The Energy University

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CISB3213 Database 1 Section 01B

Assignment 1

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1.0 Company Background

Koop Uniten is a convenience store that is located at every block of campus. It is owned by Universiti Tenaga Nasional (UNITEN). Koop Uniten sells wide variety of products from stationeries, toiletries to food and beverages. However, workers who are also underpaid need to handle paperwork as they still practise manual accounting and do not have any sort of automation. Important records such as sale, inventory and cashier information is not precise and inconsistent.

2.0 Scope of The System

The system will allow four main users (cashier, vendor, manager and administrator) to be able to interact with the system in order to fulfill their roles. The system is built based on existing similar database but is refined so that it is more efficient, logical and fulfill business owner's requirements.

2.1 Objectives

1. To keep track of sale records. Tracing cashier in charge will be possible, and number of item purchased on purchase date is recorded.
2. To keep track of item inventory. Received items from different vendors will be recorded.
3. To keep track of list of employees worked at the convenience store. Details such as name and address are also recorded.
4. To keep track of list of vendors. Details such as name and address are also recorded.

2.2 System Features

2.2.1 Administrator

- Have access to view all tables in database

(Employee, Order, OrderDetail, Product, Stock, Vendor)

- Admin can add, delete or edit records of all tables
- Have access to add, edit or delete forms and reports

2.2.2 Manager

- Able to add, delete employees using Edit Employee Form
- Able to add new product using Edit Product Form
- Able to add vendors using Edit Vendor Form
- Able to view stock using Stock List Report

2.2.3 Cashier

- Able to add order using Edit Order Form
- Able to print order using Print Order Report
- Able to print sales report using Print Sales Report

2.2.4 Vendor

- Able to add stock using Edit Stock Form
- Able to view stock history using Stock List Report

3.0 System users

The database system will be used by 4 categories of users, which are cashier, vendor, manager and administrators. Cashier will interact with the system by filling up form and printing out report. In the form they will be inputing information such as EmployeeID, ProductName, Quantity and have option to add, edit or cancel to add record. They can also print our current order or print out sales report tht contain history of orders.

The second user, vendor will interact with the database system by filling up form upon sending product stocks (ProductName, Quantity). They also can view stock list in order to plan future quantity needed

The third user, manager also will interact with the database system by filling up form which include Employee information (EmployeeName, EmployeeTel) or Product information (VendorName, ProductName, UnitPrice) or Vendor information (VendorName, VendorTel, VendorAddress). They can also view all of the lists (Employee, Product, Vendor, Stock)

Lastly, administrator will be monitoring items by accessing the tables. Administrator also able to edit design of tables, forms and reports.

4.0 Entity Relationship Diagram
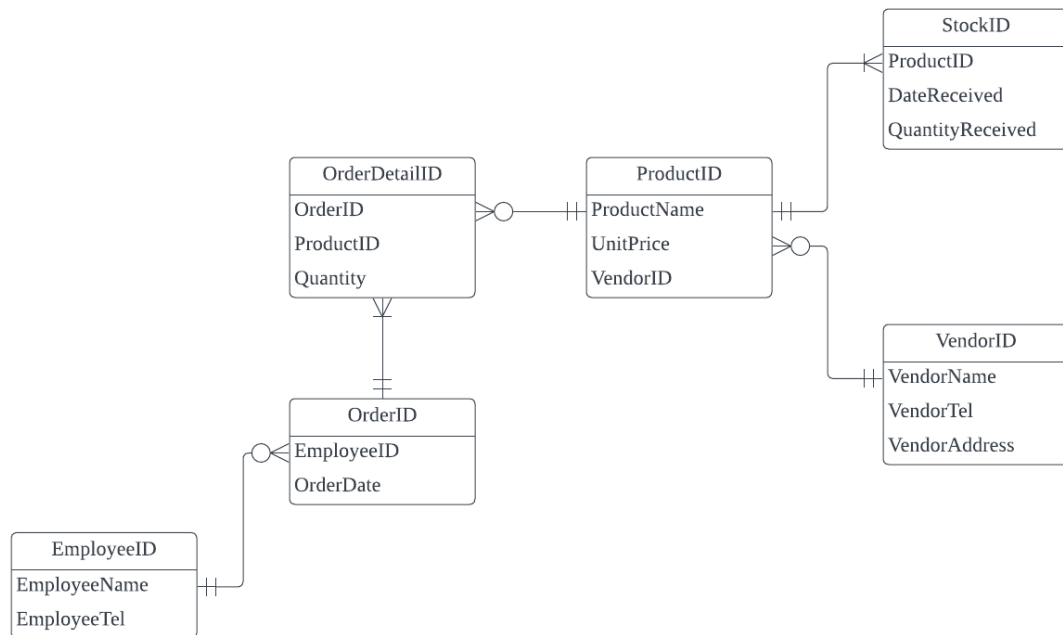
1. An EmployeeID may have zero, one or many OrderID
2. An OrderID must belong to only one EmployeeID

3. An OrderID must have at least one or many OrderDetailID
4. An OrderDetailID must belong to only one OrderID

5. An OrderDetailID must contain only one ProductID
6. One ProductID may have zero, one or many OrderDetailID

7. One Product ID must have one or many StockID
8. One StockID must have only one ProductID

9. One ProductID must belong to only one VendorID
10. One VendorID may have zero, one or many ProductID

5.0 Data Dictionary

5.1 Employee Table

Attribute	Description	Data Type	Size	Data Format	Constraint
EmployeeID	Employee Worker ID	Number	3	\E000	Primary Key
EmployeeName	Employee first name	Short Text	10	-	Not Null
EmployeeTel	Employee phone number	Number	10	-	Not Null

5.2 Order Table

Attribute	Description	Data Type	Size	Data Format	Constraint
OrderID	Order header ID	Number	4	\O0000	Primary Key
OrderDate	Date of purchase	Date/Time	-	DD/MM/YYYY	Not Null
EmployeeID	Employee Worker ID	Number	3	\E000	Not Null Foreign Key

5.3 OrderDetail Table

Attribute	Description	Data Type	Size	Data Format	Constraint
OrderDetailID	Order description ID	Number	4	\D0000	Primary Key
OrderID	Order header ID	Number	4	\O0000	Not Null Foreign Key
ProductID	Product label ID	Number	3	\P000	Foreign Key
Quantity	Number of the product	Number	4	-	Not Null

5.4 Product Table

Attribute	Description	Data Type	Size	Data Format	Constraint
ProductID	Product label ID	Number	3	\P000	Primary Key
ProductName	Product name	Short Text	25	-	Not Null
UnitPrice	Price per one unit of product	Money	-	Euro	Not Null
VendorID	Vendor Company ID	Number	3	-	Not Null Foreign Key

5.5 Stock Table

Attribute	Description	Data Type	Size	Data Format	Constraint
StockID	Stock history ID	Number	3	\P000	Primary Key
ProductID	Product label ID	Number	3	\P000	Not Null Foreign Key
DateReceived	Date of product received	Date/Time	-	DD/MM/YYYY	Not Null
QuantityReceived	Number of products received	Number	4	-	Not Null

5.6 Vendor Table

Attribute	Description	Data Type	Size	Data Format	Constraint
VendorID	Vendor Company ID	Number	3	\V000	Primary Key
VendorName	Vendor company name	Short Text	25	-	Not Null
VendorTel	Vendor office number	Number	10	-	Not Null
VendorAddress	Vendor office address	Long Text	50	-	Not Null

6.0 Tables

6.1 Employee Table

EmployeeID	EmployeeName	EmployeeTel
E001	Akmal	1627130016
E002	Musab	179559270
E003	Safwan	178777384
E004	Haziq	107953458
E006	Thaqeef	156348695
(New)		

6.2 Order Table

OrderID	EmployeeID	OrderDate
O0017	E001	02/12/2022
O0018	E001	02/12/2022
O0020	E002	02/12/2022
O0021	E004	02/12/2022
O0022	E004	02/12/2022
(New)	E000	02/12/2022

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6.3 Order Detail Table

OrderDetailT

OrderDetailID	OrderID	ProductID	Quantity
D0046	O0017	P001	2
D0047	O0017	P002	1
D0048	O0018	P005	2
D0049	O0018	P006	1
D0053	O0020	P003	5
D0054	O0020	P004	2
D0055	O0020	P007	10
D0056	O0021	P001	1
D0057	O0021	P003	1
D0060	O0022	P007	2
D0061	O0022	P003	1
D0062	O0017	P007	50
(New)	O0000	P000	0

6.4 Product Table

ProductT

ProductID	ProductName	UnitPrice	VendorID
P001	Stabilo Pencil	1,00 €	V001
P002	Stabilo Eraser	0,80 €	V001
P003	Faber Castell Ballpoint Pen	1,50 €	V002
P004	Faber Castell Correction Tape	4,50 €	V002
P005	Lifebuoy Shower Gel	7,50 €	V003
P006	Sunsilk Hair Gel	9,50 €	V004
P007	A4 Notebook	2,50 €	V005
(New)		0,00 €	V000

6.5 Stock Table

StockID	ProductID	DateReceive	QuantityReceived
S0001	P001	02/12/2022	400
S0002	P002	02/12/2022	200
S0003	P003	02/12/2022	200
S0004	P004	02/12/2022	200
S0005	P005	02/12/2022	20
S0006	P006	02/12/2022	20
S0007	P007	02/12/2022	500
(New)	P000	02/12/2022	0

6.6 Vendor Table

VendorID	VendorName	VendorTel	VendorAddress
V001	Stabilo	2676392	54 Jalan 1/100A Taman Gemilang Cheras
V002	Faber Castell	41438628	2B 2nd Floor Jalan 46/26 Taman Sri Rampai
V003	Lifebuoy	55496167	1 204 Jln Bercham Taman Ria
V004	Sunsilk	79431394	58 Jln Ss7/30 Ss7 Petaling Jaya
V005	Muji	78062057	Blok G 47-4 Jln Pju 1/37 Prima Square Petaling
(New)		0	

7.0 Sample Queries

7.1 Creating Table

7.1.1 Employee

```
Create table EmployeeT(

        EmployeeID NUMBER(3)

                CONSTRAINT emp_EmployeeID_pk PRIMARYKEY,

        EmployeeName VARCHAR2(10)

                CONSTRAINT emp_EmployeeName_nn NOT NULL,

        EmployeeTel NUMBER(10)

                CONSTRAINT emp_EmployeeTel_nn NOT NULL

);
```

7.1.2 Order

```
Create table OrderT(

        OrderID NUMBER(4)

                CONSTRAINT ord_OrderID_pk PRIMARY KEY

        OrderDate DATE

                CONSTRAINT ord_OrderDate_nn NOT NULL

        EmployeeID NUMBER(3)

                CONSTRAINT ord_EmployeeID_fk REFERENCES EmployeeT(EmployeeID)

);
```

7.7.3 OrderDetail

```
Create table OrderDetailT(

        OrderDetailID NUMBER(4)

                CONSTRAINT det_OrderDetailID_pk PRIMARY KEY

        OrderID NUMBER(4)

                CONSTRAINT det_OrderID_fk REFERENCES OrderT(OrderID)

        ProductID NUMBER(3)

                CONSTRAINT det_ProductID_fk REFERENCES ProductT(ProductID)

        Quantity NUMBER(4)

                CONSTRAINT det_Quantity_nn NOT NULL

);
```

7.7.4 Product

Create table ProductT(

    ProductID NUMBER(3)

        CONSTRAINT prod_ProductID_pk PRIMARY KEY,

    ProductName VARCHAR2(25)

        CONSTRAINT prod_ProductName_nn NOT NULL,

    UnitPrice MONEY

        CONSTRAINT prod_UnitPrice_nn NOT NULL,

    VendorID NUMBER(3)

        CONSTRAINT prod_VendorID_fk REFERENCES VendorT(VendorID)

);

7.7.5 Stock

Create table StockT(

    StockID NUMBER(3)

        CONSTRAINT stk_StockID_pk PRIMARY KEY,

    ProductID NUMBER(3)

        CONSTRAINT stk_ProductID_fk REFERENCES ProductT(ProductID),

    DateReceived DATE

        CONSTRAINT stk_DateReceived_nn NOT NULL,

    QuantityReceived NUMBER(4)

        CONSTRAINT stk_QuantityReceived_nn NOT NULL

);

7.7.6 Vendor

Create table VendorT(

    VendorID NUMBER(3)

        CONSTRAINT ven_VendorID_pk PRIMARYKEY,

    VendorName VARCHAR2(25)

        CONSTRAINT ven_VendorName_nn NOT NULL,

    VendorTel NUMBER(10)

        CONSTRAINT ven_VendorTel_nn NOT NULL,

    VendorAddress VARCHAR2(50)

        CONSTRAINT ven_VendorAddress_nn NOT NULL

);

7.2 Inserting Values Into Tables

7.2.1 Employee
INSERT INTO EmployeeT (EmployeeID, EmployeeName, EmployeeTel)

VALUES (&EmployeeID, &EmployeeName, &EmployeeTel);

7.2.2 Order
INSERT INTO OrderT (OrderID, EmployeeID, OrderDate)

VALUES (&OrderID, &EmployeeID, &OrderDate);

7.2.3 OrderDetail
INSERT INTO OrderDetailT (OrderDetailID, ProductID, Quantity)

VALUES (&OrderDetailID, &ProductID, &Quantity);

7.2.4 Product
INSERT INTO ProductT (ProductID, ProductName, UnitPrice, VendorID)

VALUES (&ProductID, &ProductName, &UnitPrice, &VendorID)

7.2.5 Stock
INSERT INTO StockT (StockID, ProductID, DateReceived, QuantityReceived)

VALUES (&StockID, &ProductID, &DateReceived, &QuantityReceived);

7.2.6 Vendor
INSERT INTO VendorT (VendorID, VendorName, VendorTel, VendorAddress)

VALUES (&VendorID, &VendorName, &VendorTel, &VendorAddress)

7.3 Display All Data In Table

SELECT * FROM EmployeeT;

SELECT * FROM OrderT;

SELECT * FROM OrderDetailT;

SELECT * FROM ProductT;

SELECT * FROM StockT;

SELECT * FROM VendorT;

7.4 Creating Query Between OrderDetail And Product

SELECT OrderDetailT.OrderDetailID, OrderDetailT.OrderID, OrderDetailT.ProductID, ProductT.ProductName, OrderDetailT.Quantity, ProductT.UnitPrice, [OrderDetailT.Quantity]*[ProductT.UnitPrice] AS TotalPrice

FROM OrderDetailT

INNER JOIN ProductT ON OrderDetailT.ProductID = ProductT.ProductID;

7.5 Creating Query Between Stock And Product

SELECT StockT.StockID, StockT.ProductID, ProductT.ProductName, StockT.DateReceived, StockT.QuantityReceived, ProductT.VendorID

FROM StockT

INNER JOIN ProductT ON StockT.ProductID = ProductT.ProductID;

8.0 System Interface
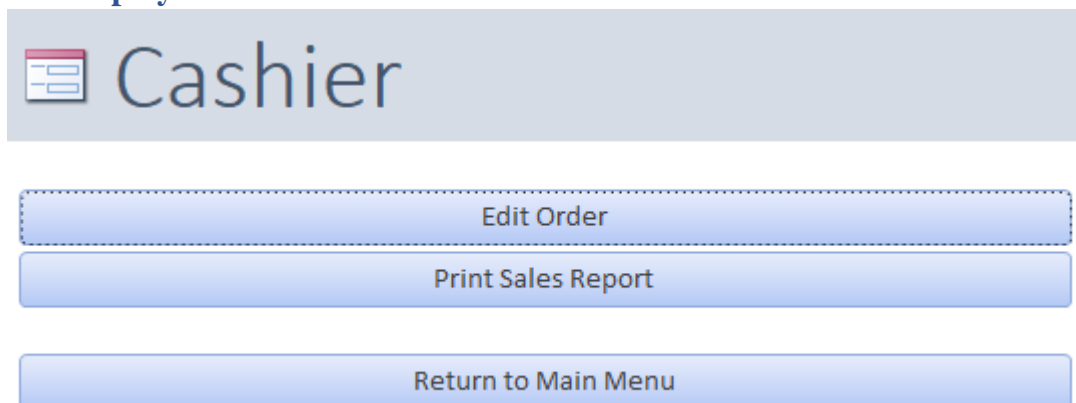## 8.1 Menu

Main Menu

Cashier	Manager
Vendor	Administrator

Quit App
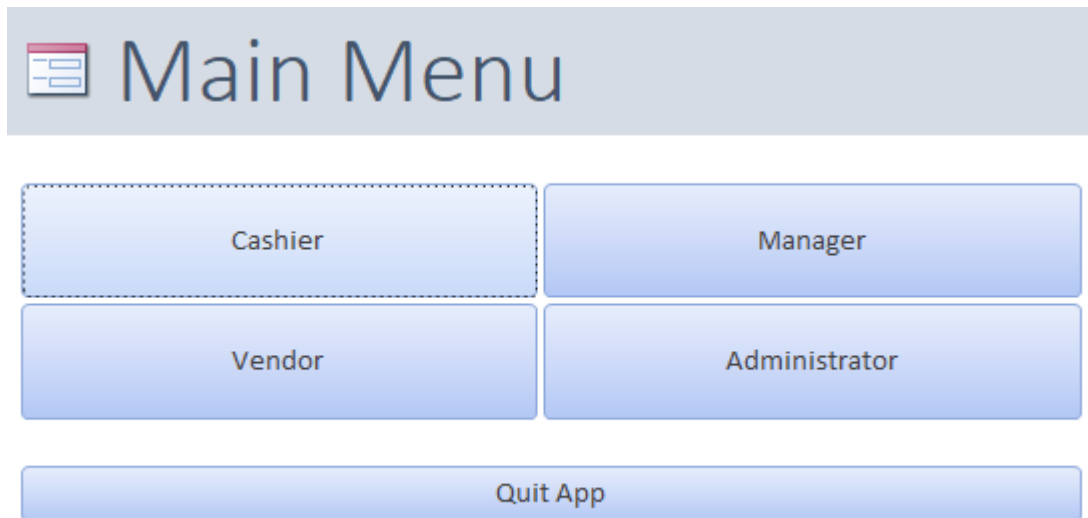
1. Each role have different views of the menu, each made for level of access of the roles
2. Users can click on the buttons to access roles

8.2 Employee View

Cashier

Edit Order

Print Sales Report

Return to Main Menu

1. Employee can click on Edit Order button to add order and print receipt
2. Employee can click on Print Sales Report to print purchase history

Edit Order

	Add New
OrderID	O0017
Date	02/12/2022
Employee	Akmal

Product	Quantity	UnitPrice	TotalPrice
Stabilo Pencil	2	1,00 €	2,00 €
Stabilo Eraser	1	0,80 €	0,80 €
A4 Notebook	50	2,50 €	125,00 €
*			

Record: I◄ ◄ 1 of 3 ► ►I ►* | No Filter | Search

Cancel	Save
◄	►
Print	
Return to Main Menu	

1. Employee must enter employee name, at least one product name and quantity
2. Unit Price will be fetched and multiplied with Quantity to display Total Price
3. Employee can click cancel to cancel order
4. Employee can click save to add record to Order and OrderDetail table without printing receipt
5. Employee can click Print to save and print receipt
6. Employee can click next and previous button to navigate through record

Invoice

Friday, 2 December 2022
19:11:44

EmployeeID E001

ProductName	Quantity	UnitPrice	TotalPrice
Stabilo Pencil	2	1,00 €	2,00 €
Stabilo Eraser	1	0,80 €	0,80 €
A4 Notebook	50	2,50 €	125,00 €
			127,80 €

Receipt of current products purchased

Sales Report
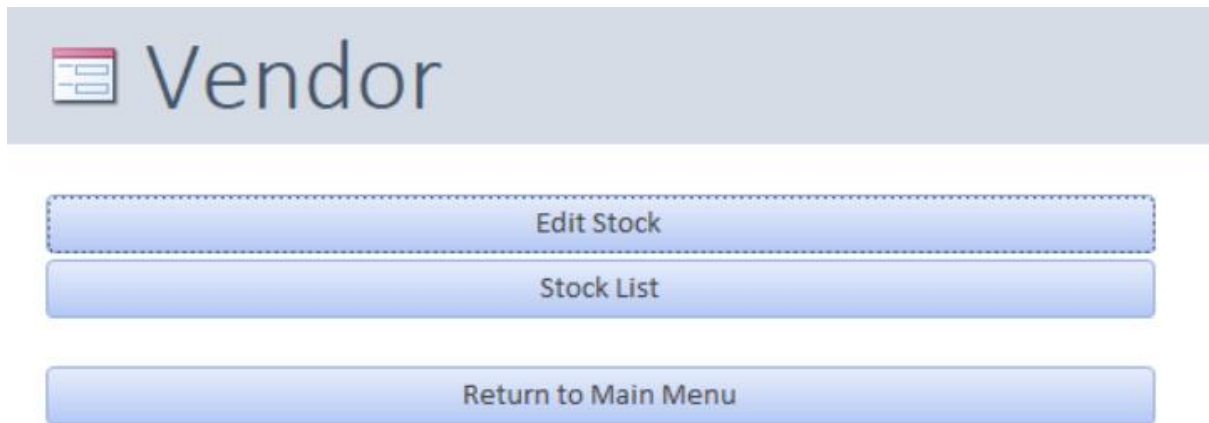
Friday, 2 December 2022
19:12:15

Date	OrderID	EmployeeID	ProductID	Product	Quantity	Total
02/12/2022	O0017	E001	P001	Stabilo Pencil	2	2,00 €
02/12/2022	O0017	E001	P002	Stabilo Eraser	1	0,80 €
02/12/2022	O0018	E001	P005	Lifebuoy Shower Gel	2	15,00 €
02/12/2022	O0018	E001	P006	Sunsilk Hair Gel	1	9,50 €
02/12/2022	O0020	E002	P003	Faber Castell Ballpoint Pen	5	7,50 €
02/12/2022	O0020	E002	P004	Faber Castell Correction Tape	2	9,00 €
02/12/2022	O0020	E002	P007	A4 Notebook	10	25,00 €
02/12/2022	O0021	E004	P001	Stabilo Pencil	1	1,00 €
02/12/2022	O0021	E004	P003	Faber Castell Ballpoint Pen	1	1,50 €
02/12/2022	O0022	E004	P007	A4 Notebook	2	5,00 €
02/12/2022	O0022	E004	P003	Faber Castell Ballpoint Pen	1	1,50 €
02/12/2022	O0017	E001	P007	A4 Notebook	50	125,00 €
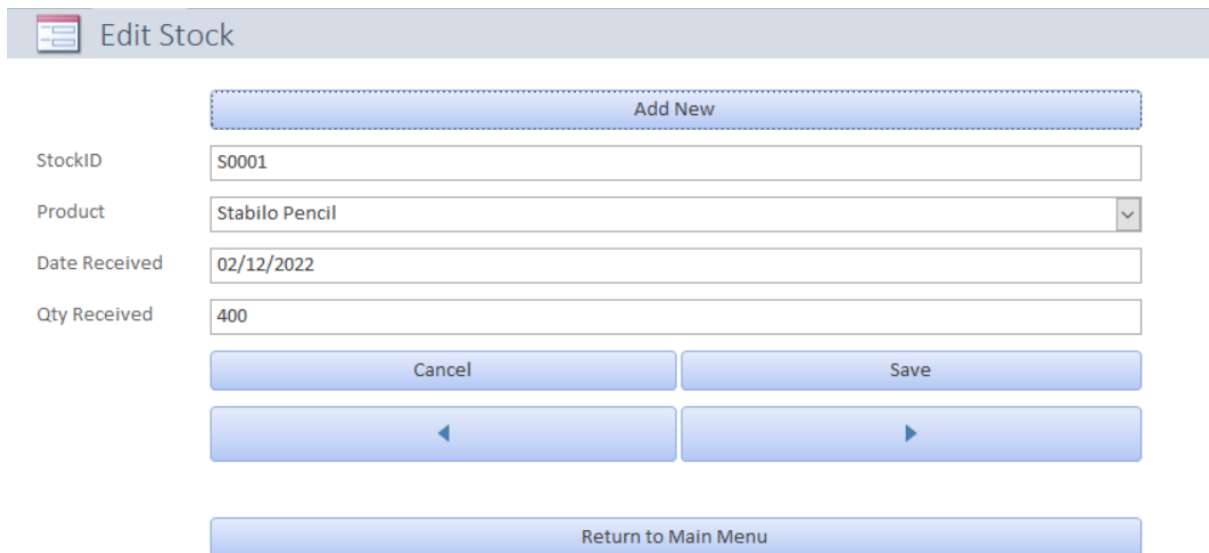
History of total product purchased

8.3 Vendor View

1. Vendor can click Edit Stock to add stock
2. Vendor can click Stock List to view product received history

1. Vendor must enter product name and quantity received
2. Vendor can click cancel to undo stock information
3. Vendor can click save to add record to Stock table
4. Vendor can click next and previous button to navigate through record

Stock List

StockID	VendorID	ProductID	Product	Date Received	Qty Received
S0001	V001	P001	Stabilo Pencil	02/12/2022	400
S0002	V001	P002	Stabilo Eraser	02/12/2022	200
S0003	V002	P003	Faber Castell Ballpoint Pen	02/12/2022	200
S0004	V002	P004	Faber Castell Correction Tape	02/12/2022	200
S0005	V003	P005	Lifebuoy Shower Gel	02/12/2022	20
S0006	V004	P006	Sunsilk Hair Gel	02/12/2022	20
S0007	V005	P007	A4 Notebook	02/12/2022	500

Return to Main Menu

History of product received

8.4 Manager View

Manager

Product | Employee
Edit Product | Edit Employee
Product List | Employee List

Stock | Vendor
| Edit Vendor
Stock List | Vendor List

Return to Main Menu

Edit Product

Add New

ProductID | P001

Vendor | Stabilo

Product | Stabilo Pencil

Unit Price | 1,00 €

Cancel | Save

◄ | ►

Return to Main Menu

1. Manager must enter vendor name, product name and unit price
2. Manager can click cancel to undo product information
3. Manager can click save to add record to Product table
4. Manager can click next and previous button to navigate through record

Edit Employee

Delete	Add New

EmployeeID   E001

Name   Akmal

Tel. No (+60)   1627130016

Cancel	Save

◄	►

Return to Main Menu

1. Manager must enter employee name and telephone number
2. Manager can click cancel to undo employee information
3. Manager can click save to add record to Employee table
4. Manager can click next and previous button to navigate through record

Edit Vendor

Add New

VendorID   V001

Name   Stabilo

Tel. No (+03)   2676392

Address   54 Jalan 1/100A Taman Gemilang Cheras
56100 Kuala Lumpur
Wilayah Persekutuan

Cancel	Save

◄	►

Return to Main Menu

1. Manager must enter vendor name and telephone number
2. Manager can click cancel to undo employee information
3. Manager can click save to add record to Employee table
4. Manager can click next and previous button to navigate through record

Product List

Friday, 2 December 2022
06:21:11

VendorID	ProductID	Product	Unit Price
V001	P001	Stabilo Pencil	1,00 €
V001	P002	Stabilo Eraser	0,80 €
V002	P003	Faber Castell Ballpoint Pen	1,50 €
V002	P004	Faber Castell Correction Tape	4,50 €
V003	P005	Lifebuoy Shower Gel	7,50 €
V004	P006	Sunsilk Hair Gel	9,50 €
V005	P007	A4 Notebook	2,50 €

Return to Main Menu

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Detail information of products that are currently being sold

Employee List

Friday, 2 December 2022
06:21:25

EmployeeID	Name	Tel. No (+60)
E006	Thaqeef	156348695
E001	Akmal	1627130016
E002	Musab	179559270
E003	Safwan	178777384
E004	Haziq	107953458

Return to Main Menu

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Detail information of employees who work for the store

Vendor List

VendorID	Name	Tel. No (+03)	Address
V001	Stabilo	2676392	54 Jalan 1/100A Taman Gemilang Cheras 56100 Kuala Lumpur Wilayah Persekutuan
V002	Faber Castell	41438628	2B 2nd Floor Jalan 46/26 Taman Sri Rampai 53300 Kuala Lumpur Wilayah Persekutuan
V003	Lifebuoy	55496167	1 204 Jln Bercham Taman Ria 31400 Ipoh Perak
V004	Sunsilk	79431394	58 Jln Ss7/30 Ss7 Petaling Jaya 47301 Petaling Jaya Selangor
V005	Muji	78062057	Blok G 47-4 Jln Pju 1/37 Prima Square Petaling 46500 Petaling Jaya Selangor

Return to Main Menu

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Detail information of vendors that are supplying products to the store

Stock List

StockID	VendorID	ProductID	Product	Date Received	Qty Received
S0001	V001	P001	Stabilo Pencil	02/12/2022	400
S0002	V001	P002	Stabilo Eraser	02/12/2022	200
S0003	V002	P003	Faber Castell Ballpoint Pen	02/12/2022	200
S0004	V002	P004	Faber Castell Correction Tape	02/12/2022	200
S0005	V003	P005	Lifebuoy Shower Gel	02/12/2022	20
S0006	V004	P006	Sunsilk Hair Gel	02/12/2022	20
S0007	V005	P007	A4 Notebook	02/12/2022	500

Return to Main Menu

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Detail information of products that has been sold

8.5 Administrator View

Administrator has access to all features other than being able to manually edit the table

9.0 Conclusion

It is clear that the database system created for Koop UNITEN will be a help all categories of users. Employee do not have to manually paste receipt papers and file it because every purchase is saved on the database and can be reused. Manager can keep track of current employees who are working for the store, update product and vendor information. Inventory also are being managed systematically and so sale is consistent to stock in and out. Overall, it helps to remove redundant work, save data on the database offline or online, save time and energy hence improve overall productivity.