

Criterion C: Development

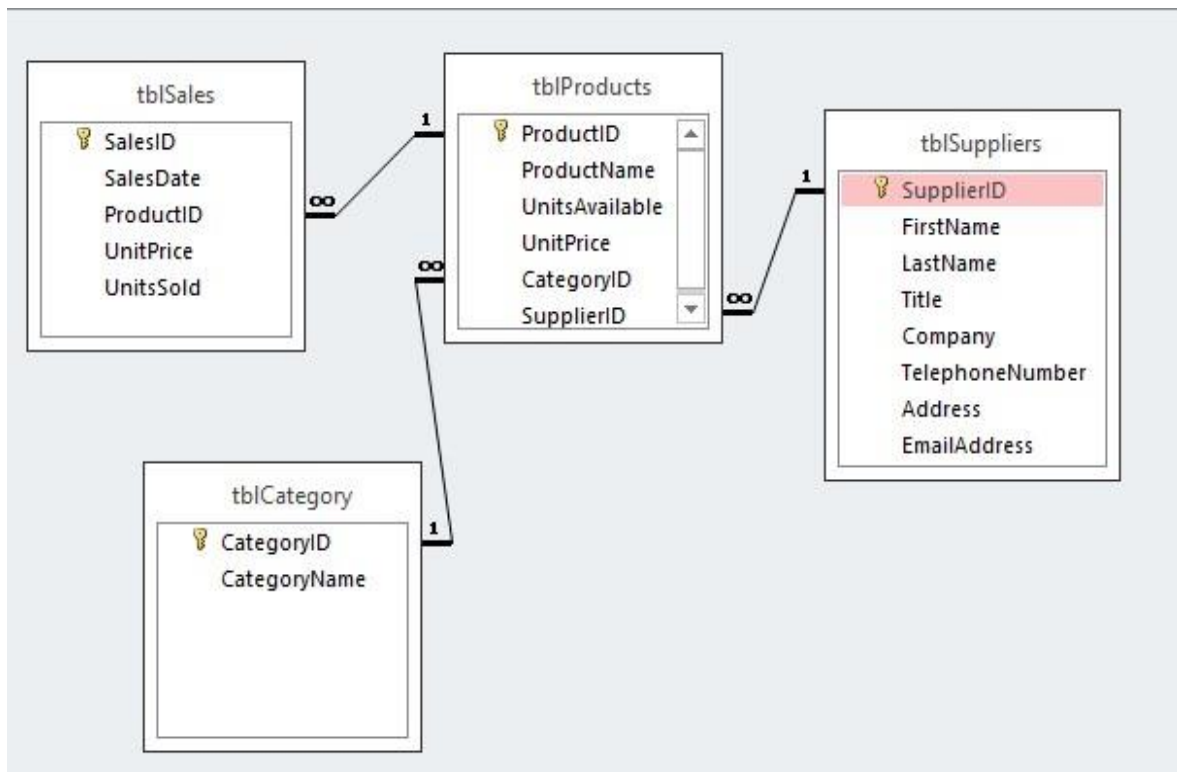
Techniques used to create the database

1. Database structure- Explanation, 4 related tables.
2. Queries , forms, macros and reports that were created
3. Visual Basic Component for the transaction.

Database Structure

The relational database created consists of 4 tables linked up as shown below. This structure was chosen so that when Nora inputs data into the database, she will not experience redundancies or inaccuracies, seeing as in a flat file database, redundancies would occur very often.

Table	Primary Key Field	Components of a record
Category	CategoryID	Various categories of the products
Products	ProductID	Product Details
Sales	SalesID	Input from a sale made in a day
Suppliers	SupplierID	Suppliers and their details



The CATEGORY table was incorporated to eliminate having to repeatedly type the Category Name into the Products table.

The SALES table is a transaction table that records the data from the sales made in the history of the tuckshop.

The PRODUCTS table is the table that records the data from all the products, both new and old, in the tuckshop. It is necessary because it is the table that relates the rest of the tables.

The SUPPLIERS table was included to eliminate the repetition of data that would occur if each product included all the supplier data.

The primary key fields uniquely identify each record in a table, and are also used in the linkages of the tables. These linkages create field in the related tables and act as secondary key fields in the tables that they are linked to.

How errors were reduced.

1. The appropriate data types were selected, so that errors would be reduced. For example in the FirstName field in SUPPLIERS, the data types selected was text.
2. Automatic entering of default values was employed. For example, the SalesDate in SALES has the formula Now(), which automatically inputs today's date from the computer's time.
3. Lookup lists were employed to ensure that only a restricted set of data could be inputted into the field, to reduce errors.
4. The field sizes of the fields were set according to what the field contained.

Field Name	Data Type
SupplierID	Text
FirstName	Text
LastName	Text
Title	Text
Company	Text
TelephoneNumber	Text
Address	Text
EmailAddress	Text

Field Prop

General Lookup	
Field Size	6
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	No
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	

This shows the field size reduced to 6.

- Referential integrity was ensured in the relationships, to make sure that the altering of a record in one table was reflected in the related table. Also, the cascading delete and update field options were selected in order to make sure that if a field was updated or deleted, the change would be reflected in the related fields. An example of such is illustrated in the screenshot below.

Edit Relationships ? X

Table/Query: **tblSuppliers** Related Table/Query: **tblProducts**

SupplierID **SupplierID**

☒ Enforce Referential Integrity
☒ Cascade Update Related Fields
☒ Cascade Delete Related Records

Relationship Type: **One-To-Many**

OK
Cancel
Join Type..
Create New..

6. In order for the currency in the database to remain in Ghana Cedis, which is the currency used in Ghana, the following formula had to be incorporated.

Field Name	Data Type
ProductID	Text
ProductName	Text
UnitsAvailable	Number
UnitPrice	Currency
CategoryID	Text
SupplierID	Text

General	Lookup
Format	"GH¢ "#,###,##"
Decimal Places	2
Input Mask	
Caption	
Default Value	

The formula is displayed here.

7. Embedded macros were used throughout the database.

A. Creation of the product sales form.

1. Select Query showing the Information on the Detailed Sales of the tuckshop

The screenshot shows the main interface of the 'TUCKSHOP MONITORING SYSTEM'. At the top, the title 'TUCKSHOP MONITORING SYSTEM' is displayed in a green box, with a 'Quit' button to its right. Below the title, there are six green buttons arranged in two rows: 'View Product Summary', 'Search Product', 'View Detailed Sales Report' in the first row, and 'Edit Products', 'Edit Suppliers', 'Input Sale' in the second row. To the right of these buttons is the logo of 'TEMA INTERNATIONAL SCHOOL'. A blue arrow points from a text box to the 'View Detailed Sales Report' button. The text box contains the text: 'This button runs the query below'. At the bottom of the window, there is a status bar with 'Record: 1 of 1', a 'No Filter' indicator, and a search field.

This is a dialog box titled 'Enter Parameter Value' with a question mark icon and a red close button. It contains a label 'From Date' above a text input field. Below the input field are two buttons: 'OK' and 'Cancel'. A blue arrow points from a text box to the input field. The text box contains the text: 'This is displayed when the user clicks on the button above'.

The user, in this case Miss Kepomey, enters the first date for the period whose sales she wants to view.

This is a dialog box titled 'Enter Parameter Value' with a question mark icon and a red close button. It contains a label 'To Date' above a text input field. Below the input field are two buttons: 'OK' and 'Cancel'. A blue arrow points from a text box to the input field. The text box contains the text: 'This is displayed when the user enters the first date.'

Miss Kepomey enters the last date for the period whose sales she wants to view.

<div> <div> tblProducts <ul style="list-style-type: none"> * ProductID ProductName UnitsAvailable UnitPrice CategoryID SupplierID </div> <div> tblSales <ul style="list-style-type: none"> * SalesID SalesDate ProductID UnitPrice UnitsSold </div> </div>						
<div> <div>Field:</div> <div>SalesID</div> <div>Table: tblSales</div> <div>Sort:</div> <div>Show: <input checked="" type="checkbox"/></div> <div>Criteria: <input checked="" type="checkbox"/></div> <div>or:</div> </div> <div> <div>SalesDate</div> <div>ProductID</div> <div>UnitPrice</div> <div>UnitsSold</div> <div>Subtotal: [tblSales].UnitsSold*[tblSales].UnitPrice</div> </div>						
<div> <div>Between [From Date] And [To Date]</div> <div><input checked="" type="checkbox"/></div> <div><input checked="" type="checkbox"/></div> <div><input checked="" type="checkbox"/></div> <div><input checked="" type="checkbox"/></div> <div><input checked="" type="checkbox"/></div> <div><input checked="" type="checkbox"/></div> </div>						

The query shows the background behind the report.

OpenReport

Report Name rptMonthlySales

View Report

Filter Name

Where Condition

Window Mode Normal

This shows the embedded macro behind the generating of the report.



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Sales

Back

SalesID	<input type="text" value="SAL002"/>	New
SalesDate	<input type="text" value="03-Jun-13"/>	Add
ProductID	<input type="text" value="PDCT016"/>	Delete
ProductName	<input type="text" value="Ceres Red Grape"/>	View Products
UnitPrice	<input type="text" value="GHC 5.50"/>	
UnitsSold	<input type="text" value="4"/>	
FinalPrice	<input type="text" value="GHC 22.00"/>	

< Back

Next >

This is the sales form used to enter data on sales into the database. The various functions are performed using the buttons on the form. The NEW button is used to input a new record. The ADD button is used to add the record. The DELETE button is used to delete a record. The BACK button is used to close the form. The BACK and NEXT buttons at the bottom of the form are used to navigate through the records. The VIEW PRODUCTS button is used to verify if the ProductID corresponds to the product in question. Below is the visual basic for applications coding for the buttons.

Option Compare Database

```

Private Sub comAdd_Click()

    CurrentDb.Execute "INSERT INTO tblSales(ProductID, UnitPrice, UnitsSold) " &
        " VALUES('" & Me.cmbproductid & "','" & Me.txtUnitPrice_Products & "','" & Me.txtNosold & "'"
    'Rem Reduce the quantity of the product in the products table
    CurrentDb.Execute "UPDATE tblProducts SET UnitsAvailable = UnitsAvailable - " & Me.txtNosold & " WHERE ProductID = '" & Me.cmbproductid & "'"

End Sub

Private Sub comClose_Click()
    DoCmd.Close
End Sub

```

←

This part of the code represents the closure of the form.

↗

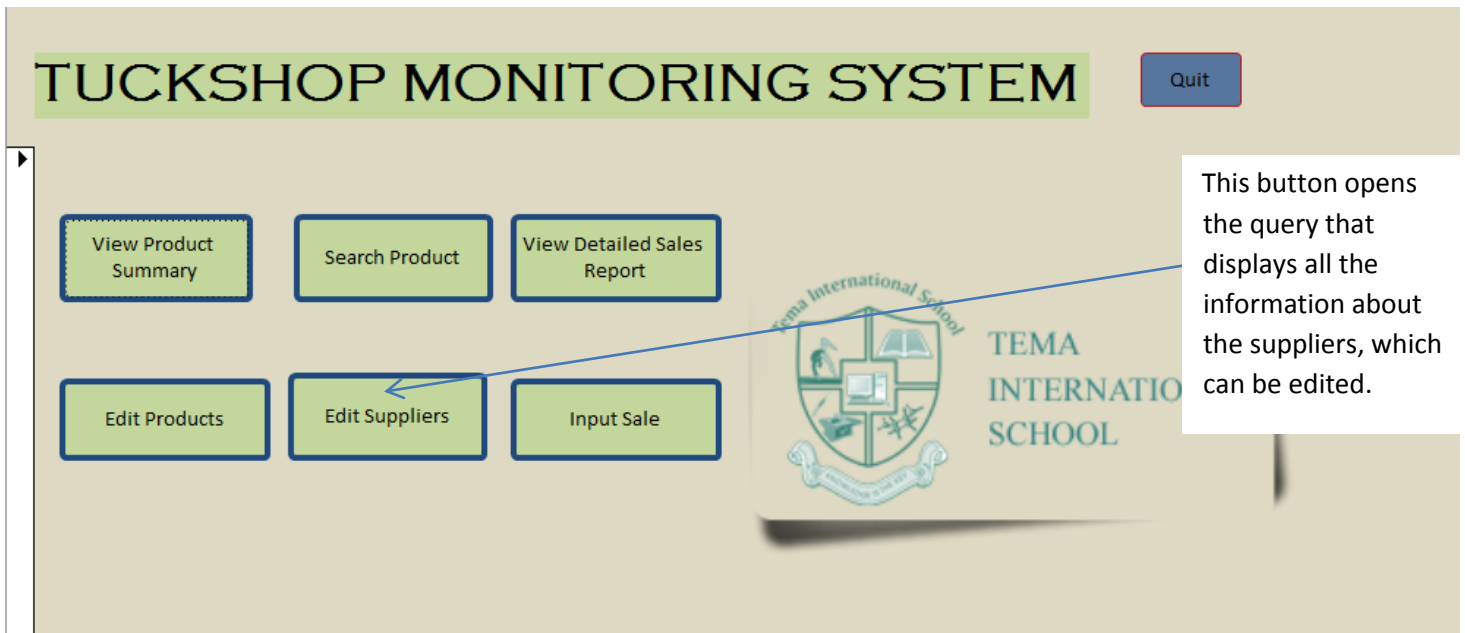
This part of the code represents the insertion of the value typed onto the sales form into the sales table

↗

This part of the code represents the reduction of the quantity in the products table when an item is bought.

In order to be sure that the IDs of the products are correct, Miss Kepomey clicks the view products button, which gives her access to the products summary report, which gives her the information she needs.

B. Creation of Suppliers form



The select query below displays the information about the suppliers for Miss Kepomey when she clicks the button.

	<div> <div> tblSuppliers <ul style="list-style-type: none"> * SupplierID FirstName LastName Title Company TelephoneNumber Address EmailAddress </div> <div> tblProducts <ul style="list-style-type: none"> * ProductID ProductName UnitsAvailable UnitPrice CategoryID SupplierID </div> </div>						
	<div> <div> tblSuppliers <ul style="list-style-type: none"> * SupplierID FirstName LastName Title Company TelephoneNumber Address EmailAddress </div> <div> tblProducts <ul style="list-style-type: none"> * ProductID ProductName UnitsAvailable UnitPrice CategoryID SupplierID </div> </div>						
Field:	SupplierID	FirstName	LastName	Title	Company	TelephoneNumber	Address
Table:	tblSuppliers	tblSuppliers	tblSuppliers	tblSuppliers	tblSuppliers	tblSuppliers	tblSuppliers
Sort:							
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:							
or:							

Below is the embedded macro behind the “Edit Suppliers” button that opens the suppliers form.

OpenForm

Form Name frmAddSupplier

View Form

Filter Name

Where Condition

Data Mode

Window Mode Normal

The suppliers form below is used to enter data on suppliers into the database.



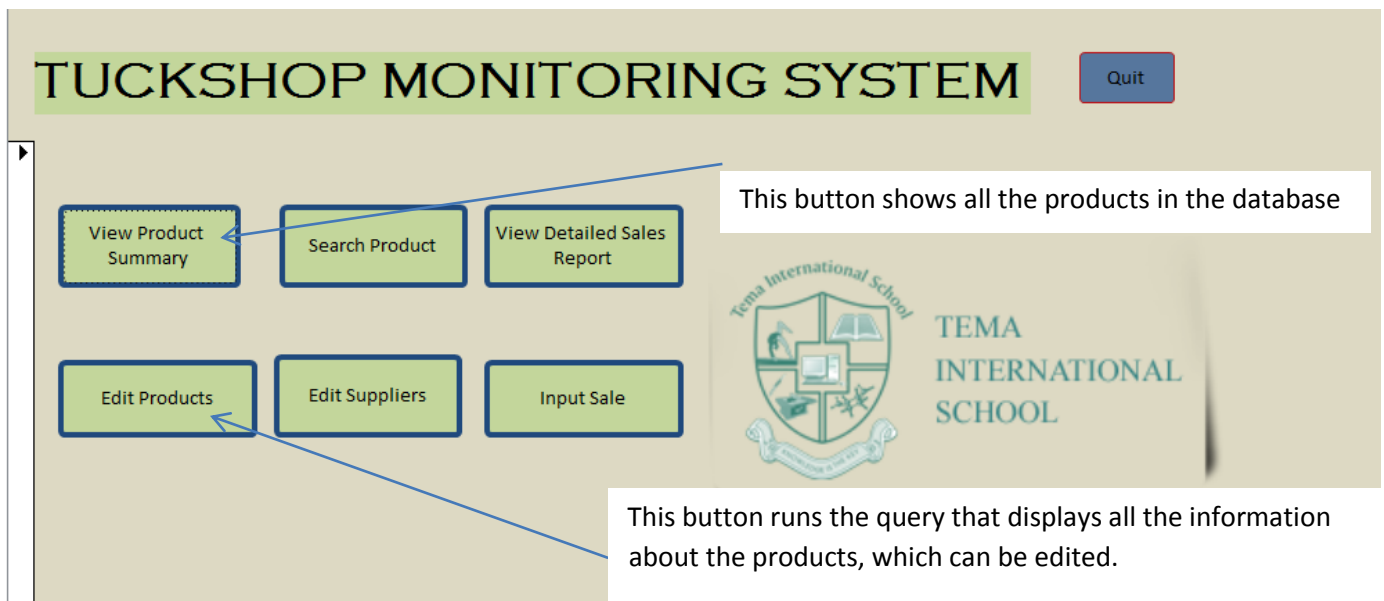
The screenshot shows a web-based form for adding a supplier. At the top left is the logo for Tema International School. The title 'TT Brothers Limited' is displayed in large orange text. A 'Back' button is in the top right. The form fields are as follows:

Field	Value	Action
SupplierID	SUP001	New
FirstName	Doris	Delete
LastName	Gyamfi	Save
Title	Miss	
Company	TT Brothers Limited	
TelephoneNumber	(+233) 30 3304 481	
Address	Purejoy House Tema Aflao Road P.O. Box Co 2044 Tema	
EmailAddress	info@ttbrotherslimited.com	

At the bottom, there are navigation buttons: First, Back, Next, and Last.

The various functions are performed using the buttons on the form. The NEW button is used to input a new record. The SAVE button is used to add the record. The DELETE button is used to delete a record. The BACK button is used to close the form. The FIRST, LAST, BACK and NEXT buttons are used to navigate through the records. The buttons all have embedded macros.

C. Creation of product list



For the product list, the report below is generated.

This button goes back to the previous menu

<i>Products Summary</i>				Back
ProductName	ProductID	Unit Price	UnitsAvailable	
7up	PDCT001	GH¢ 2.00	29	
ABRO Professional Apresto Spray Starch	PDCT002	GH¢ 5.00	3	
Always Cool Mint Flavour Candy	PDCT003	GH¢ .10	40	
Always Ultra Sanitary Pad	PDCT004	GH¢ 2.00	5	
Axe Dark Temptation Deodorant	PDCT005	GH¢ 7.00	3	
Belaqua Water	PDCT006	GH¢ 1.00	24	
Bounty Bar	PDCT007	GH¢ 2.50	47	
Brownie Cookies	PDCT008	GH¢ 6.00	9	
Camel Powerful Antiseptic (medium)	PDCT009	GH¢ 3.00	2	
Caprisun Super V Apple	PDCT010	GH¢ 2.00	12	
Caprisun Super V Berry	PDCT011	GH¢ 2.00	14	
Caprisun Super V Fruit Punch	PDCT012	GH¢ 2.00	27	
Ceres Apple	PDCT013	GH¢ 5.50	4	
Ceres Cranberry and Kiwi	PDCT014	GH¢ 5.50	5	
Ceres Guava	PDCT015	GH¢ 5.50	6	

This shot below shows the embedded macro behind the “view product summary button”.

Report Name rptProductsSummary
View Report
Filter Name
Where Condition
Window Mode Normal

D. Creation of Product edit form

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Back

ProductID	PDCT001	New
ProductName	7up	Add
UnitsAvailable	29	Delete
UnitPrice	GHC 2.00	Suppliers
CategoryID	CAT004	New stock
SupplierID	SUP002	

First < Back Next > Last

This is the product form used to enter data on products into the database. The various functions are performed using the buttons on the form. The buttons all have embedded macros. The NEW button is used to input a new record in the products table. The SAVE button is used to save the changes to a record or add a new record. The DELETE button is used to delete a record. The BACK button is used to close the form and go back to the previous menu. The FIRST, LAST, BACK and NEXT buttons are used to navigate through the records. The SUPPLIERS button is used to view the suppliers. The NEW STOCK button is used to input new arrived stock into the products table. This button opens a form that inputs the changes in the products table. Below is the form:



The form is titled "Update Stock" in large orange text. In the top left corner is the TEMA International School logo, which includes a shield with a cross and the text "TEMA INTERNATIONAL SCHOOL". Below the logo, there are two input fields: "Product ID" with a dropdown arrow and "Number Received" with a text box. To the right of these fields is a green button labeled "Back".

Once the data has been inputted, the user presses ENTER, and then the change is made. The BACK button goes back to the previous menu. Below is the visual basic for applications code.

```

txtNoInput
AfterUpdate

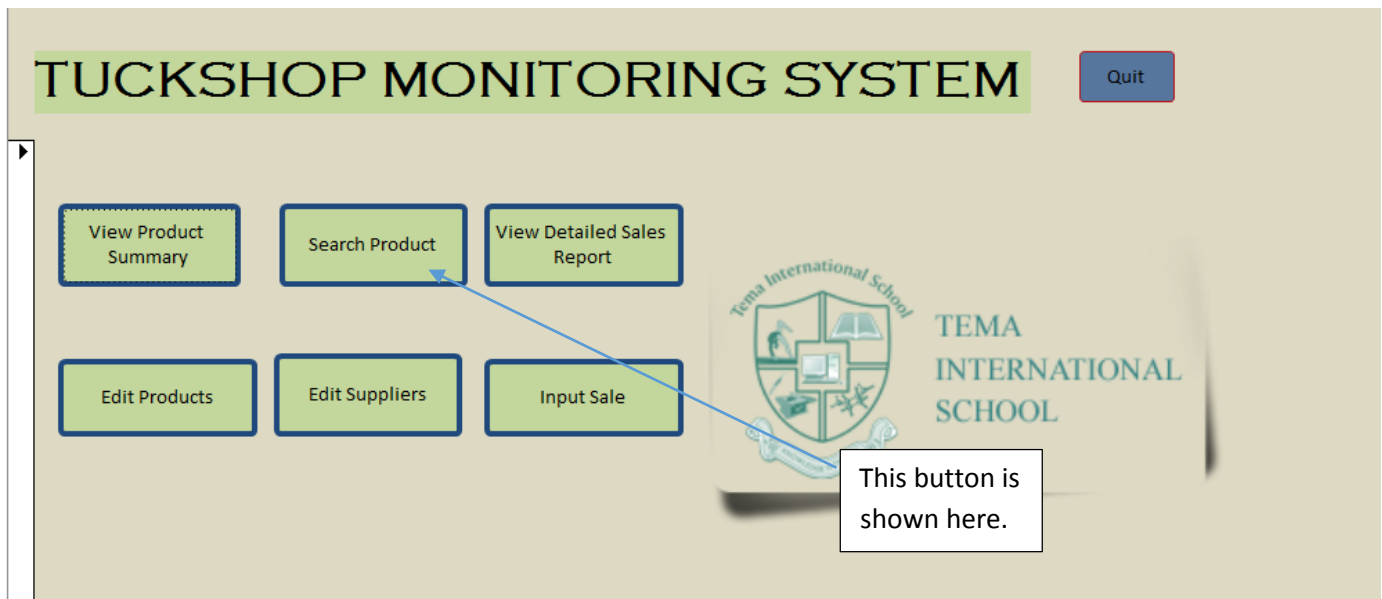
Option Compare Database

Private Sub txtNoInput_AfterUpdate()
CurrentDb.Execute "UPDATE tblProducts SET UnitsAvailable = UnitsAvailable + " & Me.txtNoInput & " WHERE ProductID = '" & Me.cmbProductIDUP & "'"
End Sub

```

This part of the code represents the increment of the quantity in the products table when new items arrive.

To search for a product, Nora simply clicks on the Search Product Button.



This is displayed when the she clicks on the button.

The screenshot shows a dialog box titled 'Enter Parameter Value'. It has a question mark icon and a close button (X) in the top right corner. The main area of the dialog box contains the text 'Type the Product ID' above a text input field. At the bottom of the dialog box, there are two buttons: 'OK' and 'Cancel'.

This is displayed when the user clicks the button, so she can enter the Product ID.

Below is the query that is run when she clicks on the button.

The screenshot shows a database query window. At the top, a box labeled 'tblProducts' contains a list of fields: ProductID (marked with a primary key icon), ProductName, UnitsAvailable, UnitPrice, CategoryID, and SupplierID. Below this, a query grid is visible with the following columns: Field, Table, Sort, Show, and Criteria. The 'Field' column contains 'ProductID', 'ProductName', 'UnitsAvailable', and 'UnitPrice'. The 'Table' column contains 'tblProducts' for all four fields. The 'Sort' column is empty. The 'Show' column has checkboxes, all of which are checked. The 'Criteria' column contains '[Type the Product ID]' for ProductID and is empty for the others.

Field:	Table:	Sort:	Show:	Criteria:
ProductID	tblProducts		<input checked="" type="checkbox"/>	[Type the Product ID]
ProductName	tblProducts		<input checked="" type="checkbox"/>	
UnitsAvailable	tblProducts		<input checked="" type="checkbox"/>	
UnitPrice	tblProducts		<input checked="" type="checkbox"/>	

The query opens the form below.

The screenshot shows a user-friendly form for adding a product. At the top left is the TEMA International School logo. To its right is the '7up' logo. In the top right corner is a green 'Back' button. The form contains four input fields: ProductID (with the value 'PDCT001'), ProductName (with the value '7up'), UnitsAvailable (with the value '29'), and UnitPrice (with the value 'GHC 2.00').

E. User friendly Interface: Main Menu

The menu was designed to make the experience easier, in order to make the usage of the database more convenient for Miss Kepomey. The buttons allow for the smooth flow of events as Miss Kepomey navigates through the system.

TUCKSHOP MONITORING SYSTEM

Quit

View Product
Summary

Search Product

View Detailed Sales
Report

Edit Products

Edit Suppliers

Input Sale



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Products Summary

Back

ProductName	ProductID	Unit Price	UnitsAvailable
7up	PDCT001	GH¢ 2.00	29
ABRO Professional Apresto Spray Starch	PDCT002	GH¢ 5.00	3
Always Cool Mint Flavour Candy	PDCT003	GH¢ .10	40
Always Ultra Sanitary Pad	PDCT004	GH¢ 2.00	5
Axe Dark Temptation Deodorant	PDCT005	GH¢ 7.00	3
Belaqua Water	PDCT006	GH¢ 1.00	24
Bounty Bar	PDCT007	GH¢ 2.50	47
Brownie Cookies	PDCT008	GH¢ 6.00	9
Camel Powerful Antiseptic (medium)	PDCT009	GH¢ 3.00	2
Caprisun Super V Apple	PDCT010	GH¢ 2.00	12
Caprisun Super V Berry	PDCT011	GH¢ 2.00	14
Caprisun Super V Fruit Punch	PDCT012	GH¢ 2.00	27
Ceres Apple	PDCT013	GH¢ 5.50	4
Ceres Cranberry and Kiwi	PDCT014	GH¢ 5.50	5

Also,
navigation
button such
as this one
allow sooth
flow from one
form to the
other.



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TT Brothers Limited

Back

SupplierID	<input type="text" value="SUP001"/>	<input type="button" value="New"/>
FirstName	<input type="text" value="Doris"/>	<input type="button" value="Delete"/>
LastName	<input type="text" value="Gyamfi"/>	<input type="button" value="Save"/>
Title	<input type="text" value="Miss"/>	
Company	<input type="text" value="TT Brothers Limited"/>	
TelephoneNumber	<input type="text" value="(+233) 30 3304 481"/>	
Address	<input type="text" value="Purejoy House Tema Aflao Road P.O. Box Co 2044 Tema"/>	
EmailAddress	<input type="text" value="info@ttbrotherslimited.com"/>	

First

Back

Next

Last

These buttons allow for the smooth navigation throughout the records.

WORD COUNT: 996