

Unit 2 Creating Systems to Manage Information



**Level 3 National in
Information Technology**

May 2022

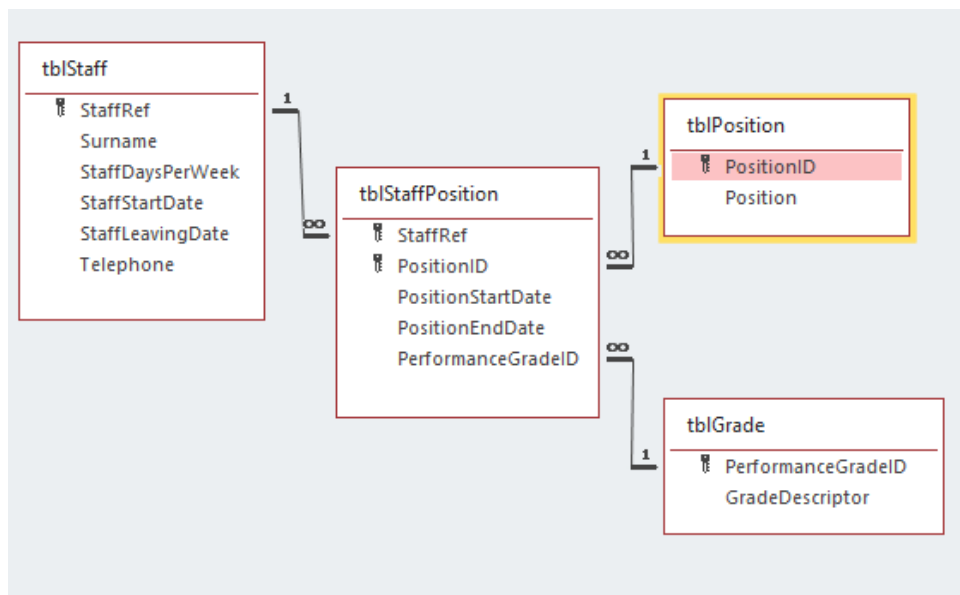
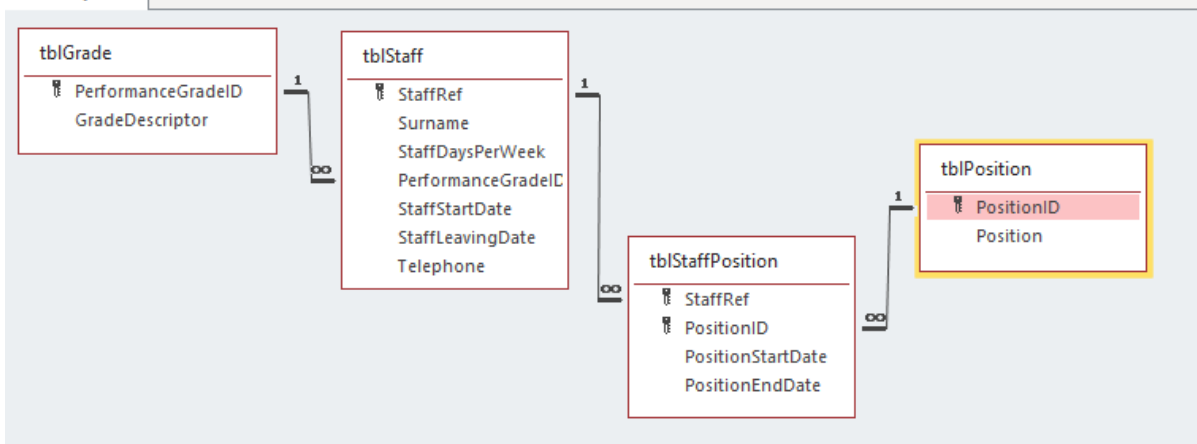
Example Solution

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Part A

Activity 1 – Database relationships screenprint



Activity 2 – Table structures

tblGrade	
Field Name	Data Type
PerformanceGradeID	AutoNumber
GradeDescriptor	Short Text

tblPosition	
Field Name	Data Type
PositionID	AutoNumber
Position	Short Text

tblStaff	
Field Name	Data Type
StaffRef	AutoNumber
Surname	Short Text
StaffDaysPerWeek	Number
PerformanceGradeID	Number
StaffStartDate	Date/Time
StaffLeavingDate	Date/Time
Telephone	Short Text

tblStaffPosition	
Field Name	Data Type
StaffRef	Number
PositionID	Number
PositionStartDate	Date/Time
PositionEndDate	Date/Time

Presence and length check

Only need 1 of but these are the two given in the requirements

tblStaff	
Field Name	Data Type
StaffRef	AutoNumber
Surname	Short Text

Format check

tblStaff	
Field Name	Data Type
StaffLeavingDate	Date/Time
Telephone	Short Text

General	
Field Size	20
Format	@
Input Mask	
Caption	
Default Value	
Validation Rule	Is Not Null
Validation Text	The surname must be present
Required	No

General	
Field Size	12
Format	@
Input Mask	00000\ 000000
Caption	

tblStaff	
Field Name	Data Type
PerformanceGradeID	Number
StaffStartDate	Date/Time

General	
Format	Short Date
Input Mask	
Caption	
Default Value	
Validation Rule	Is Not Null
Validation Text	The start date must be present
Required	No

Value lookup or range check

Field Name	Data Type
Surname	Short Text
StaffDaysPerWeek	Number

General Lookup

Field Size	Long Integer
Format	General Number
Decimal Places	Auto
Input Mask	
Caption	
Default Value	
Validation Rule	Between 2 And 5
Validation Text	Number of days must be 2, 3, 4 or 5
Required	No

Table lookup Any foreign key

Field Name	Data Type
StaffRef	AutoNumber
Surname	Short Text
StaffDaysPerWeek	Number
PerformanceGradeID	Number
StaffStartDate	Date/Time

General Lookup

Display Control	Combo Box
Row Source Type	Table/Query
Row Source	SELECT [tblGrade].[PerformanceG
Bound Column	1
Column Count	2
Column Heads	No
Column Widths	2.99cm;2.54cm
List Rows	16
List Width	5.529cm
Limit To List	Yes
...	..

Activity 3 – Queries and report

- (a) Create a query to display an alphabetically sorted list of positions that have at least two staff members currently in that position. It must show the name of the position and the number of staff members only.

Field:	Position	NumStaff: PositionID	PositionEndDate
Table:	tblPosition	tblPosition	tblStaffPosition
Total:	Group By	Count	Group By
Sort:	Ascending		
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:		>=2	Is Null
or:			

Position	NumStaff
Vending Machine Operator	3

- (b) Staff members currently employed can receive bonus payments:

- if they have worked for the company for at least 3 years the bonus is £1,000
- if they have worked for the company for less than 3 years the bonus is £200.

Create a query to display what the bonus will be for each current staff member with a performance grade of excellent.

Calculate:

- the number of years worked
- the bonus.

Display:

- the staff surname
- the staff start date
- the number of years worked
- the bonus.

Surname	StaffStartDate	YearsWorked	Bonus
Kayode	12/03/2018	4	£1,000.00
Lestrangle	12/03/2018	4	£1,000.00
Frost	12/03/2018	4	£1,000.00
Guy	18/08/2019	2	£200.00

Field:	Surname	StaffStartDate	YearsWorked: Int((Date()-[staffstartdate])/365.25)	Bonus: IIf([yearsworked]>=3,1000,200)	StaffLeavingDate	PerformanceGradeID
Table:	tblStaff	tblStaff			tblStaff	tblStaff
Sort:						
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:					Is Null	1
or:						

(c) Create a report that shows a list of positions.

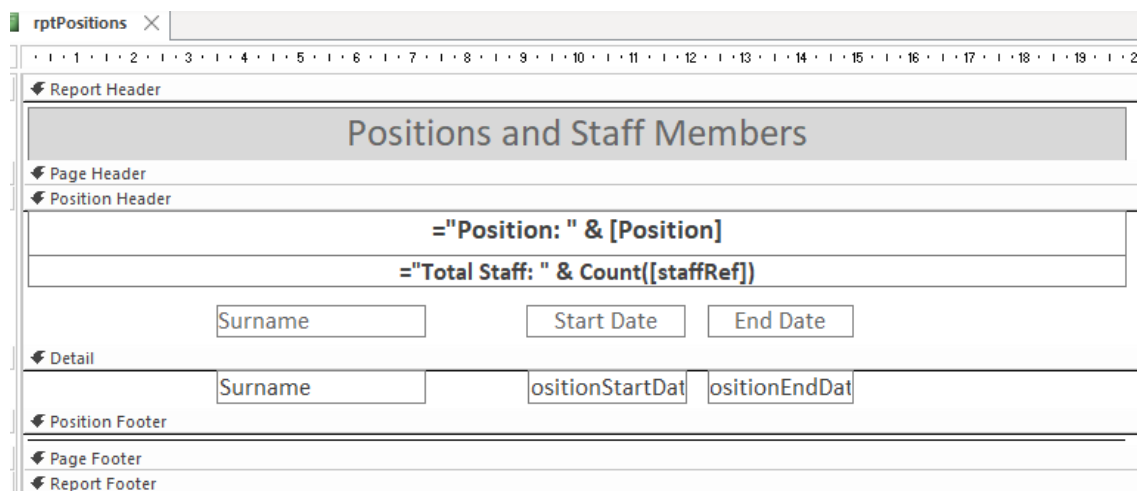
For each position, calculate the total number of current staff who hold or have held that position.

Display:

- a suitable report title
- the name of the position
- the surname of each staff member
- the position start date
- the position end date
- the total number of staff.

The report must fit on one page.

Position	Surname	PositionStartDate	PositionEndDate	StaffRef	StaffLeavingDate
tblPosition	tblStaff	tblStaffPosition	tblStaffPosition	tblStaff	tblStaff
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
					Is Null



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

Positions and Staff Members

Position: Manager

Total Staff: 1

Surname	Start Date	End Date
Kayode	13/03/2018	

Position: Office Assistant

Total Staff: 2

Surname	Start Date	End Date
Hartell	17/04/2020	
Ahmad	13/03/2018	16/04/2020

Position: Office Manager

Total Staff: 1

Surname	Start Date	End Date
Ahmad	17/04/2020	

Position: Sales Person

Total Staff: 1

Surname	Start Date	End Date
Kibbel	11/04/2019	

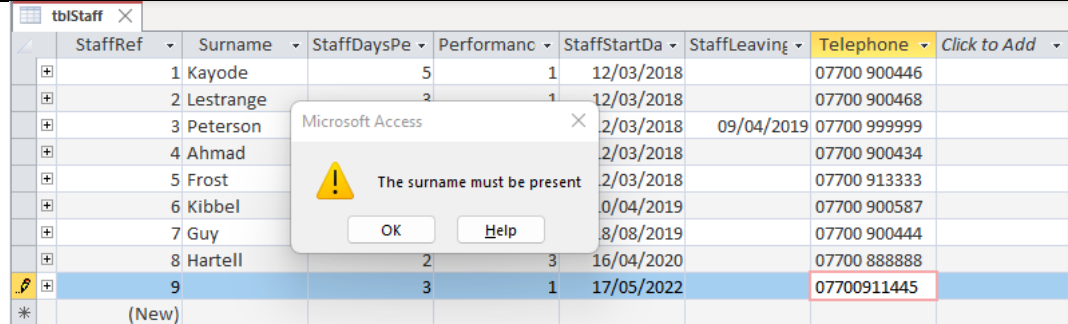
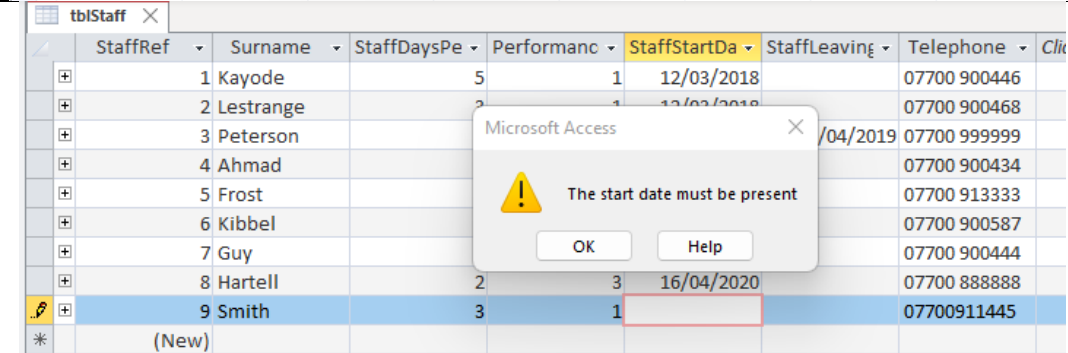
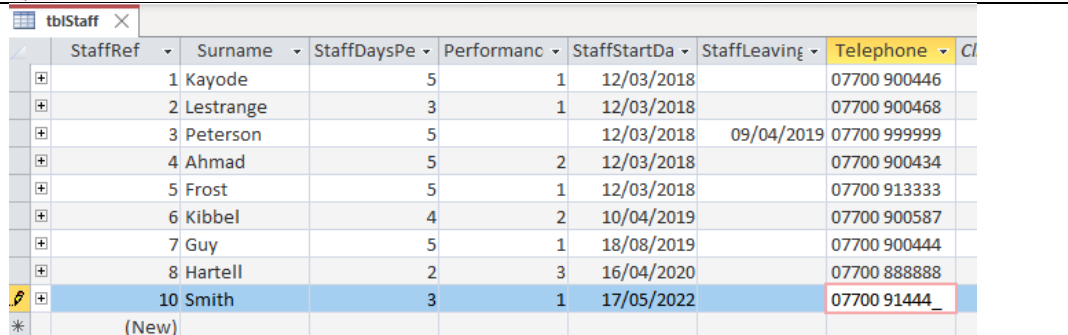
Position: Vending Machine Operator

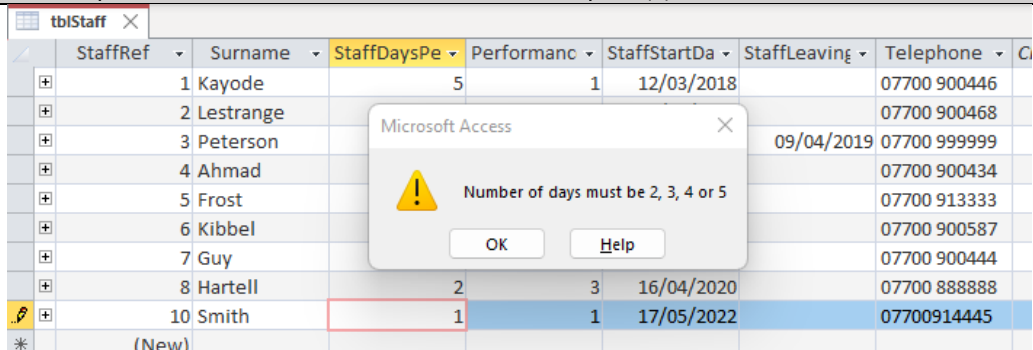
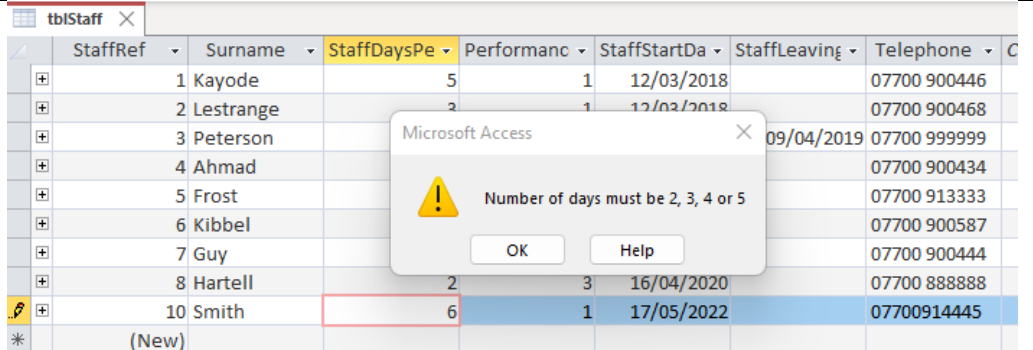
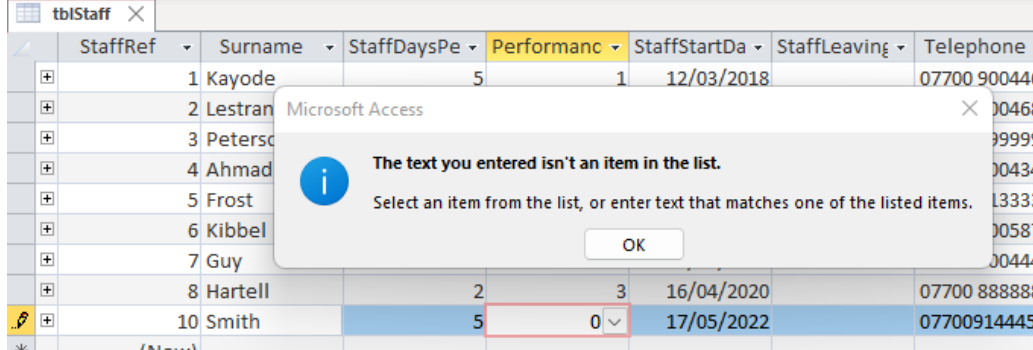
Total Staff: 3

Surname	Start Date	End Date
Guy	19/08/2019	
Frost	13/03/2018	
Lestrangle	13/03/2018	

Activity 4 – Structure testing

NOTE: The type of test and error column have been removed so that the contents are more easily readable in this format.

Test No	Test data	Expected results	Add screenshot(s) of the results of this test (and any retests) Ensure you show the test data used in the screenshot(s)
1	StaffRef: 9 Surname: StaffDaysPerWeek: 3 PerformanceGradelD: 1 (Excellent) StaffStartDate: 17/05/2022 StaffLeavingDate: blank Telephone: 07700 9114445	The error message “The surname must be present” to appear	 A screenshot of the 'tbiStaff' application interface. It shows a table with columns: StaffRef, Surname, StaffDaysPe, Performanc, StaffStartDa, StaffLeaving, Telephone, and Click to Add. The table contains 9 rows of data. Row 9 is highlighted in blue. A Microsoft Access error dialog box is overlaid on the table, displaying a yellow warning icon and the text 'The surname must be present'. The dialog has 'OK' and 'Help' buttons. The 'Surname' field in row 9 is empty, and the 'Telephone' field contains '07700911445'.
2	StaffRef: 9 Surname: Smith StaffDaysPerWeek: 3 PerformanceGradelD: 1 (Excellent) StaffStartDate: 17/05/2022 StaffLeavingDate: Telephone: 07700 9114445	The error message “The start date must be present” to appear	 A screenshot of the 'tbiStaff' application interface, similar to the first one. The table has 9 rows. Row 9 is highlighted in blue. A Microsoft Access error dialog box is overlaid, displaying a yellow warning icon and the text 'The start date must be present'. The dialog has 'OK' and 'Help' buttons. The 'StaffStartDa' field in row 9 is empty, and the 'Telephone' field contains '07700911445'.
3	StaffRef: 9 Surname: Smith StaffDaysPerWeek: 3 PerformanceGradelD: 1 (Excellent) StaffStartDate: 17/05/2022 StaffLeavingDate: Telephone: 07700 911444a	The user will not be able to input the a and will not be allowed to move on if there is not a number input	 A screenshot of the 'tbiStaff' application interface. The table has 10 rows. Row 10 is highlighted in blue. The 'StaffRef' field in row 10 contains the value '10'. The 'Surname' field contains 'Smith', 'StaffDaysPe' is '3', 'Performanc' is '1', 'StaffStartDa' is '17/05/2022', and 'Telephone' is '07700 91444_'. The 'StaffRef' field in the previous row (9) contains '9'.

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)
4	StaffRef: 9 Surname: Smith StaffDaysPerWeek: 1 PerformanceGradelD: 1 (Excellent) StaffStartDate: 17/05/2022 StaffLeavingDate: Telephone: 07700 9114445	The error message "Number of days must be 2, 3, 4 or 5" to appear	
5	StaffRef: 9 Surname: Smith StaffDaysPerWeek: 6 PerformanceGradelD: 1 (Excellent) StaffStartDate: 17/05/2022 StaffLeavingDate: Telephone: 07700 9114445	The error message "Number of days must be 2, 3, 4 or 5" to appear	
6	StaffRef: 9 Surname: Smith StaffDaysPerWeek: 5 PerformanceGradelD: 0 StaffStartDate: 17/05/2022 StaffLeavingDate: Telephone: 07700 9114445	An error message to appear telling the Performance Grade is not valid	

Part B

Activity 6 – Interface

Drinks form

Format	Data	Event	Other	All
Control Source	BrandID			
Row Source	SELECT tblBrand.BrandID, tblBrand.BrandName FROM tblBrand ORDER BY tblBrand			
Row Source Type	Table/Query			
Bound Column	1			
Limit To List	Yes			

Format	Data	Event	Other	All
Control Source	OperatorRef			
Row Source	SELECT tblOperator.OperatorRef, tblOperator.OperatorSurname, tblOperator.C			
Row Source Type	Table/Query			
Bound Column	1			
Limit To List	Yes			
Allow Value List Edits	Yes			

```
frmMachine frmMachine : cmdSave : On Click X
If IsNull([BrandID]) Then
    MsgBox
        Message You must select a brand
        Beep Yes
        Type None
        Title

Else If IsNull([PurchaseDate]) Or [PurchaseDate]>Date() Then
    MsgBox
        Message You must input the purchase date and it cannot be in the future.
        Beep Yes
        Type None
        Title

Else
    RunMenuCommand
        Command SaveRecord
    MsgBox
        Message The details of the new drinks machine has been saved
        Beep Yes
        Type None
        Title
    GoToRecord
        Object Type
        Object Name
        Record New
        Offset

End If
```

Meter reading form

Meter Readings

Select the machine ID.
Input the week beginning date
Input the meter reading
Input the money collected

Select the machine ID *

Week beginning *

Meter reading *

Money collected *

Highest reading

Drinks sold

Money expected

cboMachineID

Format Data Event Other All

Control Source	
Row Source	SELECT [tblMachine].[MachineID] FROM tblMachine;
Row Source Type	Table/Query
Bound Column	1
Limit To List	Yes
Allow Value List Editing	Yes

frmMeterReadings qryHighestMeterReading

tblMachineReading

- *
 - MachineID
 - WeekBeginning
 - MachineReading
 - MoneyCollected

Field:	MachineID	HighestReading: MachineReading
Table:	tblMachineReading	tblMachineReading
Total:	Group By	Max
Sort:		
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	[forms]![frmMeterReadings]![cboMachineID]	
or:		

Form Header

Meter Readings

Select the machine ID.
Input the week beginning date
Input the meter reading
Input the money collected

Detail

Select the machine ID	Unbound	*
Week beginning	Unbound	*
Meter reading	Inbound	*
Money collected	Inbound	*
Highest reading	=DLookup("HighestReading","qryHighestMeterReading")	
Drinks sold	=[meterReading]-[HighestReading]	
Money expected	=FormatCurrency([DrinksSold]*1.2,2)	
	=If([moneyexpected]-[moneyCollected]>10,"Call engineer","")	

frmMeterReadings frmMeterReadings : cboMachineID : After Update

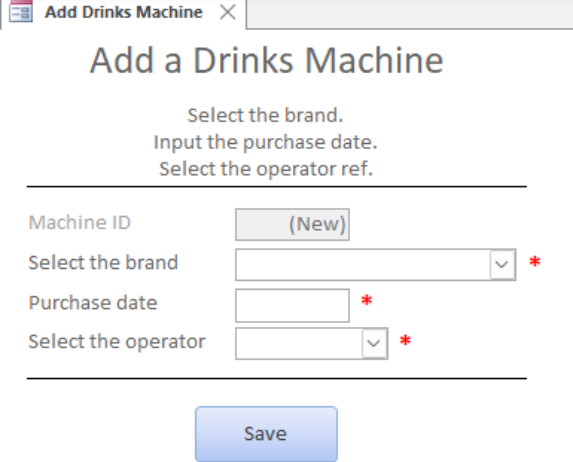
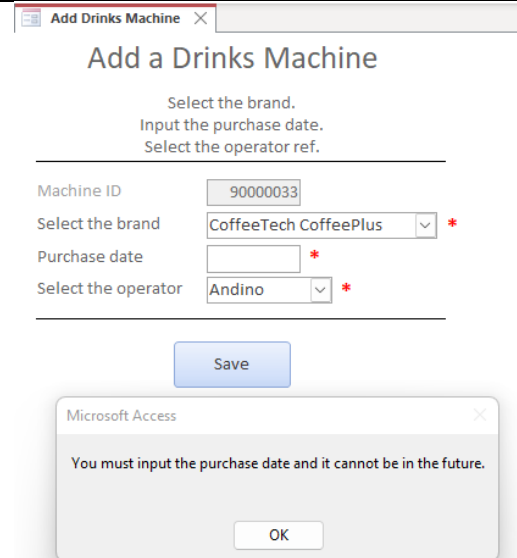
Requery

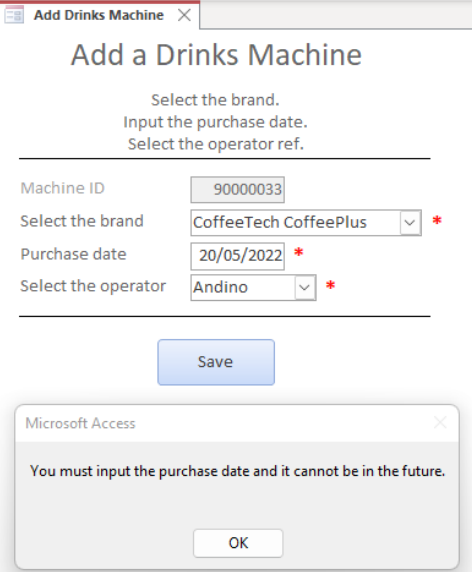
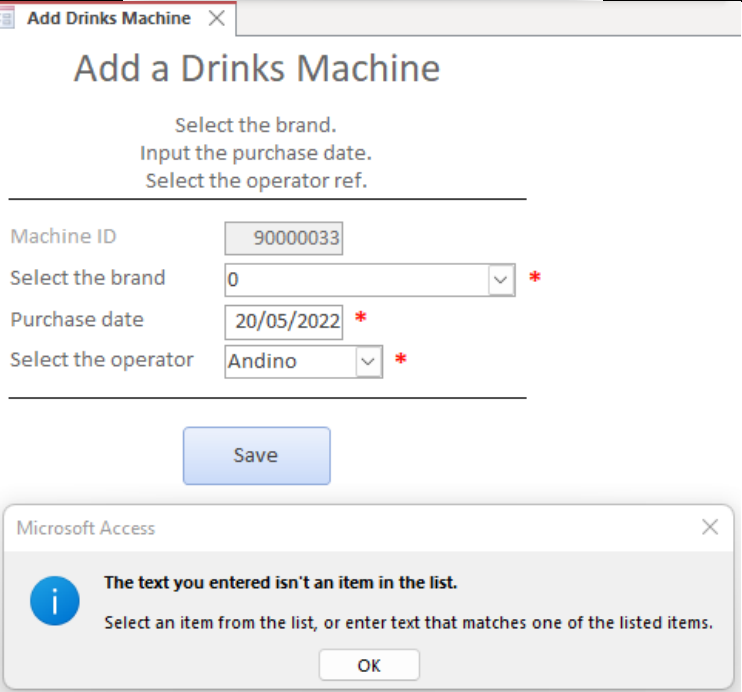
Control Name highestReading

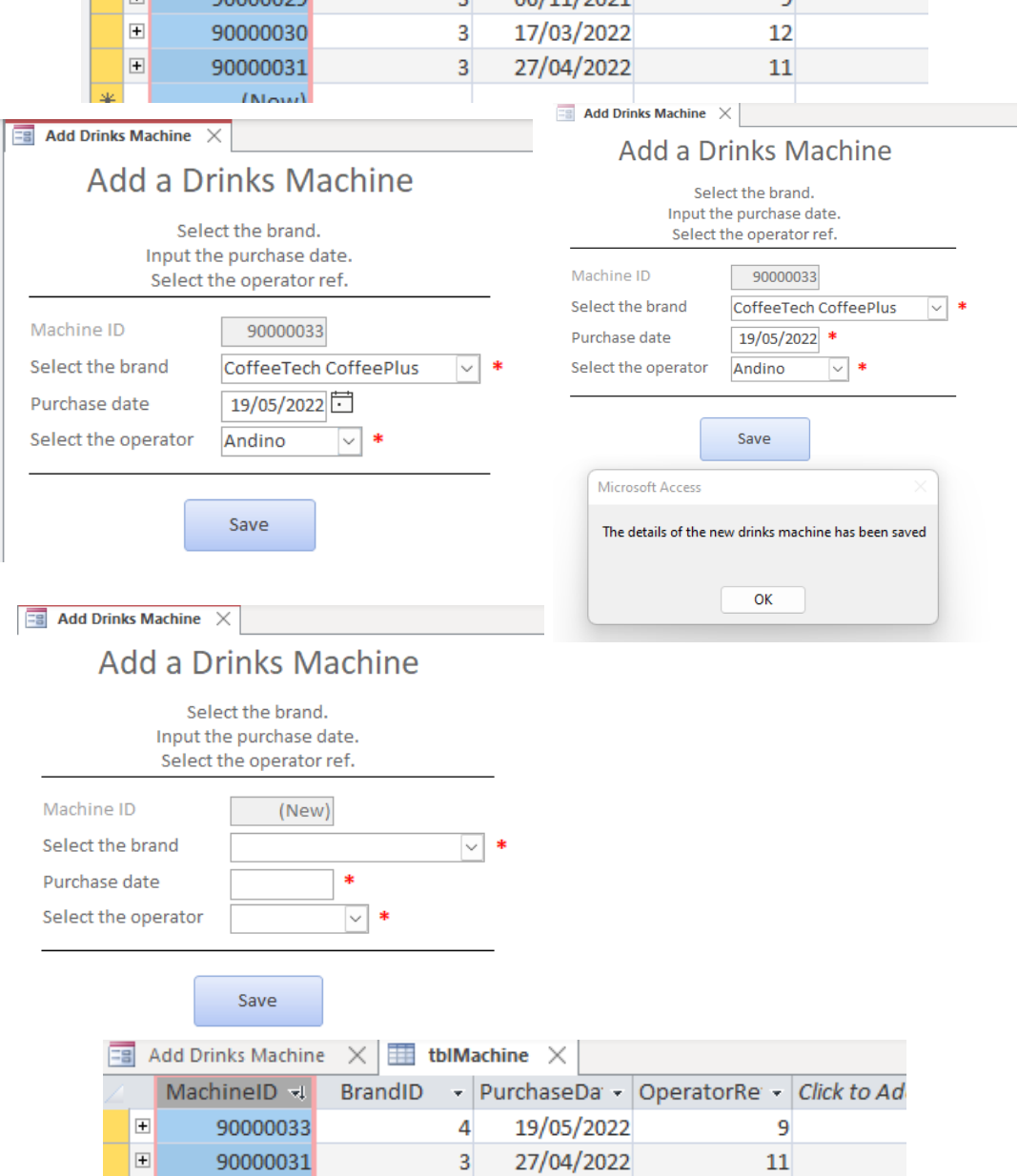
+ Add New Action

Activity 7 – Interface testing

NOTE: The type of test and error column have been removed so that the contents fit better on the screen.

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	Open the form	The form is ready for data entry	
2	MachineID: 90000033 Brand: CoffeeTech CoffeePlus (4) PurchaseDate: blank Opertor: Andino (9)	Error message to appear saying "You must input the purchase data and it cannot be in the future" to appear	

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	MachineID: 90000033 Brand: CoffeeTech CoffeePlus (4) PurchaseDate: 20/05/2022 Opertor: Andino (9)	Error message to appear saying "You must input the purchase data and it cannot be in the future" to appear	 <p>The screenshot shows the 'Add a Drinks Machine' form with the following fields: Machine ID (90000033), Select the brand (CoffeeTech CoffeePlus), Purchase date (20/05/2022), and Select the operator (Andino). A red asterisk is next to the purchase date field. A Microsoft Access dialog box is displayed with the message: "You must input the purchase date and it cannot be in the future." and an OK button.</p>
4	MachineID: 90000033 Brand: 0 PurchaseDate: 20/05/2022 Opertor: Andino (9)	Error message to appear saying "The text you entered isn't an item in the list" and "Select and item from the list, or enter text that matches one of the listed items." to appear	 <p>The screenshot shows the 'Add a Drinks Machine' form with the following fields: Machine ID (90000033), Select the brand (0), Purchase date (20/05/2022), and Select the operator (Andino). Red asterisks are next to the brand and purchase date fields. A Microsoft Access dialog box is displayed with the message: "The text you entered isn't an item in the list. Select an item from the list, or enter text that matches one of the listed items." and an OK button.</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)																								
5	MachineID: 90000033 Brand: CoffeeTech CoffeePlus (4) PurchaseDate: 19/05/2022 Opertor: Andino (9)	MachineID: 90000033 Brand: CoffeeTech CoffeePlus PurchaseDate: 19/05/2022 Opertor: Andino To be saved in tblMachine as a new record Save message to appear saying Form to be cleared	 <p>The screenshot shows the 'Add a Drinks Machine' form in a web application. At the top, there is a table with the following data:</p> <table border="1"> <thead> <tr> <th>MachineID</th> <th>BrandID</th> <th>PurchaseDate</th> <th>OperatorRe</th> </tr> </thead> <tbody> <tr> <td>90000030</td> <td>3</td> <td>17/03/2022</td> <td>12</td> </tr> <tr> <td>90000031</td> <td>3</td> <td>27/04/2022</td> <td>11</td> </tr> </tbody> </table> <p>Below the table is the 'Add a Drinks Machine' form. The form has the following fields:</p> <ul style="list-style-type: none"> Machine ID: 90000033 Select the brand: CoffeeTech CoffeePlus Purchase date: 19/05/2022 Select the operator: Andino <p>A 'Save' button is visible below the form. A Microsoft Access dialog box is shown with the message: 'The details of the new drinks machine has been saved'. Below this, the form is shown again with the Machine ID field set to '(New)' and the other fields empty. At the bottom, another table is shown with the following data:</p> <table border="1"> <thead> <tr> <th>MachineID</th> <th>BrandID</th> <th>PurchaseDate</th> <th>OperatorRe</th> </tr> </thead> <tbody> <tr> <td>90000033</td> <td>4</td> <td>19/05/2022</td> <td>9</td> </tr> <tr> <td>90000031</td> <td>3</td> <td>27/04/2022</td> <td>11</td> </tr> </tbody> </table>	MachineID	BrandID	PurchaseDate	OperatorRe	90000030	3	17/03/2022	12	90000031	3	27/04/2022	11	MachineID	BrandID	PurchaseDate	OperatorRe	90000033	4	19/05/2022	9	90000031	3	27/04/2022	11
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90000031	3	27/04/2022	11																								

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	MachineID: 90000001 Week beginning: 16/05/2022 Meter reading: 1933 Money collected: 109 Highest reading: blank Drinks sold: blank Money expected: blank Engineer: blank	Highest reading:1833 Drinks sold: 100 Money expected £120.00 Engineer: Call engineer	