05-07 22:04:26.817
22	28	12	651.6	0.086	2019-05-07 22:04:35.983

```
INSERT INTO tbl_opVIRTUALINVOICE(OrderID,TotalCost,TaxRate,InvoiceDate)
VALUES(1, 651.6,0.086,GETDATE())
```