

Unit 2 Creating Systems to Manage Information



**Level 3 National in
Information Technology**

January 2021

Example Solution

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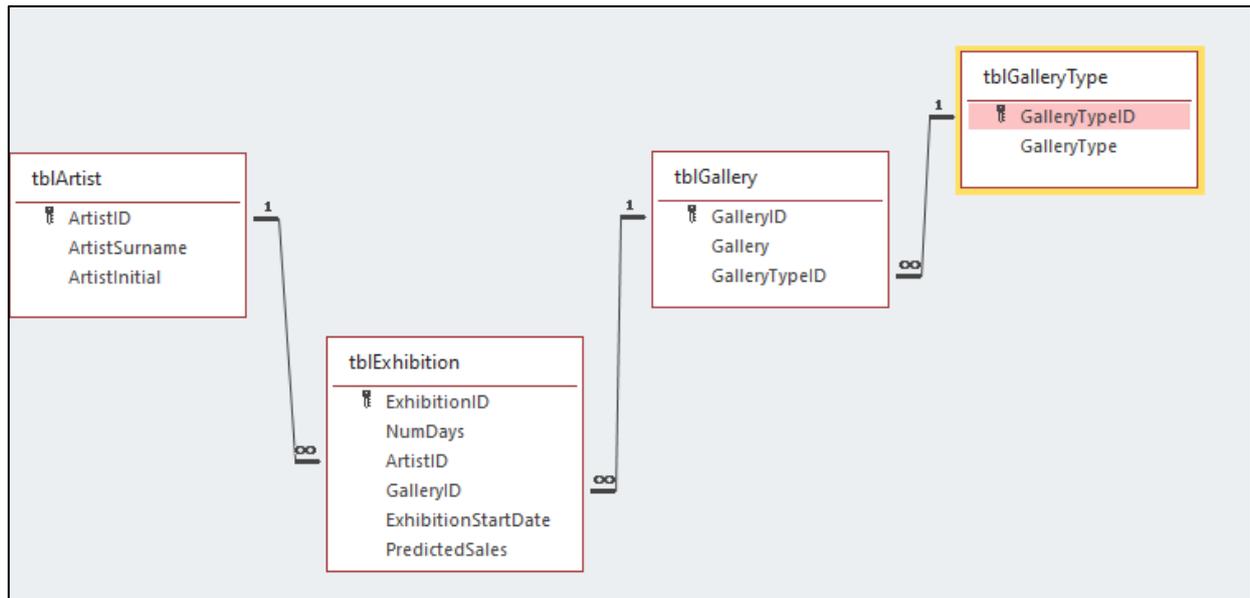
Introduction

The solution must be used alongside the Lead Examiner's report, and the marking guidance document, which contains the guidance the examiners follow to mark the scripts and examples of marked candidate work for each activity. Very few comments/explanations will appear in this document so to fully understand the approach and how to mark the other documents must be considered too.

Part A

Activity 1 – Database relationships screenprint

Full marks were achieved.



Activity 2 – Table structures

Full marks were achieved.

Field Name	Data Type
ArtistID	Number
ArtistSurname	Short Text
ArtistInitial	Short Text

Field Name	Data Type
GalleryID	Number
Gallery	Short Text
GalleryTypeID	Number

Field Name	Data Type
ExhibitionID	Number
NumDays	Number
ArtistID	Number
GalleryID	Number
ExhibitionStartDate	Date/Time
PredictedSales	Currency

Field Name	Data Type
GalleryTypeID	Number
GalleryType	Short Text

Presence check

Field Name	Data Type
ArtistID	Number
ArtistSurname	Short Text
ArtistInitial	Short Text

Field Name	Data Type
ArtistID	Number
ArtistSurname	Short Text
ArtistInitial	Short Text

General | Lookup

Field Size	255
Format	@
Input Mask	
Caption	
Default Value	
Validation Rule	Is Not Null
Validation Text	You must enter the artist's surname
Required	Yes

Length and format check

Field Name	Data Type
ArtistID	Number
ArtistSurname	Short Text
ArtistInitial	Short Text

Field Name	Data Type
ArtistID	Number
ArtistSurname	Short Text
ArtistInitial	Short Text

General | Lookup

Field Size	1
Format	@
Input Mask	>L
Caption	

Value lookup

Field Name	Data Type
ExhibitionID	Number
NumDays	Number

Field Name	Data Type
ExhibitionID	Number
NumDays	Number

Field Properties

General | Lookup

Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	
Validation Rule	Between 3 And 10
Validation Text	The number of days must be at least 3 and no more than 10.
Required	No

Table lookup Any foreign key

Field Name	Data Type
GalleryID	Number
ExhibitionStartDate	Date/Time

Field Name	Data Type
GalleryID	Number
ExhibitionStartDate	Date/Time

Field Properties

General | Lookup

Display Control	Combo Box
Row Source Type	Table/Query
Row Source	SELECT [tblGallery].[GalleryID], [tblGallery].[Gallery] FROM tblGallery;
Bound Column	1
Column Count	2
Column Heads	No
Column Widths	1.482cm;3.625cm
List Rows	16
List Width	5.106cm
Limit To List	Yes

Activity 3 – Queries and report

Full marks were achieved

(a) Create a query to display an alphabetically sorted list of commercial galleries that have exhibitions running for at least five days. It must show the gallery name, gallery type and number of days only.

Field:	Gallery	GalleryType	NumDays		
Table:	tblGallery	tblGalleryType	tblExhibition		
Sort:	Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:		"commercial"	>=5		
or:					

Gallery	GalleryType	NumDays
Hauser & Bodega	Commercial	8
Kingdom Works	Commercial	7
Neu Gallery	Commercial	10
Neue Brand Haus	Commercial	5
*		

(b) The gallery earns commission for every piece of art sold:

- the basic commercial commission rate is 40%
- the basic combo rate is 20%

Create a query that will allow the user to enter a parameter value for an artist's surname when run. Calculate the:

- number of exhibitions
- predicted commission Smart Art will receive.

Display:

- the artist's surname
- the artist's initial
- the commission rate
- the predicted commission

Field:	ArtistSurname	ArtistInitial	NumExhibitions: ExhibitionID
Table:	tblArtist	tblArtist	tblExhibition
Total:	Group By	Group By	Count
Sort:			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	[Enter artist's surname]		

CommissionRate:	If([gallerytypeID]=1,40,20)	PredictedCommission:	Sum([predictedSales]/100*[commissionRate])	PredictedSales	tblExhibition
Group By		Expression		Group By	
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	

ArtistSurname	ArtistInitial	CommissionRate	PredictedCommission
Andreasson	Q	40	£444.80

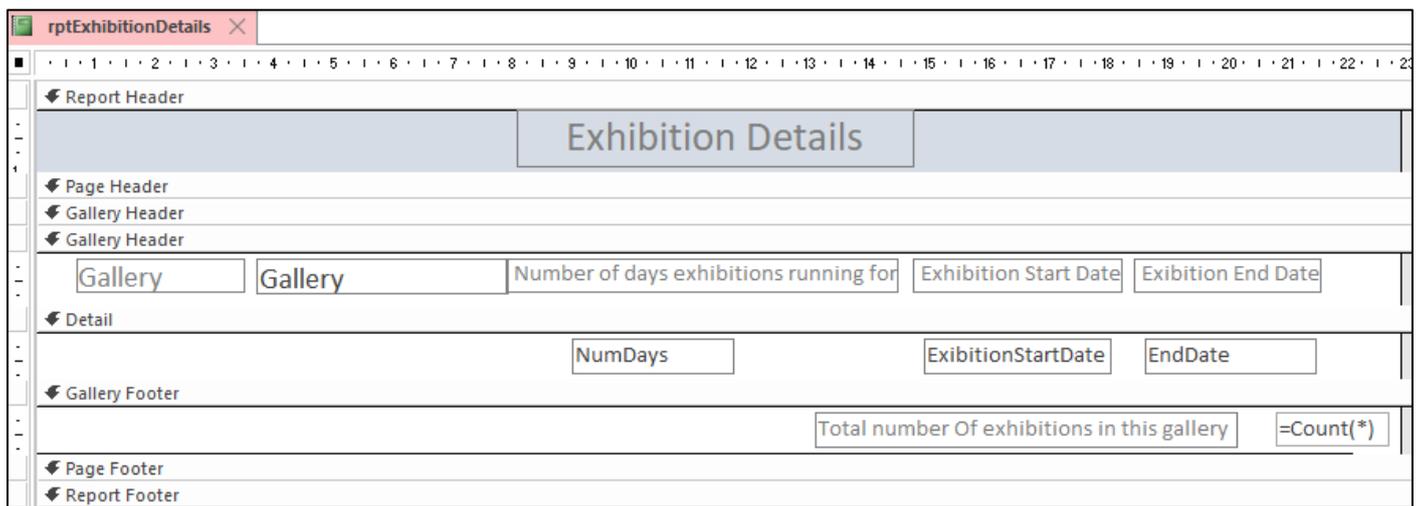
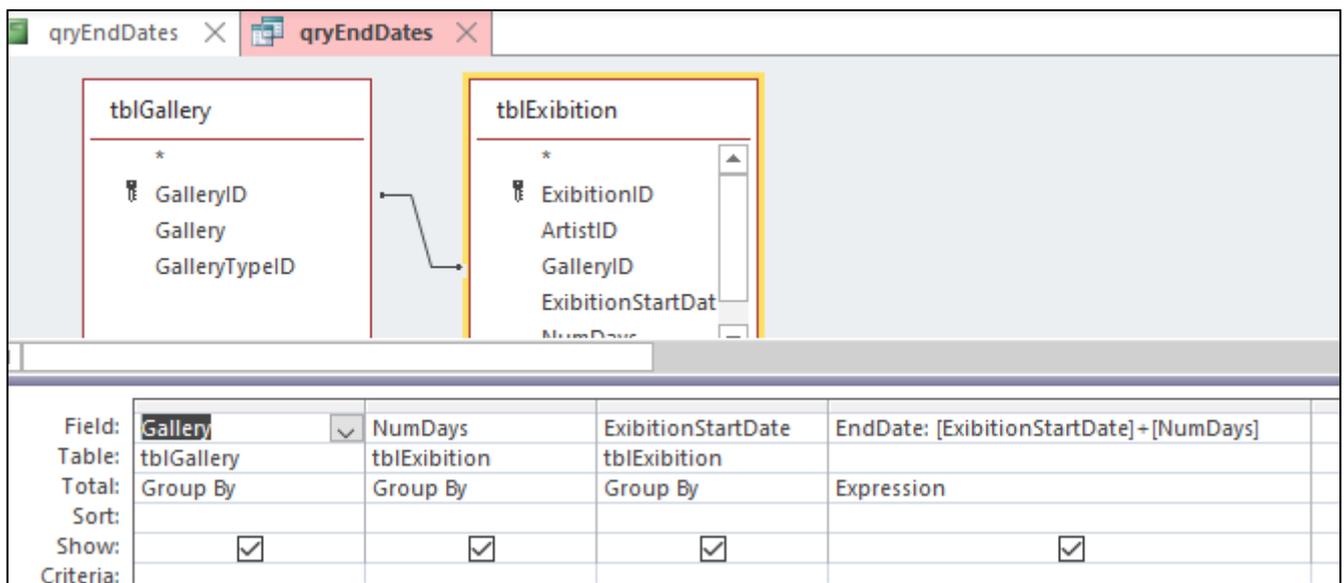
(c)Report – Create a report that shows a list of galleries and their exhibitions.

For each gallery calculate:

- the end date for each exhibition
- the total number of exhibitions
- the total number of days that exhibitions will run

Display:

- a suitable report title
- the start date for each exhibition
- the end date for each exhibition
- the total number of exhibitions for each gallery
- the total number of days that exhibitions will run in each gallery



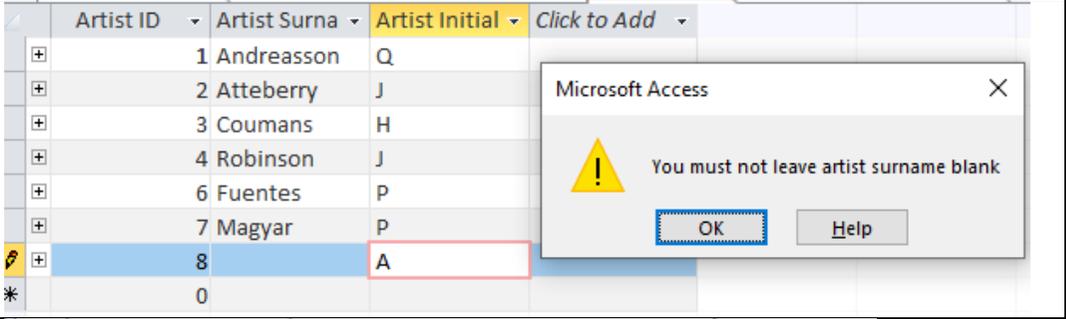
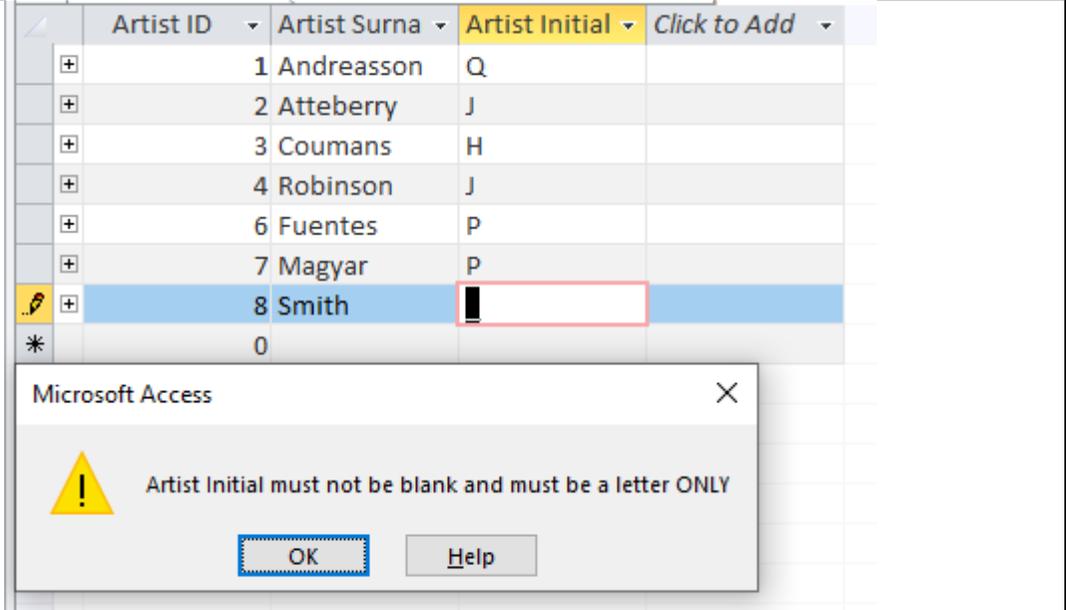
NOTE: The report is for illustration purposes only. There needs to be a pdf copy of the database report.

Exhibition Details

Gallery	Brand Arts	Exhibition Start Date	Exhibition End Date
		01/02/2021	04/02/2021
		26/12/2020	29/12/2020
Total number Of exhibitions in this gallery			2
Gallery	Decadent Furniture	Exhibition Start Date	Exhibition End Date
		12/01/2021	17/01/2021
Total number Of exhibitions in this gallery			1
Gallery	Hauser & Bodega	Exhibition Start Date	Exhibition End Date
		06/02/2021	14/02/2021
		14/12/2020	18/12/2020
Total number Of exhibitions in this gallery			2
Gallery	Kingdom Works	Exhibition Start Date	Exhibition End Date
		05/12/2020	12/12/2020
Total number Of exhibitions in this gallery			1
Gallery	Neu Gallery	Exhibition Start Date	Exhibition End Date
		31/12/2020	10/01/2021
		26/01/2021	30/01/2021
Total number Of exhibitions in this gallery			2
Gallery	Neue Brand Haus	Exhibition Start Date	Exhibition End Date
		19/01/2021	24/01/2021
		20/12/2020	24/12/2020
Total number Of exhibitions in this gallery			2

Activity 4 – Structure testing

NOTE: The type of test and error column have been removed so that the contents fit better on the screen. NOTE there are slight weaknesses in tests 2, 3 and 4 in that the candidate has not said what the error messages will be. There was still enough evidence for full marks.

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)
1	Artist ID:8 Artist Surname: Artist Initial: A	An error should pop up informing the use that they must not leave the artist surname blank	
2	Artist ID:8 Artist Surname: Smith Artist Initial:	If the user presses anything other than a letter than it should not allow the user to enter any data, it should also not allow the user to write in any more than two letters. If the user attempts to enter the data without having a put a letter in, an error message will appear. The field will also automatically make any lower-case letters capital letters	

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)																																																																																				
3	Gallery ID: 7 Gallery: Kingdom Works Gallery Type ID: 8	When the user presses enter, an error message will appear, and they will not be able to save their record as there is no gallery type with the ID 8	<p>The screenshot shows a table with columns: Gallery ID, Gallery, Gallery Type ID, and Click to Add. The row for Gallery ID 7 (Kingdom Works) has a Gallery Type ID of 8. Below the table is a Microsoft Access error dialog box that reads: "You cannot add or change a record because a related record is required in table 'tbl_galleryType'".</p> <table border="1"> <thead> <tr> <th>Gallery ID</th> <th>Gallery</th> <th>Gallery Type ID</th> <th>Click to Add</th> </tr> </thead> <tbody> <tr><td>1</td><td>Decadent Furniture</td><td>2</td><td></td></tr> <tr><td>2</td><td>Nene Brand Haus</td><td>1</td><td></td></tr> <tr><td>4</td><td>Brand Arts</td><td>1</td><td></td></tr> <tr><td>5</td><td>Neu Gallery</td><td>1</td><td></td></tr> <tr><td>6</td><td>Hauser & Bodega</td><td>1</td><td></td></tr> <tr><td>7</td><td>Kingdom Works</td><td>8</td><td></td></tr> <tr><td>0</td><td></td><td></td><td></td></tr> </tbody> </table>	Gallery ID	Gallery	Gallery Type ID	Click to Add	1	Decadent Furniture	2		2	Nene Brand Haus	1		4	Brand Arts	1		5	Neu Gallery	1		6	Hauser & Bodega	1		7	Kingdom Works	8		0																																																							
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6	Hauser & Bodega	1																																																																																					
7	Kingdom Works	8																																																																																					
0																																																																																							
4	Exhibition ID: 1 Num Days: 7 Exhibition Start Date: 05/12/2020 Predicted Sales: £3695 Gallery ID: 7 Artist ID: 24	When the user presses enter, an error message will appear, and they will not be able to save their record as there is no artist with the ID 24	<p>The screenshot shows a table with columns: Exhibition ID, Num Days, Exhibition Start Date, Predicted Sales, Gallery ID, Artist ID, and Click. The row for Exhibition ID 1 has an Artist ID of 24. Below the table is a Microsoft Access error dialog box that reads: "You cannot add or change a record because a related record is required in table 'tbl_artist'".</p> <table border="1"> <thead> <tr> <th>Exhibition ID</th> <th>Num Days</th> <th>Exhibition Start Date</th> <th>Predicted Sales</th> <th>Gallery ID</th> <th>Artist ID</th> <th>Click</th> </tr> </thead> <tbody> <tr><td>1</td><td>7</td><td>05/12/2020</td><td>£3,695.00</td><td>7</td><td>24</td><td></td></tr> <tr><td>2</td><td>4</td><td>14/12/2020</td><td>£1,112.00</td><td>6</td><td>1</td><td></td></tr> <tr><td>3</td><td>4</td><td>20/12/2020</td><td>£3,639.00</td><td>2</td><td>3</td><td></td></tr> <tr><td>4</td><td>3</td><td>26/12/2020</td><td>£1,955.00</td><td>4</td><td>6</td><td></td></tr> <tr><td>5</td><td>10</td><td>31/12/2020</td><td>£2,093.00</td><td>5</td><td>2</td><td></td></tr> <tr><td>6</td><td>5</td><td>12/01/2021</td><td>£1,612.00</td><td>1</td><td>4</td><td></td></tr> <tr><td>7</td><td>5</td><td>19/01/2021</td><td>£3,427.00</td><td>2</td><td>2</td><td></td></tr> <tr><td>8</td><td>4</td><td>26/01/2021</td><td>£3,705.00</td><td>5</td><td>3</td><td></td></tr> <tr><td>9</td><td>3</td><td>01/02/2021</td><td>£3,071.00</td><td>4</td><td>2</td><td></td></tr> <tr><td>10</td><td>8</td><td>06/02/2021</td><td>£2,042.00</td><td>6</td><td>6</td><td></td></tr> <tr><td>(New)</td><td>0</td><td></td><td>£0.00</td><td>0</td><td></td><td></td></tr> </tbody> </table>	Exhibition ID	Num Days	Exhibition Start Date	Predicted Sales	Gallery ID	Artist ID	Click	1	7	05/12/2020	£3,695.00	7	24		2	4	14/12/2020	£1,112.00	6	1		3	4	20/12/2020	£3,639.00	2	3		4	3	26/12/2020	£1,955.00	4	6		5	10	31/12/2020	£2,093.00	5	2		6	5	12/01/2021	£1,612.00	1	4		7	5	19/01/2021	£3,427.00	2	2		8	4	26/01/2021	£3,705.00	5	3		9	3	01/02/2021	£3,071.00	4	2		10	8	06/02/2021	£2,042.00	6	6		(New)	0		£0.00	0		
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(New)	0		£0.00	0																																																																																			

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)
5	Exhibition ID: 1 Num Days: 1 Exhibition Start Date: 05/12/2020 Predicted Sales: £3695 Gallery ID: 7 Artist ID: 7	An error message will appear, informing the user that their number must be between 3 and 10	
6	Exhibition ID: 1 Num Days: 11 Exhibition Start Date: 05/12/2020 Predicted Sales: £3695 Gallery ID: 7 Artist ID: 7	An error message will appear, informing the user that their number must be between 3 and 10	

Part B

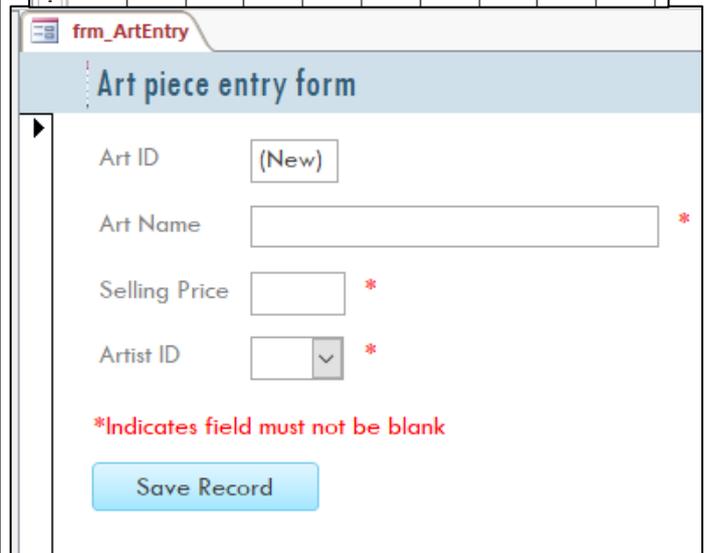
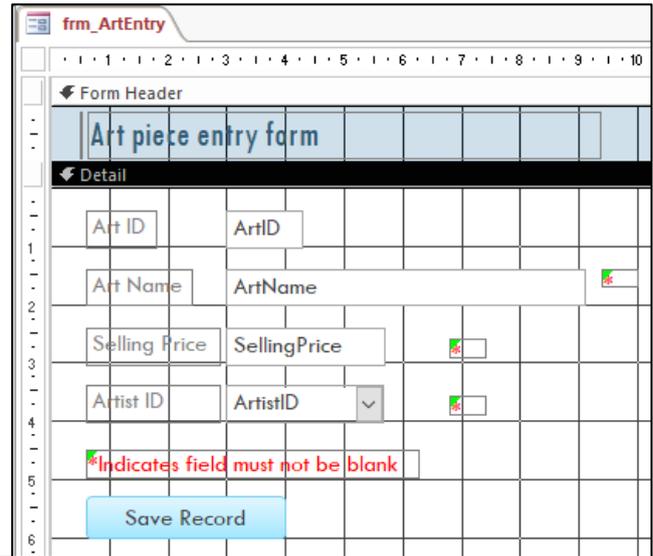
Activity 6 – Interface and functionality

Artist form

Slight weakness in that the Art ID has not been disabled. This did not stop the candidate achieving full marks in this activity.

```

frm_ArtEntry : frm_ArtEntry : btn_save : On Click
    If [txt_ArtName] Is Null Then
        MsgBox
            Message Art name must not be blank
            Beep Yes
            Type Critical
            Title Error
    Else If [txt_SellingPrice] Not Between 100 And 2000 Then
        MsgBox
            Message Selling price must be between £100 and £2000
            Beep Yes
            Type Critical
            Title Error!
    Else If [txt_SellingPrice] Is Null Then
        MsgBox
            Message Selling price must not be left blank
            Beep Yes
            Type Critical
            Title Error!
    Else If [cbo_ArtistID] Is Null Then
        MsgBox
            Message You must select a valid artist from the list
            Beep Yes
            Type Critical
            Title Error!
    Else
        RunMenuCommand
            Command SaveRecord
        MsgBox
            Message Your data has been saved
            Beep Yes
            Type Information
            Title Success
        Requery
        Control Name
    End If
    
```



Sales analysis and artist rating form

tblArtist | tblSale | tblSaleItem | frm_ArtistLookup

Artist Lookup Form

Artist Selection

Artist Surname:

Artist Rating:

Artist Info

Artist Email:

Pieces of art created:

Pieces of art sold:

Lowest priced piece sold:

Highest priced piece sold:

Total made from sales:

cbo_artistSurname	
Format	Data
Control Source	ArtistSurname
Row Source	SELECT [tblArtist].[ArtistID], [tblArtist].[ArtistSurname] FROM tblArtist;
Row Source Type	Table/Query
Bound Column	1
Limit To List	Yes

Tools | Collapse/Expand | Show/Hide | Close

tblArtist | tblSale | tblSaleItem | frm_ArtistLookup | frm_ArtistLookup : cbo_artistSurname : After Update

Requery

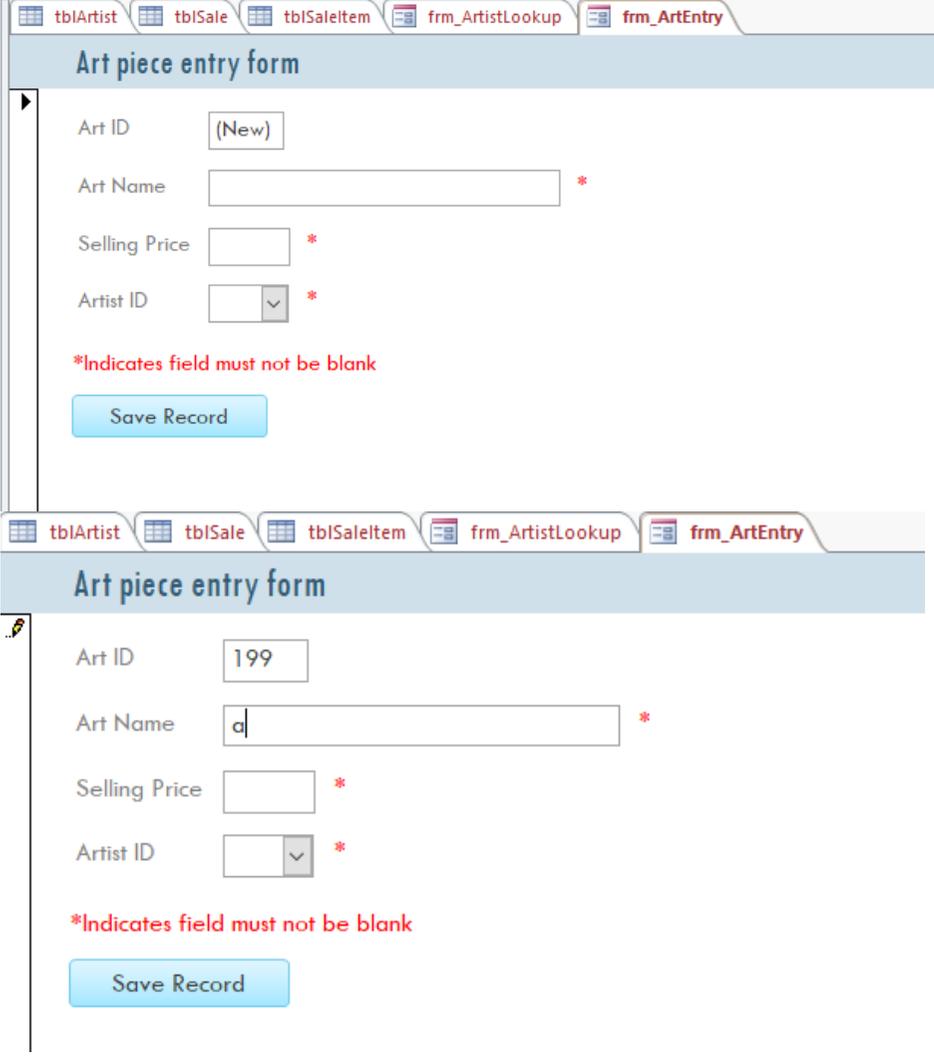
Control Name

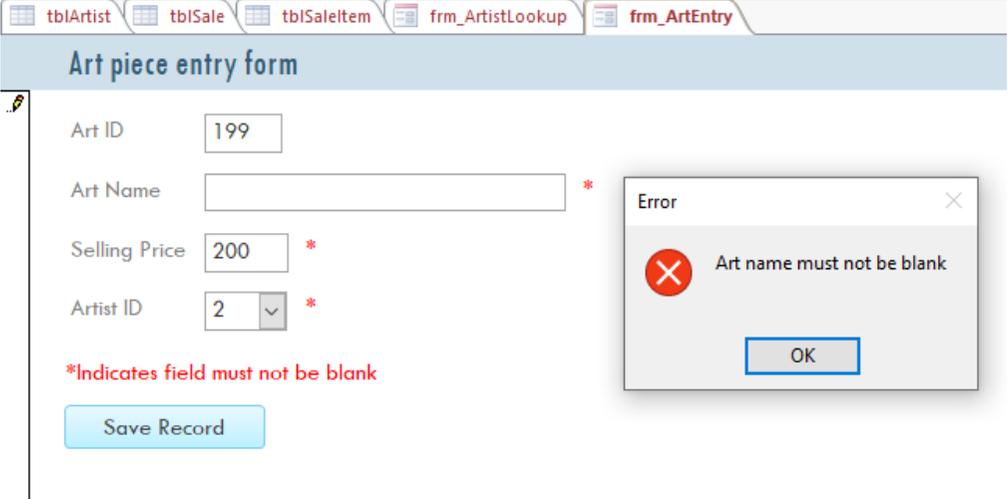
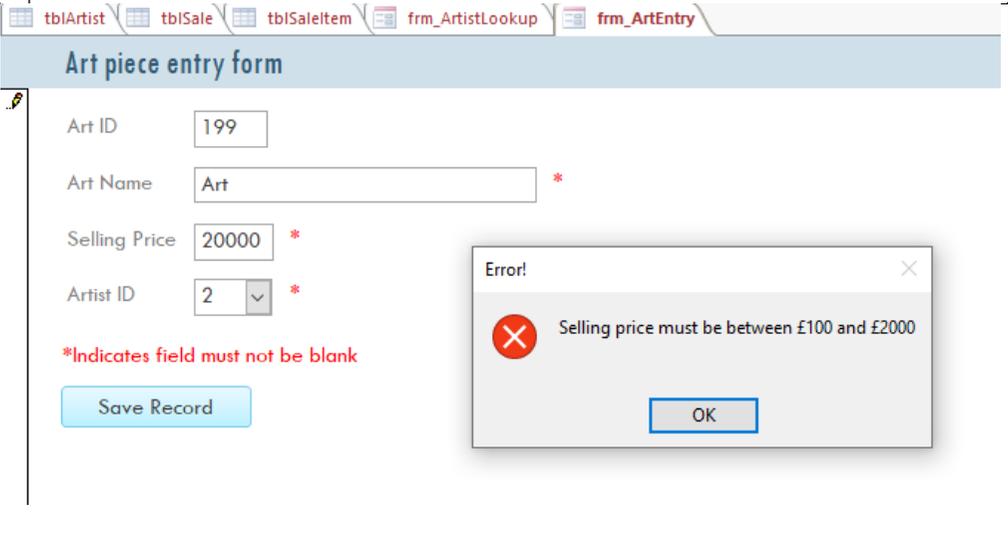
+

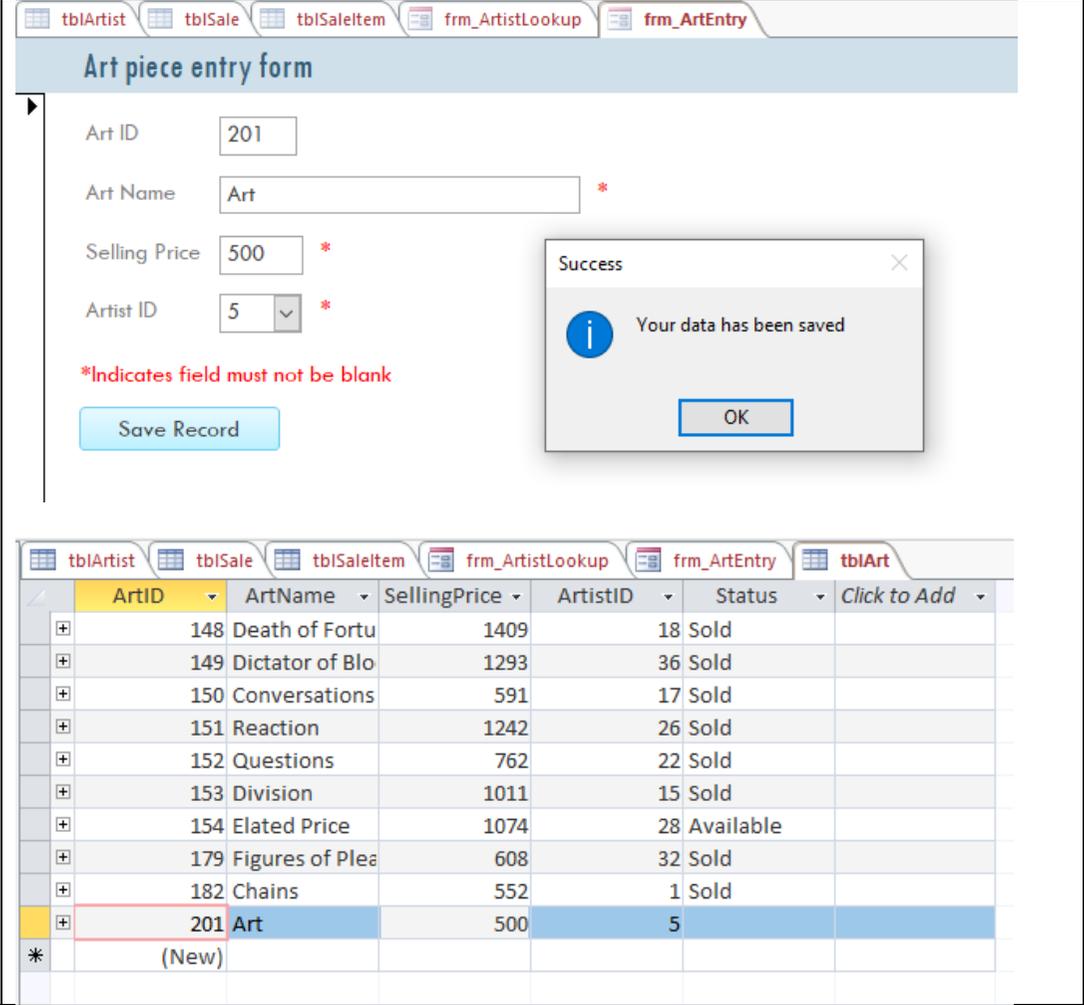
Artist Surname	<input type="text" value="ArtistSurname"/> <input type="button" value="v"/>
Artist Rating	<input type="text" value="ArtistRating"/> <input type="button" value="v"/>
Artist Info	
Artist Email	=DLookup("ArtistEmail","tblArtist","ArtistID=cbo_ArtistSurname")
Pieces of art created	=DCount("ArtID","tblArt","ArtistID=cbo_ArtistSurname")
Pieces of art sold	=DCount("ArtID","tblArt","ArtistID=cbo_ArtistSurname and Status='Sold'")
Lowest priced piece sold	=DMin("SellingPrice","tblArt","ArtistID=cbo_ArtistSurname")
Highest priced piece sold	=DMax("SellingPrice","tblArt","ArtistID=cbo_ArtistSurname")
Total made from sales	=DSum("SellingPrice","tblArt","ArtistID=cbo_ArtistSurname and Status='Sold'")

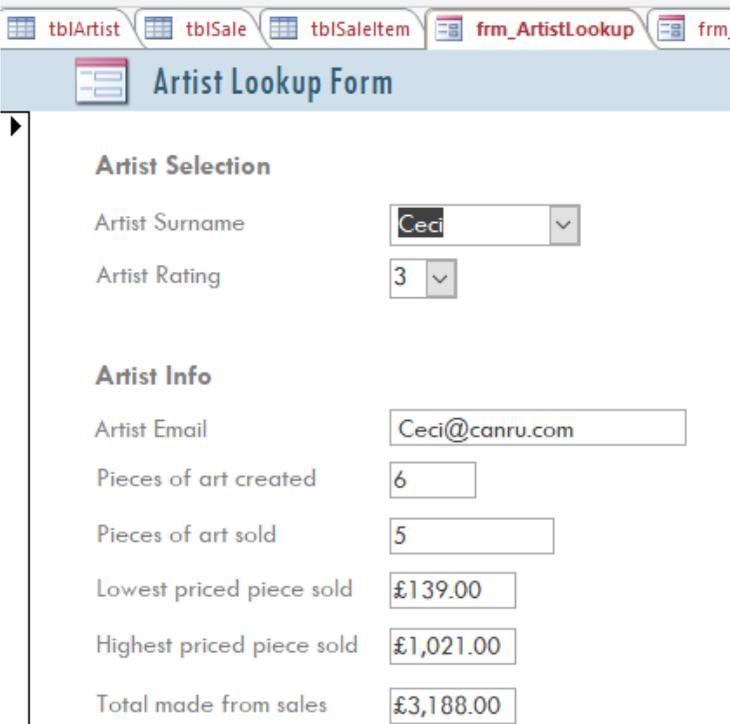
Activity 7 – Interface and functionality testing

NOTE: The type of test and error column have been removed so that the contents fit better on the screen. There is a slight weakness in test 5 in that the candidate has not said what the error message will be and a slight weakness in test 7 in that the candidate has not indicated what values should be in the fields that are automatically generated. There was still enough evidence to award full marks.

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)
1	Art ID: Art Name: a Selling Price: Artist ID:	As the form has just been opened, it should be blank, and the art ID should have (New) in it to show that it is ready for data entry. When I enter any information in any art name, or selling price, or artist ID, the ART ID should change to a number	 <p>The screenshots show the 'Art piece entry form' in a web browser. The top screenshot shows the form with 'Art ID' set to '(New)', 'Art Name' as an empty field, 'Selling Price' as an empty field, and 'Artist ID' as a dropdown menu. The bottom screenshot shows the form after data entry: 'Art ID' is '199', 'Art Name' contains 'a', 'Selling Price' is empty, and 'Artist ID' is empty. Both screenshots include a 'Save Record' button and a red asterisk indicating required fields.</p>

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)
2	Art ID: 199 Art Name: Selling Price: 200 Artist ID: 2	An error message should display, informing the user that they cannot leave the art name field blank. The record will not save	 <p>The screenshot shows the 'Art piece entry form' with the following fields: Art ID (199), Art Name (blank), Selling Price (200), and Artist ID (2). A red asterisk is next to the Art Name field. An error dialog box is displayed with the message 'Art name must not be blank' and an 'OK' button. A legend below the form states '*Indicates field must not be blank'.</p>
3	Art ID: 199 Art Name: Art Selling Price: 20000 Artist ID: 2	An error message should display, informing the user that the selling price will not be accepted as it is higher than the range it's required to fall in. The record will not save	 <p>The screenshot shows the 'Art piece entry form' with the following fields: Art ID (199), Art Name (Art), Selling Price (20000), and Artist ID (2). Red asterisks are next to the Art Name and Selling Price fields. An error dialog box is displayed with the message 'Selling price must be between £100 and £2000' and an 'OK' button. A legend below the form states '*Indicates field must not be blank'.</p>

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)																																																																																				
6	Art ID: 201 Art Name: Art Selling Price: 500 Artist ID: 5	A message should appear informing the user that their data has been saved. An entry will be added to the art table with the corresponding information.	 <p>The screenshot shows the 'Art piece entry form' with the following fields: Art ID (201), Art Name (Art), Selling Price (500), and Artist ID (5). A 'Success' dialog box is displayed with the message 'Your data has been saved' and an 'OK' button. Below the form is a table showing the 'tblArt' data with the new entry highlighted.</p> <table border="1"> <thead> <tr> <th></th> <th>ArtID</th> <th>ArtName</th> <th>SellingPrice</th> <th>ArtistID</th> <th>Status</th> <th>Click to Add</th> </tr> </thead> <tbody> <tr><td>+</td><td>148</td><td>Death of Fortu</td><td>1409</td><td>18</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>149</td><td>Dictator of Blo</td><td>1293</td><td>36</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>150</td><td>Conversations</td><td>591</td><td>17</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>151</td><td>Reaction</td><td>1242</td><td>26</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>152</td><td>Questions</td><td>762</td><td>22</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>153</td><td>Division</td><td>1011</td><td>15</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>154</td><td>Elated Price</td><td>1074</td><td>28</td><td>Available</td><td></td></tr> <tr><td>+</td><td>179</td><td>Figures of Plea</td><td>608</td><td>32</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>182</td><td>Chains</td><td>552</td><td>1</td><td>Sold</td><td></td></tr> <tr><td>+</td><td>201</td><td>Art</td><td>500</td><td>5</td><td></td><td></td></tr> <tr><td>*</td><td>(New)</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>		ArtID	ArtName	SellingPrice	ArtistID	Status	Click to Add	+	148	Death of Fortu	1409	18	Sold		+	149	Dictator of Blo	1293	36	Sold		+	150	Conversations	591	17	Sold		+	151	Reaction	1242	26	Sold		+	152	Questions	762	22	Sold		+	153	Division	1011	15	Sold		+	154	Elated Price	1074	28	Available		+	179	Figures of Plea	608	32	Sold		+	182	Chains	552	1	Sold		+	201	Art	500	5			*	(New)					
	ArtID	ArtName	SellingPrice	ArtistID	Status	Click to Add																																																																																	
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+	149	Dictator of Blo	1293	36	Sold																																																																																		
+	150	Conversations	591	17	Sold																																																																																		
+	151	Reaction	1242	26	Sold																																																																																		
+	152	Questions	762	22	Sold																																																																																		
+	153	Division	1011	15	Sold																																																																																		
+	154	Elated Price	1074	28	Available																																																																																		
+	179	Figures of Plea	608	32	Sold																																																																																		
+	182	Chains	552	1	Sold																																																																																		
+	201	Art	500	5																																																																																			
*	(New)																																																																																						

Test No	Test data	Expected results	Add screenprint(s) of the results of this test (and any retests) Ensure you show the test data used in the screenprint(s)
7	Artist Surname: Ceci Artist Rating: 3	Once the artist surname and artist rating are entered, all of the artist information should be filled in automatically with the correct information.	 <p>The screenshot shows the 'Artist Lookup Form' interface. At the top, there are navigation tabs for 'tblArtist', 'tblSale', 'tblSaleItem', 'frm_ArtistLookup', and 'frm_'. The form is titled 'Artist Lookup Form' and is divided into two sections: 'Artist Selection' and 'Artist Info'. In the 'Artist Selection' section, the 'Artist Surname' dropdown is set to 'Ceci' and the 'Artist Rating' dropdown is set to '3'. In the 'Artist Info' section, the 'Artist Email' field contains 'Ceci@canru.com'. Below this, there are several input fields: 'Pieces of art created' (6), 'Pieces of art sold' (5), 'Lowest priced piece sold' (£139.00), 'Highest priced piece sold' (£1,021.00), and 'Total made from sales' (£3,188.00).</p>