

Database Design

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Student information

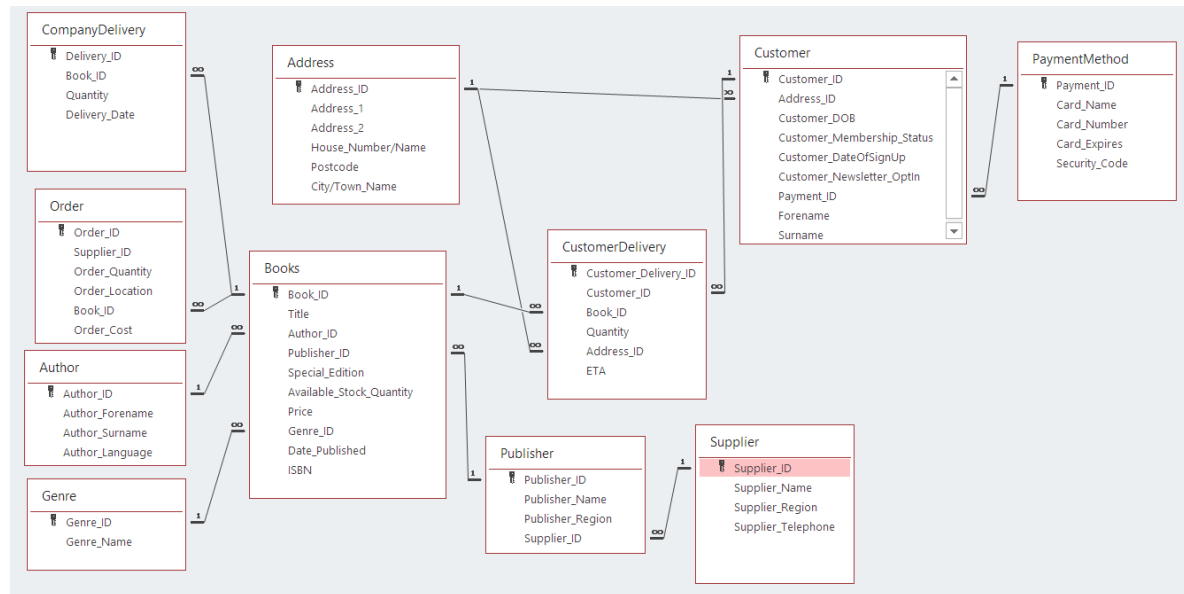
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Module: Information Engineering

Module code: ACCB4012

Relationship diagram



Initial design

Creating the tables

The first thing the author of this document did was create suitable tables the author personally believes is necessary for the creation of this Access Database System. These tables include:

- **Address**
The data for addresses includes multiple values, such as post code, address line etc. The staff may want to sort this table by certain values, i.e. sorting between regions or post codes.
- **Author**
Information on the book's author will go in this table, this table will include information such as author's first name, surname and language. This will allow staff the ability to sort information about the author, for cases such as customers forgetting the first or last name of the author etc.
- **Books**
The books table is the most important, with all sorts of information about the book, such as the Author, which will link to the author table, the title of the book, whether the book is first edition, etc.
- **Company Delivery**
Since the business itself will expect deliveries from suppliers, the ability to log each delivery with a link to other tables respectfully will computerise the need to check invoices and receipts and will typically make things more efficient. It'll also allow staff to track whether a delivery has been completed.
- **Customer**
Data about the customer, such as payment method, First name and Last name (so you can sort surnames for efficiency) etc.
- **Customer Delivery**
Deliveries for customers will be stored in the "customer delivery" table, which would have delivery information such as delivery address, which book and what quantity etc.
- **Genre**
Using the genre as a separate table will allow the ability to add additional

genres.

- **Order**

The order information for company orders, so that the company can track orders, including quantity and location.

- **Payment Method**

The payment method for customers is stored and linked to the customer's table separately, this is to ensure all payment details are secure and makes good use of having more than one field to store the data.

- **Publisher**

The publisher table stores information about the publisher, such as the publisher name and region

- **Supplier**

The final table is the supplier table, with information about the supplier such as the supplier name and region.

Creating fields

- **Address**

- **Address ID**

- The ID number of each entry.

- **Address 1**

- The first address, separated from address 2 so that staff can sort easily.

- **Address 2**

- The second address.

- **House Number**

- The house number.

- **Postcode**

- The postcode of the address.

- **City/Town name**

- The City/Town name, separated from the address so that staff can sort between cities and towns easily.

- **Author**

- **Author ID**

- The ID number for each author.

- **Author Forename**

- The forename of the author, separated from the surname for ease of sorting.

- **Author Surname**

- The surname of the author.

- **Author Language**

- The language of the author, for more ambiguity on the database.

- **Books**

- **Book ID**

- The ID number for each book.

- **Title of Book**

- The book title itself.

- **Author ID**

- The link between the book and the author.

- **Publisher ID**

- The link between the book and the publisher.

- **Is this book special edition?**

- A boolean value to determine whether the book is a special edition book.

- **Availability quantity**
A value that can be adjusted depending on the quantity of the books available in the back-end of the store.
- **Price**
The price of the book itself.
- **Genre ID**
The link between the book and the genre.
- **Publish date**
The date the book was published.
- **ISPN number**
The ISPN number.
- **Delivery**
 - **Delivery ID**
The ID number of the delivery.
 - **Book ID**
A link between the delivery and the book in delivery.
 - **Quantity**
The quantity of the delivery.
 - **Delivery Date**
The date the delivery was made.
- **Customer**
 - **Customer ID**
The ID of the customer.
 - **Address ID**
A link to the address table to give more detail on the addresses of the customer.
 - **Customer Date of Birth**
The date of birth of the customer to ensure that mature books aren't delivered to the customer if underaged.
 - **Customer membership status**
A boolean value that determines the status of whether or not a customer is currently a member at the store.
 - **Customer membership sign up date**
The date the customer signed up as a member.
 - **Customer signed up to newsletter**
A boolean value to determine whether the customer wants to be subscribed to newsletters.
 - **Payment ID**
The method of payment this customer uses.
 - **Forename**
The forename of the customer, separated from the surname for convenience and sorting.
 - **Surname**
The surname of the customer, separated from the forename for convenience and sorting.
- **Customer delivery**
 - **Customer Delivery ID**
The customer delivery ID to identify the delivery
 - **Customer ID**
The link between the delivery and the actual customer themselves.
 - **Book ID**
The link between the delivery and what book is being delivered itself.

- **Quantity**
The quantity of the delivery.
- **Address ID**
The link between the delivery and where it's being delivered via the address table.
- **ETA**
The estimated date of arrival.
- **Genre**
 - **Genre ID**
The ID of the genre.
 - **Genre Name**
The name of the genre.
- **Order**
 - **Order ID**
The ID of the order.
 - **Supplier ID**
A link between the order and the supplier itself.
 - **Order Quantity**
The quantity of the order.
 - **Order Location**
The location of the order for sorting and convenience.
 - **Book ID**
The book in question that's going to be ordered.
 - **Order Cost**
The overall cost of the order for documenting.
- **Payment ID**
 - **Card Name**
The name of the card.
 - **Card Number**
The number of the card (Cannot exceed 16 characters).
 - **Card Expires**
The date the card itself expires.
 - **Security Code**
The security code on the back (Cannot exceed 3 characters).
- **Publisher**
 - **Publisher ID**
The ID of the publisher itself.
 - **Publisher name**
The name of the publisher.
 - **Publisher region**
The region of the publisher.
 - **Supplier ID**
A link between the publisher and what supplier they use.
- **Supplier**
 - **Supplier ID**
The supplier ID.
 - **Supplier Name**
The name of the supplier.
 - **Supplier Region**
Where the supplier is located for convenience and sorting.
 - **Supplier Telephone Number**
The telephone number in case of contact.

Populated Tables

Address

Address_ID	Address_1	Address_2	House_Num1	Postcode	City/Town_Name
1	4 Grosvenor Ro	Sketty, Swansea	4	SA2 0SP	Swansea
2	88 Quay Street	Titchwell	88	PB1 8AS	Norfolk
3	23 Kingsway No	Holton	23	LN3 7LB	Lincoln

You cannot enter more than 7 characters for the post code.

Author

Author_ID	Author_Forename	Author_Surname	Author_Language
1	David	Walliams	English
2	Niel	Breen	English
3	James	LeSeir	French
4	Mari	Davies	Welsh

Books

Available stock quantity	Price	Genre ID	Publish Date	ISBN Number
34	£76.00	1	26/11/2019	5865749385793
54	£34.00	2	18/10/2017	8529835712304
73	£12.00	3	25/06/2001	5864867348619

You cannot save an entry where the Genre ID is not a valid Genre ID. You must create data in the genre table first and enter a correct Genre ID number. Prices can be floating point but must start with a “£” symbol and dates must be in date format.

Company Delivery

Delivery_ID	Book_ID	Quantity	Delivery_Date
1	3	234	30/04/2020
2	2	23	12/06/2001
3	2	34	13/06/2001

The date must be in date format and Book ID must be a valid ID, otherwise the entry will not save.

Customer

Customer_ID	Address_ID	Customer_DOB	Customer_Membership_Status	Customer_DateOfSignUp	Customer_Newsletter_OptIn	Payment_ID	Forename	Surname
1	2	22/06/2001	☒	30/04/2020	☒		1 Tomos	Leggett
2	3	12/06/1956	☐	13/02/2020	☐		3 James	May
3	2	12/08/1957	☒	30/04/2020	☒		2 Joseph	King

A valid Address ID and payment ID must be set up before a customer can be added to the database. The DOB and the Date of Sign up must be valid dates.

Customer Delivery

Customer_Delivery_ID ▾	Customer_ID ▾	Book_ID ▾	Quantity ▾	Address_ID ▾	ETA ▾
1	1	3	23	3	14/05/2020
2	2	2	53	2	15/08/2021
3	3	1	73	1	09/08/2020

The customer delivery ID could not save without a valid customer ID, Book ID or Address ID. The ETA had to be a valid date.

Genre

Genre_ID ▾	Genre_Name ▾
1	Murder Mystery
2	Crime
3	Sci-Fi

Order

Order_ID ▾	Supplier_ID ▾	Order_Quant ▾	Order_Location ▾	Book_ID ▾	Order_Cost ▾
1	1	12	London	1	£12.00
2	2	4	Birmingham	2	£12.00
3	3	42	Manchester	3	£58.00

The order ID would not save unless the supplier ID existed as so the Book ID. The order cost automatically inserts a “£” symbol.

Payment Method

Payment_ID ▾	Card_Name ▾	Card_Number ▾	Card_Expires ▾	Security_Code ▾
1	MR T J LEGGETT	0230492059350934	01/04/2021	234
2	MR JOE KING	98765432876543	01/07/2022	876
3	MR JAMES MAY	5434635345235642	01/06/2022	265

The card number cannot exceed 16 characters, the security code cannot exceed 3 and the card expiry date must be a valid date.

Publisher

Publisher_ID ▾	Publisher_Name ▾	Publisher_Region ▾	Supplier_ID ▾
1	Camelot Publishing	England	1
2	PublishForMe	Wales	2
3	Daniel's buff books	Scotland	1

The publisher cannot save unless a valid supplier ID has been created.

Supplier

Supplier_ID ▾	Supplier_Name ▾	Supplier_Region ▾	Supplier_Telephone ▾
1	Dan Supplies Books Okay?	Wales	01492620634
2	Dan also supplies books in England Okay?	England	54032565943
3	Super Supplies	Scotland	76543234567

The supplier telephone number must not exceed 11 characters.

Forms

Addresses

Address ID	1
Address 1	4 Grosvenor Road
Address 2	Sketty, Swansea
House Number/Name	4
Postcode	SA2 OSP
City/Town Name	Swansea





Author

Author ID	1
Forename	David
Surname	Walliams
Language of Author	English





Books

Book ID (New)

Title of Book

Author ID 0

Publisher ID 0

Is this book a special edition? ☐

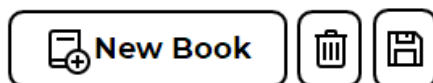
Available stock quantity 0

Price £0.00

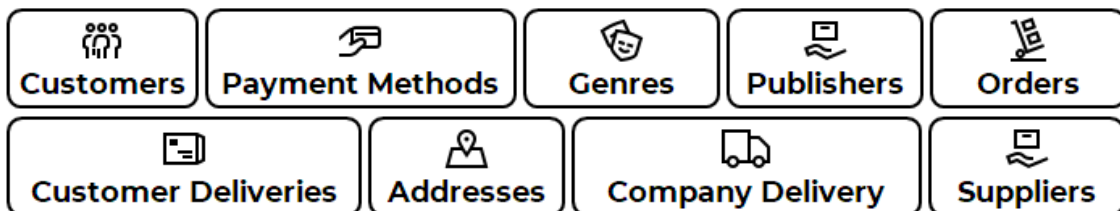
Genre ID 0

Publish Date

ISBN Number

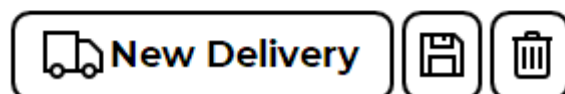


Additional Databases:



Company Delivery

Delivery ID
Book ID 3
Quantity 234
Delivery Date 30/04/2020



Customer

Customer ID	
Address ID	2
Customer Date of Birth	22/06/2001
Member	☒
Customer Sign Up date	30/04/2020
Recieve newsletters	☒
Payment ID	1
Forename	Tomos
Surname	Leggett

New customer

Customer Delivery

Customer Delivery ID	
Customer ID	1
Book ID	3
Quantity	23
Address ID	3
ETA	14/05/2020

New customer

Genre

Genre ID	
Genre Name	Murder Mystery

New Genre

Order ID

Order ID	
Supplier ID	1
Order Quantity	12
Order Location	London
Book ID	1
Order Cost	£12.00

New Order

Payment Method

Payment ID

Name of card holder

Card Number

Card Expires

Security Code

The Security Code (or CVC) is located at the back of the card next to the valid signature.



 New payment method



Publisher

Publisher ID

Publisher Name

Publisher Region

Supplier ID

 New Publisher



Supplier

Supplier ID

Supplier Name

Supplier Region

Supplier Telephone

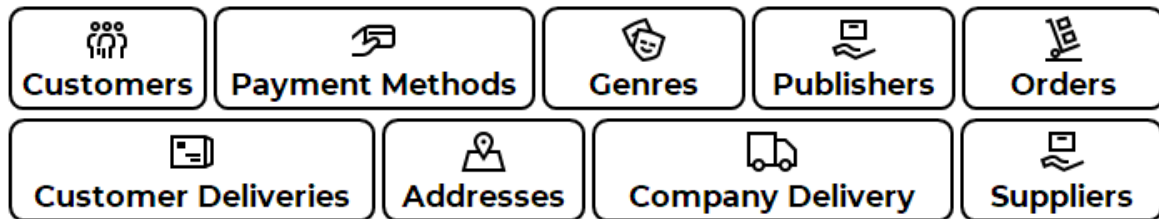
 New Supplier



Brief user guide

When opening the database in access, the first window that should appear is the “books” form. This is the master form, it has two sections, the above section, which allows users to manipulate the data in the “books” database, including adding and editing the data, and the below section, which features a launch pad of different forms under the label “Additional Forms”.

Additional Databases:



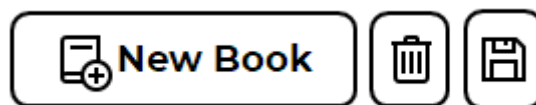
Each form can be navigated through a tab system with access, and can be closed with the X icon or `Ctrl + W`. You can also switch between tabs.

As for the data, access has a built in data navigation suite. All forms use the same navigation suite at the bottom of the form.

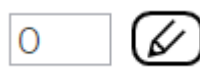


This suite allows users to skip to the first record, go back a previous record, specify which record they'd like to go to, advance a record, and skip to the very latest record. It also allows users to create additional records, apply filters, and search through the records.

Below every single form is a set of navigation buttons. These buttons allow different functionalities and are on display on every form.



The “new” or “add” button creates a new blank entry on the database, so that the user doesn't have to flick through the entire database to create a new entry, the rubbish bin icon will delete that specific entry, a function that doesn't come pre-loaded with the Access data navigation suite, along with a floppy disk icon, which when pressed, saves the data entered to the database, which is also a feature not present in the Access navigation suite.



On the right side of any text box requiring the user to enter a valid ID from a linked data set is a pencil button. This button opens the database the text box is referring to in a new tab, allowing the user to quickly copy and paste the ID required by the text box, or even to quickly create a new entry or even delete an entry if required.