HyperAV

Home Cinema

Retailer of Home Cinema Equipment

Group Members

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Overview

At present the company uses a basic spreadsheet system to record customer and supplier orders and to keep track of stock levels at each retail branch and the warehouse. The buyer and stock controller keep in regular contact with the shops and the warehouse to check stock levels and the status of orders. This is complicated as each shop only contains a limited number of members of staff and they are often busy dealing with customers. To eliminate this administration overhead, the managing director of the company has decided that a centralised database system is required. The database will be stored on a server at the company's head office and will be accessed by the shops, the warehouse, the buyer and the stock controller.

Introduction

The purpose for HyperAV Home Cinema System is to introduce an online presence for the retail shop to allow users throughout the country to view the products they sell and also to solve the problems with maintaining stock in all the branches of the shop without interrupting the Sales Assistants by constant telephone calls. This report includes HyperAV's online website requirements for the online presence of a shop system. In addition, it includes the Web development Life Cycle. This report explains the different aspects of the system with the various diagrams which include Use Case Diagrams, Activity Diagrams, an Entity Relationship Diagram and a Class diagram. The entity relationship diagram represents the conceptual level and relational database is the logical level for the database. The database has been created and populated with the business details and some useful queries have been included. The group members have all equally participated in this project.

Goals

1. To design the Use Case Diagram, Activity Diagram, Class Diagram, and an ERD diagram to show how the system works.

2. Designing and implementing the database to store the required data of the systems day to day activities.

3. Design and develop the the front end using the PHP server side scripting language.

Specifications

OO principles in the context of System Analysis and Design

Using MySQL to design database structure

Create maintain and query databases using data definition and data manipulation language.

Issues in the physical organisation of the databases and the implementation of database management system.

Problems Faced With Current System

- Checking stock levels was tedious job, constant telephone calls required and the Sales Assistants had to leave their own work to answer telephone calls.
- No centralized way to check the stock level
- Slow customer service because staff are busy with constant telephone calls.
- Product information given to customers was handwritten.
- There was no stored records of potential customers to inform about special offers.
- Price list cannot be updated across all branches so each individual branch may have different prices.
- No backup been taken at the end of the day
- Business records were not kept to check regularly the growth of the business

System requirements for the web presence of the shop

- Able to showcase the products online
- Able to easily identify the stock level of each product in all branches of the shop, and which products are out of stock
- Able to keep a count of parts ordered and received and to check one against the other
- Browse to check the availability of the product
- Ordered and available stock information is easily accessible.
- Allow customers to order the products that are not available in the shop which directly sends order to the supplier due to the demand of the product.
- Create business reports for sales, purchases, profit based on date ranges, month or year.
- Stock is searchable to see which products are out of stock so that they can be ordered.
- Allow to check the price difference between purchase price and selling.
- Print an up-to-date price list to give to customers who are just enquiring.
- Create regular, automatic, offsite backups of the database.
- User friendly, easy to use for people at their own space.
- Keep a record of fast moving products and maintain stock.
- Be secured by means of password to keep customer data safe.

Use Case Diagram (Using MoSCoW prioritisation)

Firstly, all the actors were identified from the case study for HyperAV and their roles within the system notified. This was done by deciding whether it was an initiative or informative.

Must Have - Without these use cases, business won't run

Should Have - Without these business will run but they are needed for a smooth running of the business.

Could Have - Additional functionality that isn't essential

Combined UCD
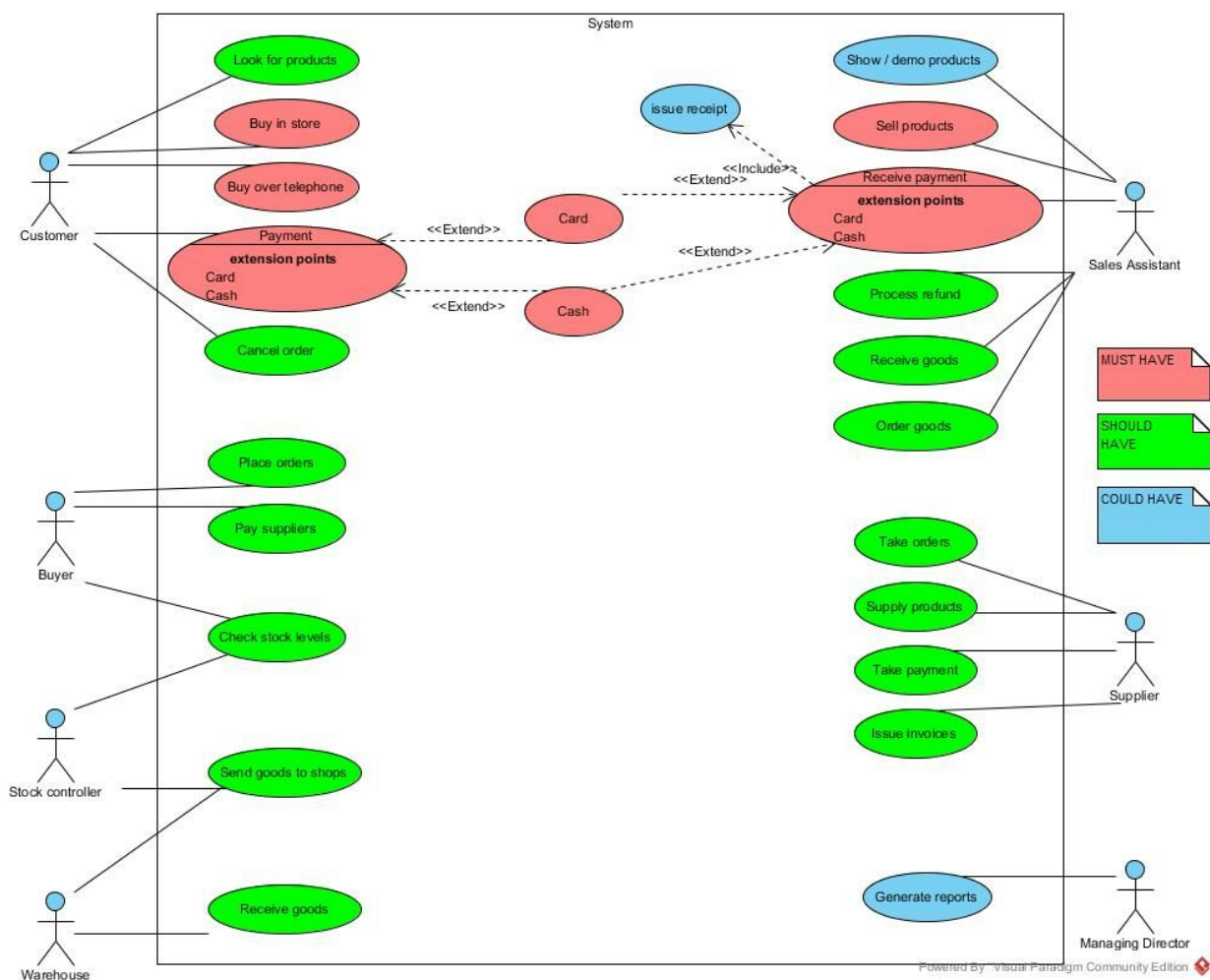
Each Group Members UCD

Dan's Use Case Diagram
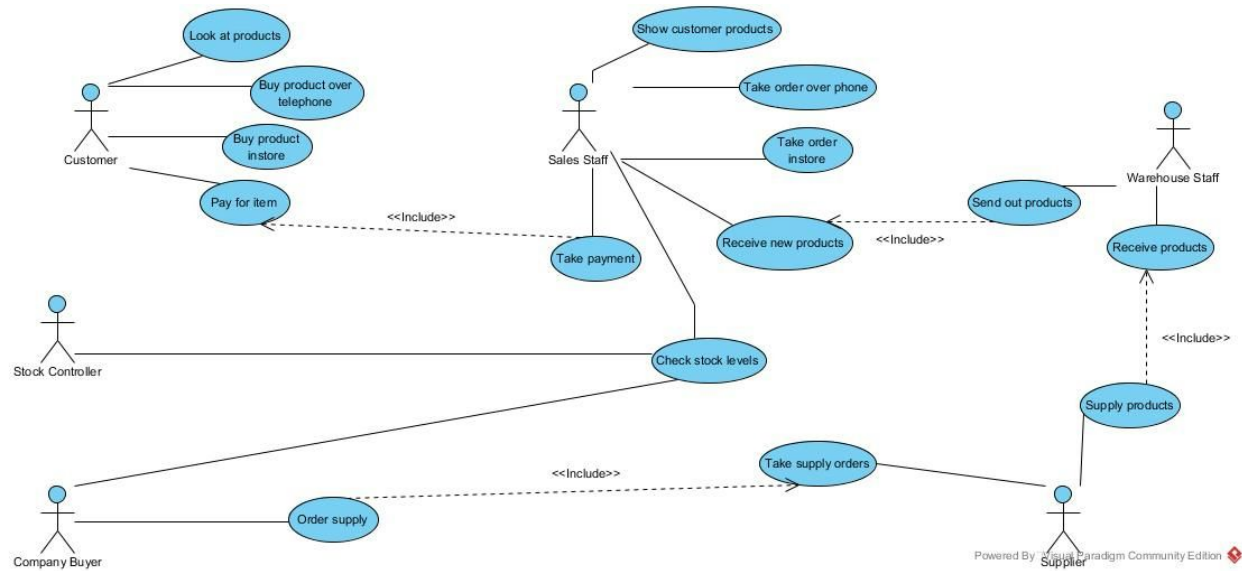
Mark's Use Case Diagram
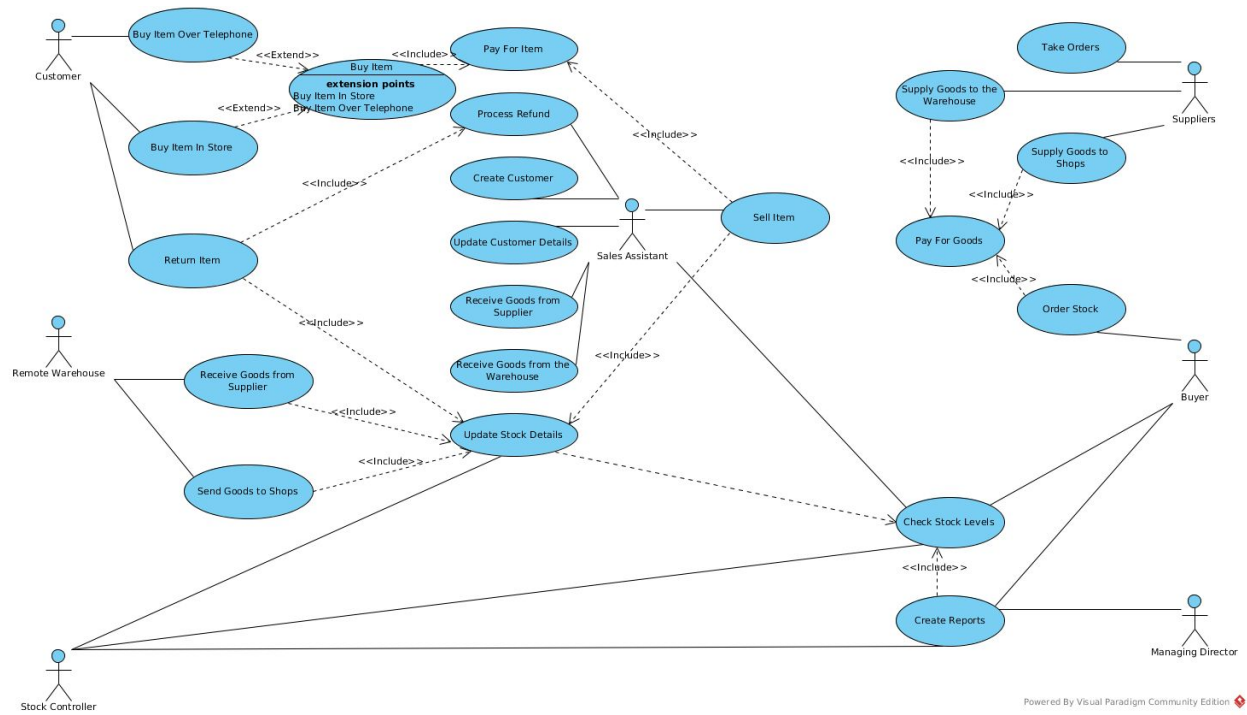
Janet's Use Case Diagram
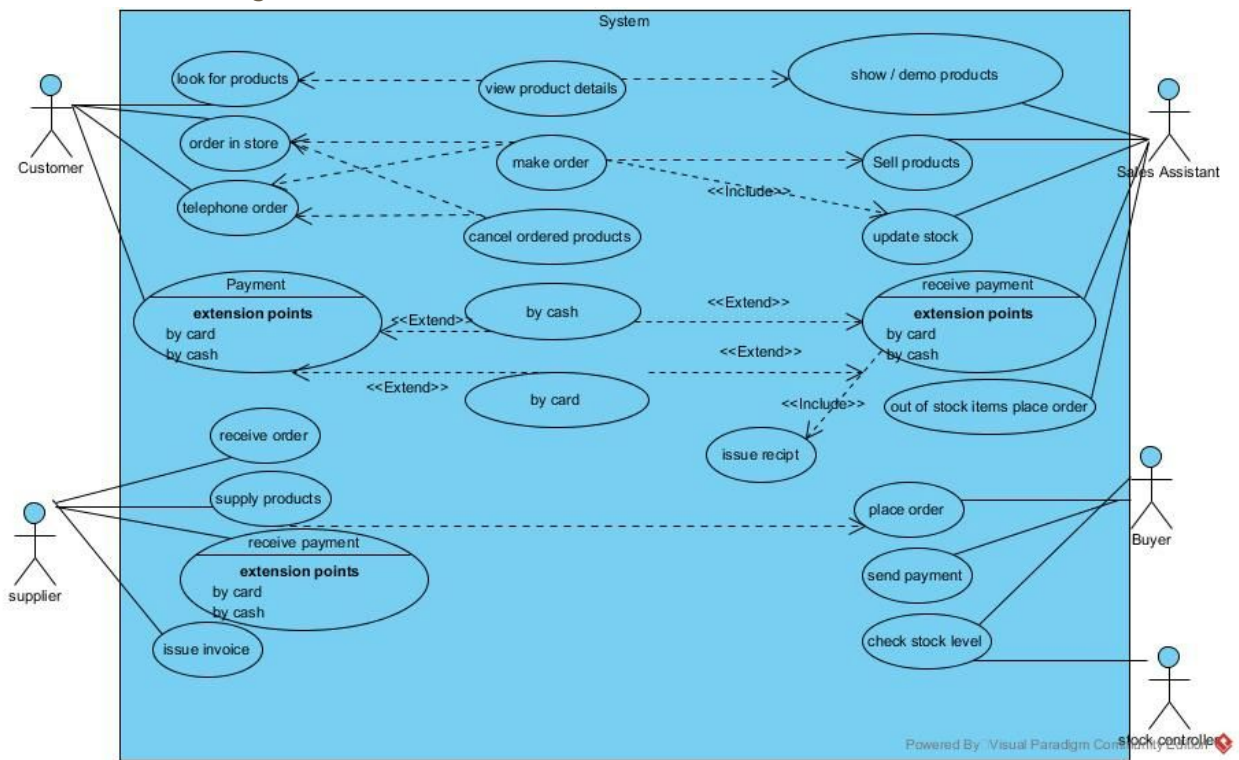
Use Case Specifications and Activity Diagrams

Dan's Use Case Specifications and corresponding Activity Diagrams

Use Case – Order goods
Owner
Sales assistant
Actors
Sales assistant Stock controller
Pre-Conditions
Item not in stock instore
Post-Conditions
Item is in stock
Primary Path
Shop order is not in stock Payment is taken Request item from the warehouse Warehouse sends item to shop
Alternate Path
If warehouse doesn't have item in stock, buyer orders item from the supplier

Start

Customer orders item

Item not in stock

Payment is taken

Request item from warehouse

Warehouse does not have item in stock

Buyer orders item from supplier

Warehouse has item in stock

Item sent to shop

Finish

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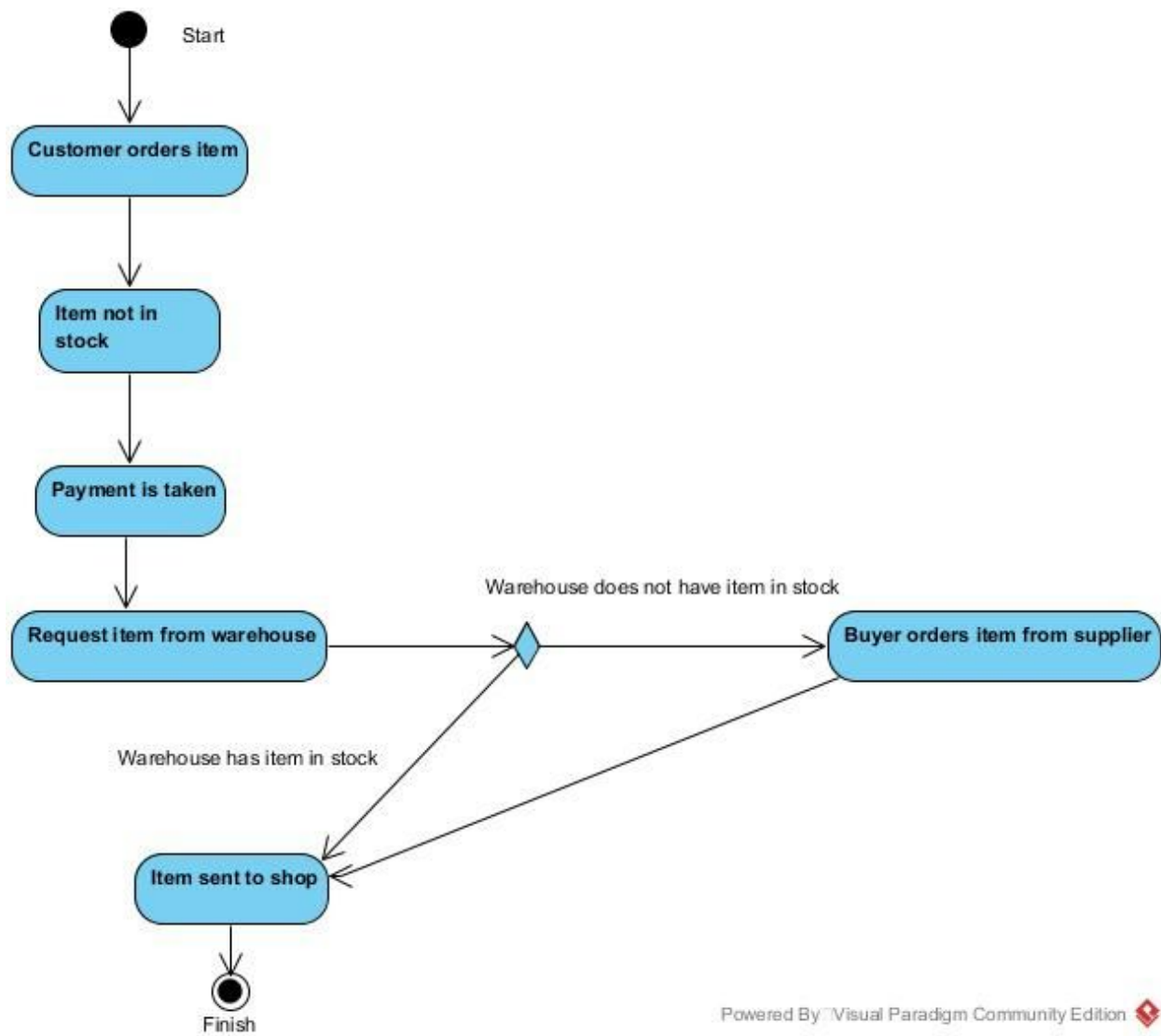
Use Case – Sell Products

Owner

Sales Assistant

Actors

Sales Assistant
Customer

Pre-Conditions

Customer wants to buy an item

Post-Conditions

Customer receives item

Primary Path

Take order either instore or over telephone
Check if item is in stock
Take payment
Give customer item

Alternate Path

If item not in stock, ordered from warehouse

Customer orders item

Order taken by telephone or instore

Check if item is instock

Item not instock

Item ordered from warehouse

Item instock

Sent to store

Take payment

Give customer item

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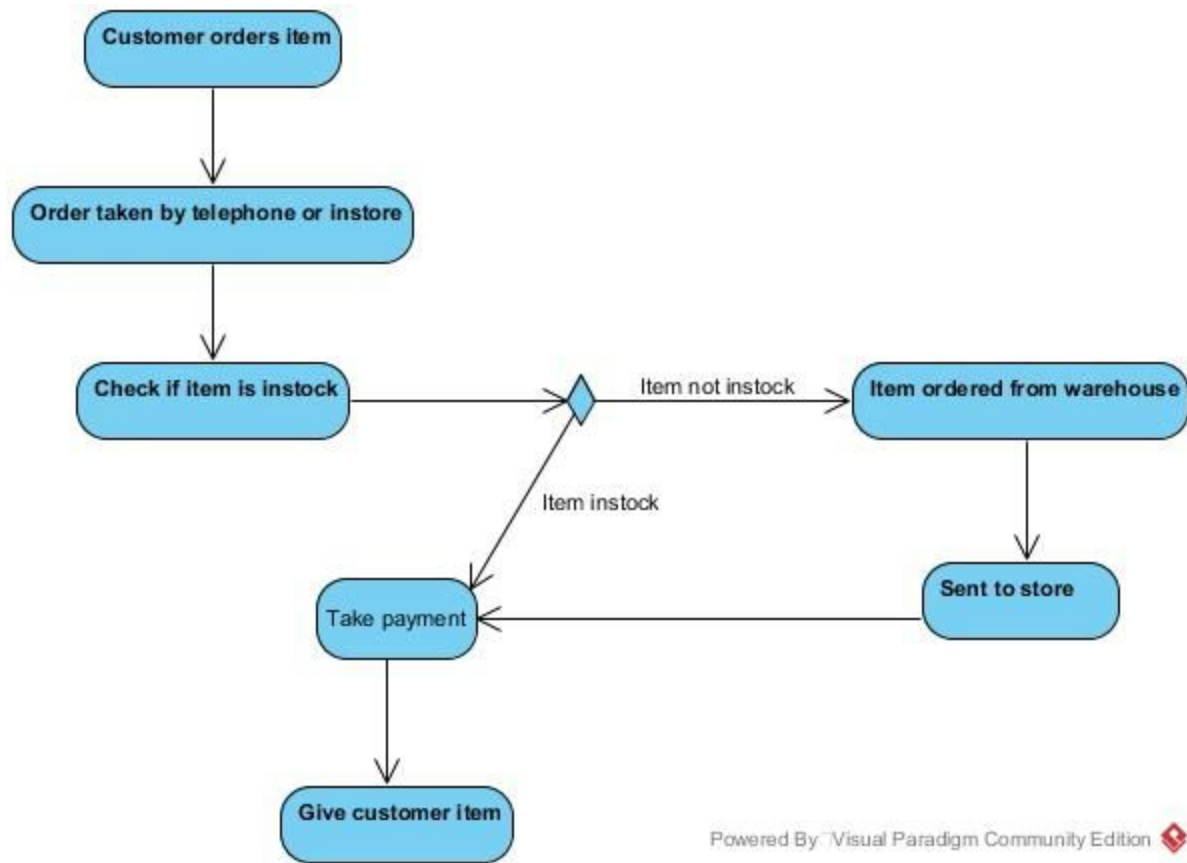
Mark's Use Case Specifications and corresponding Activity Diagrams

Use Case Specification – Send Goods to Shops

Owner

Stock Controller

Actors

Stock Controller, Warehouse

Pre-Conditions

Shops low on or out of stock of items and they need more stock and stock is available in the warehouse

Post-Conditions

Shop stock levels are adequate

Primary Path

- Stock Controller checks the stock levels for each item in each shop
- Items that have low stock count which should be higher are listed with actual and recommended stock levels
- Stock Controller obtains list of items in stock in the warehouse
- The two lists are cross checked and a third list of items to be sent to each shop is created
- Warehouse creates order from each list
- Warehouse send the goods to the shops

Alternate Path

- Warehouse receives a request from a shop for an item a customer has ordered
- Warehouse creates order for the item and sends it to the shop

Additional Notes

Primary Path	Alternate Path

Start

Generate report of stock levels in the shops

Check if items are in the warehouse

DecisionNode

Not in stock

Order from supplier

In stock

Warehouse creates order from each list

Warehouse sends goods to the shops

Finish
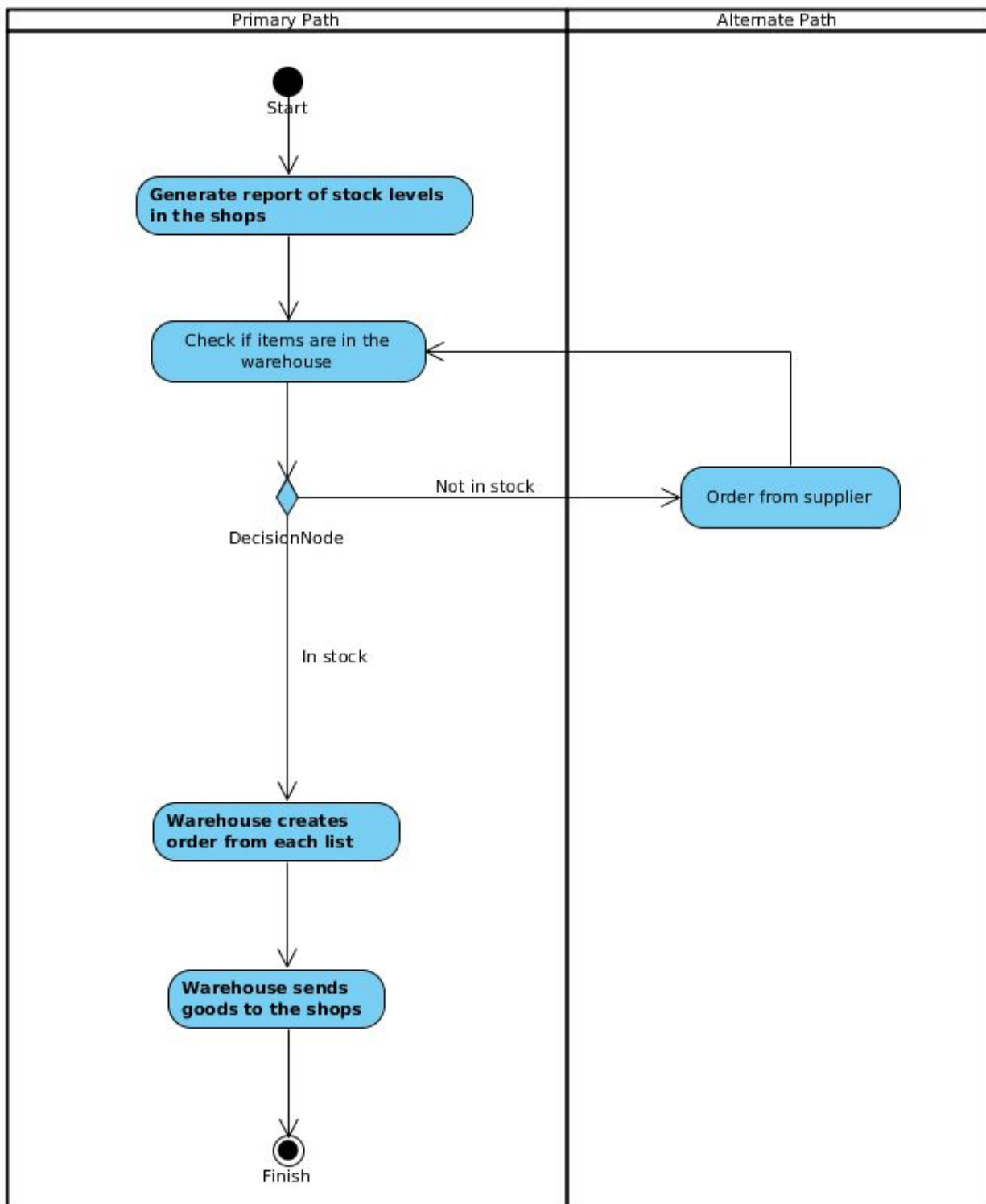
Use Case Specification – Place Orders

Owner

Buyer

Actors

Buyer, Supplier, Sales Assistant

Pre-Conditions

An item is out of stock or low on stock and more stock is required

Post-Conditions

Stock levels are adequate or not needed

Primary Path

- Generate report of stock levels in shops and the warehouse
- Identify which items need more stock
- Identify how much of each item to buy based on sales and predictions
- Check item(s) are still available from supplier
- Create order details
- Send order(s) to supplier(s)

Alternate Path

- Sales Assistant takes an order for an item which is out of stock
- Item is also out of stock in the warehouse
- Buyer checks item(s) are still available from supplier
- Buyer places an order with the supplier

Additional Notes
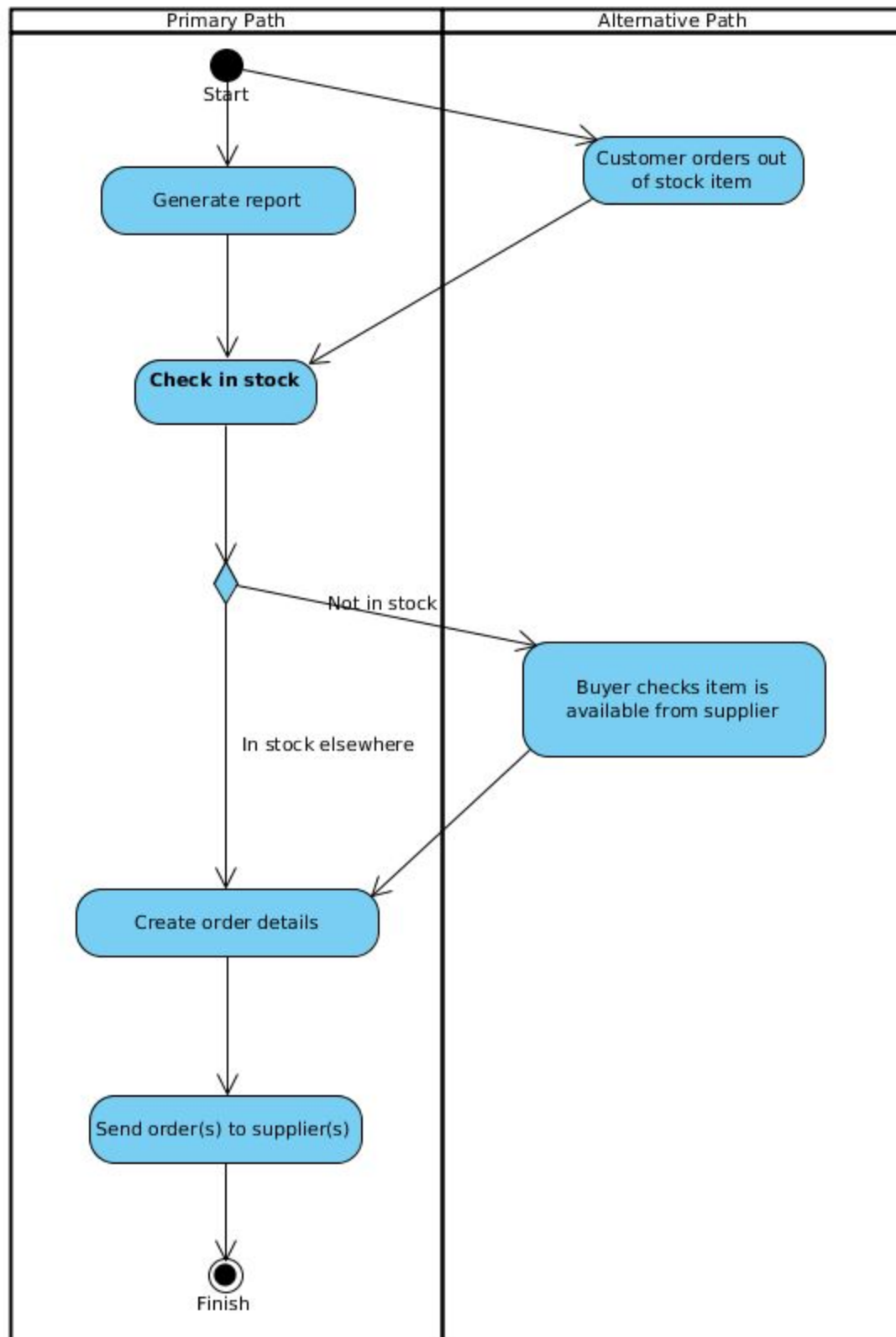
Janet's Use Case Specifications and corresponding Activity Diagrams

Use Case: Buy Products in Store

Owner	
Customer	
Actors	
Customer Sales Assistant	
Pre-Conditions	
Look for the various brands of products in store and if required ask for the demonstration of products to the Sales Assistant.	
Post-Conditions	
Product / s bought	
Primary Path	

- ·   Customer choose the product to buy.
- ·   System display New Order screen and identify the Sales Assistant.
- ·   Sales Assistant provide product Number to the System and System display the product details.
- ·   Sales Assistant enter the quantity customer wants to buy.
- ·   System checks product availability and incase of insufficient stock Add the product to backorder line.
- ·   Customer provides staff with their contact details
- ·   Process Payment [separate use case]
- ·   System generate receipt
- ·   Customer buy the product.

Alternate Path

- ·   If the ordered product is not in stock then

·   Sales Assistant request the customer to do the payment and gives a future delivery date.

·   Customer makes the payment

·   Sales Assistant place order to the supplier.
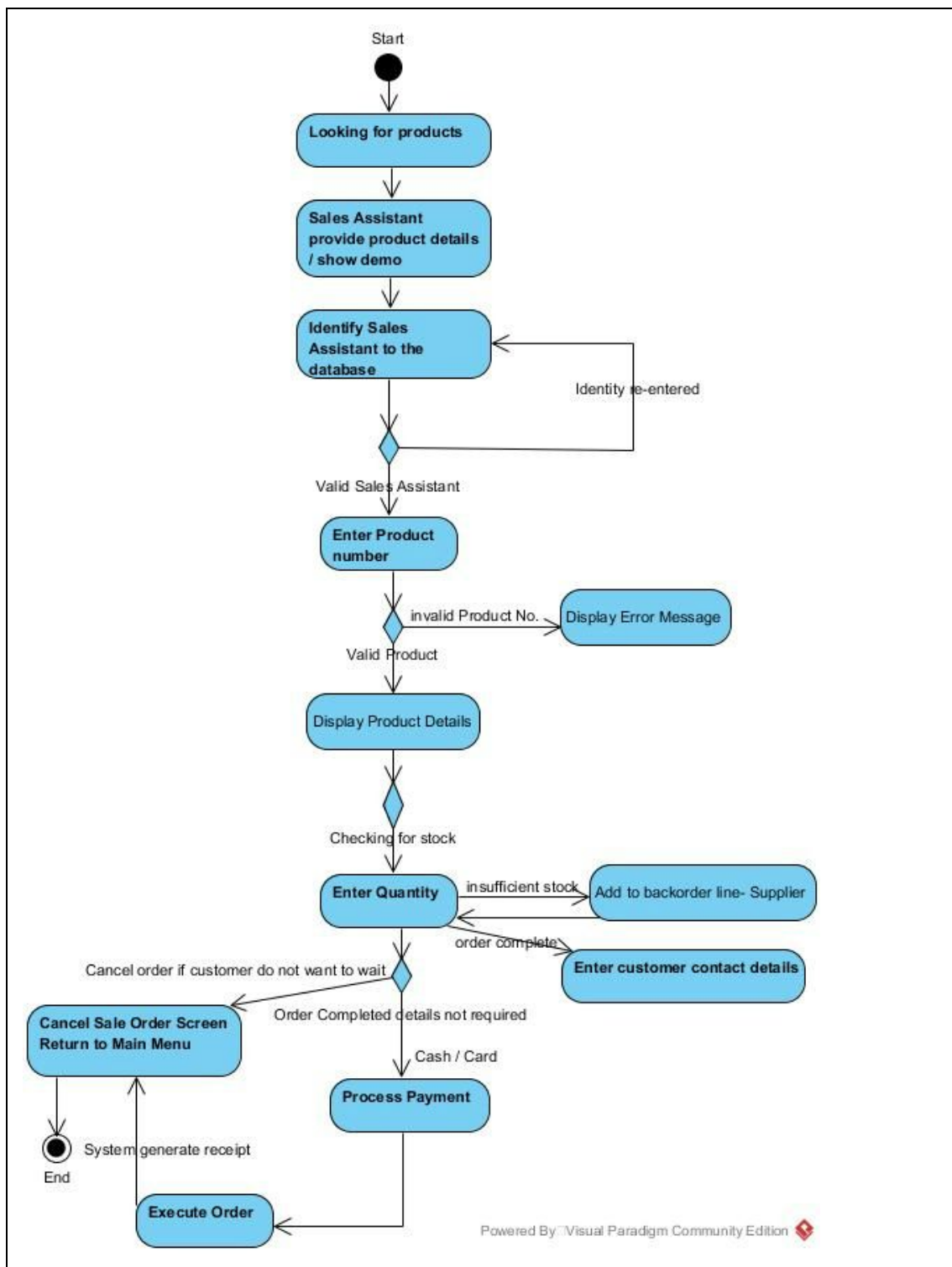
·   Product delivered to the customer as soon it is available.

Class Diagram

Login
- -userID
- -password
- -permissions
- +verify()

Staff Logins

Staff
- -staffId
- -stName
- -stAddress
- -stTelephone
- -stEmail
- -stJobRole
- -stBranch
- +createOrder(product : Products, quantity : int)
- +createCustomer()

Customer
- -custID
- -custName
- -custAddress
- -custTelephone
- -custEmail
- +addPaymentMethod()
- +cancelOrder()

Place order

Products
- -productID
- -prName
- -prType
- -prPrice
- -prStock
- +displayDetails()
- +stock(quantity : int)

0..*   views   0..1

1   place Order   Check Availability

subject of

OrderItem
- -productID
- -orderID
- -quantity
- -itemTotal
- +create(product : Products, quantity : int)

1..*   line   1

Orders
- -orderID
- -orderTotal
- -orderDate
- -deliveryDate
- +create(product : Products, quantity : int)
- +addItem(product : Products, quantity : int)
- +placeOrder()
- +deliverOrder()

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State Diagram

Start

Looking for products

Sales Assistant
provide product details
/ show demo

Identify Sales
Assistant to the
database

Identity re-entered

Valid Sales Assistant

Enter Product
number

invalid Product No. — Display Error Message

Valid Product

Display Product Details

Checking for stock

Enter Quantity — insufficient stock — Add to backorder line- Supplier

order complete

Cancel order if customer do not want to wait

Enter customer contact details

Cancel Sale Order Screen
Return to Main Menu

Order Completed details not required

Cash / Card

Process Payment

System generate receipt

End

Execute Order

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Notes

Products displayed in the shop are for the demonstration purpose for the customers
to try them before they make the choice.

Use Case: Payment

Owner: Customer

Customer

Actors

Customer

Sales Assistant

Pre-Conditions

Check enough cash available or Bank card is with you to pay for the product .
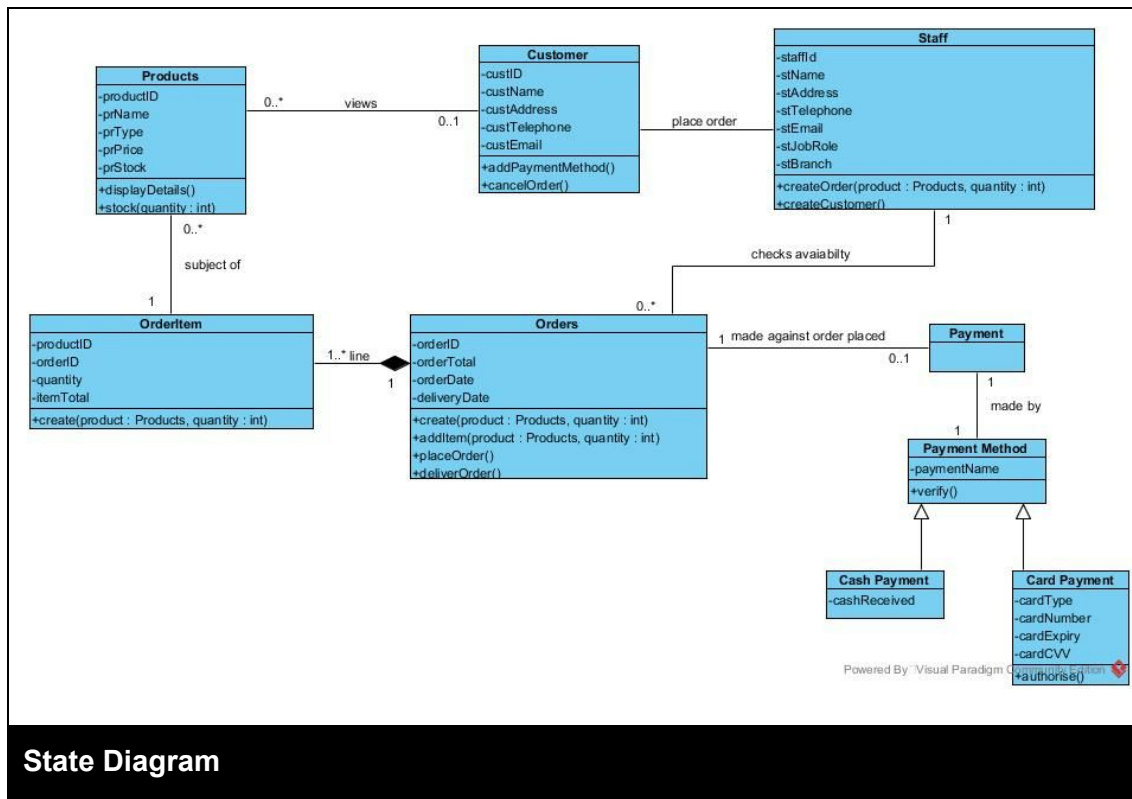
Post-Conditions

Paid for the product / s.

Primary Path

- · Customer provides card details
- · Sales Assistant record the details in the system
- · System authorise the payment by validating PIN
- · If PIN validated then executes the Order.
- · If PIN failed Order fails to execute and ask to re-enter PIN
- · System returns back to the main screen.
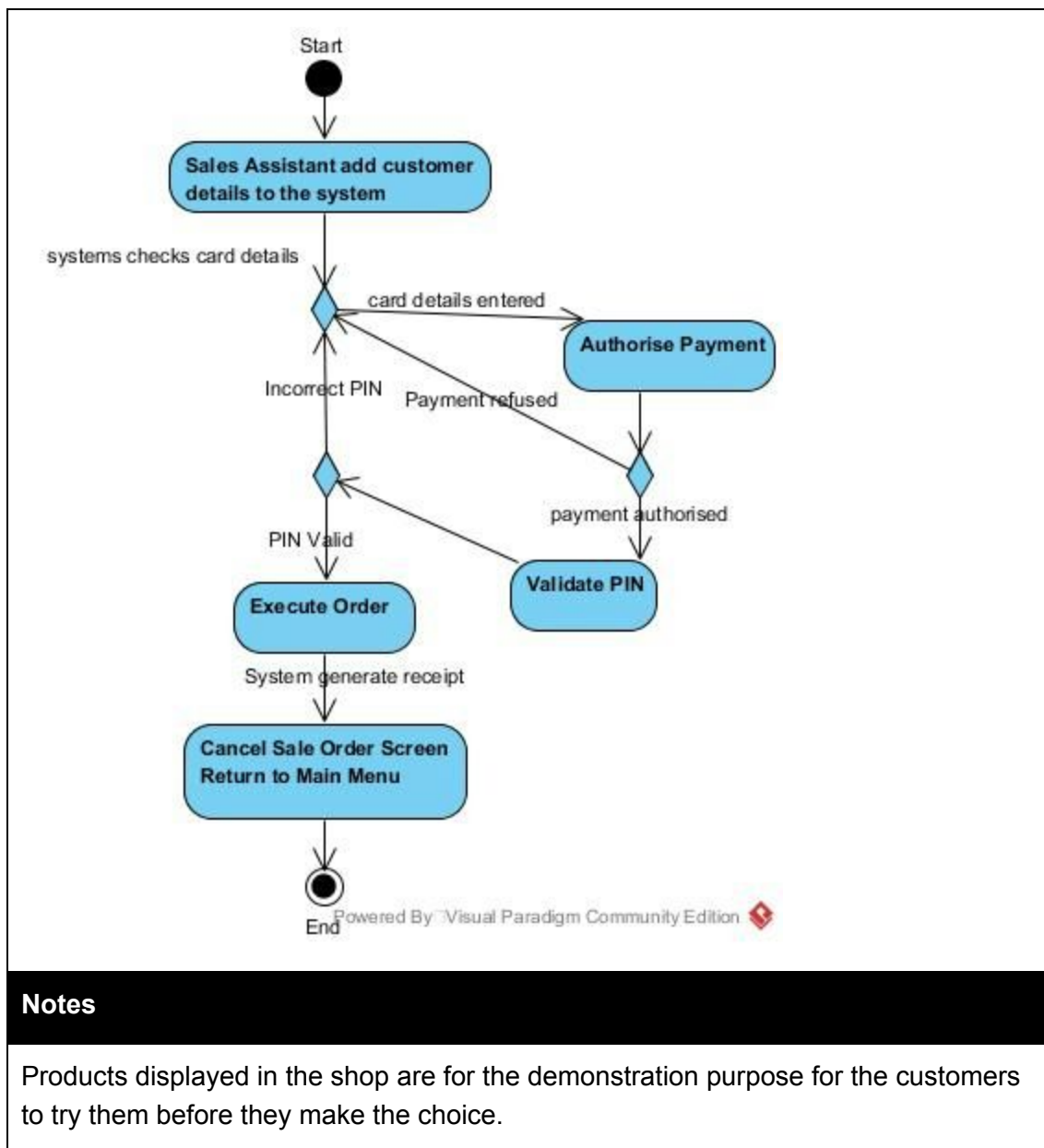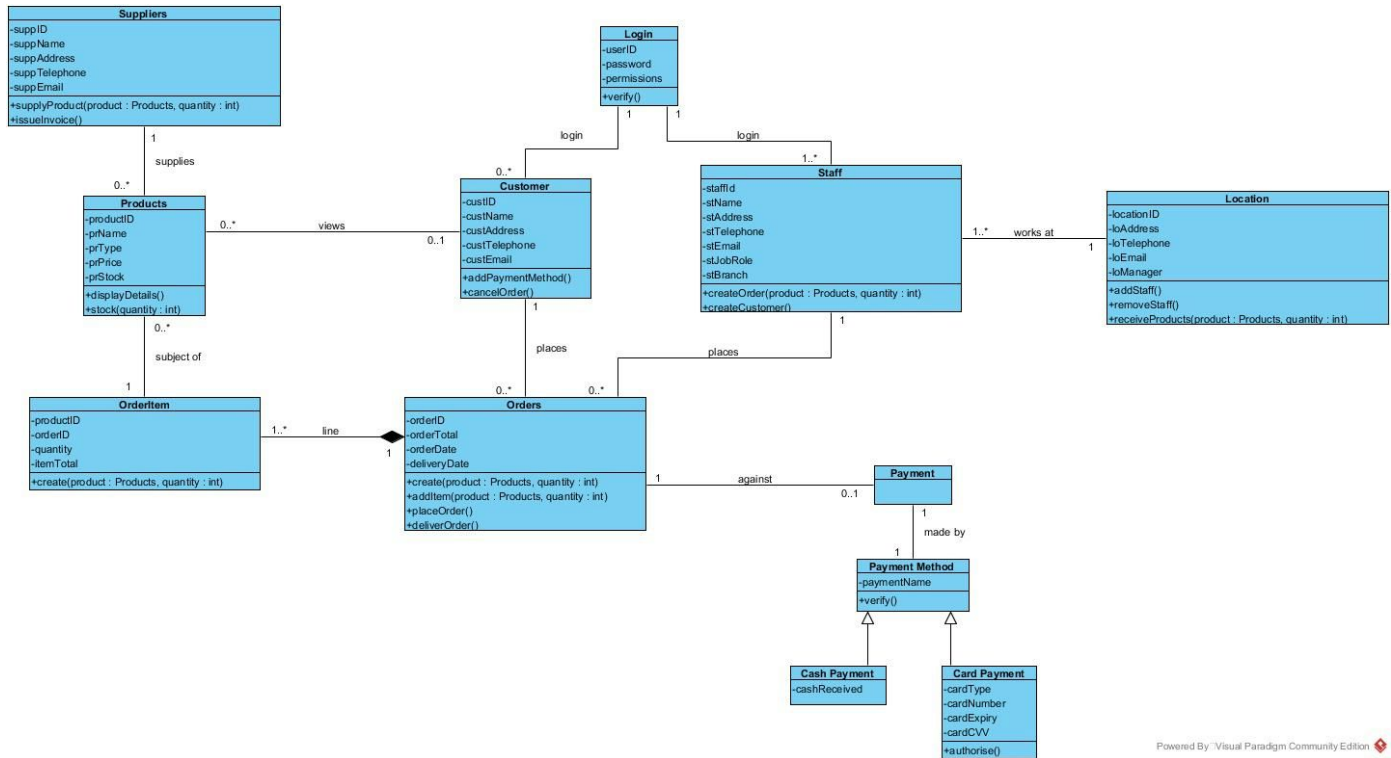- · System generate the receipt for the customer

Alternate Path

- · Customer pays Cash
- · Sales Assistant verifies all the cash and put in the drawer
- · System generate the receipt for the customer
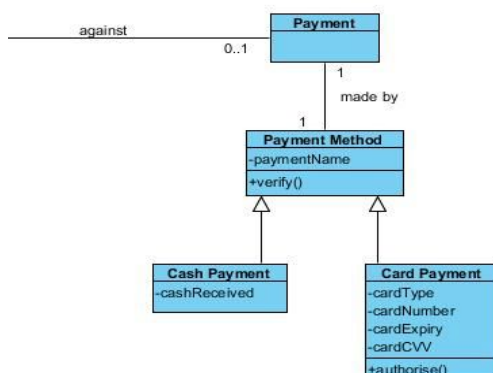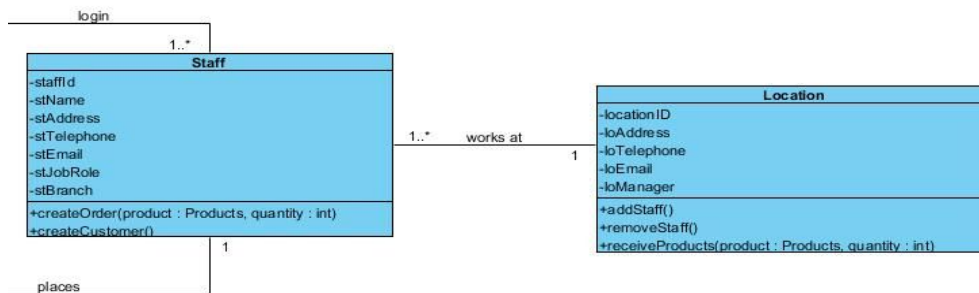
Class Diagram

State Diagram

Start

Sales Assistant add customer
details to the system

systems checks card details

card details entered

Authorise Payment

Incorrect PIN

Payment refused

payment authorised

PIN Valid

Validate PIN

Execute Order

System generate receipt

Cancel Sale Order Screen
Return to Main Menu

End
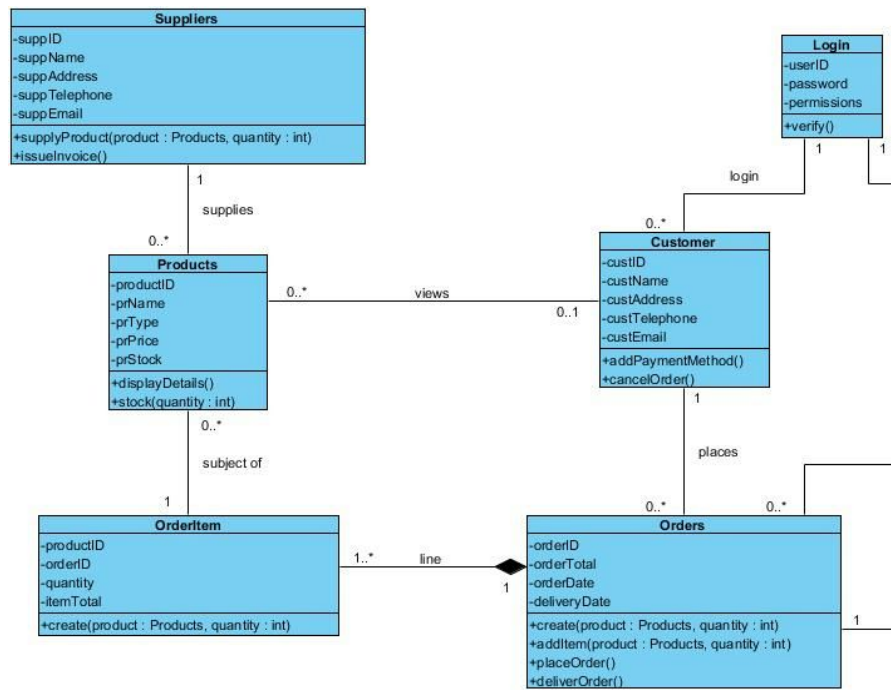
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Notes

Products displayed in the shop are for the demonstration purpose for the customers
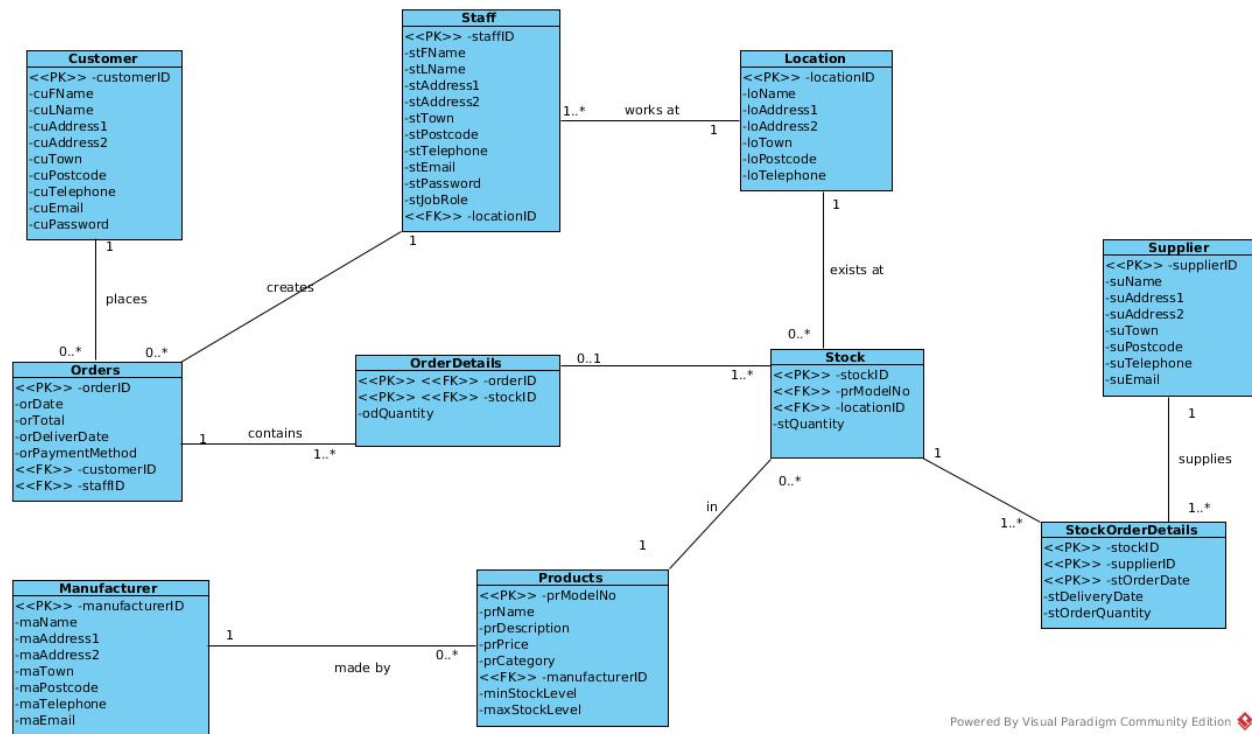to try them before they make the choice.

Class Diagram

This is our final class diagram. We have identified attributes and operations relevant for each table and shown the links between tables.

Suppliers

- -suppID
- -suppName
- -suppAddress
- -suppTelephone
- -suppEmail

+supplyProduct(product : Products, quantity : int)
+issueInvoice()

Login

- -userID
- -password
- -permissions

+verify()

1   1

1

login

supplies

0..*

0..*

Products

- -productID
- -prName
- -prType
- -prPrice
- -prStock

+displayDetails()
+stock(quantity : int)

0..*   views   0..1

Customer

- -custID
- -custName
- -custAddress
- -custTelephone
- -custEmail

+addPaymentMethod()
+cancelOrder()

1

places

0..*   0..*   1

0..*

subject of

1

OrderItem

- -productID
- -orderID
- -quantity
- -itemTotal

+create(product : Products, quantity : int)

1..*   line   1

Orders

- -orderID
- -orderTotal
- -orderDate
- -deliveryDate

+create(product : Products, quantity : int)
+addItem(product : Products, quantity : int)
+placeOrder()
+deliverOrder()

login

1..*

Staff

- -staffId
- -stName
- -stAddress
- -stTelephone
- -stEmail
- -stJobRole
- -stBranch

+createOrder(product : Products, quantity : int)
+createCustomer()

1..*   works at   1

Location

- -locationID
- -loAddress
- -loTelephone
- -loEmail
- -loManager

+addStaff()
+removeStaff()
+receiveProducts(product : Products, quantity : int)

1

places

against   ## Payment

0..1

1   made by

1

Payment Method

- -paymentName

+verify()

Cash Payment

- -cashReceived

Card Payment

- -cardType
- -cardNumber
- -cardExpiry
- -cardCVV

+authorise()

ERD

This is our final Entity Relationship Diagram.

The OrderDetails table solves a many to many relationship between orders and stock. It enables each order to have as many different products in it as required. Likewise the StockOrderDetails table performs a similar function when ordering from the supplier. The Stock table allows the same product to exist in different locations. Products are linked to the supplier via the Stock table.

Data Dictionary

A data dictionary has been created to show all the attributes from the ERD.

hyperAV_customer					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
customerId	int	10	PRIMARY KEY	AUTO INCREMENT	
cuFName	varchar	25		NOT NULL	
cuLName	varchar	50		NOT NULL	
cuAddress1	varchar	50		NOT NULL	
cuAddress2	varchar	50			
cuTown	varchar	15		NOT NULL	
cuPostcode	varchar	15		NOT NULL	
cuTelephone	varchar	11		NOT NULL	
cuEmail	varchar	50		NOT NULL UNIQUE	
cuPassword	varchar	50		NOT NULL	

hyperAV_location					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
locationID	int	10	PRIMARY KEY	AUTO INCREMENT	
loName	varchar	25		NOT NULL	
loAddress1	varchar	20		NOT NULL	
loAddress2	varchar	20			
loTown	varchar	20		NOT NULL	
loPostcode	varchar	15		NOT NULL	
loTelephone	varchar	20		NOT NULL; UNIQUE	

hyperAV_staff					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
staffID	int	10	PRIMARY KEY	AUTO INCREMENT	
stFName	varchar	25		NOT NULL	
stLName	varchar	50		NOT NULL	
stAddress1	varchar	50		NOT NULL	
stAddress2	varchar	50			
stTown	varchar	15		NOT NULL	
stPostcode	varchar	15		NOT NULL;	
stTelephone	varchar	20		NOT NULL	
stEmail	varchar	50		NOT NULL	
stPassword	varchar	50		NOT NULL	
stJobRole	varchar	50		NOT NULL	
locationID	int	10	FOREIGN KEY		hyperAV_ location

hyperAV_orders					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
orderID	int	10	PRIMARY KEY	AUTO INCREMENT	
orDate	Date			NOT NULL CHECK(orDate = DATE(orDate))	
orTotal	decimal	10,2		NOT NULL	
orDeliverDate	Date			NOT NULL CHECK(orDeliverDate >= orDate)	
orPaymentMethod	varchar	15		NOT NULL	

| customerID | int | 10 | FOREIGN KEY | | hyperAV_ customer |
| staffID | int | 10 | FOREIGN KEY | | hyperAV_ staff |

hyperAV_manufacturer					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
manufacturerID	int	10	PRIMARY KEY	AUTO INCREMENT	
maName	varchar	25		NOT NULL	
maAddress1	varchar	40		NOT NULL	
maAddress2	varchar	40			
maTown	varchar	20		NOT NULL	
maPostocde	varchar	15		NOT NULL	
maTelephone	varchar	20		NOT NULL UNIQUE	
maEmail	varchar	50			

hyperAV_supplier					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
supplierID	int	10	PRIMARY KEY	AUTO INCREMENT	
suName	varchar	25		NOT NULL	
suAddress1	varchar	40		NOT NULL	
suAddress2	varchar	40		NOT NULL	
suTown	varchar	20		NOT NULL	
suPostcode	varchar	15		NOT NULL	
suTelephone	varchar	20		NOT NULL UNIQUE	
suEmail	varchar	50			

hyperAV_products

FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
prModelNo	varchar	15	PRIMARY KEY	NOT NULL UNIQUE	
prName	varchar	25		NOT NULL	
prDescription	varchar	100		NOT NULL	
prPrice	Decimal	6,2		NOT NULL	
prCategory	varchar	30		NOT NULL	
manufacturerID	int	10		NOT NULL	
minStockLevel	int	6		NOT NULL	
maxStockLevel	int	6			

hyperAV_stock

FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
stockID	int	10	PRIMARY KEY	AUTO INCREMENT	
prModelNo	varchar	15	FOREIGN KEY	NOT NULL	hyperAV_ products
locationID	int	10	FOREIGN KEY	NOT NULL	hyperAV_ location
stQuantity	int	7		NOT NULL	

hyperAV_orderdetails

FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
orderID	int	10	PRIMARY KEY FOREIGN KEY	NOT NULL	hyperAV_ orders
stockID	int	10	PRIMARY KEY	NOT NULL	hyperAV_

			FOREIGN KEY		stock
odQuantity	int	3		NOT NULL CHECK(odQuantity>0)	hyperAV_ location

hyperAV_stockorderdetails					
FieldName	Data Type	Size	Constraint Name	Constraint Condition	Foreign Key Table
stockID	int	10	PRIMARY KEY FOREIGN KEY	NOT NULL	hyperAV_ stock
supplierID	int	10	PRIMARY KEY FOREIGN KEY	NOT NULL	hyperAV_ supplier
stOrderDate	Date		PRIMARY KEY	NOT NULL CHECK(stOrderDate = DATE(stOrderDate))	hyperAV_ location
stDeliveryDate	Date				
stOrderQuantity	int	3		NOT NULL CHECK(stOrderQuantity>0)	

SQL Queries

1. List all staff members who work at the London branch.

Query and the output:

```
mysql> SELECT stFName AS "First Name",stLName AS "Last Name",loName AS "Location"
    -> FROM hyperav_staff JOIN hyperav_location ON hyperav_location.locationid = hyperav_staff.locationid
    -> WHERE hyperav_location.loName = 'HyperAv London';
+------------+-----------+----------------+
| First Name | Last Name | Location       |
+------------+-----------+----------------+
| Shawn      | Michaels  | HyperAV London |
| Bret       | Hart      | HyperAV London |
+------------+-----------+----------------+
2 rows in set (0.00 sec)
```

2.   List all current supplier orders including the name of the supplier and the products and quantities on order.

Query and the output:

```
mysql> SELECT su.suName AS "Supplier Name", pr.prName AS "Product Name", sod.stOrderQuantity AS "Order Quantity"
    -> FROM hyperav_stockorderdetails sod JOIN hyperav_stock st ON sod.stockID = st.stockID JOIN hyperav_products pr
ON st.prModelNo = pr.prModelNo JOIN hyperav_supplier su ON sod.supplierID = su.supplierID
    -> WHERE sod.stDeliveryDate IS NULL;
+-------------------+-------------------+----------------+
| Supplier Name     | Product Name      | Order Quantity |
+-------------------+-------------------+----------------+
| ABC Industries    | Sharp LC32DHE4041K |             5 |
| Power Associates  | Sharp LC32DHE4041K |             3 |
| Energy Inc        | Sharp LC32DHE4041K |             4 |
| Tech Corparations | Sharp LC32DHE4041K |             1 |
| ABC Electronics   | Sharp LC32DHE4041K |             2 |
| ABC Electronics   | Sharp LC32DHE4041K |             7 |
+-------------------+-------------------+----------------+
6 rows in set (0.00 sec)
```

3. List all customer orders with a total value of over £1000 and which branch made the sale. The output should be sorted by sale value.

Query and the output:

```
mysql> SELECT CONCAT(cu.cuFName, ' ', cu.cuLName) AS "Customer Name", o.orDate AS "Order Date", o.orTotal AS "Order Total"
    -> FROM hyperav_orders o JOIN hyperav_customer cu ON o.customerID = cu.customerID
    -> WHERE ortotal > 1000 ORDER BY orTotal DESC;
+---------------+------------+-------------+
| Customer Name | Order Date | Order Total |
+---------------+------------+-------------+
| Cowardy Dog   | 2016-02-08 |     2117.00 |
| Spike Butch   | 2016-02-08 |     1730.50 |
| Spike Butch   | 2016-02-08 |     1473.50 |
| Sylvester Cat | 2016-02-08 |     1200.50 |
+---------------+------------+-------------+
4 rows in set (0.02 sec)
```

4.   Calculate and show the total turnover (total amount taken from sales) for each branch since the beginning of the year.

Query and the output:

```
mysql> SELECT loName, SUM(orTotal) AS "Total Sales", lo.loName AS "Location"
    -> FROM hyperav_orders o JOIN hyperav_staff st ON o.staffID = st.staffID JOIN hyperav_location lo ON st.locationID = lo.locationID
    -> WHERE `orDate` between `MAKEDATE(year(now()),1)` AND `substr(NOW(),1,10)`
    -> GROUP BY loName;
+-------------------+-------------+-------------------+
| loName            | Total Sales | Location          |
+-------------------+-------------+-------------------+
| HyperAV Manchester|     1745.25 | HyperAV Manchester|
| HyperAV Stockport |    18948.75 | HyperAV Stockport |
+-------------------+-------------+-------------------+
2 rows in set (2.07 sec)
```

5.   Calculate and show the average order value of all orders placed at the York branch.

Query and the output:

```
mysql> SELECT loName, avg(orTotal) AS "Average Sales"
    -> FROM hyperav_orders o JOIN hyperav_staff st ON o.staffID = st.staffID JOIN hyperav_location lo ON st.locationID = lo.locationID
    -> group by loName;
+-------------------+---------------+
| loName            | Average Sales |
+-------------------+---------------+
| HyperAV Manchester|     349.050000|
| HyperAV Stockport |     624.450000|
+-------------------+---------------+
2 rows in set (0.00 sec)
```

Screenshots of the website with corresponding code

New Customer can register with their personal details.

Login Screen

Customer or Staff can login using the above login page.

Hello Stranger!

HyperAV Home Cinema
for all your home entertainment needs

| Home | Staff | Customer | Sign In | Reports |

Login

Email Address:
tjerry@yahoo.co.uk

Password:
•••••••••

Are you a member of staff? ☐

Login

Customer logs in using his login credentials. Customer should not tick the check box 'Are you member of Staff?'

Staff Logging in with their own credentials but the staff must tick the checkbox 'Are you member of Staff?'

mudfoot.doc.stu.mmu.ac.uk/students/dsouzaj/hyperav/public/login.php

Hello Tom!

HyperAV Home Cinema
for all your home entertainment needs

| Home | Staff | Customer | Sign In | Reports |

Login

Email Address:
chris.jericho@hyperav.co.uk

Password:
••••••••••

Are you a member of staff? ☑

Login

Staff editing Customer Profile

Hello Tom!

HyperAV Home Cinema
for all your home entertainment needs

| Home | Staff | Customer | Sign In | Reports |

Search Customer and Edit

Last Name: *

Postcode: *

* required

[Edit Customer Details]

Customer has to provide LastName and Postcode to the Staff to change his details so staff can identify the customer by confirming address.

Hello Tom!

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| Home | Staff | Customer | Sign In | Reports |

Search Customer and Edit

Last Name: * Cat

Postcode: * M19 3PG

* required

[Edit Customer Details]

Staff editing customer Details

Hello Tom!

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Home	Staff	Customer	Sign In	Reports

Sylvester
Cat
901 Stockport Road

Levenshulme

Manchester
M19 3PG
01616249700
scat@yahoo.co.in   Save

Changed telephone phone number of the client and saved

Hello Tom!

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Home	Staff	Customer	Sign In	Reports

1

Cat

901 Stockport Road

Levenshulme

Manchester

M19 3PG

01612256748

scat@yahoo.co.in

customer information for Cat has been updated

Staff Deleting Customer

Details of all the customers will be displayed and customer can click on the Remove button to delete the customer.

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Home	Staff	Customer	Sign In	Reports

Products

	Customer Id	First Name	Last Name	Address1	Address2	PostCode	Telephone	Email	
1	Sylvester	Cat	901 Stockport Road	Levenshulme	Levenshulme	M19 3PG	01612256748	scat@yahoo.co.in	Remove Customer
2	Tom	Jerry	70 Delemere Street	Levenshulme	Levenshulme	M19 3WR	01615281225	tjerry@yahoo.co.uk	Remove Customer
3	Spike	Butch	3 Wellington Road	Rusholme	Rusholme	M16 3PG	01616289540	sButch@yahoo.com	Remove Customer
4	Cowardy	Dog	116 Oxford Street	Longsight	Longsight	M1 3LA	0161528623	cDog@gmail.com	Remove Customer
5	Daffy	Duck	1 Machester Road	Cheadle	Cheadle	SK9 3NG	01616240840	dDuck@mymail.co.in	Remove Customer
6	Colonel	Hathi	54 Edwinstowe Drive	Sherwood	Sherwood	NG5 3EP	01158408234	cHathi@gmail.co.uk	Remove Customer
7	Pink	Panther	14 Perry Road	Woodsworth	Woodsworth	NG3 7WR	01157543297	pPanther@ymail.com	Remove Customer
8	Bugs	Bunny	56 Oxford Crecent	Rise Park	Rise Park	NH4 2AA	01188760054	bBunny@msn.com	Remove Customer
9	Felix	The Cat	68 Rock Avenue	Burry Park	Burry Park	BG1 6ED	01108745333	fTheCat@hotmail.com	Remove Customer
10	Samurai	Jack	117 Edward Street	Central Road	Central Road	LL2 8AS	01519800231	sJack@hotmail.co.uk	Remove Customer
11	Cheshire	Cat	2 Recepton Avenue	Manchester Road	Manchester Road	BG2 1AA	01102343323	cCat@yahoo.co.uk	Remove Customer
12	Powerpuff	Girls	1 Disney Road	Cartoon Land	Cartoon Land	M16 0LW	01615624852	ppGirls@myworld.com	Remove Customer

After Deleting the customer Sylvester Cat

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Home	Staff	Customer	Sign In	Reports

1 was deleted from the database

Products

	Customer Id	First Name	Last Name	Address1	Address2	PostCode	Telephone	Email	
2	Tom	Jerry	70 Delemere Street	Levenshulme	Levenshulme	M19 3WR	01615281225	tjerry@yahoo.co.uk	Remove Customer
3	Spike	Butch	3 Wellington Road	Rusholme	Rusholme	M16 3PG	01616289540	sButch@yahoo.com	Remove Customer
4	Cowardy	Dog	116 Oxford Street	Longsight	Longsight	M1 3LA	0161528623	cDog@gmail.com	Remove Customer
5	Daffy	Duck	1 Machester Road	Cheadle	Cheadle	SK9 3NG	01616240840	dDuck@mymail.co.in	Remove Customer
6	Colonel	Hathi	54 Edwinstowe Drive	Sherwood	Sherwood	NG5 3EP	01158408234	cHathi@gmail.co.uk	Remove Customer
7	Pink	Panther	14 Perry Road	Woodsworth	Woodsworth	NG3 7WR	01157543297	pPanther@ymail.com	Remove Customer
8	Bugs	Bunny	56 Oxford Crecent	Rise Park	Rise Park	NH4 2AA	01188760054	bBunny@msn.com	Remove Customer
9	Felix	The Cat	68 Rock Avenue	Burry Park	Burry Park	BG1 6ED	01108745333	fTheCat@hotmail.com	Remove Customer
10	Samurai	Jack	117 Edward Street	Central Road	Central Road	LL2 8AS	01519800231	sJack@hotmail.co.uk	Remove Customer
11	Cheshire	Cat	2 Recepton Avenue	Manchester Road	Manchester Road	BG2 1AA	01102343323	cCat@yahoo.co.uk	Remove Customer
12	Powerpuff	Girls	1 Disney Road	Cartoon Land	Cartoon Land	M16 0LW	01615624852	ppGirls@myworld.com	Remove Customer

Staff inputting Product Information

Staff Placing Order to the Supplier

List of suppliers populated directly from the database any more supplier added to the database will be automatically added to the list. By default all the products displayed from all suppliers.

Products filtered based on the supplier

Hello Chris!

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Supplier Products

Select Category ▼
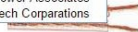
	Name	Description	Price	Category	
	Philips FIDELIO M1 MK2	On Ear Closed Back Headphones	£124.37	Headphones	Buy
	Sharp LC32DHE4041K	32 inch LED TV with DVD Player HD Ready Freeview HD	£169.95	TV	Buy
	Sony STRDH550	Black AV Receiver	£129.00	AV Receiver	Buy

Clicking on the buy button item added to the order and you can choose different items from all available suppliers

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Model No. : LC32DHE4041K was added to your order

Name	Price
Sharp LC32DHE4041K	£169.95

Show my order

Show all products

All the items on the order

Hello Chris!

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Home	Staff	Customer	Sign In	Reports

Your current order

	Name	Price per item	Quantity	Total per item	
	Sony HTCT80	£99.00	1	£99	Update
	Sharp LC32DHE4041K	£169.95	1	£169.95	Update
Total				£268.95	

Submit Order

You can change the Quantity and clicking on update updates the order total. By clicking on confirm button Order gets confirmed.

Reports

The next screenshots show the reports page. It show all the queries requested in the brief but they have been adapted so they are better suited and more usable by the staff. This page is only accessible when a member of staff is logged in

The first report shows all the staff who work at a particular location. For this demonstration, the Birmingham branch has been chosen

These are the results

The second report will show a list of all supplier orders

Hello Hulkl

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| Home | Staff | Customer | Sign In | Reports |

List all staff at [Select Location ▾] [Submit]

List all supplier orders [Submit]

List of customer orders with a total value of [£0 - £249.99 ▾] [Submit]

List total turnover [Submit]

List average order value at [Select Location ▾] [Submit]

These are the results

Hello Hulkl

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| Home | Staff | Customer | Sign In | Reports |

Supplier Name	Product Name	Order Quantity
ABC Industries	Sharp LC32DHE4041K	5
Power Associates	Sharp LC32DHE4041K	3
Energy Inc	Sharp LC32DHE4041K	4
Tech Corparations	Sharp LC32DHE4041K	1
ABC Electronics	Sharp LC32DHE4041K	2
ABC Electronics	Sharp LC32DHE4041K	7

The third report shows a list of customer orders between certain price ranges. The range £0-£249.99 has been chosen for the demonstration

Hello Hulkl

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| Home | Staff | Customer | Sign In | Reports |

List all staff at [Select Location ▾] [Submit]

List all supplier orders [Submit]

List of customer orders with a total value of [£0 - £249.99 ▾] [Submit]
- £0 - £249.99
- £250 - £499.99
- £500 - £749.99
- £750 - £999.99
- £1000+

List total turnover [Submit]

List average order value at [Select Location ▾]

These are the results

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| Home | Staff | Customer | Sign In | Reports |

First Name	Last Name	Order Date	Order Total
Sylvester	Cat	2016-02-08	120.50
Tom	Jerry	2016-02-08	150.75
Spike	Butch	2016-02-08	73.50
Cowardy	Dog	2016-02-08	110.00
Daffy	Duck	2016-02-08	94.50
Sylvester	Cat	2016-02-08	128.50
Tom	Jerry	2016-02-08	156.75
Spike	Butch	2016-02-08	173.50
Cowardy	Dog	2016-02-08	117.00
Daffy	Duck	2016-02-08	97.50
Colonel	Hathi	2016-02-08	178.50
Pink	Panther	2016-02-08	210.50
Bugs	Bunny	2016-02-08	150.00
Felix	The Cat	2016-02-08	89.50

The fourth report will show the total turnover for every location

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| Home | Staff | Customer | Sign In | Reports |

List all staff at [Select Location ▾] [Submit]

List all supplier orders [Submit]

List of customer orders with a total value of [£0 - £249.99 ▾] [Submit]

List total turnover [Submit]

List average order value at [Select Location ▾] [Submit]

These are the results

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| Home | Staff | Customer | Sign In | Reports |

Total Sales	Location
271.25	HyperAV Stockport
183.50	HyperAV Manchester
223.00	HyperAV London
330.25	HyperAV York
214.50	HyperAV Newcastle
389.00	HyperAV Cardiff
239.50	HyperAV Birmingham

The fifth and final report lists the average order value at a location which is selected by a drop down box. Manchester will be used for the demonstration

These are the results

Customers Viewing Products and Creating Orders

When the user selects 'View Products' the site displays a list of all the products in the database. There is a drop-down box which displays a list of the different categories. Each of the products has a link that will take the user to an individual product page. There is also a 'Buy' button that adds the product to the shopping cart.

When the user selects one of the categories, the page will automatically reload showing only that category. The code which makes this happen is shown below. It gets all the distinct categories from the products table and populates the drop-down, then the 'onchange="this.form.submit()"' call reloads the page putting the selected category into the GET request, which is then used to restrict a second query which shows the products.

```php
<!-- Populates the drop-down box where the customer can select from the different categories
    if one of the categories is selected, it reloads the page with the selected option as a GET request
    so that the page only shows the selected category  -->
<?php
    $query1 = "SELECT DISTINCT prCategory FROM hyperav_products ORDER BY prCategory ASC";
    $results1 = @mysqli_query($connection, $query1);
    $num_rows1 = mysqli_num_rows($results1);
    if($results1) {
        if($num_rows1 > 0) {?>
        <form action="products.php" method="GET">
            <select name=category onchange="this.form.submit()">
                <option>Select Category</option>
                <?php while($option = mysqli_fetch_array($results1, MYSQLI_ASSOC)) { ?>
                    <option><?php echo $option['prCategory']; ?></option>
                <?php } ?>
            </select><noscript><INPUT type="submit" value="Select" name=category></noscript>
        </form><?php
        }
    }
?>
```

Because the person logged in is a staff member, there is a link below the category drop-down that takes them to a page where they can add a new product to the database. This link is not visible when a customer is logged in.

```php
// if a staff member is logged in, a link is provided to add a new product to the database
if (isset($_SESSION['staff'])) {
    echo '<p><a href="add_new_item.php" id="add_new">Add a new product to the database</a></p>';
}
```


The next image shows the individual product information page. It displays the name, price and description and there is also a button to buy the product and one to edit the details. Like the 'Add to database' link, the edit button is only visible when a staff member is logged in. Underneath the product information is a list of items from the same category, whose names are clickable and take the user to the product information page for that item.

Hello Bruno!

HyperAV Home Cinema

for all your home entertainment needs

| Home | Staff | Customer | Sign In | Reports |

Product information for Denon Atmos

Denon Atmos
Black Atmos AV Receiver
£429.00

Buy   Edit

More items related to your query

| Denon Atmos | Denon Atmos | Denon Atmos | Denon AVRX520BT | Sony STRDH550 | Sony STRDN1060 | Sony STRDN860 |
| £429.00 | £599.00 | £849.00 | £179.95 | £129.00 | £399.00 | £299.95 |

The next screenshots show the page where the user can edit the product information. The fields are automatically filled in with the information from the database. The category and manufacturer fields are put in automatically generated drop-down boxes to minimise the risk of spelling errors. Likewise, the minimum and maximum stock fields will only accept numbers. There are two buttons, one to confirm the changes and one to delete this product from the database altogether. The button to delete was deliberately placed on this page so that it is a slight hassle to get to. Therefore the user is less likely to mistakenly delete unintended products. This page, like all restricted pages related to the products, checks whether the person trying to access it is a staff member. If they are not then they are redirected away before the page loads.

```
// If the user somehow tries to load this page when not logged in as staff
// they are redirected to the products page
if(!isset($_SESSION['staff'])) {
    redirect_to("products.php");
}
```

When the user clicks on a 'Buy' button, they are taken to an interim page which displays the details of the item the clicked on and confirms that it was added to their basket. There
are two other links on this page, to show all items in their basket or to return to the page showing all products.

Once the user has added a few items to their basket, they will want to see the current state of it and possibly to amend the quantities or to remove an item. All these functions are available in the basket area. This page shows the basic product information, with a link to each individual item's page. It shows the cost for one of each; an editable number field to change the quantities; a total per item which multiplies the cost per item by the quantity; an update and a delete from order button. Under the total per item, the page sums up the total for the order and next to that is a link to the checkout. The update and delete buttons redirect back to this page after they have performed their respective function, making it appear to the user that the action is immediate.

HyperAV Home Cinema

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| Home | Staff | Customer | Sign In | Reports |

Here are your current orders

	Name	Price per item	Quantity	Total per item		
	SYMPHONY 100	£0.99	1	£0.99	Update	Delete
	LG 32LF580V	£259.00	1	£259.00	Update	Delete
	Denon Atmos	£429.00	1	£429.00	Update	Delete
	Mission SX1PIANO	£249.95	1	£249.95	Update	Delete
Total				£938.94	**Checkout**	

The checkout page is a simplified version of the basket, where the user can see and check the information, but not change it. If a member of staff is making the order on behalf of a customer, they are asked for the customer's

| Home | Staff | Customer | Sign In | Reports |

Confirm your order

	Name	Price per item	Quantity	Total per item
	SYMPHONY 100	£0.99	5	£4.95
	LG 32LF580V	£259.00	1	£259.00
	Denon Atmos	£429.00	1	£429.00
	Mission SX1PIANO	£249.95	2	£499.90
Total				£1,192.85

Please confirm the customer's email address:

Confirm Order

email address. This box must be filled before they can continue. Then they click on Confirm Order and the page will reload showing the customer's address to be confirmed with them.

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| Home | Staff | Customer | Sign In | Reports |

Confirm your order

	Name	Price per item	Quantity	Total per item	
	SYMPHONY 100	£0.99	5	£4.95	**Are your details correct?**
					Daffy Duck
					1 Machester Road
	LG 32LF580V	£259.00	1	£259.00	Cheadle
					Manchester
					SK9 3NG
	Denon Atmos	£429.00	1	£429.00	
	Mission SX1PIANO	£249.95	2	£499.90	
Total				£1,192.85	

Confirm Order

If the customer is creating their own order, for example from the internet, the previous page is skipped and they are shown this one with their address and a drop-down box (not shown in this screenshot) where they can select the location for pickup or delivery. The Confirm Order button is clicked again and if the page has all the required information, it will submit all the details to the database and display a message to the user.

Hello Bruno!

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| Home | Staff | Customer | Sign In | Reports |

Your order has been successfully submitted

The next screenshot is of a query with the database, showing that the order information has been successfully inserted. There are two orders shown, one with and one without the help of a staff member. It shows an automatically generated order ID, and automatically inserted date and other details relevant to the whole order.

```
mysql> select * from hyperav_orders where orderID = 29 or orderID = 30;
+---------+------------+---------+--------------+----------------+------------+---------+
| orderID | orDate     | orTotal | orDeliverDate | orPaymentMethod | customerID | staffID |
+---------+------------+---------+--------------+----------------+------------+---------+
|      29 | 2016-03-16 | 1192.85 | 2016-03-16   | Credit Card    |          5 |      13 |
|      30 | 2016-03-16 |  418.84 | 2016-03-16   | Credit Card    |          2 |    NULL |
+---------+------------+---------+--------------+----------------+------------+---------+
2 rows in set (0.01 sec)
```

These values were inserted using a prepared statement to allow for NULL values.

```php
/* INSERT basic order information such as customerID, order date and payment method into the orders table
 The INSERT statement is created using Prepared Statement because there is a possibility of a NULL value in the staffID field. */
$query2 = mysqli_prepare($connection, "INSERT INTO hyperav_orders (orDate, orTotal, orDeliverDate, orPaymentMethod, customerID, staffID) VALUES (?, ?, ?, ?, ?, ?)");
if ($query2 === false) {
    trigger_error('Statement failed! ' . htmlspecialchars(mysqli_error($connection)), E_USER_ERROR);
}
// Bind the values
$bind = mysqli_stmt_bind_param($query2, "sdssii", $orDate, $orTotal, $orDate, $orPaymentMethod, $customerID, $staffID);
if ($bind === false) {
    trigger_error('Bind param failed!', E_USER_ERROR);
}
// Execute the query
$exec = mysqli_stmt_execute($query2);
if ($exec === false) {
    trigger_error('Statement execute failed! ' . htmlspecialchars(mysqli_stmt_error($query2)), E_USER_ERROR);
}
```

Then the automatically generated orderID needed to be retrieved to insert it into the order details table.

```php
// Get the automatically generated orderID from the last insert
$orderID = mysqli_insert_id($connection);
```

In order details table for these two orders, further information about each order is shown, the stock ID (which is related to the product ID and the location) and the quantity for each item.

```
mysql> mysql> select * from hyperav_orderdetails where orderID = 29 or orderID = 30;
+---------+---------+------------+
| orderID | stockID | odQuantity |
+---------+---------+------------+
|      29 |      21 |          5 |
|      29 |      42 |          1 |
|      29 |      66 |          1 |
|      29 |     258 |          2 |
|      30 |       4 |          6 |
|      30 |      79 |          1 |
|      30 |      91 |          1 |
|      30 |     115 |          1 |
+---------+---------+------------+
8 rows in set (0.00 sec)
```

Not yet implemented / Improvements

Additional functionality which would make the system more complete would be to delete customer orders or parts of their order in case the items could not be supplied.

Another problem is that when a product is bought and the stock level reduced, there is no check to stop the stock level from going negative. In order to implement this feature, the system would have to know from the start where the user is buying from, even in the case of remote purchases. While this is relatively simple for a single store, it is much more complicated to implement for multiple stores.

A good improvement would be to implement a feature to offer discount codes or offers on selected items. These could be restricted by product, by store or even by individual customer.

If we had more time we would like to have created a more visually pleasing interface. Although the one we have is functional, it is quite plain in places. Designing and coding a more aesthetic look takes a significant amount of time and we felt that our resources would be better engaged in functionality.

The system does not have separate retail and wholesale prices so as it works at the moment, Hyper AV are buying and selling at the same price.

Some of our database queries are not sanitised against remote attacks leaving our system vulnerable to attack from malicious sql injection or even simple input errors.

Methodology Used to build the project

Agile is a time based iterative approach to project delivery that has been followed throughout our design, development and testing process. Depending on the requirements, we listed the things to do and assigned a number of days or hours to do each task. We prioritised the list so the most important functionalities are done first.

For every sprint Analysis, design, coding and testing are continuous activity in Agile. So the client could see the project and express their opinion or problems at each stage. Changes were made throughout the project in order to produce a better quality product.

Conclusion

To conclude, this report has described the steps that were followed to design and develop this website using MYSQL as backend and PHP as our frontend. We have met the project requirements and produced an effective and professional responsive website.