

### Criterion E: Product Development

#### Techniques used

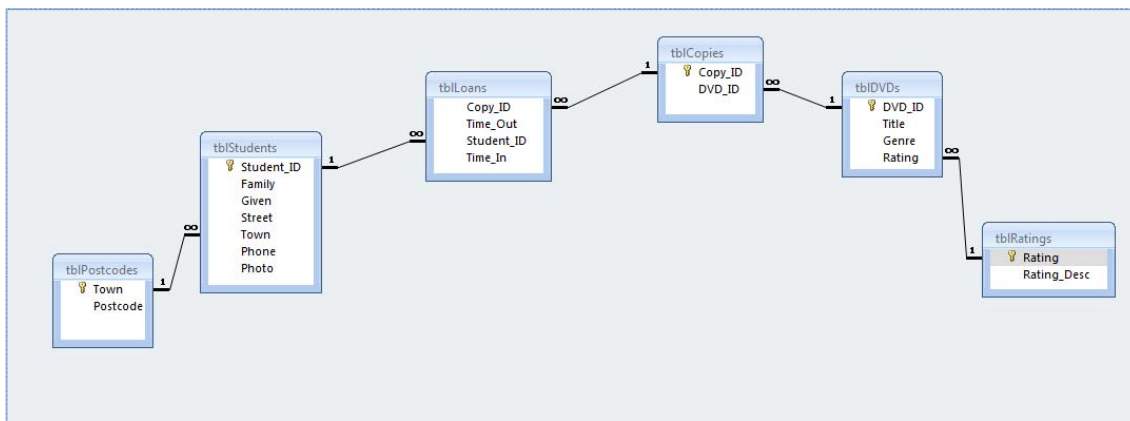
- 6 related tables (pg 1)
- Main menu (pg 12)
- Macros (pg 9)
- Sub-form (pg 10)
- Complex queries / calculated fields (pg 5)
- Graphics field (pg 8)
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The student has not identified which of the above techniques are complex.

#### Database structure – explanation and justification

The relational database below consists of 6 linked tables shown below. Complex table.

Table	Keyfield	A record contains...	Links
STUDENTS	Student_ID	Student details	STUDENTS:LOANS is 1:many
COPIES	Copy_ID	Copy ID & associated DVD ID	COPIES:LOANS is 1: many
DVDs	DVD_ID	DVD details	DVDs: COPIES is 1:many
RATINGS	Rating	Description of rating code	RATINGS:DVDs is 1: many
POSTCODES	Town	Town name & its postcode	POSTCODES:STUDENTS is 1: many
LOANS	-	ID of copy & student plus time out and time returned (if applicable)	Transaction table linking COPIES and STUDENTS



The LOANS table is a transaction table linking STUDENTS and COPIES

The COPIES table is necessary as Mme Martin has more than one copy of some DVDs.

Copy\_ID identifies the actual copy that is borrowed.

The RATINGS table has been incorporated to eliminate repetition of data which would occur if each DVD record included a rating description.

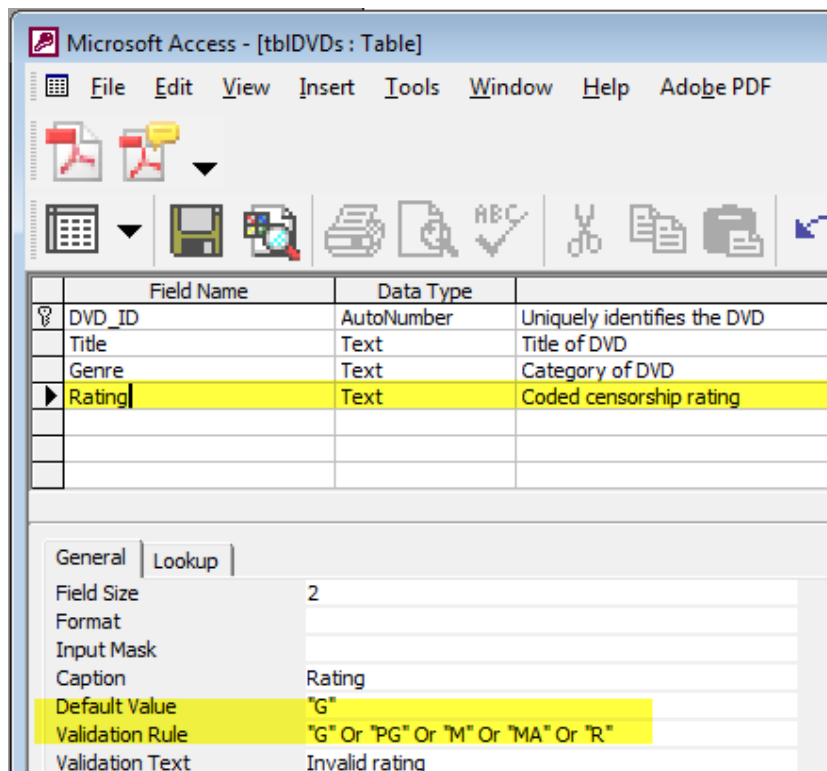
POSTCODES is a look-up table which will save Mme Martin time looking up the postcode each time she enters a new student's address.

Key fields identify one record in a table and are used for linking tables.

The structure of the relational database is very clear using the diagram and the description under the diagram.

### Techniques used to minimise errors during data entry

1. Default values make data entry more efficient and minimise errors eg Time\_Out in LOANS defaults to Now() which automatically enters today's date from the computer clock. Rating in DVDs defaults to "G" as most of Mme Martin's DVDs are G rated.
2. Appropriate data types minimise errors eg Time\_Out in LOANS is date/time,
3. Input masks limit the field type and number of characters eg Postcode in POSTCODES is 0000 limiting the data entry to 4 numbers.
4. Validation rules limit data entry eg Rating in DVDs (diagram below) is limited to "G" Or "PG" Or "M" Or "MA" Or "R" and if the user enters an unaccepted code the validation text "Invalid rating" provides feedback. Similarly Rating\_Desc has a validation rule "General" Or "Parental Guidance" Or "15+over" Or "Mature Audiences" Or "Restricted".



Data validation is not considered a complex technique, but important as a part of the techniques that were used in the product.

**Development of the product based on the requirements specification**

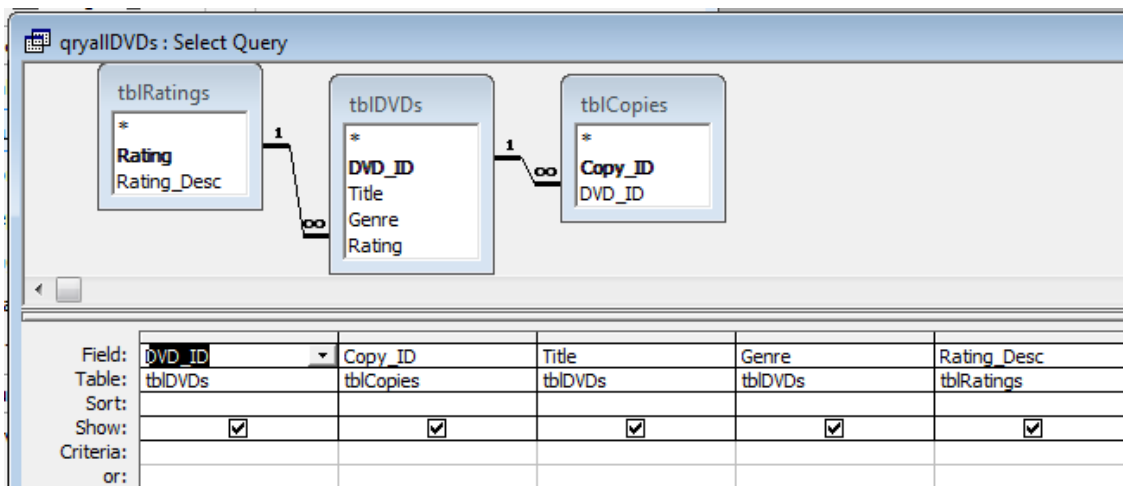
**1. List of all DVDs**

Mme Martin requires a list of all her DVDs. A report has been generated which includes the Copy\_ID and totals the number of copies of each video.

***DVD Listing***

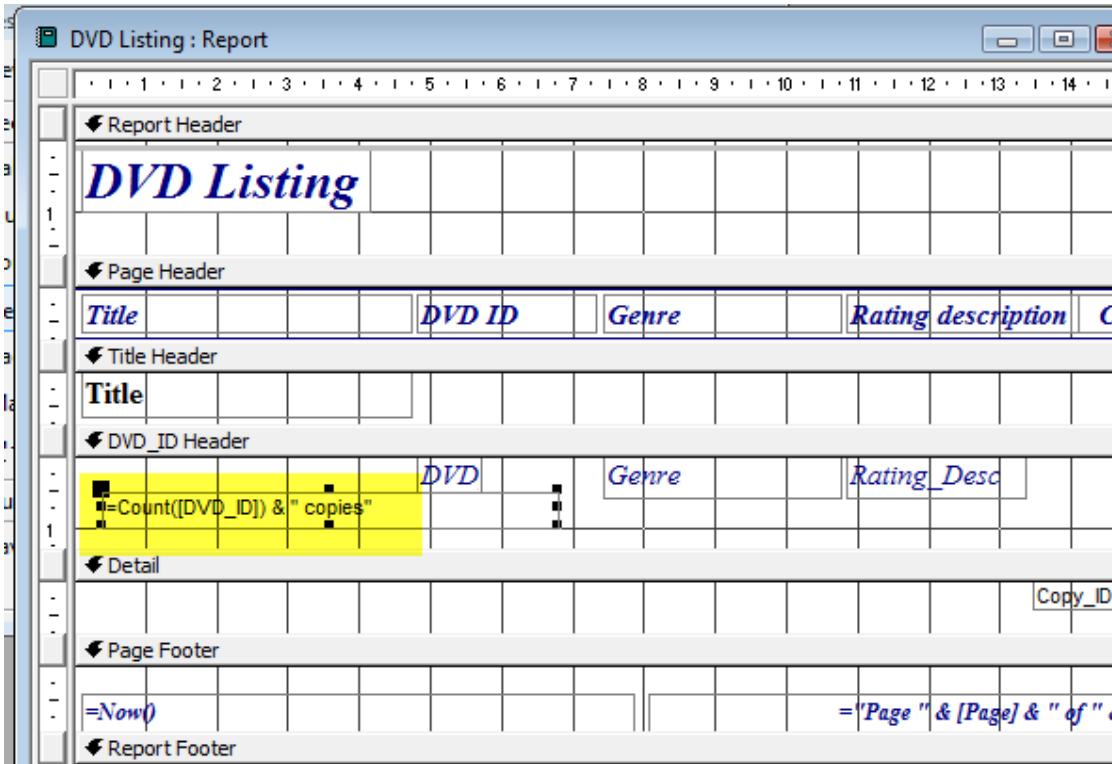
<i>Title</i>	<i>DVD ID</i>	<i>Genre</i>	<i>Rating description</i>	<i>Copy ID</i>
<b>A French woman</b>				
2 copies	3	Drama	15+over	7
				6
<b>French cuisine</b>				
3 copies	6	Food	General	29
				14
				13
<b>French wine</b>				
2 copies	5	Food	General	12
				11
<b>Hercule Poirot</b>				
3 copies	4	Crime	General	10
				9
				8

The report is based on the query below.



A formula has been added to count the number of copies. Concatenation links number of copies with the word 'copies' so Mme Martin can immediately see the number of copies of each video.

Complex technique in the use of functions to produce a well-designed report. The explanation of the technique is well supported with screenshots.



## 2. List of overdue DVDs

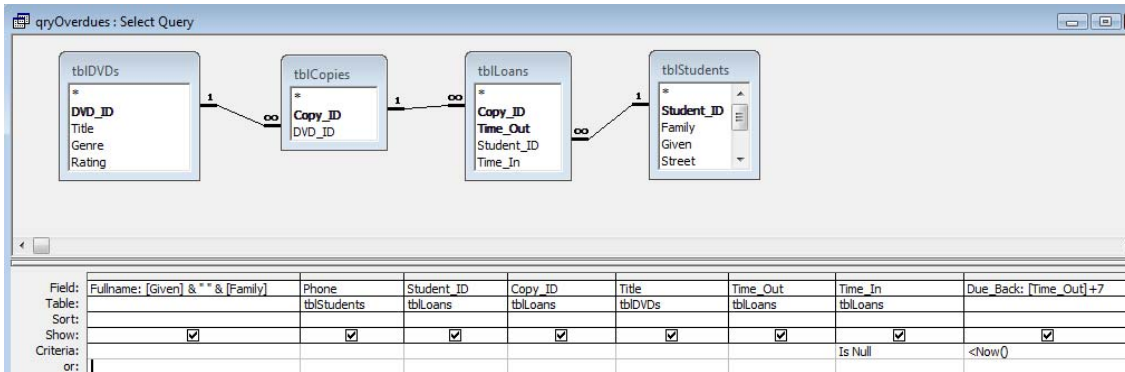
Mme Martin wants a list of overdue videos and needs the name and phone number of the borrowers.

By linking tables this query provides details of DVDs and borrowers' names and phone numbers.

The new field Fullname concatenates Given and Family for easy reading.

Since her lessons are weekly she allows a 7 day loan period. The calculated field Due\_Back calculates the due date based on 7 days from Time\_Out.

The search finds due dates that have passed (ie < today's date) **and** videos not returned ie Time\_In is empty.



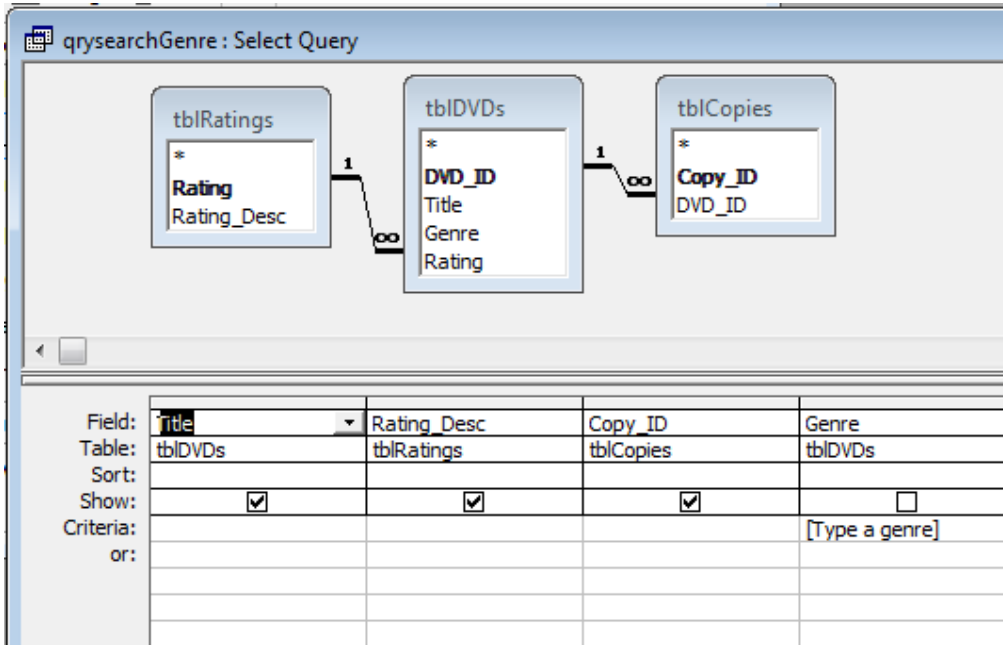
A report (shown below) has been generated based on this query.

Fullname	Phone	Time_Out	Borrowed	Copy	Title	Due
<i>Doug Dundee</i>						
	8232 1111	March 2008				
			26-Mar-08	10	Hercule Poirot	02-Apr-08
<i>Maggie Dalcross</i>						
	8335 6777	November 2008				
			11-Nov-08	3	The taste of others	18-Nov-08
		December 2008				
			01-Dec-08	1	Paris	08-Dec-08

### 3. Search on a particular genre

Another requirement is to find DVDs on a particular subject.

This parameter query allows Mme Martin to search on any genre. It provides a list of titles with their ratings and copy ID.



The report below is based on this query.

Complex techniques used for search.

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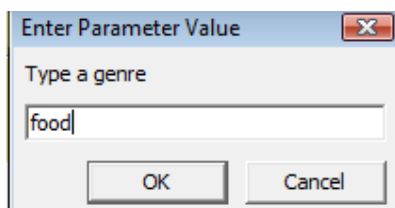
## *All DVDs about Food*

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<i>Genre</i>	<i>Title</i>	<i>Rating description</i>
Food	French cuisine	<i>General</i>
	French wine	<i>General</i>

*Thursday, 26 February 2009*

When the report is run the box below appears and this lets Mme Martin type in her chosen genre.



To make the report more user-friendly in the design of the report a text box has been added with input from the control source [genre]. This displays the heading with Mme Martin's input text.

*Demonstrates the use of an advanced technique to improve the user interface.*

Report Header									
<i>All DVDs about =[genre]</i>									
Page Header									
<i>Genre</i>			<i>Title</i>				<i>Rating descripti</i>		
Genre Header									
Genre									
Title Header									
Title									
Rating_Desc Header									
Rating_Desc									
Detail									
Page Footer									
=Now()					="Page " & [Page] &				
Report Footer									



#### 4. A user-friendly interface – Student details

Many features have been added to make the database easy for Mme Martin to use

- The student data entry form includes the student's photo.
- A search button allows Mme Martin to search for a student by typing in last name.
- By clicking the LOANS button she can easily see outstanding loans for this student.
- The HELP button provides assistance on using this screen
- The exit button closes the form

**Students Data Entry Form**

Student ID: 4

Family: Dalcross

Given: Maqqie

Street: 23 Fifth Avenue

Town: Noosville

Phone: 8335 6777

Postcode: 4566

HELP

New Record

Search for a student

Enter last name

Click to Search

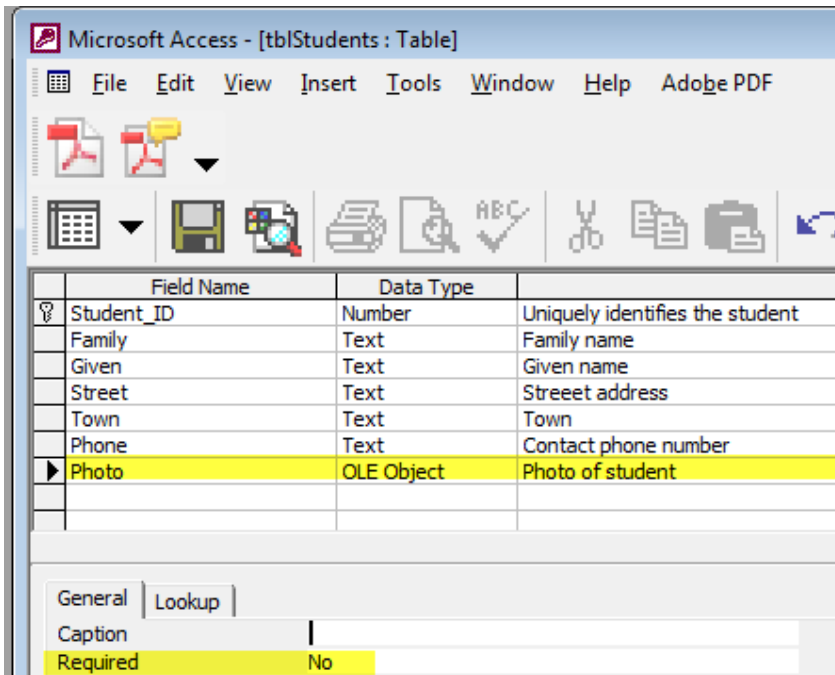
To add a new suburb and postcode click

Add a Postcode

LOANS

Evidence of techniques to allow easy navigation.

The **photo** has been incorporated into the design of the STUDENTS table (below) as an OLE object. Required is set to NO as not all students may provide a photo.



The **search** feature allows easy searching on Last name

The onclick property of the search button will run a macro called mcrFindStudent

Action	Comment
GoToControl	Go to the Family text box ie Control Name Family
FindRecord	Find the record that matches the search key
SetValue	Blank the serch text boxes Macro Name is mcrClearSearch

Action Arguments	
Find What	= [txtFamilySearch]
Match	Any Part of Field

The LOANS button runs a macro to open the LOANS form. This enables Mme Martin to quickly see the DVDs the current student has on loan. In order to locate the relevant student this macro has a condition where [Student\_ID]=[Forms]![frmStudentEdit]![Student\_ID].

The subform is based on a query and the form and subform are linked on Student\_ID to ensure that the loans shown relate to the student.

## STUDENT LOANS

**Member ID:**

**Family:**

**Given:**


**Street:**

**Town:**

**Phone:**

**Postcode:**

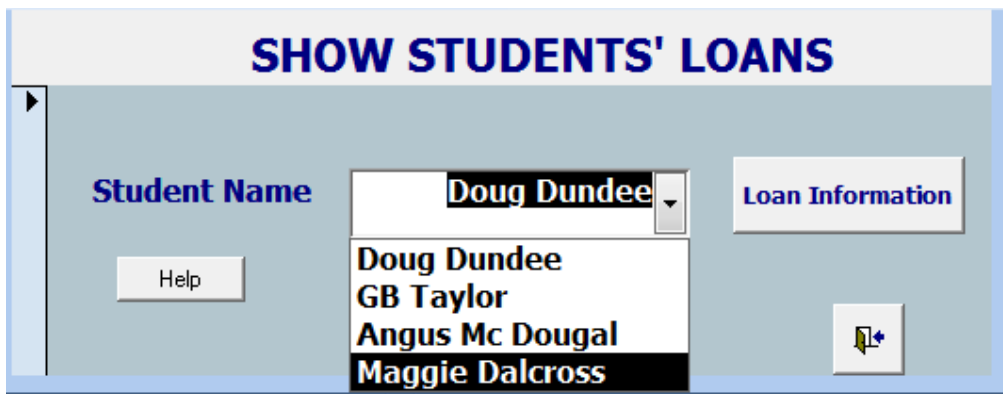
**Gender:**



Student	Copy ID	Title	Borrowed
4	1	Paris	01-Dec-0
4	3	The taste of others	11-Nov-0
4	12	French wine	10-Jan-0
*			

Record: 4 of 4 No Filter Search

**5. A user-friendly interface – Loan details**



The Loan Information button runs a macro similar to the one above which opens the Loans form and subform.

**6. A user-friendly interface – Help facilities**

The forms incorporate help buttons which give information about using the forms. Below a macro attached to the Help button has an action to display a message box. The message box incorporates the lines of text.

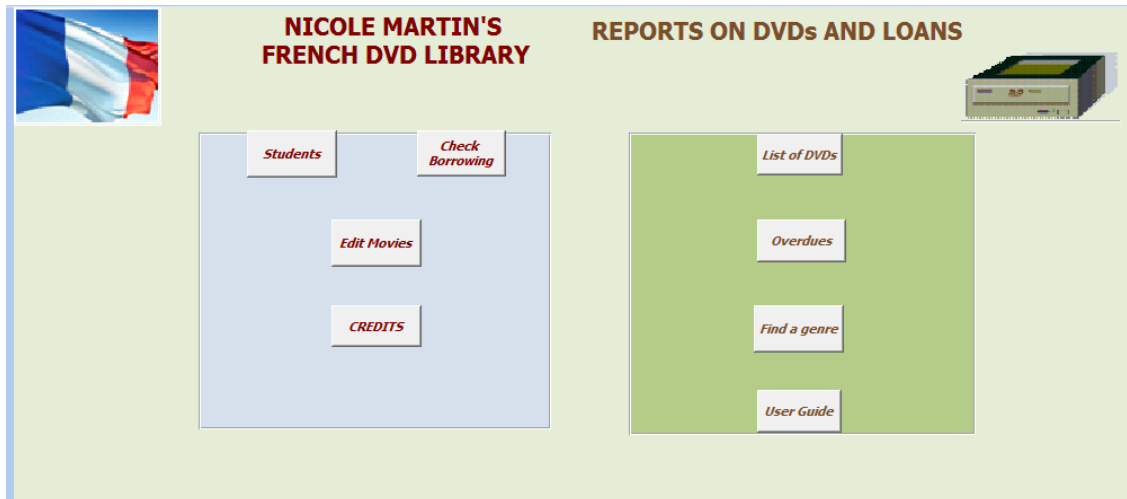


## 7. A user friendly interface – Main Menu

A macro has been created to open the form called Main Menu. By saving this macro as autoexec it automatically launches the Main Menu on startup.

Buttons open forms and reports making the database simple to use.

A user guide is available via a button.



### Security and privacy information

The STUDENTS table contains person information about the students which should not be available to unauthorised users. The database will be loaded onto Mme Martin's home computer. Her computer is not shared with other users and she has a password to log on. A password will also be set on the database for extra security.

Word Count 1012

This database was based on a video store database in *Developing databases with Access* by Graeme Summers. Permission may need to be sought to use his idea.

His Website is <http://users.bigpond.net.au/gramebs/>

I would highly recommend this book to ITGS teachers who need assistance with MS Access.

8 marks

The structure of the product and the choice of techniques are justified.

There are at least three complex techniques explained amongst the six that were identified. (eg more than three related tables, complex queries and calculated fields, proficient design of reports).

Screenshots are used to contribute to the justification.

Sources are cited where appropriate.