

Design

In the design I will be trying to take the end user's specification and produced a workable database solution on paper. I have to make sure that a relatively competent 3rd party should be able to implement my ideas from only the paperwork.

1.

1.1 Comparison of alternative solutions

Applications

1.2 Justification for chosen solution

I have chosen Access as one of my software applications to implement the database because it includes many very user-friendly tools, which I will be able to use to complete my tasks. Access has also many advantages to it, as shown below: -

- Support for very large databases
- Automatic optimization of searching (when possible)
- Has a simple view of the database that conforms to much of the data used in business
- Standard Query language (sql)
- Allows us to collect data in relatively simple tables, keeping organizational tasks simple
- We can match data from one table to corresponding data in another table by using a linking mechanism called a relational join
- Match primary key in one table to a foreign key in a second table

Advantages of Solutions

- One advantage of these solutions is that with the Standard query language there is able to be a higher reliability on the different types of search queries that the user implicates.
- Another advantage in these solutions is that they are much cheaper than other solutions explained in the Analysis.

1.3 Hardware Requirements

2. Project Plan

- 3. Database Design
 - 3.1 Normalization
 - 3.2 Entity-Relationship Diagrams

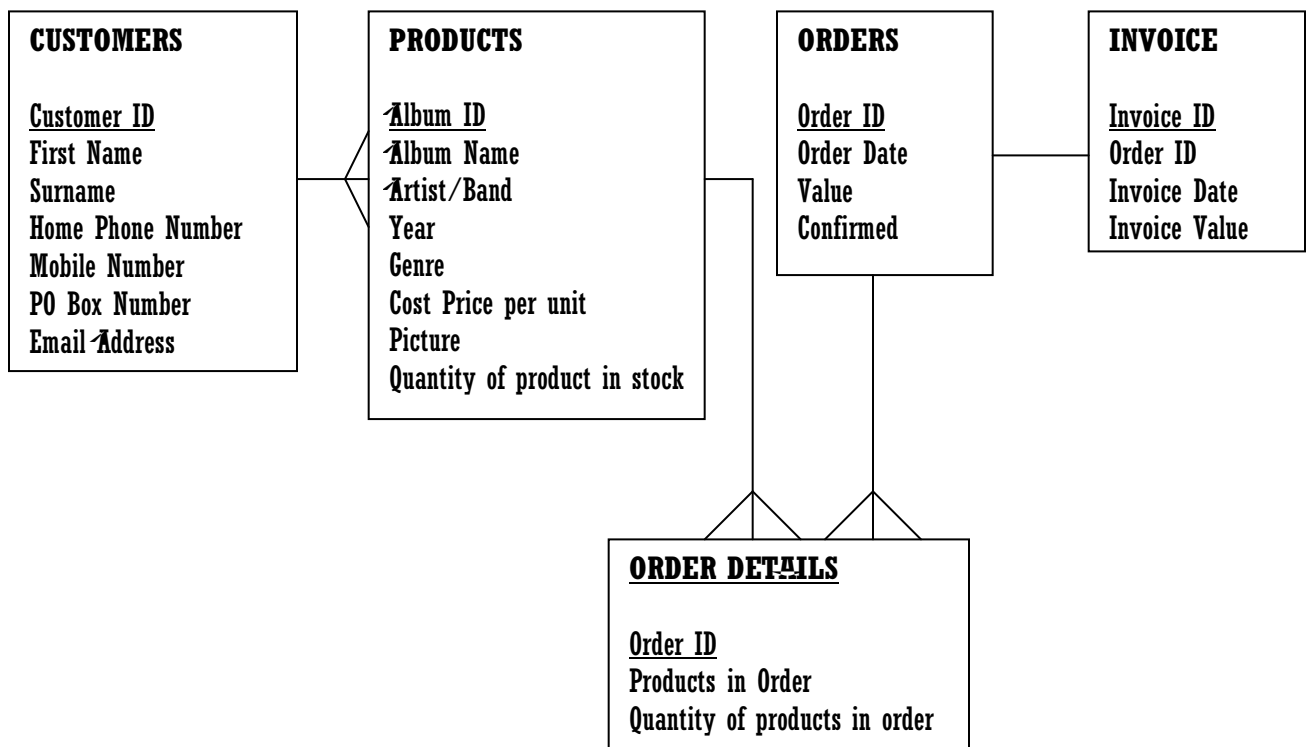
What is an Entity-Relationship Diagram (ERD)?

- Identifies the data required by the business
- An entity corresponds to a person, place thing, event, or concept about which we are interested in recording data
- Entities must be clearly defined so that all understand exactly what is being represented
- Two entities whose information are somehow dependent on one another or connected with each other are said to have a relationship between them (e.g. “friends” may have many “addresses”)
- Relationships are evaluated in both directions to determine what type of relationship exists (e.g. “one friend may have many telephones”, and “one telephone belongs to a single friend”)

An entity relationship diagram is a data modeling technique that creates a graphical representation of the entities, and the relationships between entities, within an or information system. Entity relationship diagrams are abstractions of the real world, which simplify the problem to be solved while retaining its essential features.

The whole purpose of drawing entity diagrams is that they enable the systems analyst to analyze the data, and once this is done, design the database and implement it. Drawing these diagrams brings to the attention of the analyst any problems with many-to-many relationships, and so they can ensure their final data model is valid.

The database contains three main entities, CUSTOMER, PAYMENTS, and ITEM



3.4 Overall System Design

INPUT	PROCESSES
Customer Details: ID, Name, Address, Tel,	Add, edit, delete customers
Music CD: ID, Artist, Album, Price	Add, edit, delete music cd's
Stock Listings: Product ID, Artist, Album, No. Of Stock	Look up all items for customers
Payments: Invoice ID, Customer Name, Amount spent, Item brought	Print out reports: All Customers with memberships Invoice of products purchased Stocks which are updated and not updated Mail merge to customers with membership
TABLES	OUTPUT
Customers Music CD details Stock listings Payments	Reports: Invoice of products purchased All customers with memberships Stocks which need upgraded and already upgraded Mail merge letters Forms: Customers Music CD details Stock listings Payments

Design

Tables

In this section it will be showing each table with each description.

TblCustomers

Field Name	Data Type and Length	Description	Validation rule and Text
Customer ID	Auto Text	A unique number related to the customer	Unique Primary Key
First Name	Text (25)	First name of the customer	
Surname	Text (25)	Surname of the customer	
Home Phone Number	Number (7)	Phone number for the customers home	Like "???????" Please enter 7digits.
Mobile Number	Number (7)	Mobile phone number of the customer	Like "050???????" Please enter 050 before inputting number
PO Box Number	Number (4)	Address of the customers home	Like "?????" Please enter a valid P.O Box
Email Address	Alphanumeric (25)	E-mail address of the customer (feedback, etc.)	

TblProducts

Field Name	Data Type and Length	Description	Validation rule and text
Album ID	Number	A unique number to represent each album	A unique primary key
Album Name	Text (25)	Title of the album	
Artist/Band	Text (25)	Name of the band/Artist	
Year	Number (4)	Year to show in which the album was produced	Like "?????" Please only enter 4 digits
Genre	Text (20)	To show what type of music each band falls into	Only select from the list of genres
Cost Price per unit	Currency	Number to show how much the CDs are	
Picture	OLE object	Picture to show the album cover	
Quantity of product in stock	Number (2)	Number to show how many products are in stock	Like "???" Please enter 2 valid digits for the appropriate number of items in stock

TblOrders

Field Name	Data Type and length	Description	Validation rule and Text
Order ID	Number	A unique number to show the order number	no validation rules for this table
Order Date	Date/Time	Date to show when the item had been ordered	
Value	Currency	Number to show the cost of the product	
Confirmed	Yes/No	Yes/No box to show whether order has been sent	

Input

Forms – backgrounds

The use of forms is very important as it allows many user-friendly solutions within the actual system when the customer or employee is using it. Forms are useful in a database as it can create a data-entry form to enter data into a table. Also it can enable the user to create a custom dialog box to accept user input and then carry out an action. Another reason why forms are important within a database application is because the user is able to create a switchboard to open other forms or reports. Forms allow you to focus on one record at a time with all the data pleasantly laid out on the screen. You can build several forms for different groups of users to reflect their different needs. You can use the form to view the contents of tables or the results of queries.

One form can be used to enter data into several tables. Forms automatically use the relationships built into your database.

Input Forms

FrmCustomers

Album ID	Album Name	Artist/Band
<input type="text"/>	<input type="text"/>	<input type="text"/>
Picture		Genre
<input type="text"/>		<input type="text"/>
		Year
		<input type="text"/>
		Cost per Unit
		<input type="text"/>

Design

FrmCustomers

Design

Reports/other

A report is an effective way to present your data in a printed format. Because you have control over the size and appearance of everything on a report, you can display the information the way you want to see it. Most of the information in a report comes from an underlying table, query, or SQL statement, which is the source of the report's data. Other information in the report is stored in the report's design.

Reports/other out put -DRAW BY HAND

Mail Merge

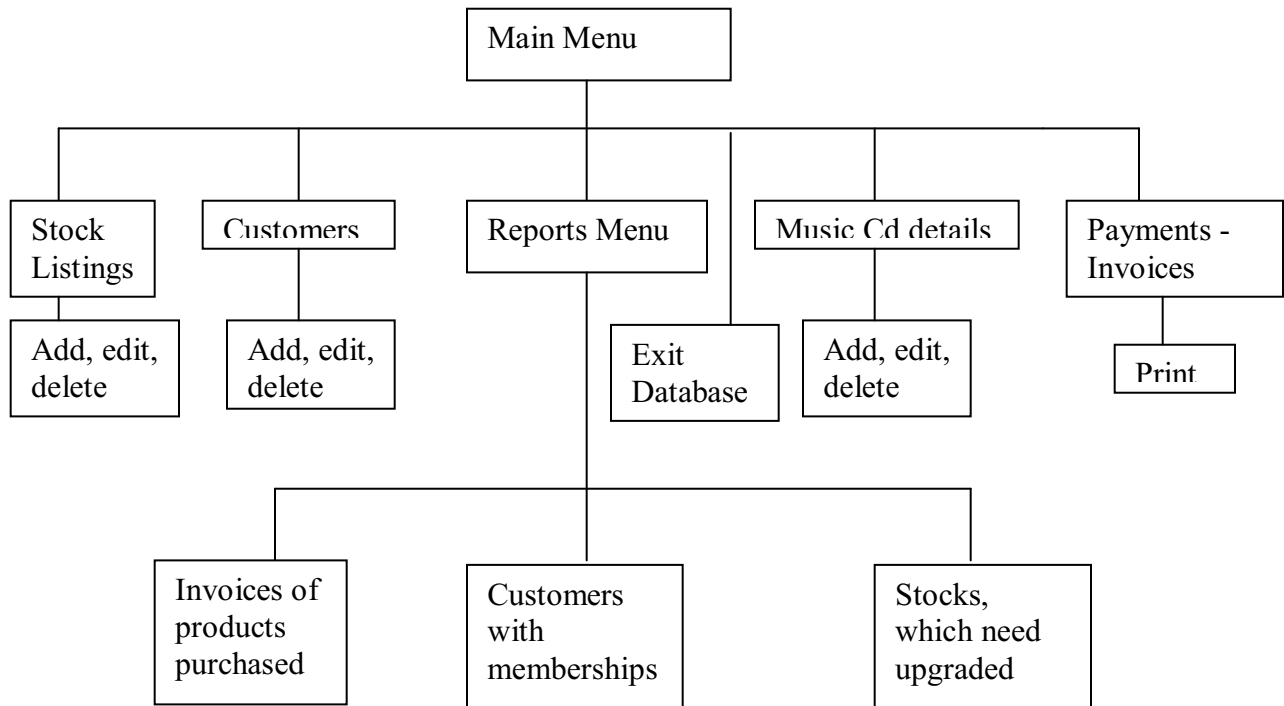
The mail merge option will allow the user to load up word directly from Access, and specify which of the several queries should be used as the source of the data. It is a feature supported by many word processors that enables you to generate form letters. For the user to use a mail-merge system, you first store a set of information, like a list of names and addresses, in one file. In another file, you write a letter, substituting special symbols in place of names and addresses (or whatever other information will come from the first file). The power and flexibility of mail merge systems varies considerably from one word processor to another. Some word processors support a full set of logical operators that enable you to specify certain conditions under which information should be merged. Also, some merge systems allow you to merge data from several files at once.

Queries

Queries are used to view, change, and analyze data in different ways. You can also use them as the source of records for forms, reports, and data access pages. The most common type of query is a select query. A select query retrieves data from one or more tables by using criteria you specify and then displays it in the order you want.

Design

Menu Design



Security

There will be a password attached to the database so it can only be accessible to anyone that knows that certain password. There will be no security levels when entering the main database, but in tables such as Customers details there will be another password as it would be against the data protection act if other users can edit some of the customers details. There will also have to be a watch on if there is any personal information on anyone being used for any unreasonable uses.

Testing

Testing will be used to check whether all the aspects within the database are correct. Things such as command buttons (print, exit etc) will be tested. Logical testing will be used to test every aspect of each form, report and query as soon as it is implemented, using valid, invalid and extreme data. Functional testing is going to be where each menu item will be tested in turn to make sure that none of the functions have been missed out. The next type of testing that I will be carrying out is going to be systems testing. This is when the system is finished; all of the range of tests will be carried again to ensure that no other errors have been entered. Recovery testing will also be used in the database. The computer will be restarted while the database is open to ensure the data is not lost or corrupted incase there is a power failure. The last type of testing that will be carried

Design

throughout the system is acceptance testing. The user will be asked to test the capabilities of the system to make sure that all of the required functions are present and working as expected.

Test Plan

Test No.	Test Data	Expected Result
1	Incorrect Password “ABC”	Password Rejected
2	Test Main menu – Customers Form	Customers Form opens
3	Input new customer	Customer ID should automatically be shown and customer should be added.
4	Test Main menu – CD details frm	CD frm should open
5	Edit Cd frm – test to see if able to save changes	Change should be shown and made correctly to the form
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