National Diploma IT Practitioners

Software Development

Unit 6

System Analysis and Design

Task3

System Specification

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1 Introduction

This task aims to record the result of Coburns Grocery Delivery System (CGDS) system investigation. The information collected using interview, questionnaire and the results of the feasibility study will be recorded in an analytical way.

I will draw Data Flow Diagrams to show the flow of information into the CGDS. The next step will be identifying the entities within the system and their attributes. The relationship between the systems entities will then be established by drawing the entity relationship diagram of the system. The attributes of the CGDS entities will be used to build the system's data dictionary.

All of the above will be used to design and develop a prototype of the system. The user interface will be designed. A test plan will be develop to specify how the system will be tested. Once the prototype is implemented using Microsoft Access, a test log will be produced based on the test plan and evidence of the test results will be illustrated.

Finally the system will be examined using scenario testing to make sure that the CGDS satisfies Mrs. Coburn requirements.

2 Data Flow Diagram

2.1 Context Diagram (Level 0)

The following diagram shows the general flow of data between the CGDS and other systems. It was produced based on the system investigation results (see task 2).

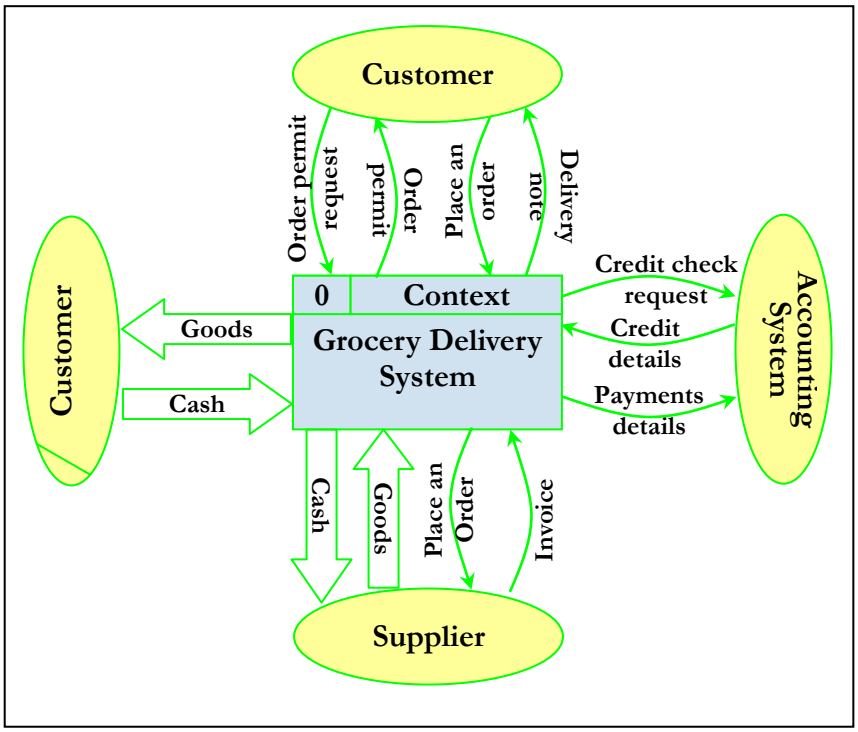

Figure 1(Context Diagram)

2.2 Data Flow Diagram (Level 1)

The following diagram is a detailed illustration of the data flow within the system and between the system and the external systems and entities

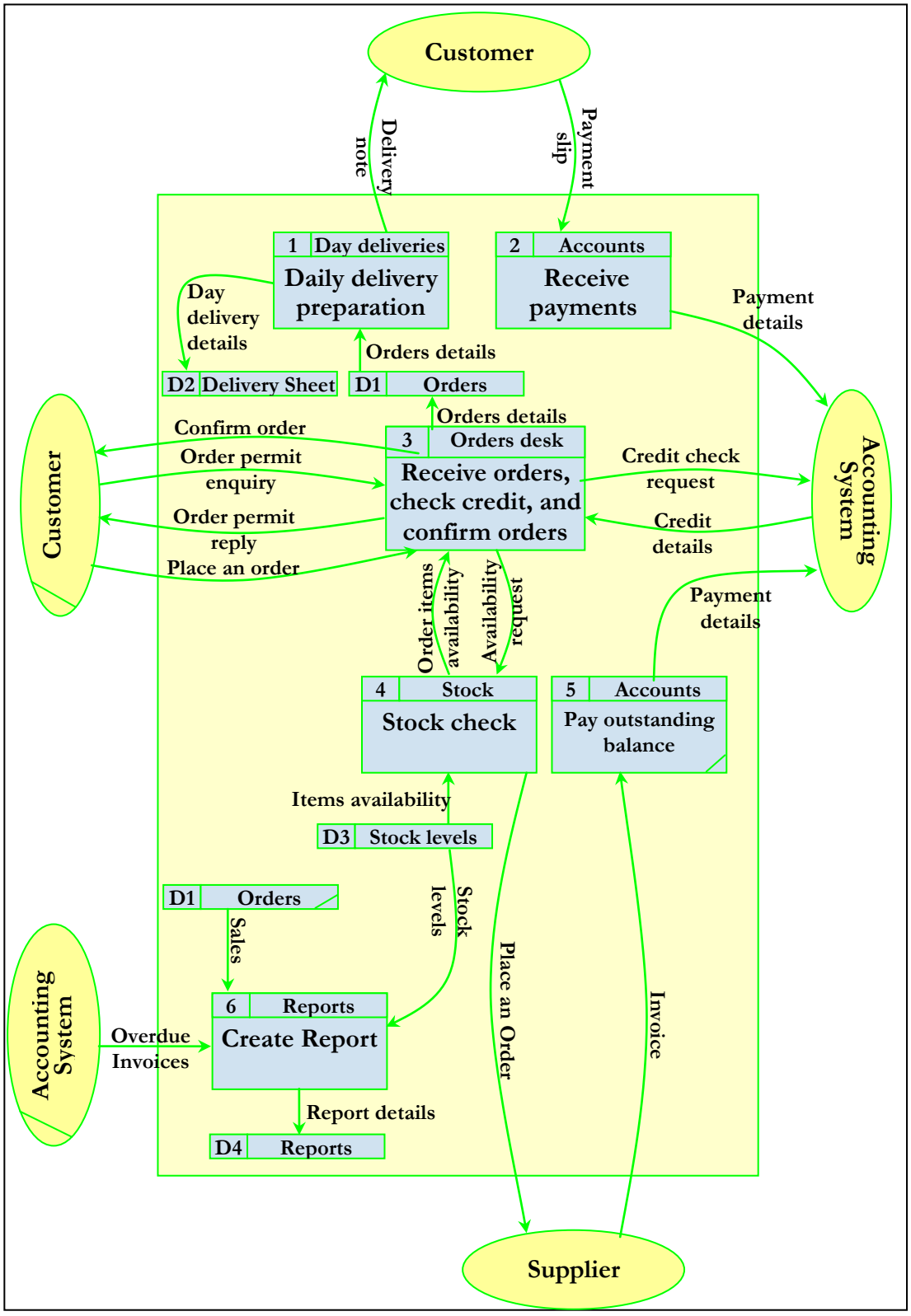

Figure 2(Level 1 Diagram)

3 Structure Diagram JSP

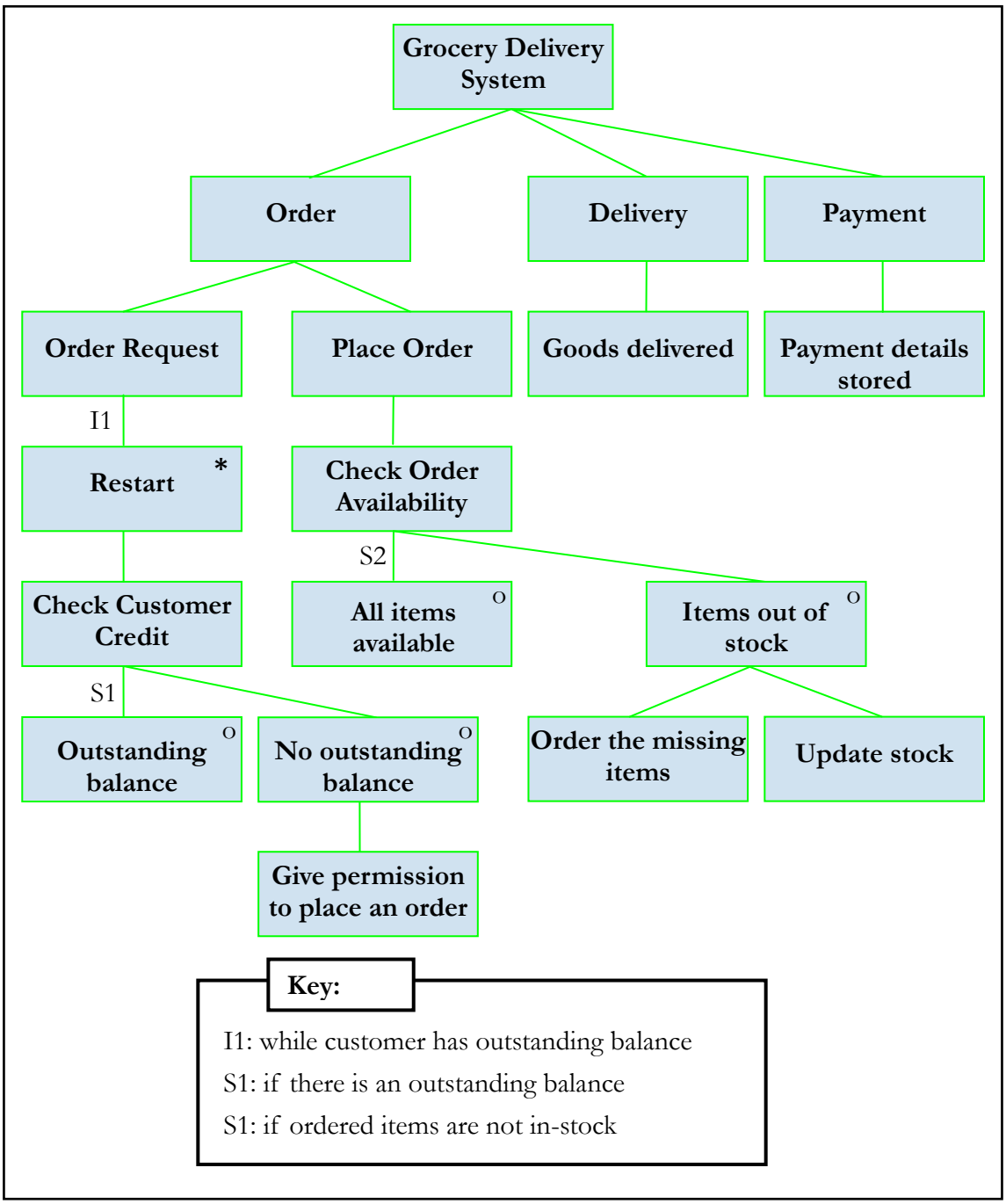

Figure 3(Jackson structured Diagram (JSD))

4 Entity Relationship Model

The entities that compose the Coburn's Grocery Delivery System (CGDS) are listed in table 1

Entity Name	Attributes							
Customer	**ID**	Fore name	Surname	address	town	county	country	Post code
	phone number	fax number	email	Outstanding balance				
Supplier	**ID**	contact name	address	town	county	country	post code	phone number
	fax number	email	home page	Company Name				
Order	**ID**	**Customer ID**	Order Date	Required Date	Delivered Date	**Delivery Person ID**		
Order details	**Order ID**	**Product ID**	Quantity	Discount				
Product	**ID**	Product name	**Supplier ID**	Quantity per unit	Unit price	Units in stock	Units on order	
Delivery person	**ID**	Fore name	surname	Home phone	extension	address	town	county
	Post code	Hire date	Report to	salary				

Table 1(CGDS Entities)

Note: primary keys are underlined with solid lines and foreign keys underlined with dotted lines.

4.1 Entity Relationship Diagram

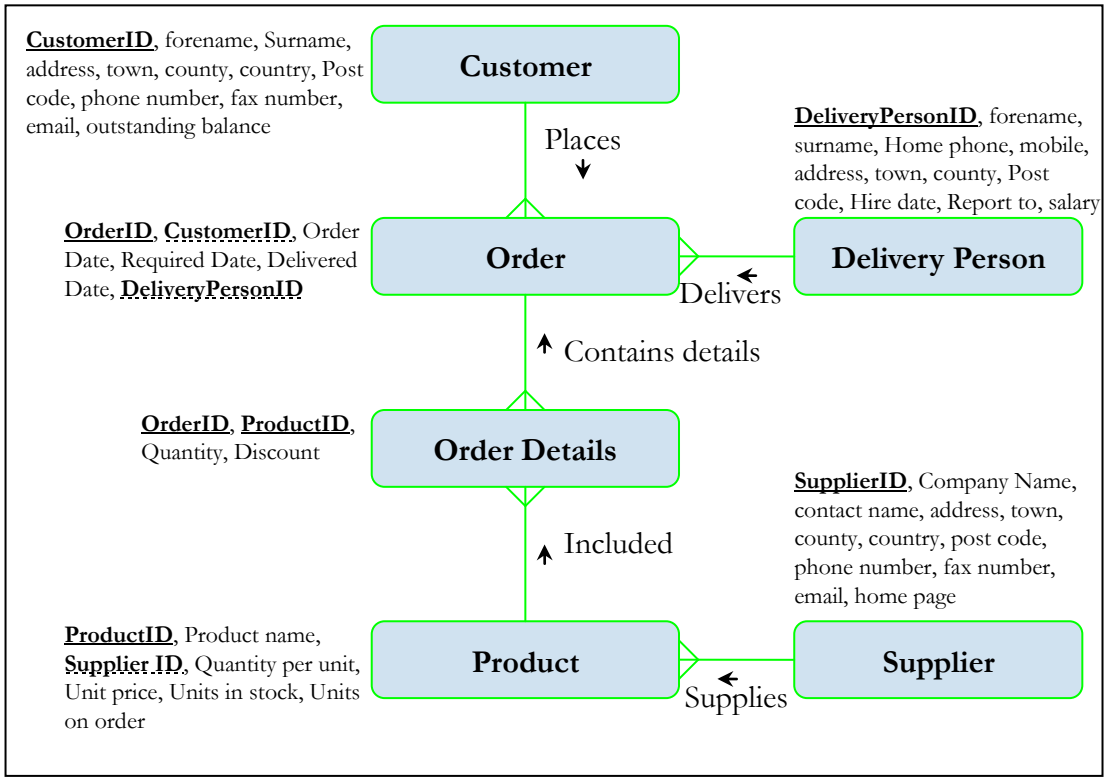

Figure 4(Entity Relationship Diagram of CGDS)

4.2 Data Dictionary

4.2.1 Customer Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
CustomerID	AutoNumber	Long Integer	#####	"00000"
Forename	Text	15	N/A	N/A
Surname	Text	15	N/A	N/A
Address	Text	60	N/A	N/A
Town	Text	15	N/A	N/A
County	Text	15	N/A	N/A
Country	Text	15	N/A	N/A
Post Code	Text	15	N/A	N/A
Phone Number	Text	15	N/A	N/A
Fax Number	Text	15	N/A	N/A
Email	Text	15	N/A	N/A
Outstanding Balance	Currency	N/A	Currency	N/A

Table 2 (Customer Entity Data Dictionary)

4.2.2 Order Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
OrderID	AutoNumber	Long Integer	#####	"00000"
CustomerID	Number	Long Integer	#####	"00000"
Order Date	Date/Time	Date	dd-mmm-yyyy	N/A
Required Date	Date/Time	Date	dd-mmm-yyyy	N/A
Delivered Date	Date/Time	Date	dd-mmm-yyyy	N/A
DeliveryPersonID	Number	Long Integer	#####	"00000"

Table 3(Order Entity Data Dictionary)

4.2.3 Order Details Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
OrderID	Number	Long Integer	#####	"00000"
ProductID	Number	Long Integer	#####	"00000"
Quantity	Number	Integer	General Number	N/A
Discount	Number	Single	Percentage	"00%"

Table 4(Order Details Entity Data Dictionary)

4.2.4 Supplier Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
SupplierID	AutoNumber	Long Integer	#####	"00000"
Company Name	Text	30	N/A	N/A
Contact Name	Text	30	N/A	N/A
Address	Text	60	N/A	N/A
Town	Text	15	N/A	N/A
County	Text	15	N/A	N/A
Country	Text	15	N/A	N/A
Post Code	Text	15	N/A	N/A
Phone Number	Text	15	N/A	N/A
Fax Number	Text	15	N/A	N/A
Email	Text	60	N/A	N/A
Home Page	Hyperlink	60	N/A	N/A

Table 5(Supplier Entity Data Dictionary)

4.2.5 Delivery Person Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
DeliveryPersonID	AutoNumber	Long Integer	#####	"00000"
Forename	Text	15	N/A	N/A
Surname	Text	15	N/A	N/A
Home Phone	Text	15	N/A	N/A
Mobile	Text	15	N/A	N/A
Address	Text	60	N/A	N/A
Town	Text	15	N/A	N/A
County	Text	15	N/A	N/A
Country	Text	15	N/A	N/A
Post Code	Text	15	N/A	N/A
Hire Date	Date/Time	Date	dd-mmm-yyyy	N/A
Report To	Text	30	N/A	N/A
Salary	Currency	N/A	Currency	N/A

Table 6(Delivery Person Entity Data Dictionary)

4.2.6 Product Entity Data Dictionary

Field Name	Data Type	Field Size	Format	Input Mask
ProductID	AutoNumber	Long Integer	#####	"00000"
Product Name	Text	30	N/A	N/A
SupplierID	Number	Long Integer	#####	"00000"
Quantity Per Unit	Number	Integer	General Number	N/A
Unit Price	Currency	N/A	Currency	N/A
Units in Stock	Number	Integer	General Number	N/A
Units on Order	Number	Integer	General Number	N/A

Table 7(Order Entity Data Dictionary)

5 CGDS User Interface Design

The application was developed using Microsoft Access, tables and the relationships based on the entity relationship diagram drawn earlier. Queries and lookups were use to automatically display previously defined information such as the unit price will be displayed automatically when a product is entered

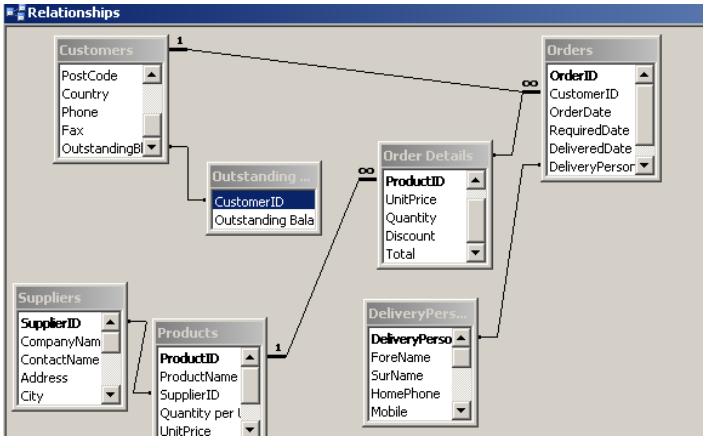

Figure 5(relationships)

5.1 Switchboard

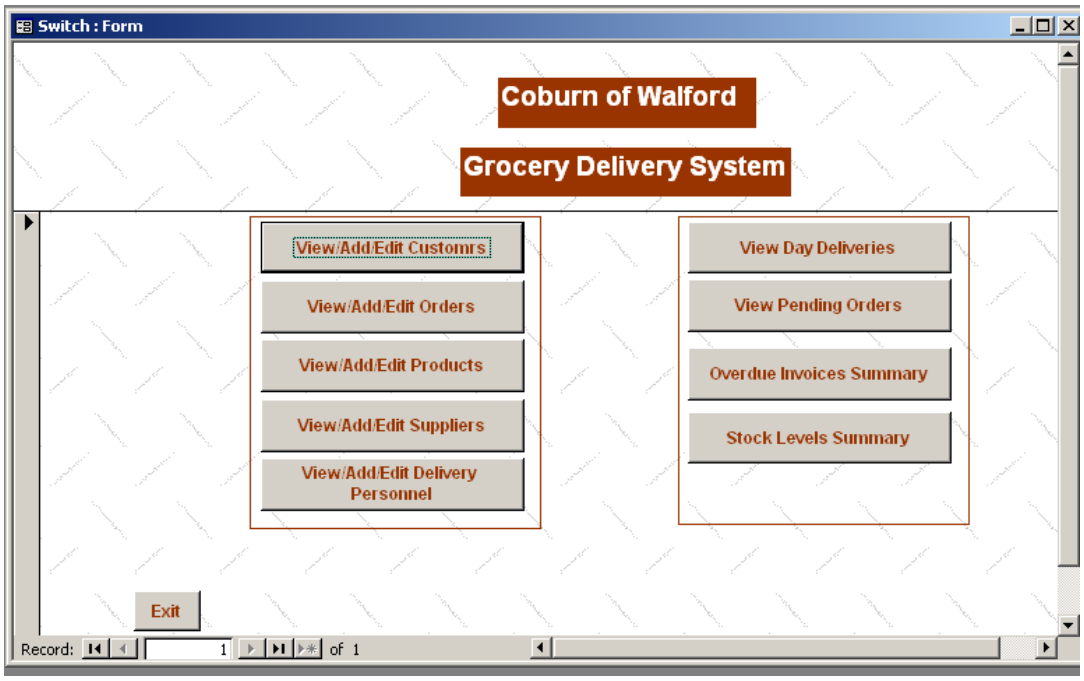

Figure 6(Application Switchboard "Main Form")

5.2 Input Forms

5.2.1 Customers Form

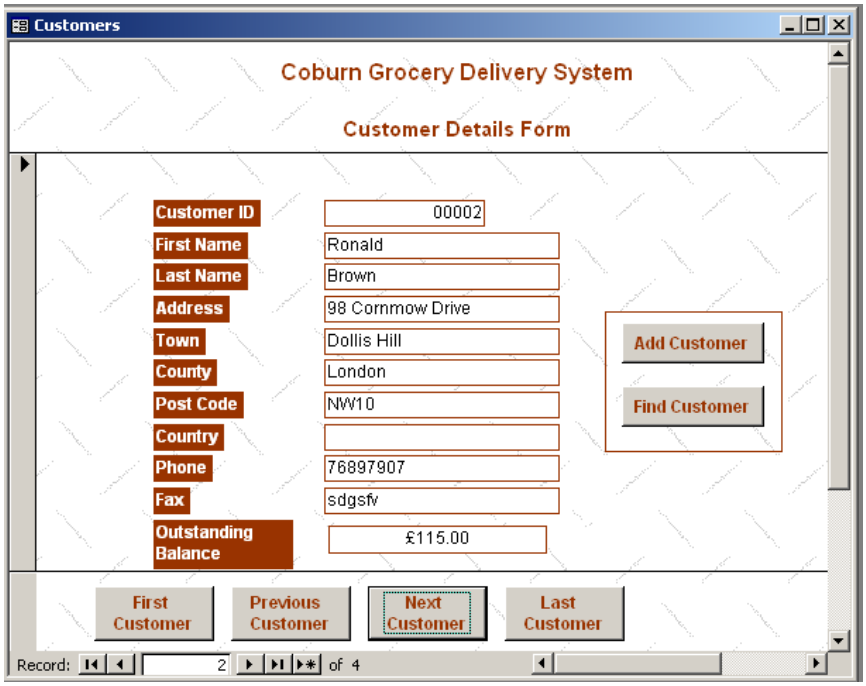

Figure 7(Customer Form)

5.2.2 Delivery personnel Form

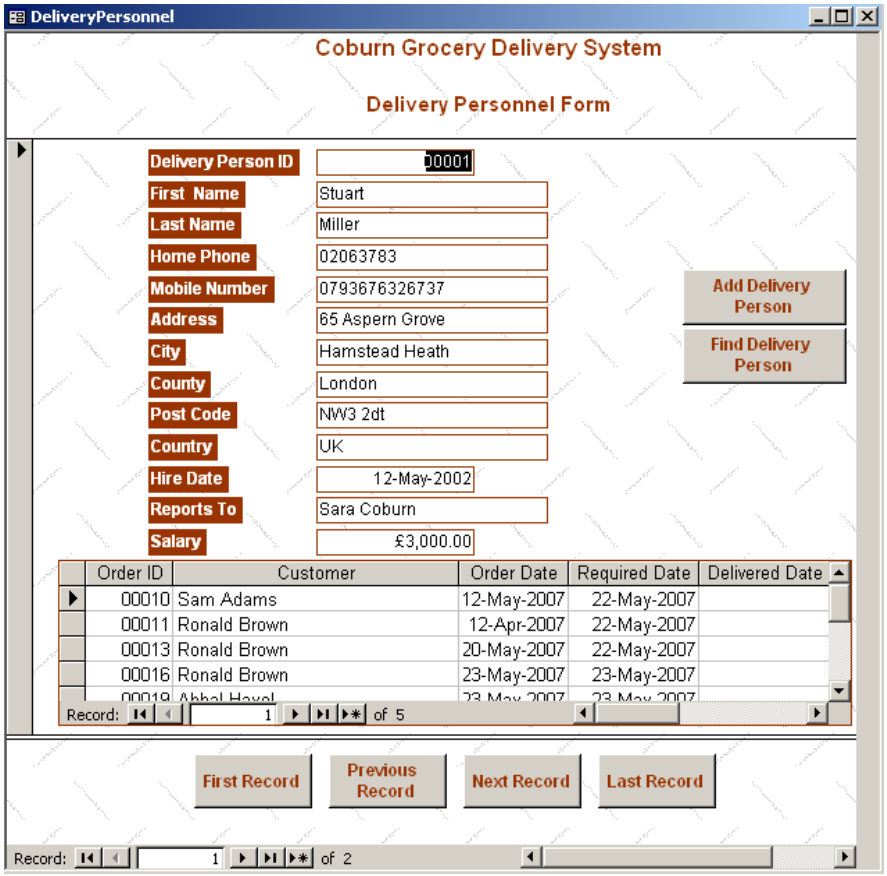

Figure 8(Delivery Personnel Form)

5.2.3 Orders Form

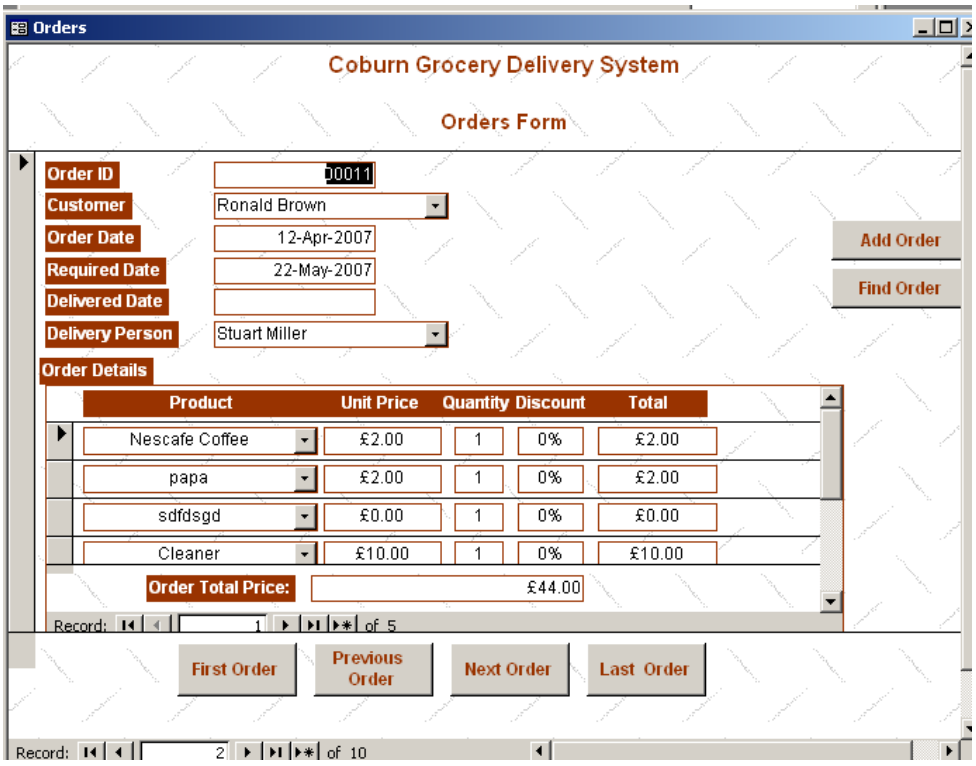

Figure 9(Orders Form)

5.2.4 Products Form

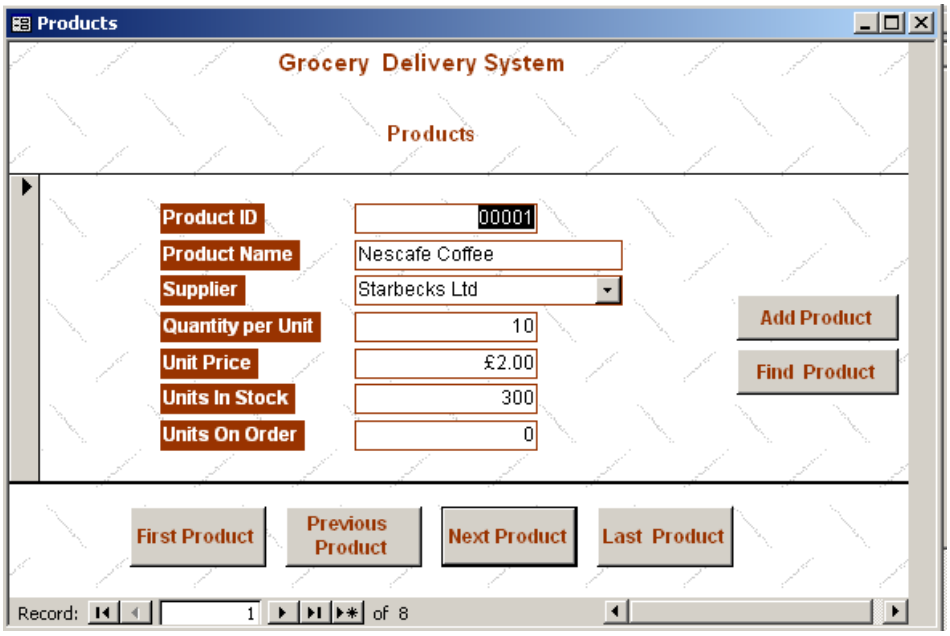

Figure 10(Products Form)

5.2.5 Suppliers Form

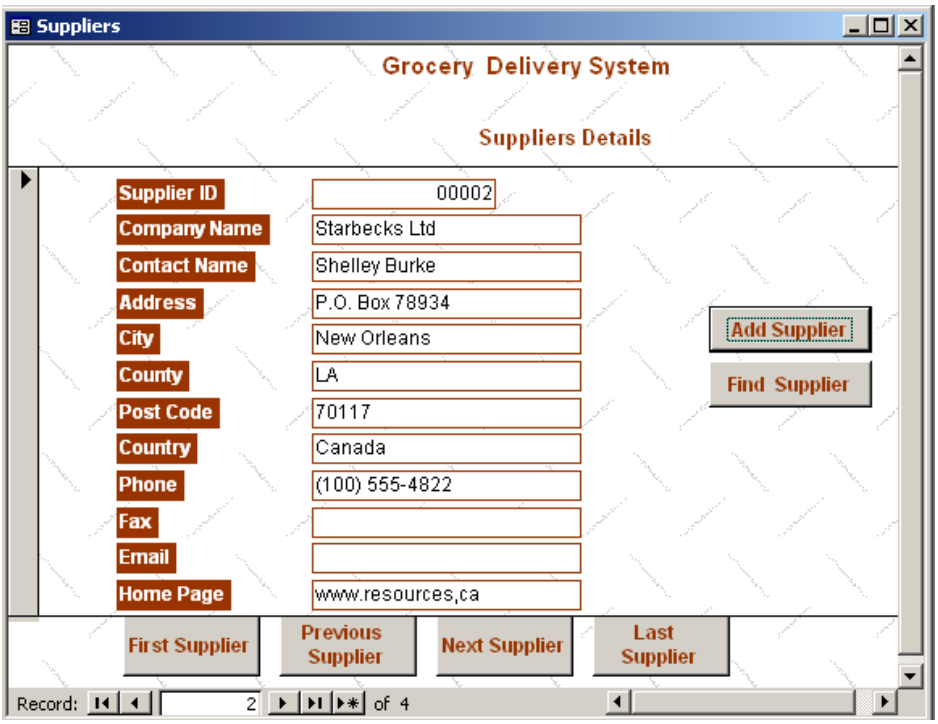

Figure 11(Suppliers Form)

5.3 Output Forms

5.3.1 Day Deliveries Summary Form

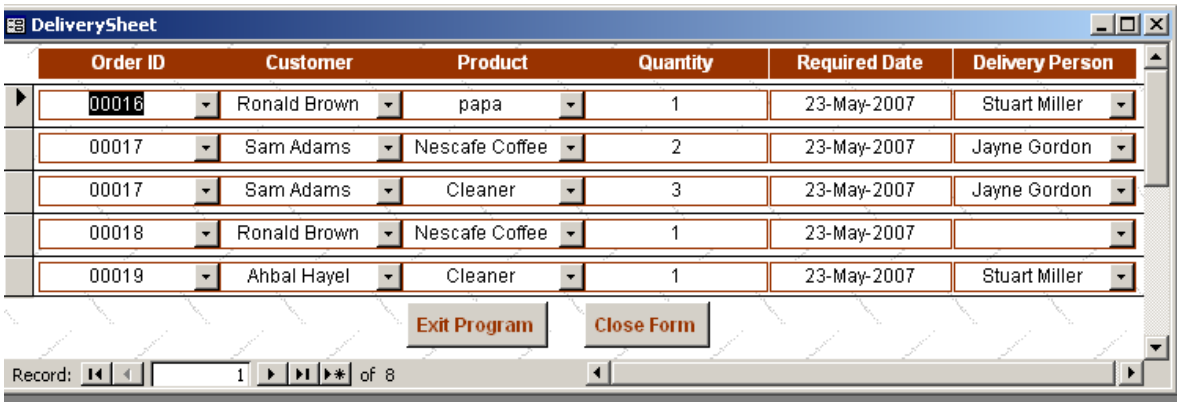

Figure 12(Day Delivery Information Form)

5.3.2 Pending Orders Summary Form

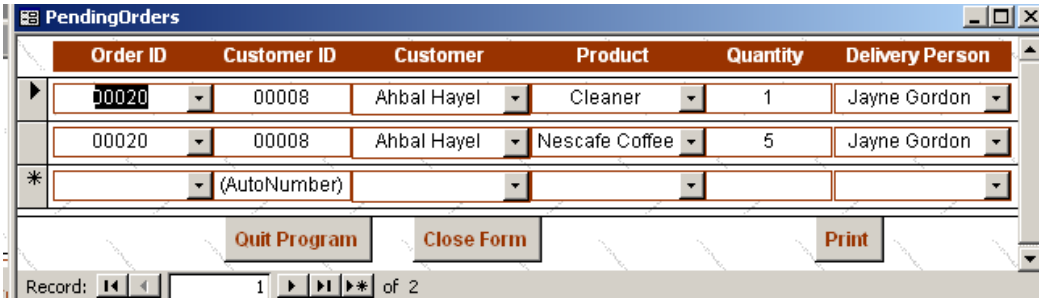

Figure 13(Pending Orders Summary Form)

5.3.3 Overdue Invoices Summary Form

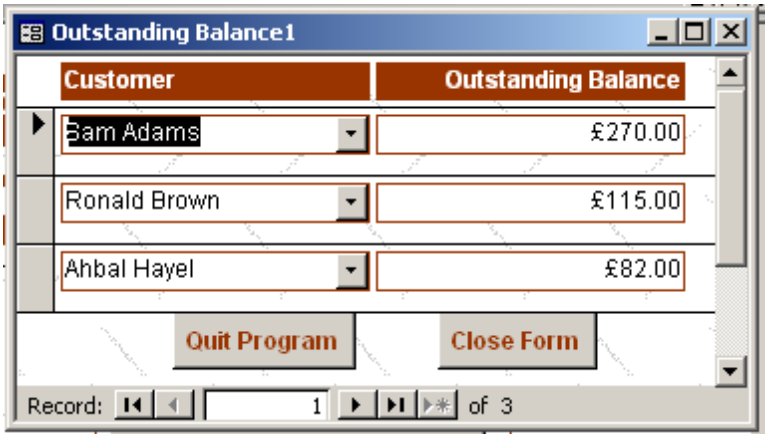

Figure 14(Overdue Invoices Summary Form)

5.3.4 Stock Levels Summary Form

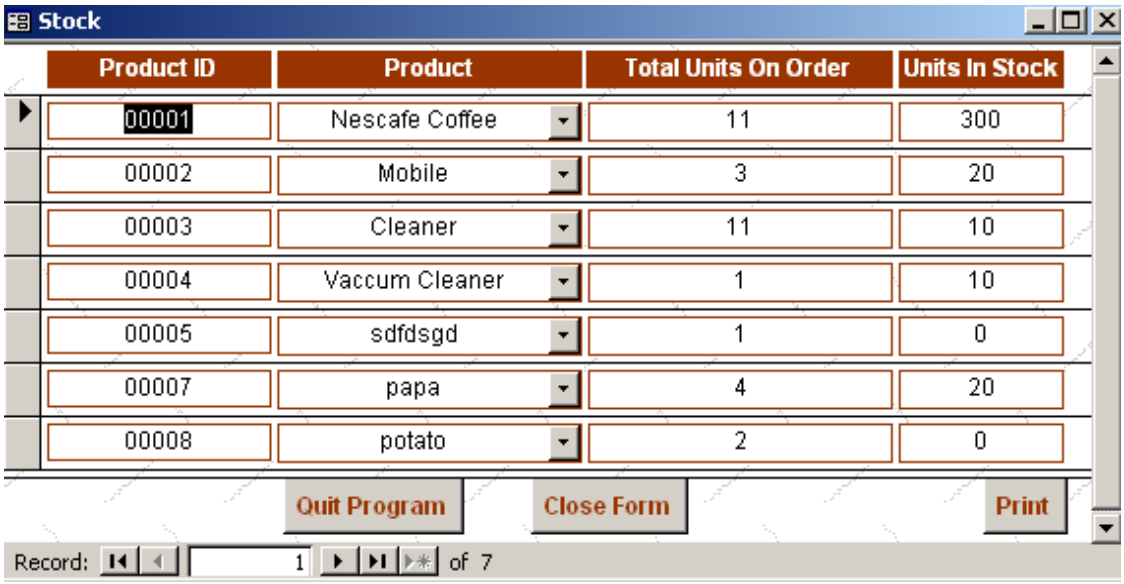

Figure 15(Stock Levels Summary Form)

5.3.5 Customers Addresses Form

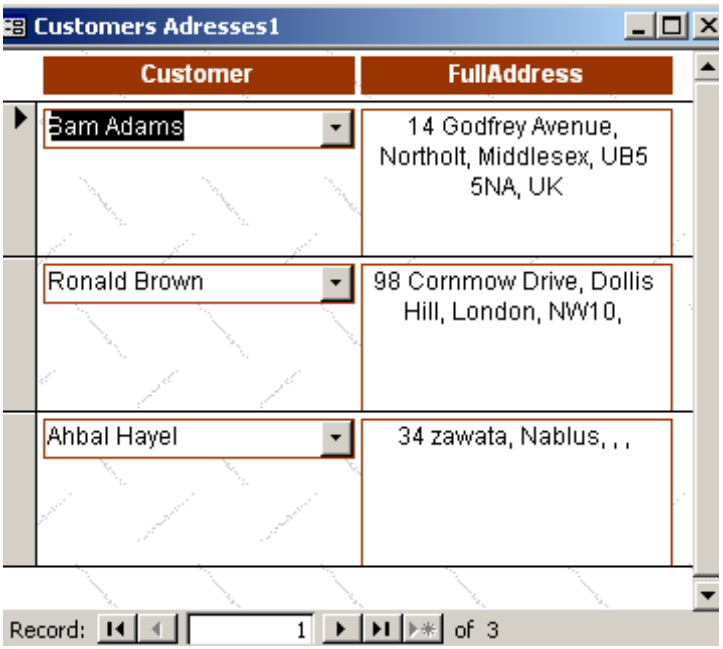

Figure 16(Customers Addresses)

6 Testing

6.1 Switchboard

6.1.1 Test Plan and Log

Test No	Test	Expected Result	Actual Result	Comments
1	Click "View/Add/Edit Customer" button	The customer form should be loaded	The customer form is loaded	Works appropriately, no changes or corrections required
2	Click "View/Add/Edit Orders" button	The orders form should be loaded	The orders form is loaded	Works appropriately, no changes or corrections required
3	Click "View/Add/Edit Products" button	The Products form should be loaded	The Products form is loaded	Works appropriately, no changes or corrections required
4	Click "View/Add/Edit Suppliers" button	The Suppliers form should be loaded	The Suppliers form is loaded	Works appropriately, no changes or corrections required
5	Click "View/Add/Edit Delivery Personnel" button	The Delivery Personnel form should be loaded	The Delivery Personnel form is loaded	Works appropriately, no changes or corrections required
6	Click "View Day Delivery Sheet " button	The Day Delivery form should be loaded with all orders to be delivered on today's date	The Day Delivery form is loaded with all orders to be delivered on today's date	Works appropriately, no changes or corrections required
7	Click "View Pending Orders " button	The Pending Orders form should be loaded with all orders to be delivered after today's date	The Pending Orders form is loaded with all orders to be delivered after today's date	Works appropriately, no changes or corrections required
8	Click "Overdue Invoices Summary " button	The Outstanding Balances form should be loaded with the sum of all orders value of each customer	The Outstanding Balances form is loaded with the sum of all orders value of each customer	Works appropriately, no changes or corrections required
9	Click "Stock Levels Summary " button	The stock form should be loaded with the quantity of each product in stock and the amount on order	The stock form should is with the quantity of each product in stock and the amount on order	Works appropriately, no changes or corrections required
10	Click "Customer Addresses " button	The Customer Addresses form should be loaded	The Customer Addresses form should is loaded	Works appropriately, no changes or corrections required

Table 8(Switchboard testing)

6.1.2 Testing Evidence

Test 1:

As shown in figure 17; when the "View/Add/Edit Customer" button is clicked, the customer form is loaded in a new window showing first customer's record details

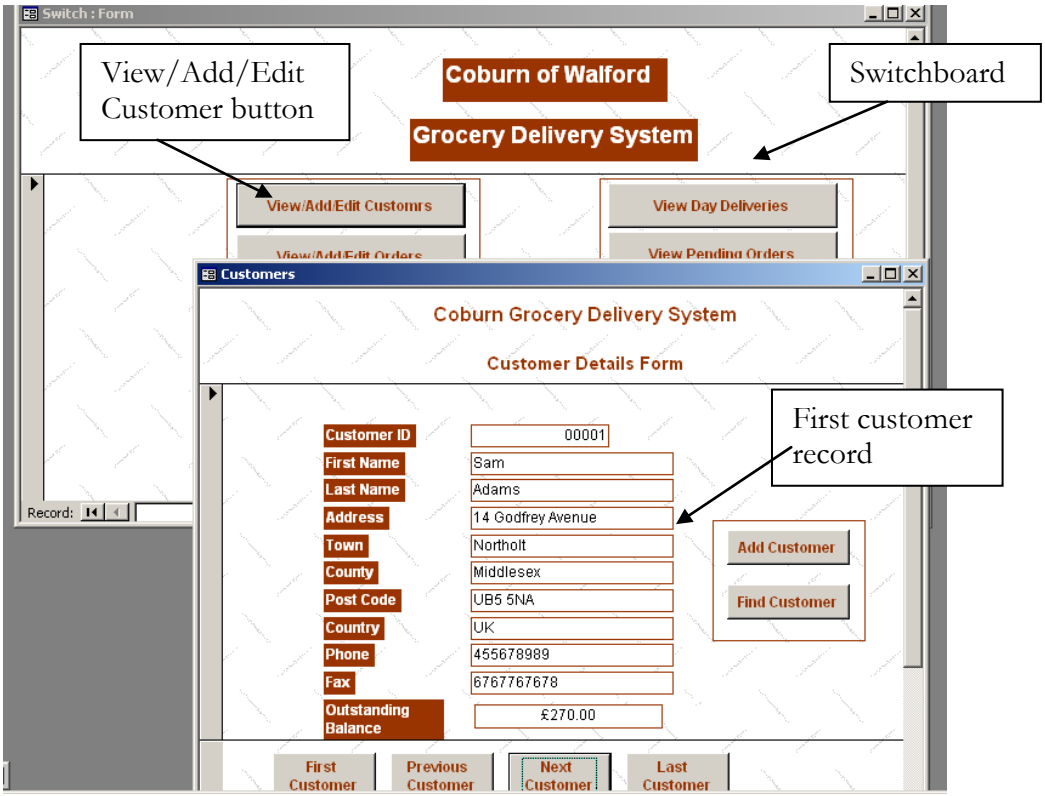

Figure 17

The same applies for tests 2 to 5.

Test 6:

As shown in figure 18; when the "View Day Deliveries" button is clicked, a delivery summary form will be loaded in a new window showing all orders to be delivered on today's date "based on the Operating System date".

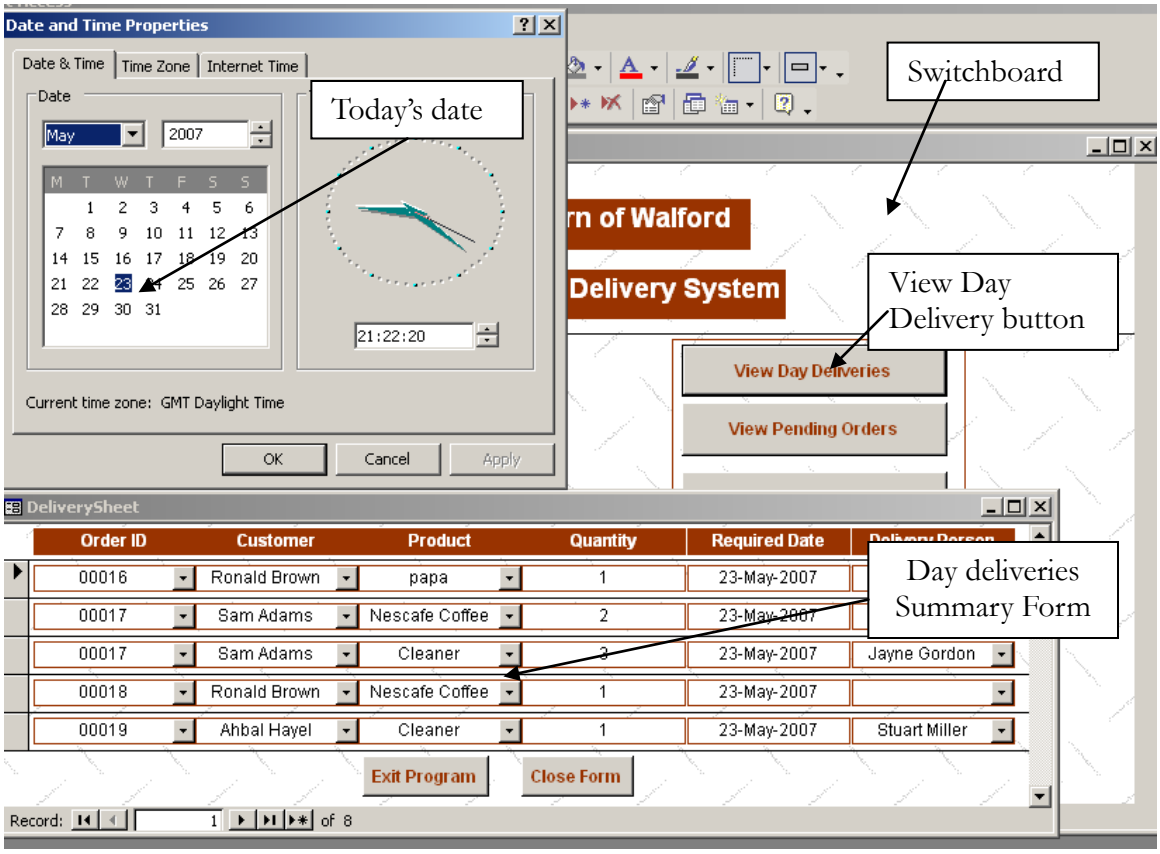

Figure 18(Test 6 Evidence)

Test 7:

As shown in figure 19; when the "View Pending Orders" button is clicked, a delivery summary form will be loaded in a new window showing all orders to be delivered after today's date "based on the Operating System date".

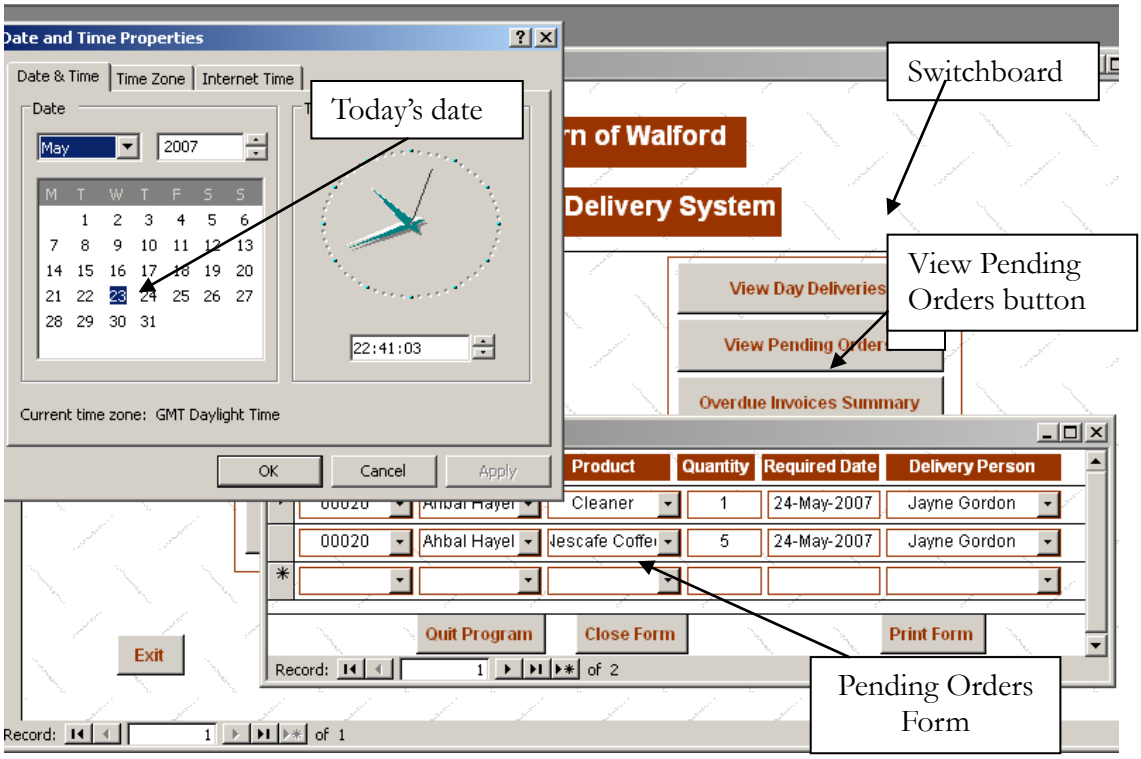

Figure 19(Test 7 Evidence)

Test 8:

As shown in figure 20; when the "Overdue Invoices summary" button is clicked, an outstanding balance form will be loaded in a new window showing all customers outstanding balance

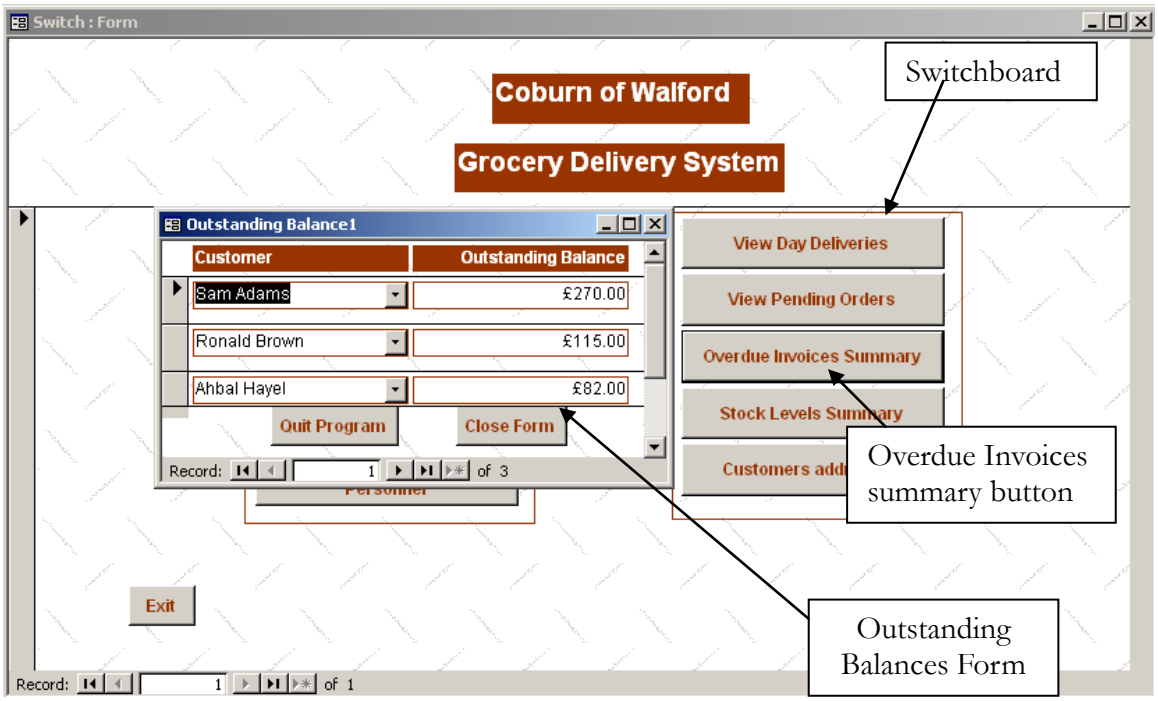

Figure 20(Test 8 Evidence)

Test 9:

As shown in figure 21; when the "Stock Levels summary" button is clicked, a delivery summary form will be loaded in a new window showing the quantities of products in stock and the amounts ordered

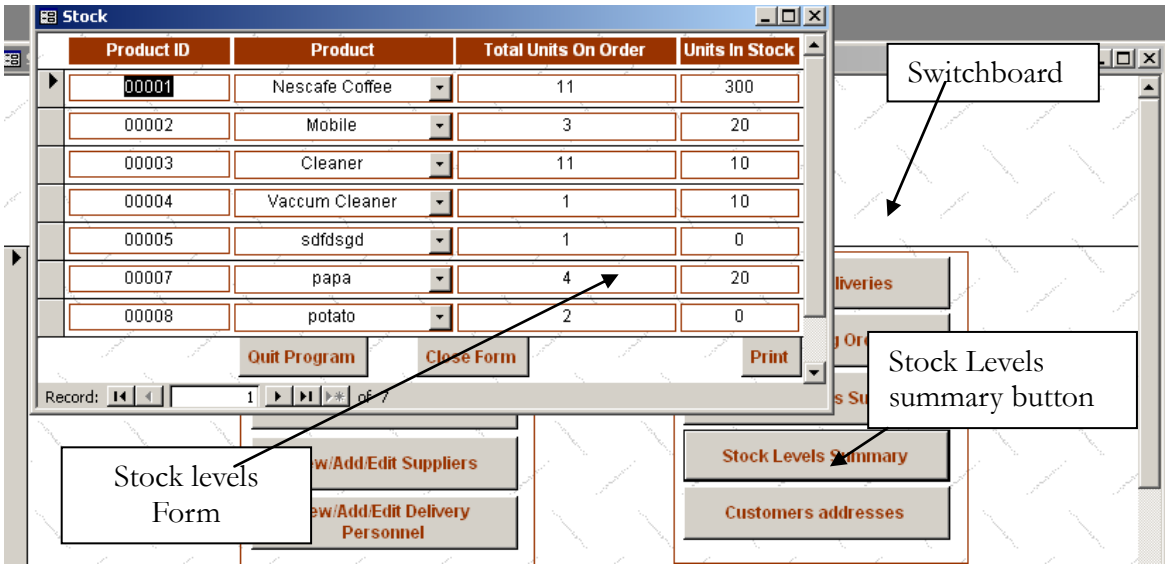

Figure 21(Test 9 Evidence)

Test 10:

As shown in figure 22; when the "Customers' addresses" button is clicked, a Customers' addresses form will be loaded in a new window showing all Customers' addresses

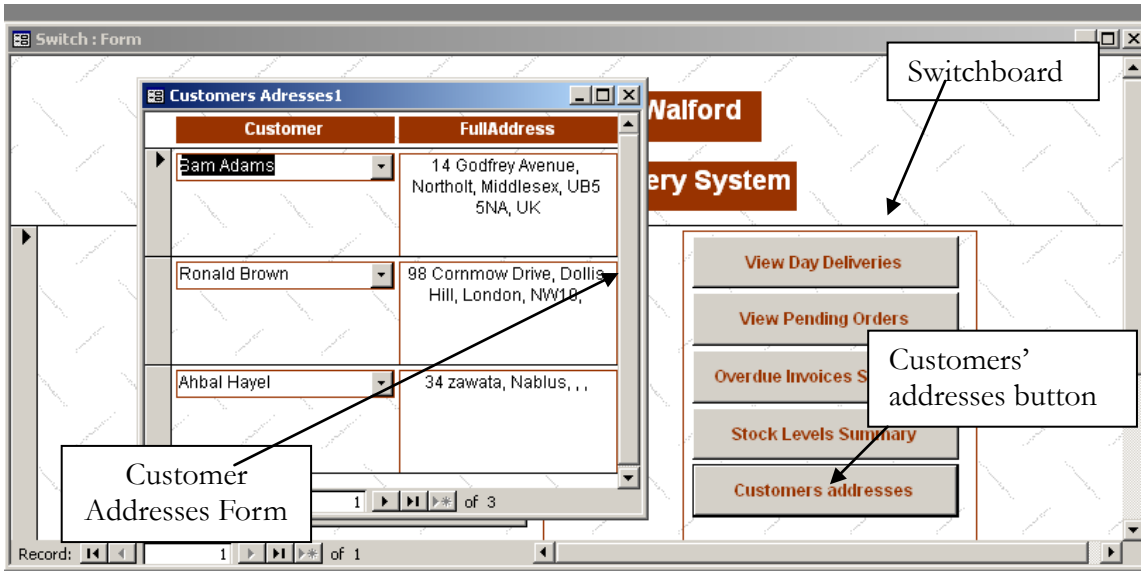

Figure 22(Test 10 Evidence)

6.2 Input Forms

6.2.1 Customers Form

6.2.1.1 Test Plan and Log

Test No	Test	Expected Result	Actual Result	Comments
1	Click "Next Customer" button when the current record is not the last record	The next customer record should be shown in the form fields	The next customer record is shown in the form fields	Works appropriately, no changes or corrections required
2	Click "Next Customer" button when the current record is the last record	A message box "this is the last record" will be displayed	A message box "this is the last record" is displayed	Works appropriately, no changes or corrections required
3	Click "Previous Customer" button when the current record is not the first record	The previous customer record should be shown in the form fields	The previous customer record is shown in the form fields	Works appropriately, no changes or corrections required
4	Click "Previous Customer" button when the current record is the first record	A message box "this is the first record" will be displayed	A message box "this is the first record" is displayed	Works appropriately, no changes or corrections required

5	Click "First Customer" button	The first customer record should be shown in the form fields	The first customer record is shown in the form fields	Works appropriately, no changes or corrections required
6	Click "Last Customer" button	The last customer record should be shown in the form fields	The last customer record is shown in the form fields	Works appropriately, no changes or corrections required
7	Click "Add Customer" button	All fields go blank apart from the customer ID filed, which will display auto number, all buttons will disappear and a new "Save" Button will appear	All fields go blank apart from the customer ID filed, which will display auto number, all buttons disappeared and a new "Save" Button appeared	Works appropriately, no changes or corrections required
8	Click "Find Customer" button	A message box asking for customer ID of the customer to be found will be displayed	A message box asking for customer ID of the customer to be found is displayed	Works appropriately, no changes or corrections required

Table 9(Customers Form testing)

6.2.2 Testing Evidence

Test 1

As shown in figure 23; when the "Next Customer" button is clicked, the next record is displayed given that the current record is not the last record

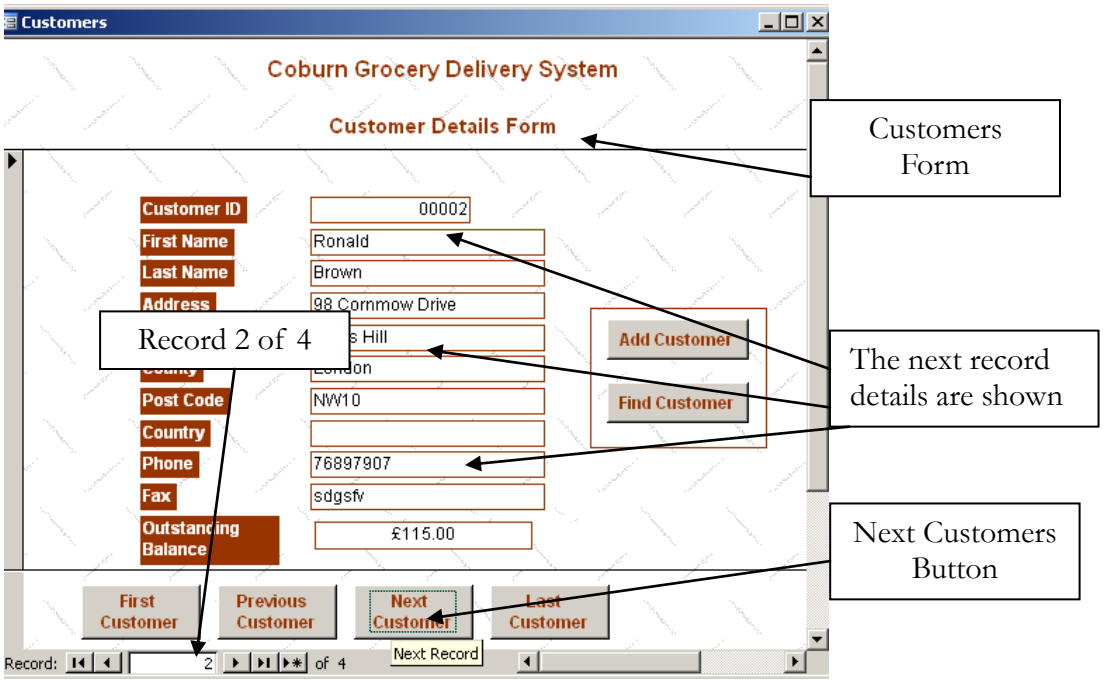

Figure 23(Test 1 Evidence)

Test 2

As shown in figure 24; when the "Previous Customer" button is clicked, the next record is displayed given that the current record is not the first record

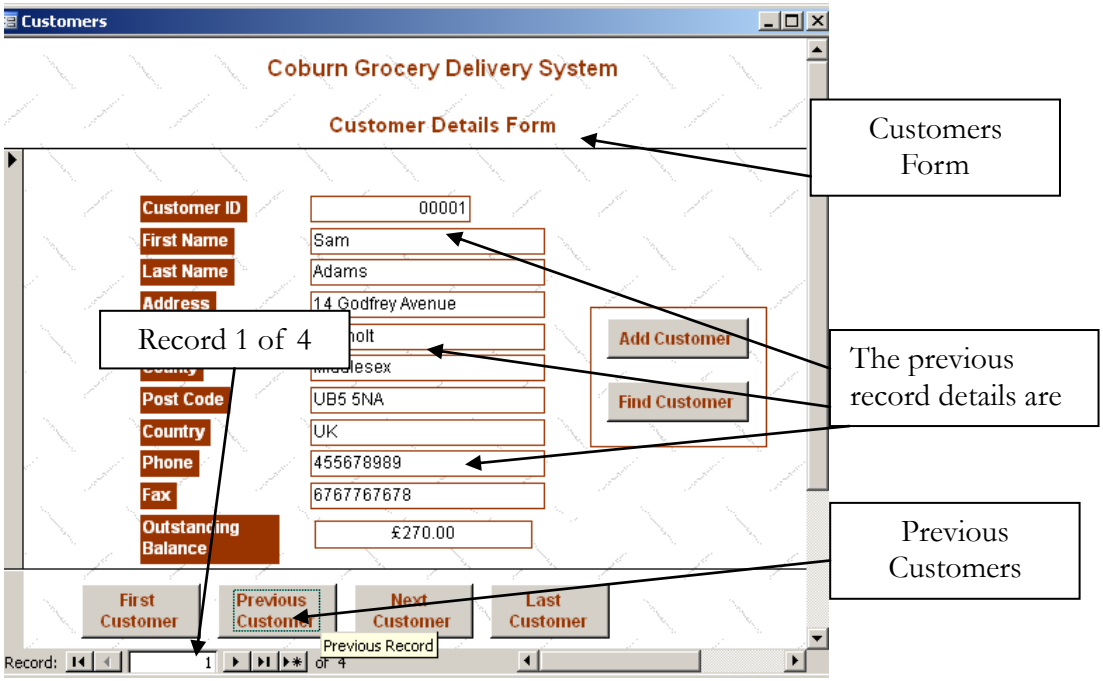

Figure 24(Test 2 Evidence)

Test 3

As shown in figure 25; when the "Next Customer" button is clicked, a message "this is the last record" is displayed given that the current record is the last record

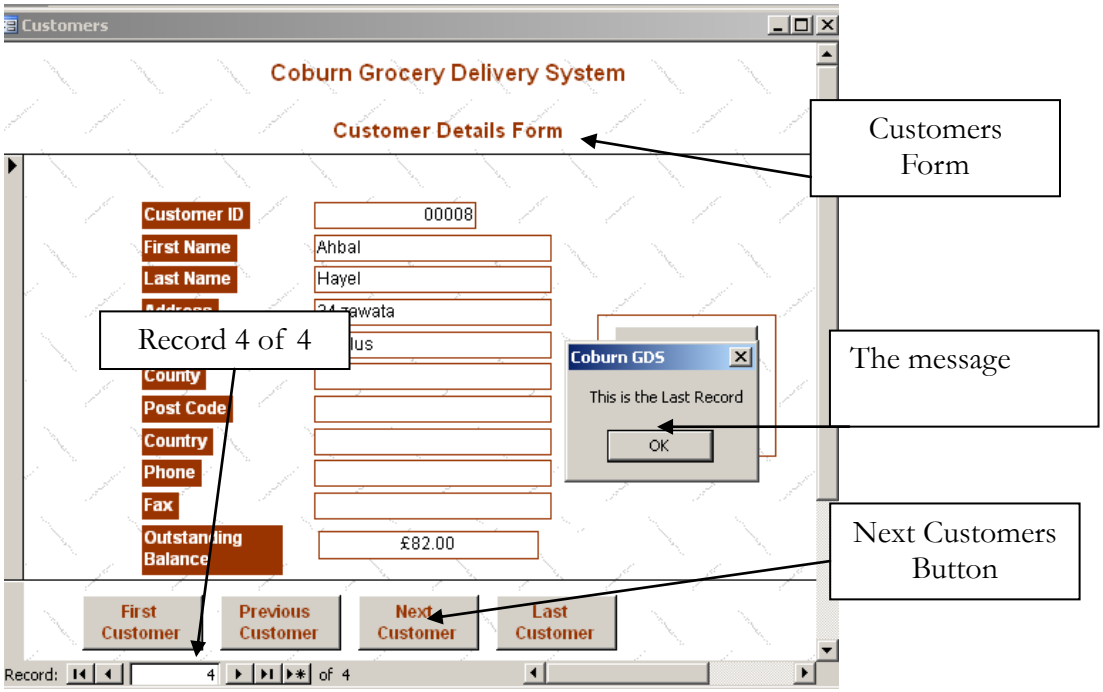

Figure 25(Test 3 Evidence)

Test 4

As shown in figure 26; when the "Previous Customer" button is clicked, a message "this is the first record" is displayed given that the current record is the first record

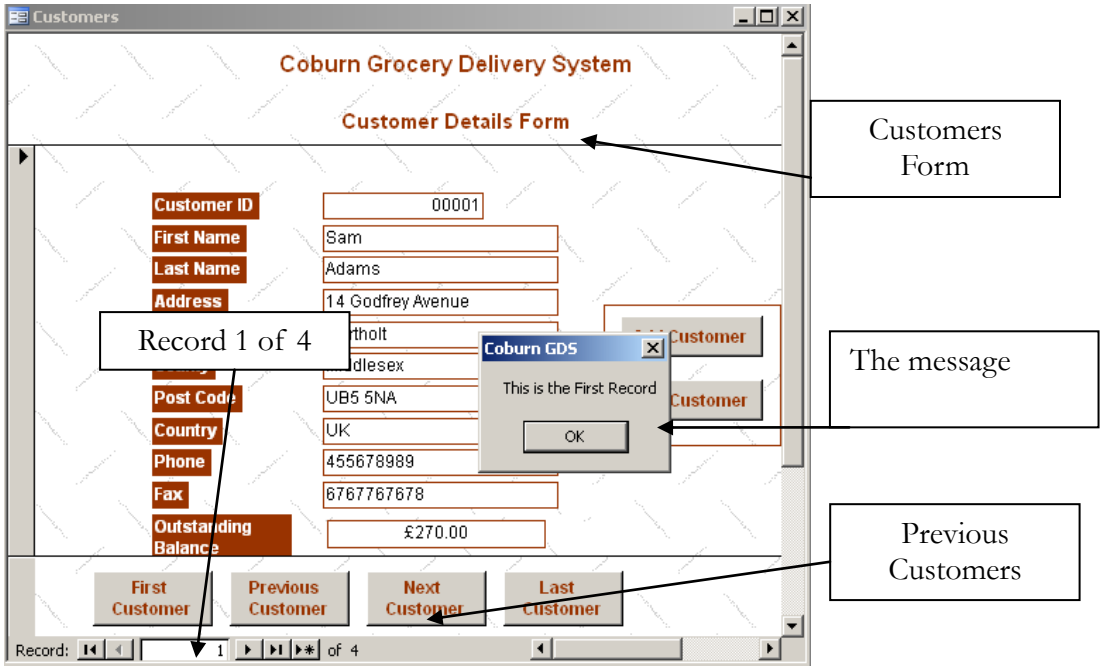

Figure 26(Test 4 Evidence)

Test 5

As shown in figure 27; when the "First Customer" button is clicked, the first record details will be displayed

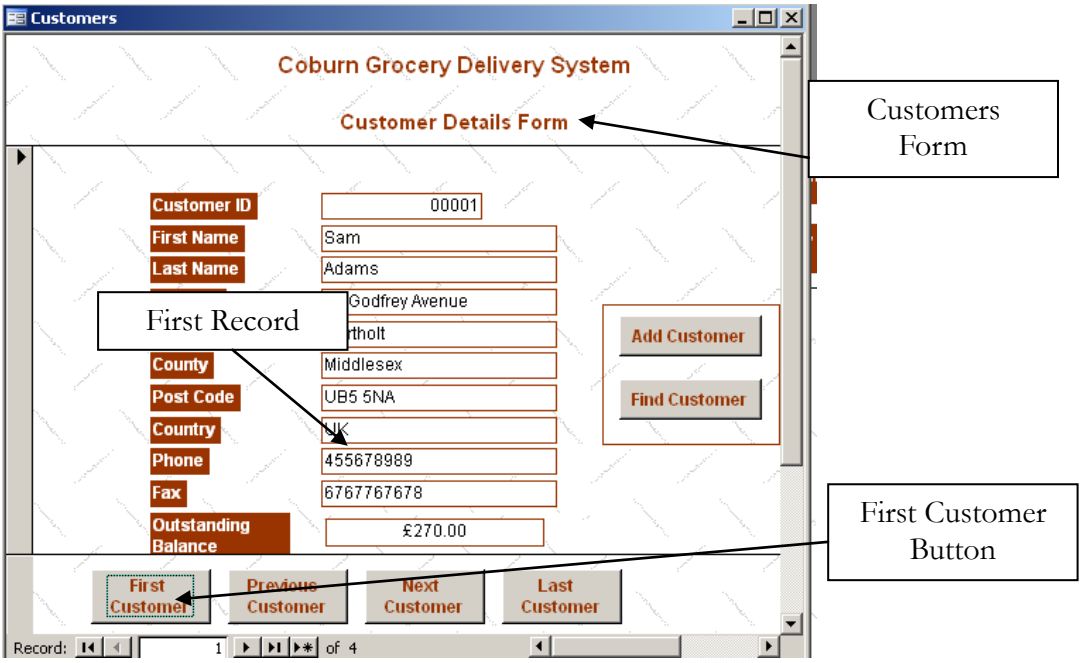

Figure 27(Test 5 Evidence)

Test 6

As shown in figure 28; when the "Last Customer" button is clicked, the last record details will be displayed

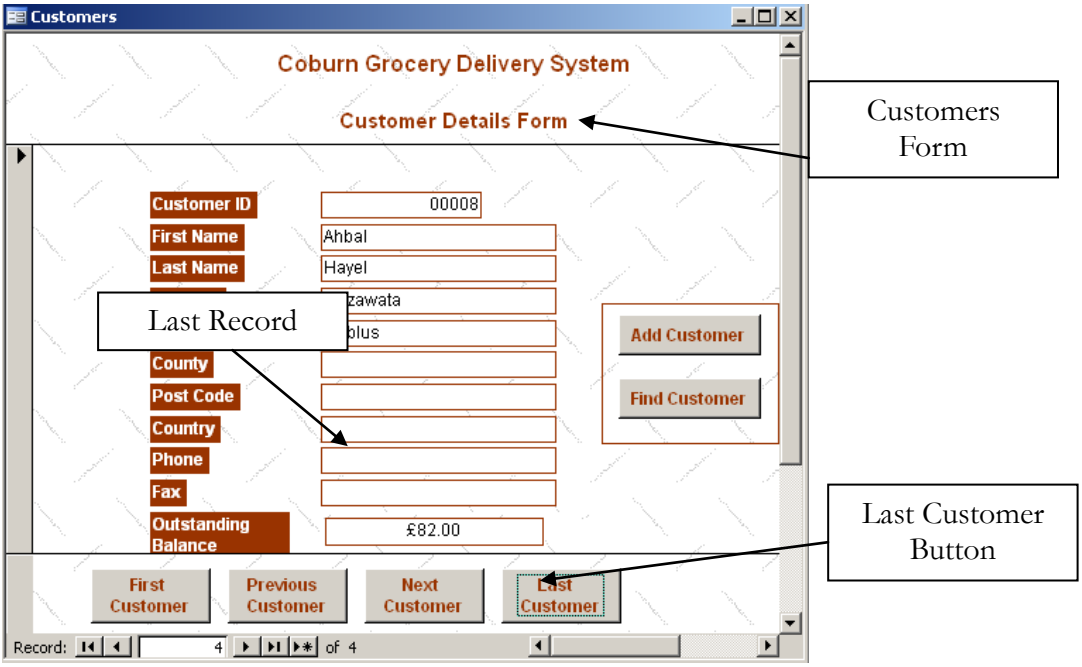

Figure 28(Test 6 Evidence)

Test 7

As shown in figure 29; when the "Add Customer" button is clicked, all the fields go blank except the customer ID field which will display the Id automatically

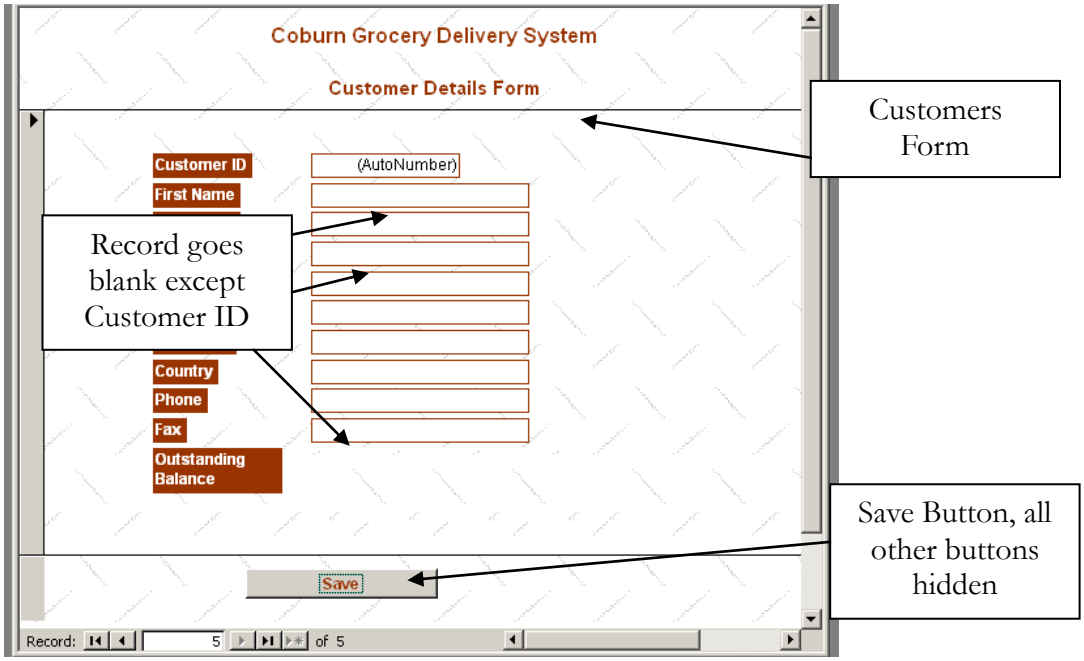

Figure 29(Test 7 Evidence)

Test 8

As shown in figure 30; when the "Add Customer" button is clicked, all the fields go blank except the customer ID field which will display the Id automatically

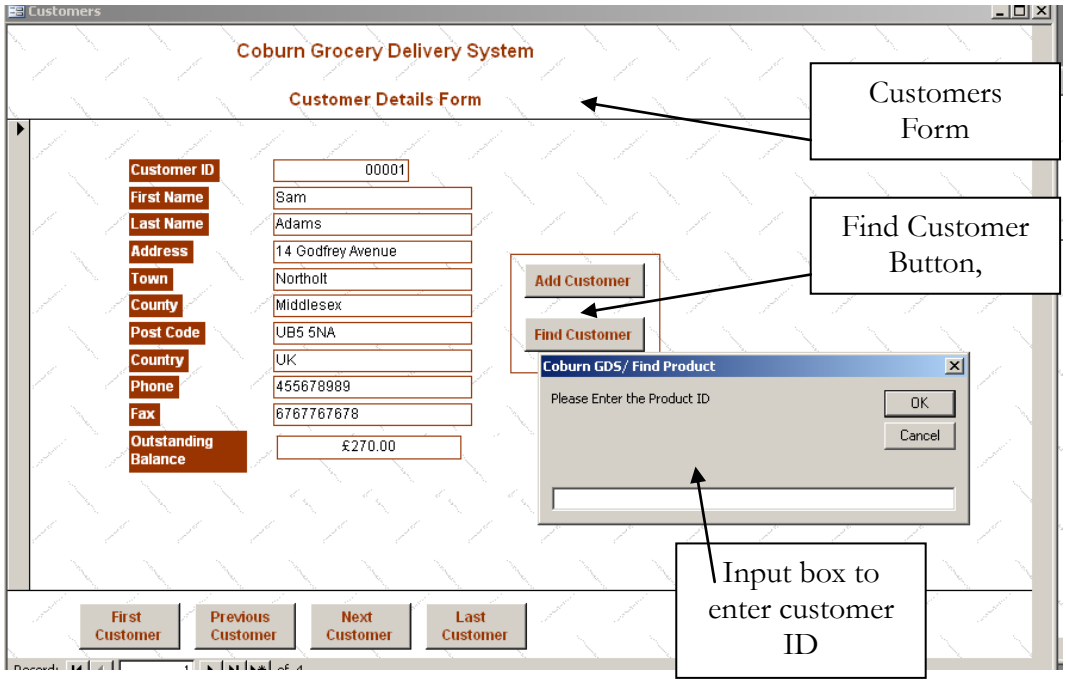

Figure 30(Test 8 Evidence)

The same above tests was carried out for the Orders form, the Products form, the delivery personnel form and the suppliers form.

7 Prototype Consistency with User Requirements

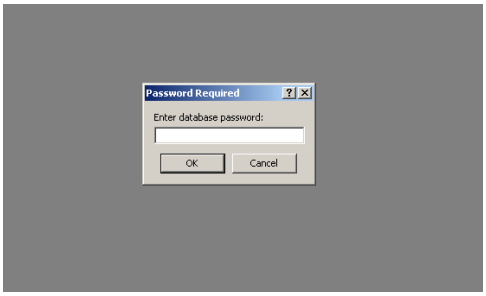

Figure 31(Owner Authorisation to view add/ delete records)password1234

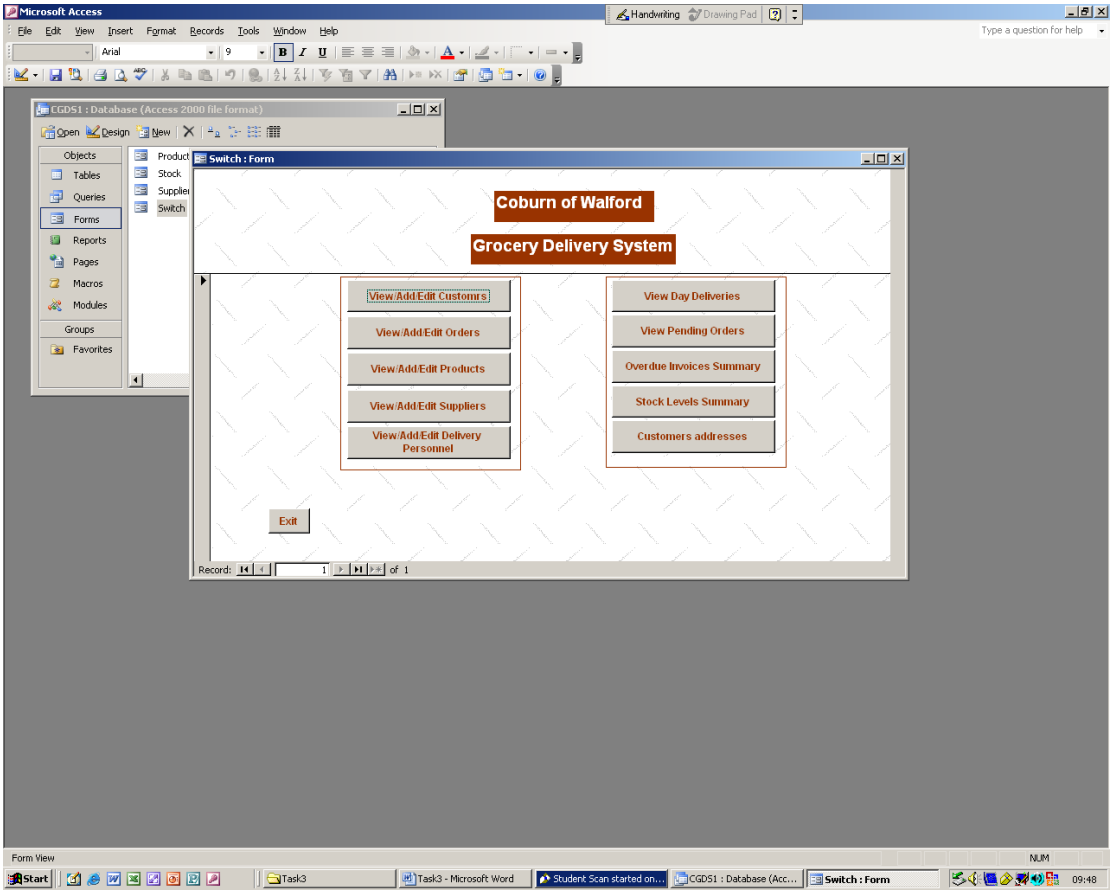

Figure 32(Application Customised so that users with no access experience can use it)

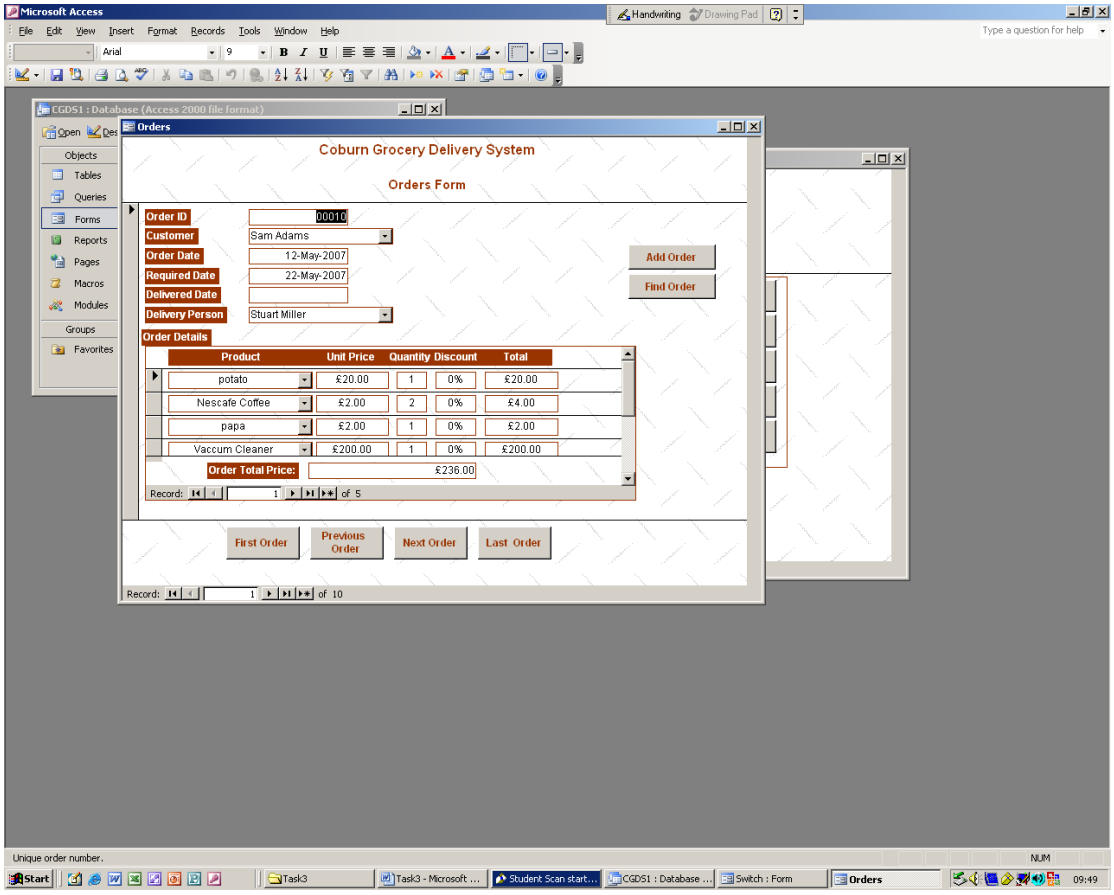

Figure 33(Adding, viewing, deleting orders is easy)