

Assignment 2 by Jackson Watkins

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Module name: Information Engineering

Module code: ACCB4013

Assignment title: Database Design (The Book Store)

Date: 3/1/20

Suitable tables/fields created

I had made six tables for the companies database. Here is the data diction for the tables:

Supplier

Suppliers ID (PK)
Product ID
Location
Product request
Staff ID (FK)
Product category/genre

Stock

Stock ID (PK)
Stock number
Product (FK)
Product ID
How rare is the item?
Price
Product category/genre

Store

Store ID (PK)
Location
Order ID (FK)
Customer ID (FK)
Product ID (FK)
Has the product been collected yet?

Staff

Staff ID (PK)
First name
Last name
Gender
Product request

Customer details

Customer ID (PK)
Email
City/town
Postcode
Streat
Phone number
First name
Last name
Gender

Customer order

Order ID (PK)
Customer ID (FK)
Product
Product ID (FK)
Product category/genre
Price
Order date/time

The PK in the fields stands for Primary Key. This means the data in this field will always be unique, for example the product ID¹. This also allows my database to identify what each table are and allowing them to be linked together without causing any issues. It will also help prevent errors from happening in my database by not allowing duplicate values for fields like customer ID where every ID is unique to the customer. Having these fields unique can also help admin identify users and products quickly by searching for their ID in the database. Last thing to mention about Primary Key is that there can only be one of them in each table.

The other field type that's in the tables are Foreign Keys (FK), for example the price field. These fields can include duplicate value, unless you go into its fields properties to not allow this by changing the index value to "allow no duplicates". These data can also be used in relationships to link tables together by referencing the Primary Key². Last thing to mention about Foreign Keys, there can be multiple of them in one table.

Here are the tables made in Microsoft Access with quick explanation what they are:

Supplier

¹ "Add or change a table's primary key in Access - Access."
<https://support.office.com/en-gb/article/add-or-change-a-table-s-primary-key-in-access-07b4a84b-0063-4d56-8b00-65f2975e4379>. Accessed 3 Jan. 2020.

² "What is a Foreign Key? - Definition from Techopedia."
<https://www.techopedia.com/definition/7272/foreign-key>. Accessed 3 Jan. 2020.

Suppliers ID	Product ID	Location	Product req	Staff ID	Click to Add
1	1	Cardiff	Risk	1	
5	2	London	Risk	2	
6	3	Cardiff	Monopoly	3	
7	4	Llanelli	Uno	4	
8	5	Llanelli	Monopoly	5	
*(New)	0			0	

This table contains the details for who is selling the product (supplier) and where they're located. The reason why staff ID is in this table so the company can know which staff is picking up what product. Here is what this table looks like in design view:

Field Name	Data Type
Suppliers ID	AutoNumber
Product ID	Number
Location	Short Text
Product request	Short Text
Staff ID	Number

Additional information about this section is:

- AutoNumber generates a number automatically for the field.
- I set index (yes, no duplicates) for product ID and staff ID.
- Product request and location had a limit of 25 characters.
- Product ID and staff ID are in the number data type so they can only contain number characters.
- Location and product request are in short text so they can contain both letters and numbers.

Staff

Staff ID	First name	Last name	Gender	Product req	Click to Add
1	Jeff	Jones	Male	Risk	
2	John	David	Male	Risk	
3	Jess	Lane	Female	Monopoly	
4	Billy	Jones	Male	Uno	
5	Jon	Watkins	Male	Monopoly	
*(New)					

This is to keep track of all of the staff working in the company. It also keep tracks what the staff are requested to collect for the company. Here is the design view:

Field Name	Data Type
Staff ID	AutoNumber
First name	Short Text
Last name	Short Text
Gender	Short Text
Product request	Short Text

The only new feature used here is that the gender filed uses a dropdown box to select the staff gender.

Customer ID	Email	City/town	Postcode	Streat	Phone numl	First name	Last name	Gender
4	Jim@gmail.co	Llanelli	SA15 2SN	131 Old Castle	(0800) 5612784	Jim	Watkins	Male
5	Jerry232@gma	Barry	SA15 3GN	12 Queen Stre	(0800) 4578358	Jerry	Jones	Male
6	Terry1960@yal	Llanelli	SA15 7UH	12 Old Caslte F	(0800) 4349834	Terry	Ward	Female
7	Ron11@hotmail	Cardiff	SA12 4GF	5 Wood Streat	(0800) 9854549	Ron	Wall	Male
8	Kay40@gmx.co	Barry	SA15 6HN	10 Queen Stre	(0800) 3438498	Kay	Francis	Female

Stock

Stock ID	Stock numb	Product	Product ID	How rare is	Price	Product cate	Click to Add
2	2	Risk	1	Rare	£30.00	Wargames	
3	2	Risk	2	Rare	£30.00	Wargames	
4	2	Monopoly	3	Rare	£35.00	Family games	
5	1	Uno	4	Very rare	£50.00	Party games	
6	2	Monopoly	5	Very rare	£50.00	Family games	
*(New)	0		0		£0.00		

This is to keep track of all of the stocks in the company and information about the product. Here is its design view:

Field Name	Data Type
Stock ID	AutoNumber
Stock numbers	Number
Product	Short Text
Product ID	Number
How rare is the item?	Short Text
Price	Number
Product category/genre	Short Text

New feature used is that the price filed format is set to currency.

Store

Store ID	Location	Order ID	Customer IC	Product ID	Has the product	Click to Add
1	Llanelli	6	4	4	☐	
2	Barry	7	5	1	☐	
3	Llanelli	8	6	3	☒	
4	Cardiff	9	7	2	☒	
5	Barry	10	8	5	☐	
*(New)		0	0	0	☐	

This table is to keep track of all of the store functioning within the company. It allows the company to see which customer is heading to which store and if they got their product yet.

The only new feature this table used is the yes/no format for the has the product been collected field. This what makes the tickbox appear for this field.

Customer details

Customer IC	Email	City/town	Postcode	Street	Phone number	First name	Last name	Gender	Click to Add
1	Jim@gmail.co	Llanelli	SA15 2SN	131 Old Castle	(0800) 5612784	Jim	Watkins	Male	
5	Jerry232@gma	Barry	SA15 3GN	12 Queen Stre	(0800) 4578358	Jerry	Jones	Male	
6	Terry1960@yal	Llanelli	SA15 7UH	12 Old Caslte F	(0800) 4349834	Terry	Ward	Male	
7	Ron11@hotmail	Cardiff	SA12 4GF	5 Wood Streat	(0800) 9854549	Ron	Wall	Male	
8	Kay40@gmx.co	Barry	SA15 6HN	10 Queen Stre	(0800) 3438498	Kay	Francis	Female	
*(New)									

This table keep track all of the customer information if the company needs to contact them or request proof of the product they are collecting. Here is this table in design view:

Field Name	Data Type
Customer ID	AutoNumber
Email	Short Text
City/town	Short Text
Postcode	Short Text
Street	Short Text
Phone number	Short Text
First name	Short Text
Last name	Short Text
Gender	Short Text

The new features this table used are:

- This \99999")"0090009;0; is put in the phone number field input mask so the data in this field is displayed as a phone number.
- This >LL00\0LL;0; is put in the postcode field input mask so the data in this field is displayed as a postcode.

Customer order

Order ID	Customer ID	Product	Product ID	Product cate	Price	Store ID	Order date/	Click to Add
6	4	Uno	4	Party games	£50.00	1	04/12/2019	
7	5	Risk	1	Wargames	£30.00	2	02/12/2019	
8	6	Monopoly	3	Family games	£35.00	3	12/12/2019	
9	7	Risk	2	Wargames	£30.00	4	06/12/2019	
10	8	Monopoly	5	Wargames	£30.00	5	08/12/2019	
*	(New)	0	0		£0.00	0		

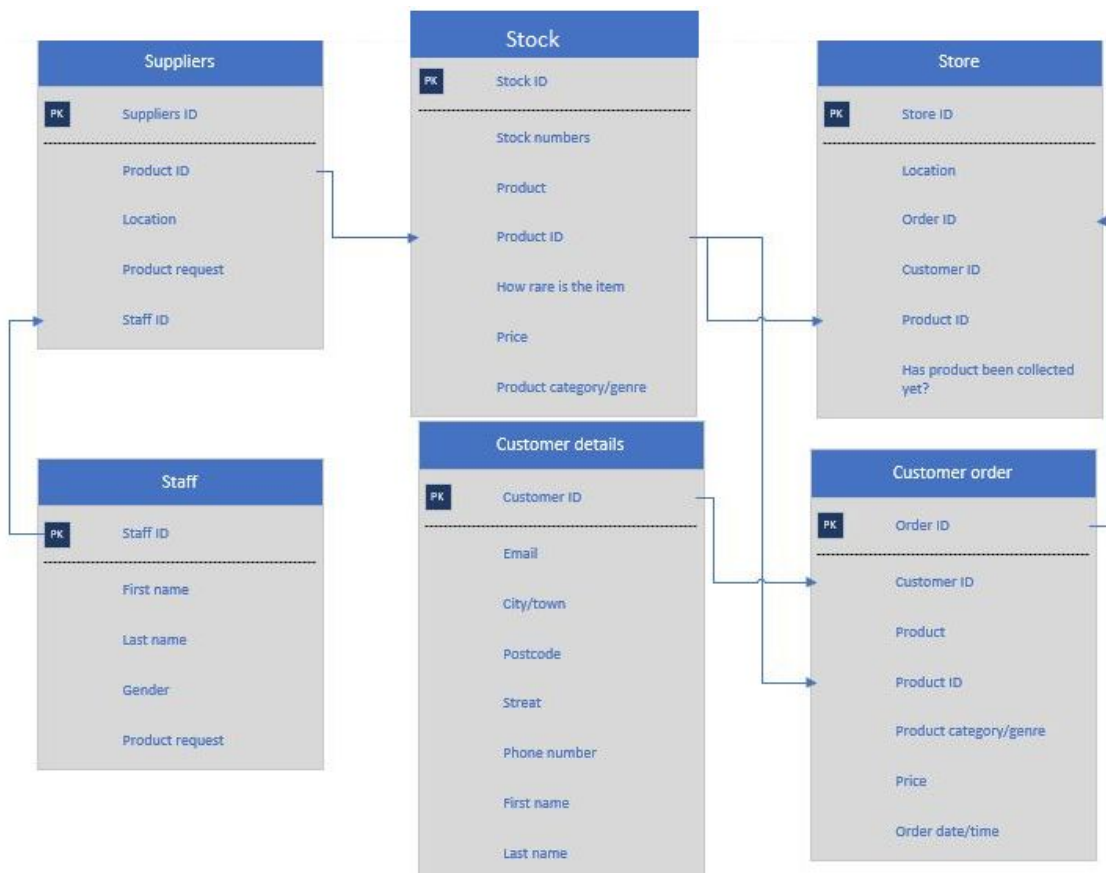
This table allows the company keep track of their customer orders. Here is this table in design view:

Field Name	Data Type
Order ID	AutoNumber
Customer ID	Number
Product	Short Text
Product ID	Number
Product category/genre	Short Text
Price	Number
Store ID	Number
Order date/time	Date/Time

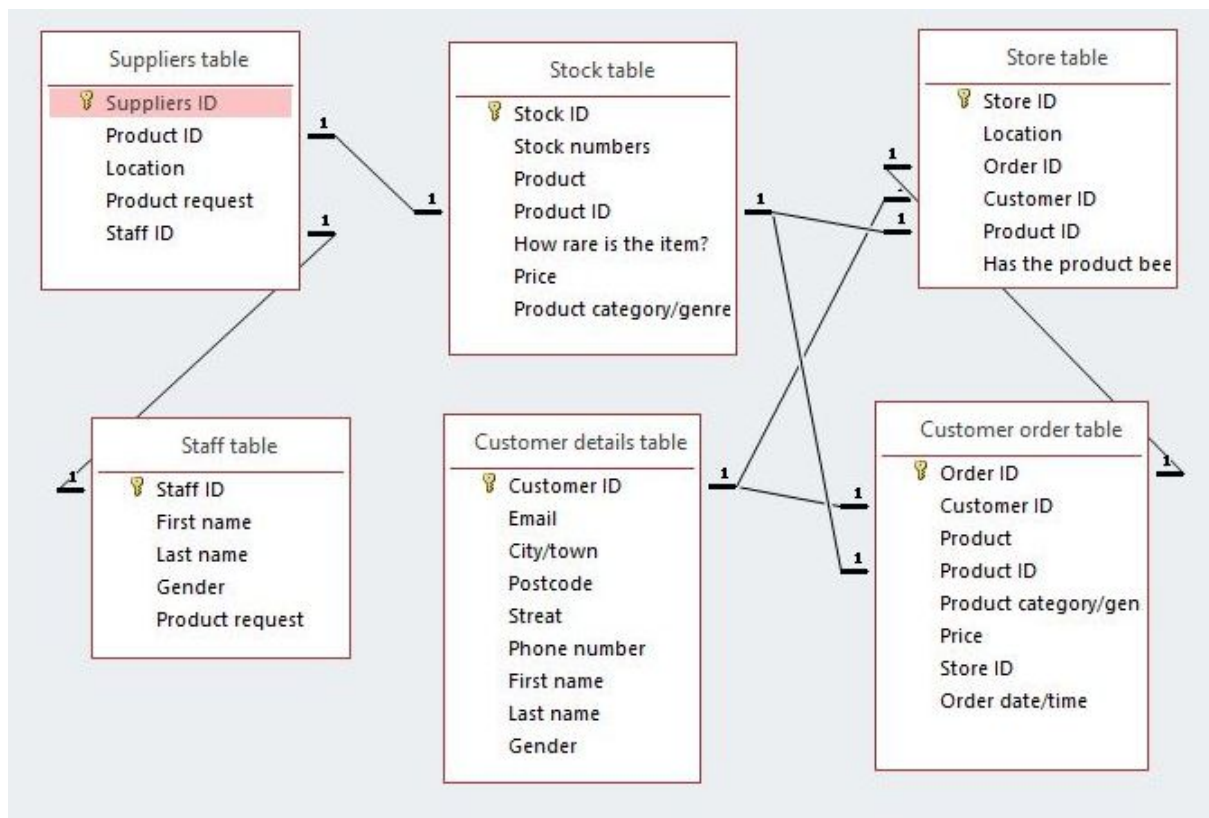
The only new feature used here is that the order date/time field uses the date/time format so the field is displayed in a date/time format. It also allows the user to pick a date from a calendar.

Suitable relationships created

I had used Microsoft Visio studios to design the relationships for the database. Here is the design:



Here is the relationship in Microsoft Access:



Tables relate together correctly

To prove that my relationships work here is a screenshot showing the staff table being linked with the supplier table:

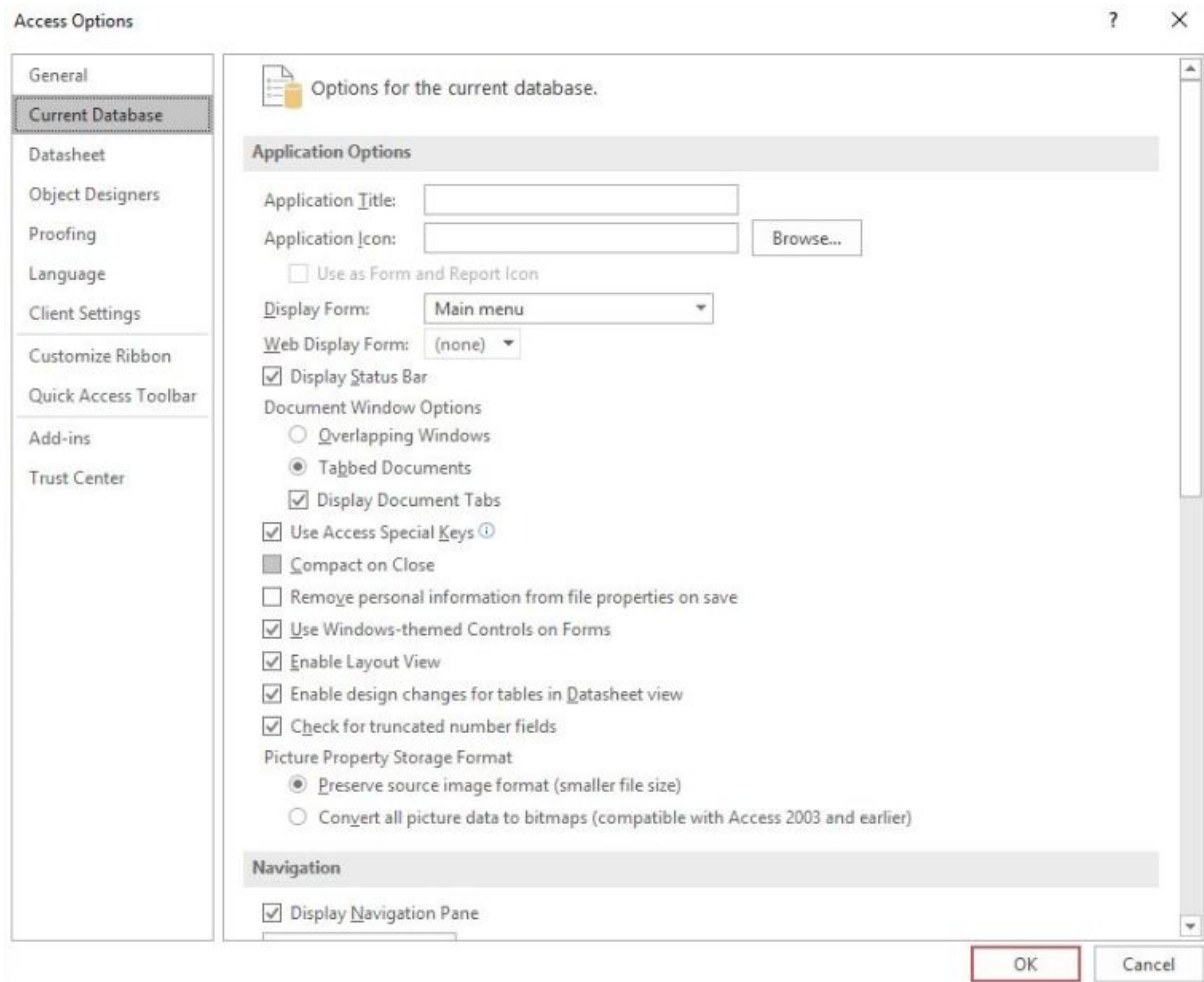
	Staff ID ▾	First name ▾	Last name ▾	Gender ▾	Product req ▾	Click to Add ▾
	1	Jeff	Jones	Male	Risk	
	Suppliers ID ▾	Product ID ▾	Location ▾	Product req ▾	Click to Add ▾	
		1	Cardiff	Risk		
*	(New)	0				
+	2	John	David	Male	Risk	
+	3	Jess	Lane	Female	Monopoly	
+	4	Billy	Jones	Male	Uno	
+	5	Jon	Watkins	Male	Monopoly	
*	(New)					

User guide

I had made the database very user friendly for the company's admins to use. Here is a user guide showing how it all works.

Main menu

When you open the database the first thing you will see is the main menu I made for the database that automatically opens. It does this because I went into the access settings, current database tab and in the display form setting I selected main menu. Here is the settings page I used:



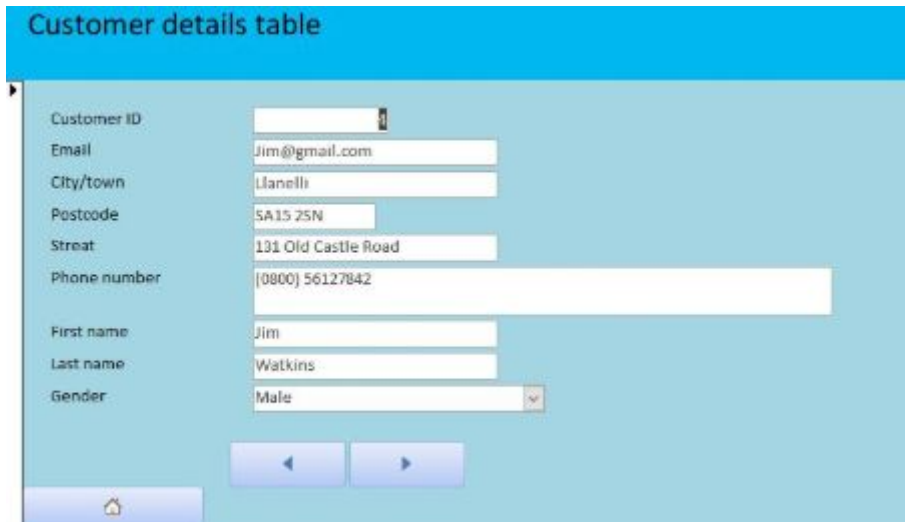
Here is the main menu:



As you can see, there are a lot of buttons that navigate you across the database. All of the buttons are labeled so you know where each button takes you. The only other bit of information about the main menu is that there is a button called “quit” that will close the database program when you click it.

Customer details form

Here is the customer details form:

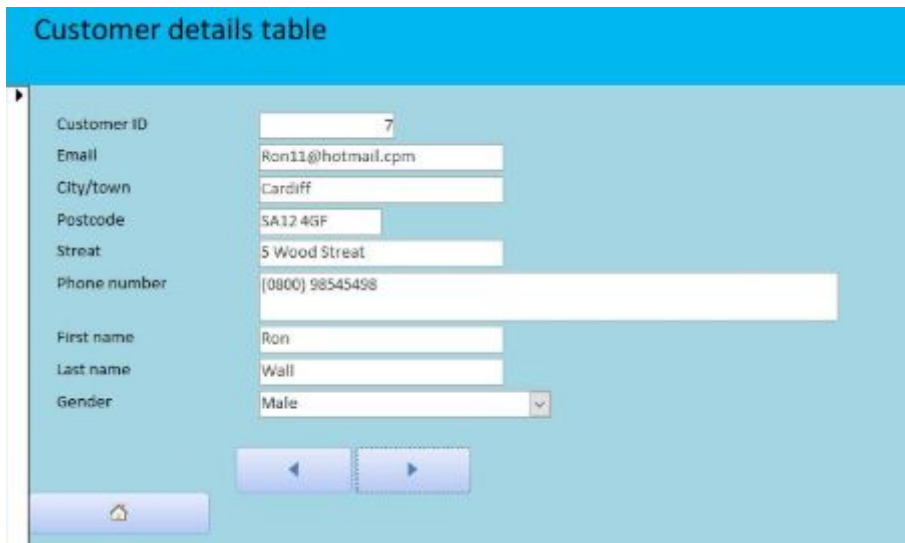


The screenshot shows a web form titled "Customer details table" with a light blue header. The form fields are as follows:

Field	Value
Customer ID	1
Email	Jim@gmail.com
City/town	Llanelli
Postcode	SA15 2SN
Street	131 Old Castle Road
Phone number	(0800) 56127842
First name	Jim
Last name	Watkins
Gender	Male

At the bottom of the form, there is a home button (house icon) on the left, and two arrow buttons (left and right) in the center.

Here you can see all of the customer details. You can change customer by clicking on one of the arrow buttons. The left arrow takes you back, the right arrow takes you forward. Here proof of this working by showing a different result in the form:



The screenshot shows the same web form titled "Customer details table" but with different data:

Field	Value
Customer ID	7
Email	Ron11@hotmail.cpm
City/town	Cardiff
Postcode	SA12 4GF
Street	5 Wood Street
Phone number	(0800) 98545498
First name	Ron
Last name	Wall
Gender	Male

The layout, including the home button and arrow buttons at the bottom, remains the same as in the previous screenshot.

Last thing to mention about this form is that the house button takes you back to the main menu.

Staff form

Staff table

Staff ID:

First name:

Last name:

Gender:

Product request:

This function the same as the customer details form.

Customer order form

Customer order table

Order ID:

Customer ID:

Product:

Product ID:

Product category/genre:

Price:

Store ID:

Order date/time:

Store table

Store ID:

Location:

Order ID:

Customer ID:

Product ID:

Has the product been collected yet? ☐

Record: 1 of 1 | No Filter | Search

Customer details table subform

Customer ID	Email	City/town	Postcode	Street	Phone number	First name	Last name	Gender
5	Jerry232@gmail.com	Barry	SA15 3GN	12 Queen Street	(0800) 45783585	Jerry	Jones	Male
(New)								

Record: 1 of 1 | No Filter | Search

This form works by using the combo box in the order ID to find a specific customer. Here is proof of it working by using the results that match the data in the combo box:

Customer order table

Order ID:

Customer ID:

Product:

Product ID:

Product category/genre:

Price:

Store ID:

Order date/time:

Store table

Store ID:

Location:

Order ID:

Customer ID:

Product ID:

Has the product been collected yet? ☒

Record: 1 of 1 | No Filter | Search

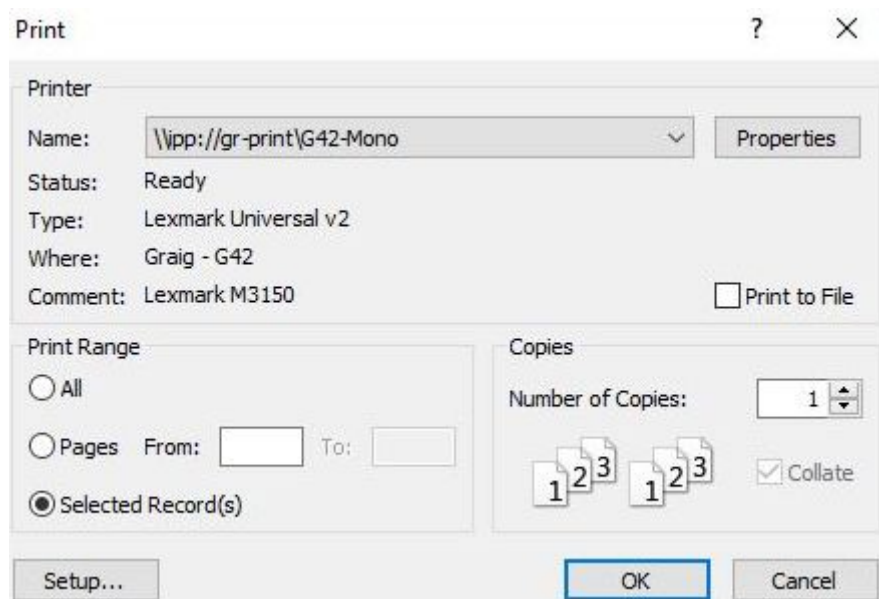
Customer details table subform

Customer ID	Email	City/town	Postcode	Street	Phone number	First name	Last name	Gender
7	Ron11@hotmail.cpm	Cardiff	SA12 4GF	5 Wood Street	(0800) 98545498	Ron	Wall	Male
(New)								

Record: 1 of 1 | No Filter | Search

There is also a customer details subform on the bottom of the form and a store table subform on the right. I put these here because I think it is important to have these information here if the admin needs to contact the customer. These data also match the data in the combo box.

Last thing to mention about this form is that there is a home button and a printer button next to it. The printer button prints out the current results showed on the screen. This is useful if the company want these details printed for whatever reason. This button does work as it opens up the printer settings asking how you would like to print the information:



Suppliers form

A screenshot of a web form titled 'Suppliers table'. It contains several input fields: 'Suppliers ID' (empty), 'Product ID' (containing '1'), 'Location' (containing 'Cardiff'), 'Product request' (containing 'Risk'), and 'Staff ID' (containing '1'). Below these fields are two blue navigation buttons with left and right arrows. At the bottom, there is a blue button with a home icon, a blue 'Add Request' button, and a small icon of a document with a plus sign.

This form does everything the staff form does but also does two new things. First new thing it does is that you can add new records through the form into the database by filling out the

form yourself and click on the add request button once your finish. Here is one I made:

Suppliers table

Suppliers ID: 16
Product ID: 7
Location: Llanelli
Product request: Uno
Staff ID: 8

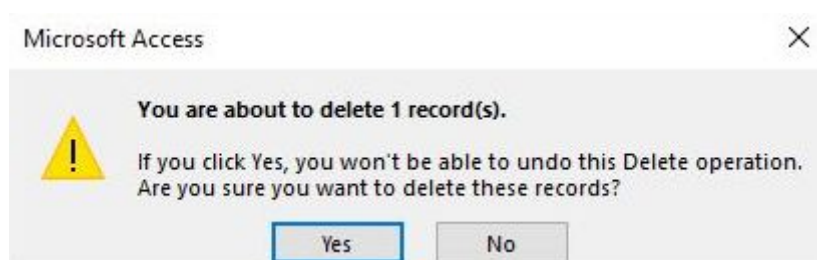
Navigation buttons: [Back] [Forward]

Buttons: [Home] [Add Request] [Trash]

Here is the new records appearing in the database:

Suppliers ID	Product ID	Location	Product req	Staff ID	Click to Add
1	Cardiff	Risk	1		
5	2 London	Risk	2		
6	3 Cardiff	Monopoly	3		
7	4 Llanelli	Uno	4		
8	5 Llanelli	Monopoly	5		
16	7 Llanelli	Uno	8		
*	(New)	0		0	

The other new button this form has is a trash can icon that allows you to remove records from the database. I will use this button to remove the new record I just added. I will do this by finding the record I added in the form and click on the trash can button. Clicking on this button will give me this warning:



Clicking yes will delete the record from the database. Here is the record now gone from the database:

Suppliers ID ▾	Product ID ▾	Location ▾	Product req ▾	Staff ID ▾
4	1	Cardiff	Risk	1
5	2	London	Risk	2
6	3	Cardiff	Monopoly	3
7	4	Llanelli	Uno	4
8	5	Llanelli	Monopoly	5

Store from

Store table

Store ID: 1

Location: Llanelli

Order ID: 0

Customer ID: 4

Product ID: 4

Has the product been collected yet? ☐

This form has the same features as the staff form.

Stock form

Stock table

Stock ID: 2

Stock numbers: 2

Product: Risk

Product ID: 1

How rare is the item?: Rare

Price: £30.00

Product category/genre: Wargames

What category/genre are you looking for query

Clicking on this button opens up this text box:

Enter Parameter Value ? X

What category/genre are you looking for?

Wargames

OK Cancel

Here you type what you are looking and the database will look through the stock table with your result. Here is what it looks like once its finished:

Main menu What category/genre are you looking for?						
Stock ID	Stock numb	Product	Product ID	How rare is	Price	Product cate
2	2	Risk	1	Rare	£30.00	Wargames
3	2	Risk	2	Rare	£30.00	Wargames
*(New)	0		0		£0.00	

There is no buttons that take you back to the main menu as it opens the table once its done searching for your results. To go back you would need to click on the main menu tab on top.

Whats the product price query

This does the same thing as the, what category/genre are you looking for query but instead looks for a product price. Here proof of this working:

Enter Parameter Value
?
X

Whats The Product Price?

50

OK
Cancel

Stock ID	Stock numb	Product	Product ID	How rare is	Price	Product cate
5	1	Uno	4	Very rare	£50.00	Party games
6	2	Monopoly	5	Very rare	£50.00	Family games
*(New)	0		0		£0.00	

How rare of a game are you looking for query

This also does the same as the, what category/genre are you looking for query but this time allows you to look for how rare of a game you are looking for. Here proof of it working:

Enter Parameter Value
?
X

How rare of a game are you looking for?

Rare

OK
Cancel

Stock ID	Stock numb	Product	Product ID	How rare is	Price	Product cate
2	2	Risk	1	Rare	£30.00	Wargames
3	2	Risk	2	Rare	£30.00	Wargames
4	2	Monopoly	3	Rare	£35.00	Family games
*(New)	0		0		£0.00	

What product are you looking for query

This does the same thing as what category/genre are you looking for query but this time lets you look for a specific product. Here proof of it working:

Enter Parameter Value ? X

What Product Are You looking for?

Uno

OK Cancel

	Stock ID	Stock numb	Product	Product ID	How rare is	Price	Product cate
	5	1	Uno	4	Very rare	£50.00	Party games
*	(New)	0		0		£0.00	

Customers that haven't got their product yet query

This query allows you to see which customer haven't got their product yet. It does this by filtering the store table to only show customers that haven't got their product yet. Here is what this looks like

	Store ID	Location	Order ID	Customer IC	Product ID	Has the pro
	1	Llanelli	6	4	4	☐
	2	Barry	7	5	1	☐
	5	Barry	10	8	5	☐
*	(New)		0	0	0	☐

Preview customers details report

Clicking on this button will show the customer details report that you can see here:

Customer details table

Order ID	Email	City/town	Postc	Street	Phone number	First name	Last name	Gender
4	Jim@gmail	Llanelli	SA15	133 Old Cas	(0800) 56127842	Jim	Wickins	Male
5	Jerry232@gmail	Berry	SA15	112 Queen St	(0800) 45703565	Jerry	Jones	Male
6	Terry1960	Llanelli	SA15	112 Old Cast	(0800) 43496243	Terry	Ward	Male
7	Ron11@hotmail	Cardiff	SA12	5 Wood Str	(0800) 98945498	Ron	Wall	Male
8	Kay10@gmail	Berry	SA15	10 Queen St	(0800) 54384964	Kay	Fronds	Female

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You can't do anything here other than print it out if you want by clicking the file tab then print. This has the same problem as the queries where there isn't a home button so you will have to go back to the main menu by clicking on the main menu tab.

Preview staff report

Staff table			
Staff ID	First name	Last name	Gender
1	Jeff	Jones	Male
2	John	David	Male
3	Jess	Lane	Female
4	Billy	Jones	Male
5	Jon	Watkins	Male
			Product request
			Risk
			Risk
			Monopoly
			Uno
			Monopoly

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This functions the same as the customer details report.

Preview supplier report

Suppliers table				
Staff ID	Supplier ID	Product ID	Location	Product request
1	4	1	Cardiff	Rak
2	5	2	London	Rak
3	6	3	Cardiff	Monopoly
4	7	4	Utrecht	Uno
5	8	5	Utrecht	Monopoly

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This functions the same as the customer details report.

Preview stock report

Stock table					
Product ID	Stock ID	Stock numbers	Product	How rare is the item	Price Product case
1	2	2 Risk	Rare	£30.00	Wargames
2	3	2 Risk	Rare	£30.00	Wargames
3	4	2 Monopoly	Rare	£35.00	Family game
4	5	1 Uno	Very rare	£50.00	Party games
5	6	2 Monopoly	Very rare	£50.00	Family game

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This functions the same as the customer details report.

Preview what category/genre are you looking for query report

Clicking on this button will give you a text box to answer so it can gather your results. After that it will display the report like all of the other reports and behave the same. Here is the text box:

Enter Parameter Value
?
X

What category/genre are you looking for?

OK
Cancel

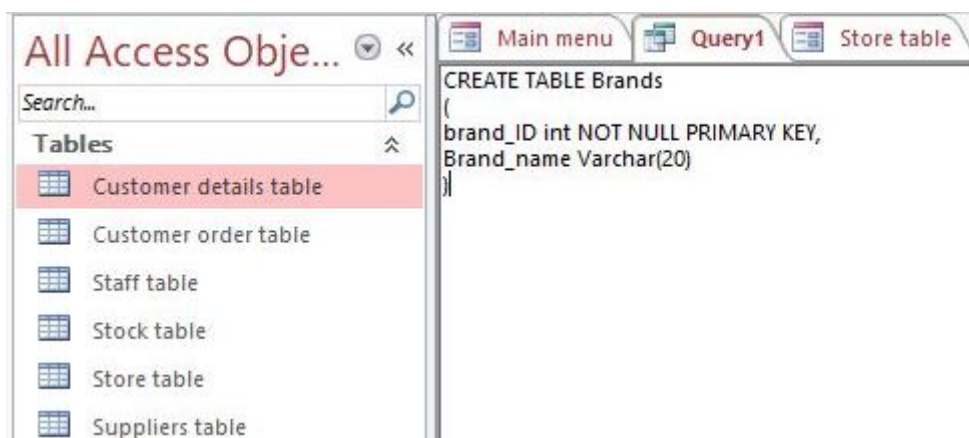
Here are the results:

What category/genre are you looking for?					
Product ID	Stock ID	Stock numbers	Product	How rare is the item	Price Product code
1	2	2 Risk		Rare	£30.00 Wergames
2	3	2 Risk		Rare	£30.00 Wergames

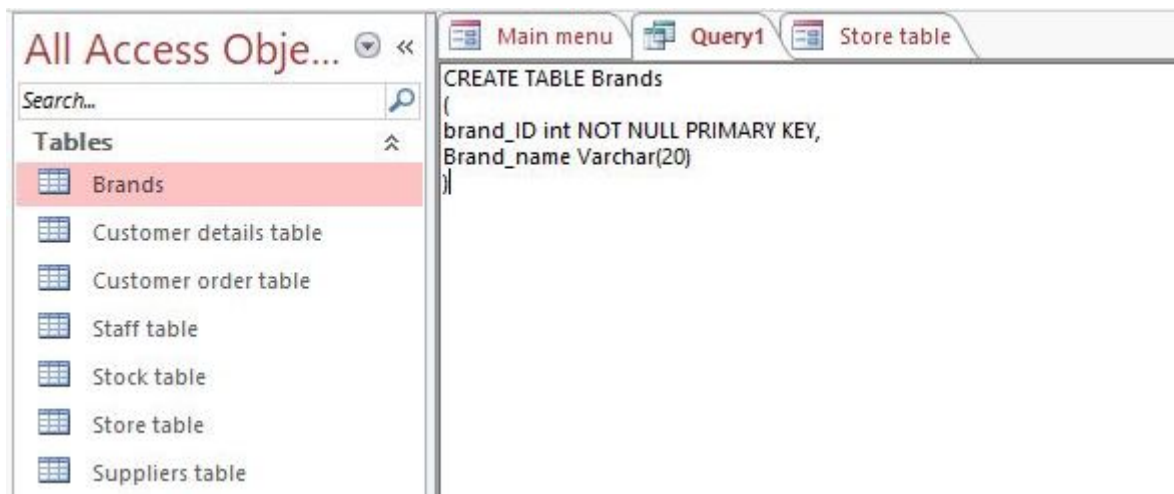
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SQL

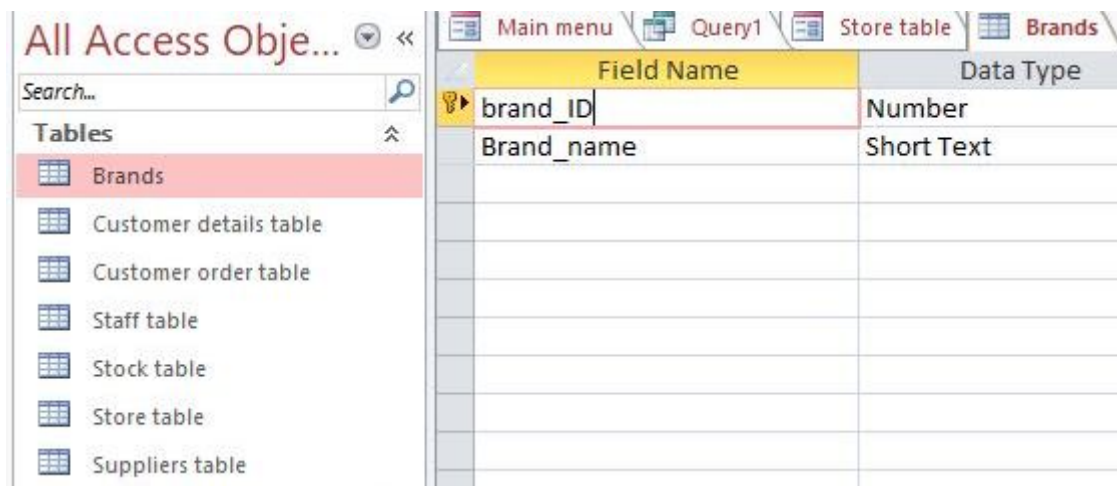
I had used SQL to make a table. Here is the code I used:



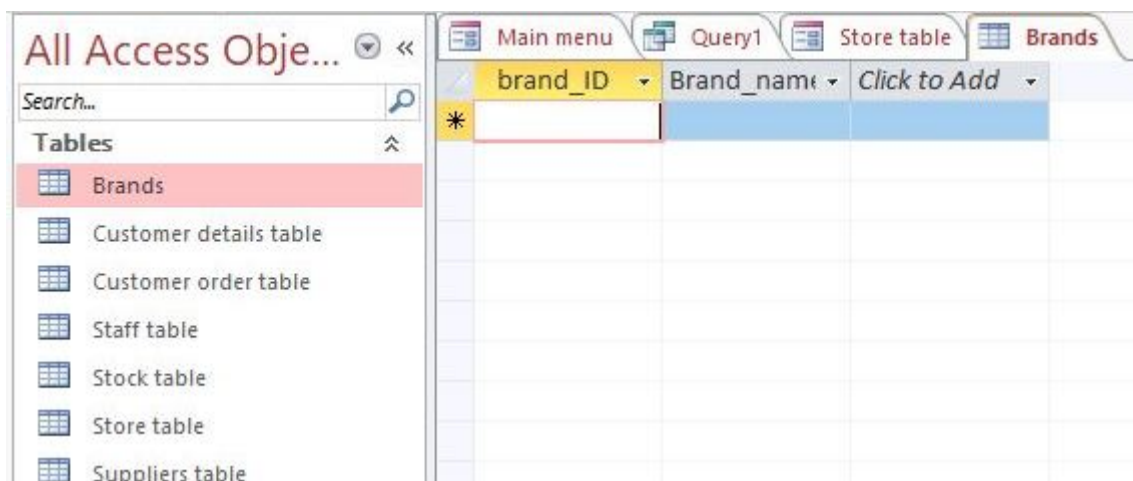
Here is proof it worked:



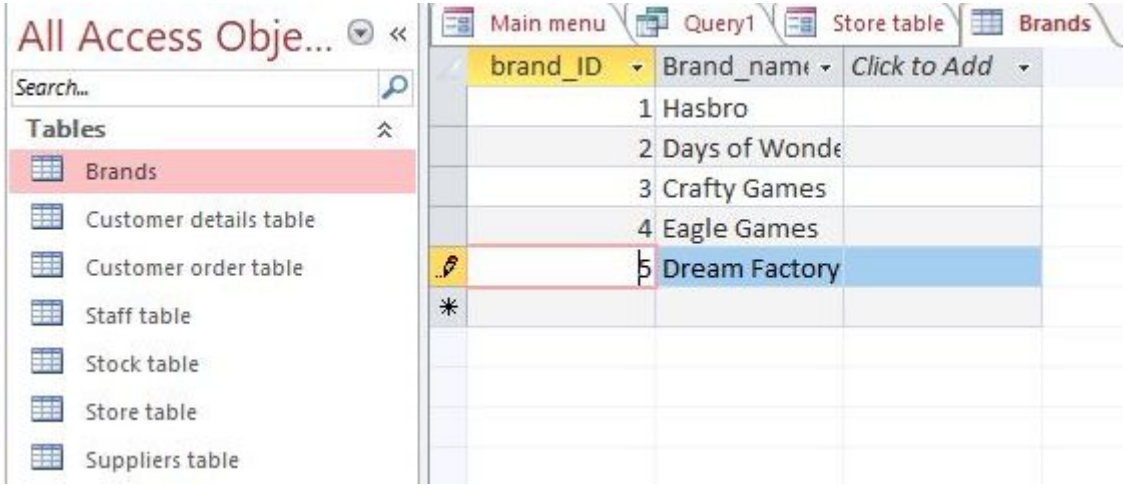
As you can see it added a brand table. Here is what the table looks like in design view:



Here is what the table looks like:



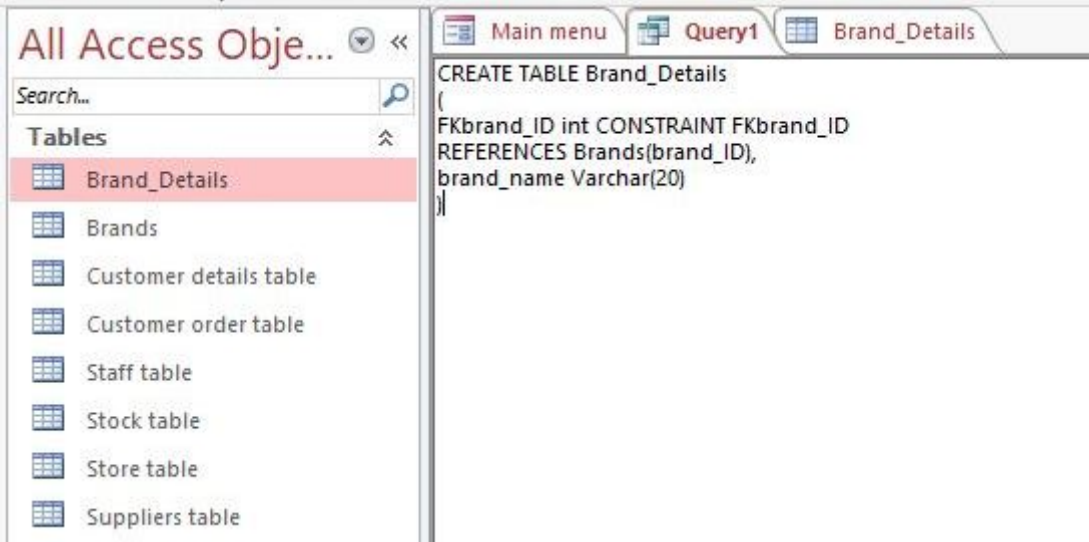
As you can see, it's currently blank. That's because I haven't added data in yet. I added data in to see if it works and it did as you can see here:



The screenshot shows the Microsoft Access interface. On the left, the 'All Access Objects' pane is open, and the 'Tables' section is expanded. The 'Brands' table is selected. On the right, the 'Brands' table is displayed in Datasheet view. The table has three columns: 'brand_ID', 'Brand_name', and 'Click to Add'. The data is as follows:

brand_ID	Brand_name	Click to Add
1	Hasbro	
2	Days of Wonder	
3	Crafty Games	
4	Eagle Games	
5	Dream Factory	
*		

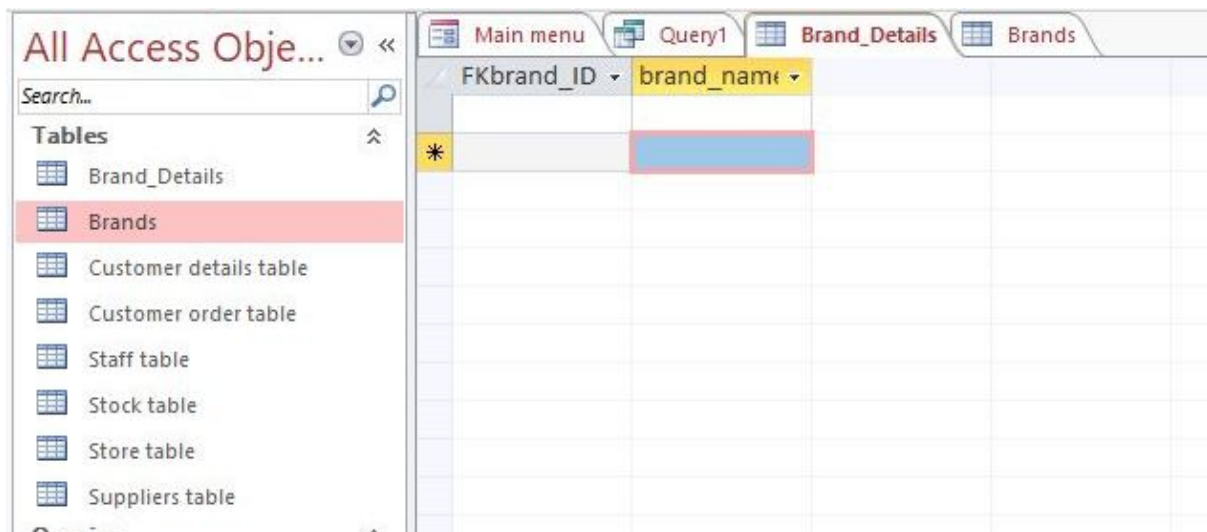
I now wanted to make another table for the brand table to link to with relationships. Here is the code I used in SQL:



The screenshot shows the Microsoft Access interface. On the left, the 'All Access Objects' pane is open, and the 'Tables' section is expanded. The 'Brand_Details' table is selected. On the right, the 'Query1' window is open, showing the SQL code to create the 'Brand_Details' table. The code is as follows:

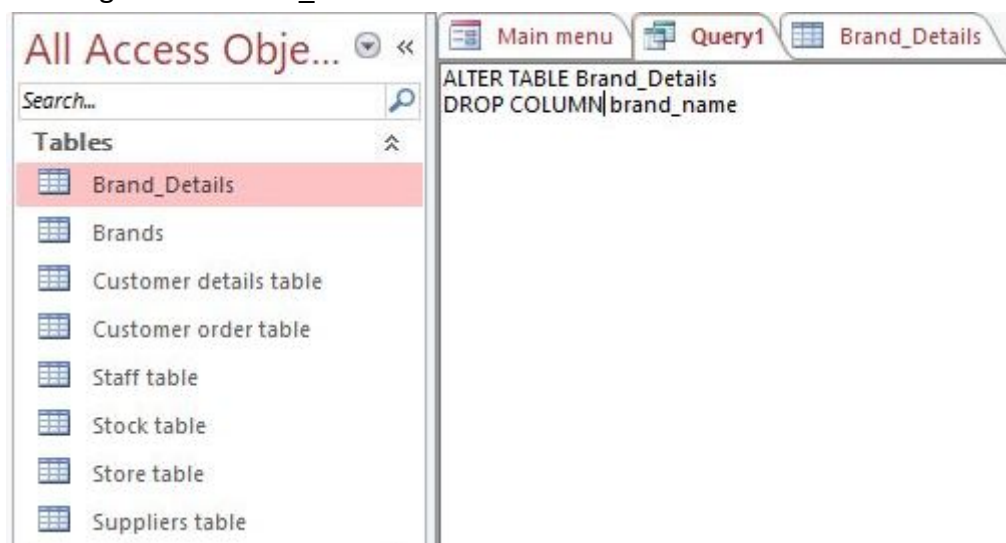
```
CREATE TABLE Brand_Details
(
  FKbrand_ID int CONSTRAINT FKbrand_ID
  REFERENCES Brands(brand_ID),
  brand_name Varchar(20)
)
```

As you can see it added a new table called Brand_Details. Here is what it looks like:



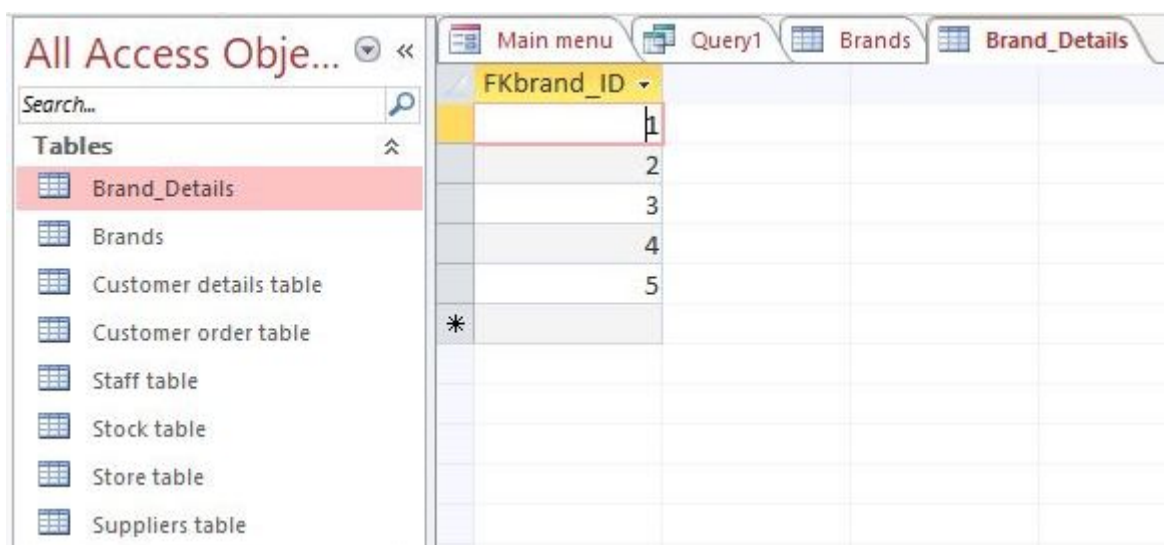
FKbrand_ID	brand_name
*	

I no longer want brand_name in this table so I went back into SQL and entered this code:



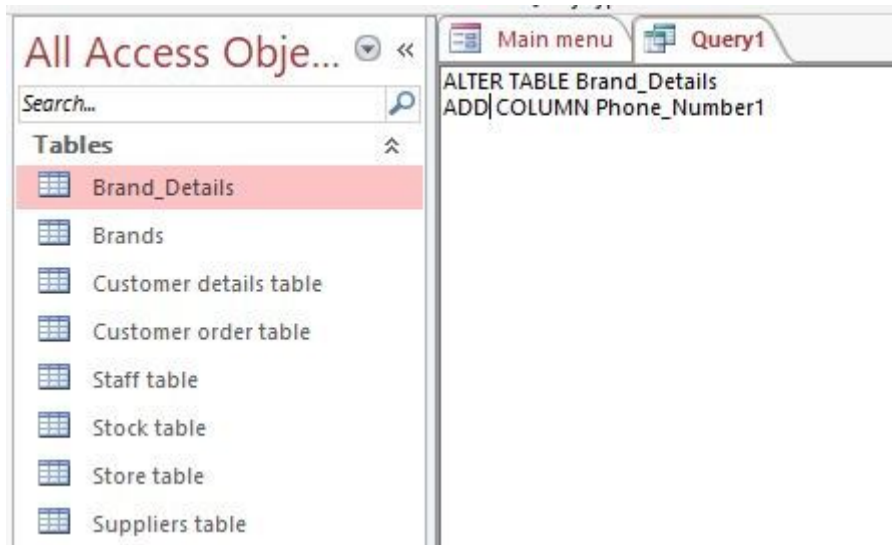
```
ALTER TABLE Brand_Details  
DROP COLUMN brand_name
```

Here is what my table now looks like:



FKbrand_ID
1
2
3
4
5
*

As you can see, the brand_name field is now gone. I also added data in the table to see if it still works and it does (this data will be used later to see if the relationships work). I now want to add some new fields to this table like phone number. I did this by going back to my SQL and wrote this code:



Here is what the table now looks like:

The screenshot shows the Microsoft Access interface with the 'Brand_Details' table selected in the 'All Access Objects' pane. The table is displayed in data view. The columns are 'FKbrand_ID' and 'Phone_Nurr'. The data rows are as follows:

FKbrand_ID	Phone_Nurr
1	
2	
3	
4	
5	
*	

As you can see it added a new field called phone_number. I did this again for email and address and gave them data once they were added. After I did this I wanted to see if the relationship I gave them worked. I did this by going back to the brands table and clicked on the X next to its data to see if it links with the other table. It did work as you can see from

the screenshot below:

The screenshot shows a database application interface. On the left, a sidebar titled 'All Access Objects' contains a 'Tables' section with a list of tables: Brand_Details, Brands (highlighted), Customer details table, Customer order table, Staff table, Stock table, Store table, and Suppliers table. The main window displays a table with the following columns: brand_ID, Brand_name, Click to Add, Phone_Nun, Address, Email, and Postcode. The data is as follows:

brand_ID	Brand_name	Click to Add	Phone_Nun	Address	Email	Postcode
1	Hasbro		80023455623	121 Old Castle	Hasbro@gmail	
2	Days of Wonder					
3	Crafty Games					
4	Eagle Games					
5	Dream Factory					

Conclusion

In conclusion I would say the design meets the user requirements. The requirements was:

- The design allows them to find a wide range of board games.
- They can say how rare of a game they are looking for.
- The design organise all board games in the corred genre.
- They can keep stock of their products.
- It allows customers to look for specific games.
- The admins can edit information if needed.
- Can see customers request.
- Allows the company to print reports.