IUBAT- International University of Business Agriculture and Technology

Title of The Project- Shop Management System

Group Name- Techpirates

Course Name: Software Engineering Lab

Course Code: CSC 470

Section: D

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Introduction

Point of Sell is a software which is a Online shopping platform for the Mabrur Grocery Shop located in Bamnartek, Turag, Dhaka and is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. Consumers find a product of interest by visiting the website of the retailer directly. An online shop evokes the physical analogy of buying products or services at a regular "bricks-and-mortar" retailer or shopping center; the process is called business-to-consumer (B2C) online shopping. Online stores usually enable shoppers to use "search" features to find specific models, brands or items. Online customers must have access to the Internet and a valid method of payment in order to complete a transaction, such as a credit card.

There are 3 modules in this software:

1. Admin module
2. User module
3. Customer module
4. Product module

In this software we have the options to register as an admin, user or a customer. The admin has all the powers and can perform any task this software is able to do like from managing full website and all the users, manage stores, manage customers, update products. A customer on the other hand can register, update profile, view products, add product to cart and make payments.

Methodology

We choose waterfall model in our project because our requirement is fixed and we cannot change the requirements. We have also time limitation. To develop our project every week we face some assessment. During the assessment we are face some problem and we solve the problem.

Objective

1. Service or product advertising: The main purpose of a business site is to promote company's products, services or events on the Internet.
2. Selling a product or a service online: This is basically the main reason behind the existence of this business website. Selling products and services is th
3. e most common objective.
4. Providing product support and customer service
5. Providing corporate information
6. Establishing brand awareness and identity
7. Manages the details of Profiles, Products.

Several Advantages of our proposed System are:

1. Convenience.
2. Better prices.
3. More variety: The choices online are amazing.

4. You can send gifts more easily.
5. Fewer expenses.
6. Price comparisons.
7. No crowds.
8. Less compulsive shopping.

Feasibility Analysis

Feasibility is the study of impact, which happens in the organisation by the development of a system. The impact can be either positive or negative. When the positives nominate the negatives, then the system is considered feasible.

Economic Feasibility

The project is economically feasible as the only cost involved is having a computer with the minimum requirements mentioned earlier. For the users to access the application, the only cost involved will be in getting access to the Internet.

Technical Feasibility

To deploy the application, the only technical aspects needed are mentioned below:

1. Operating Environment Windows 7 or more
2. Database SQL Server 2005

For Users:

1. Internet Browser
2. Internet Connection

The software will be technically feasible, since there isn't much resources that we need in order to get the system running. At the same time we do need to much resource to maintain it as well. System requirements for the project are easily available in the market and thus won't cause much problem.

Functional Requirements are:

1. Speed
2. Mobile Friendliness
3. Ease of use in checkout flow

4. Personalisation
5. Accessibility
6. Register New Customers
7. Update Product details
8. Checkout an order
9. Payment for an order

User and System Requirements

- Admin Panel - Log In, Manage, Add, Delete, Update.
- View all the available Products
- Registration and Login for admin, employers and Customers
- Add to cart and Checkout
- Profile (registration, payment, delete)
- System – Windows 7/8/10, PHP 7+, Local-host Server

The functional requirements of this system are:

- Register new Customer.
- Add products to cart.
- Make Payments.
- Record the details of a customer interaction with the website.
- Register a new admin or employer.
- Register a new user for the system.
- Record the purchase history of a customer.
- Update product details.
- Add or delete products from the list.
- Generate various reports for all transactions in the system.

Non- functional requirements of this system are:

- Admin can log in by using username and password.
- Customer can log in by using username and password.
- Only Admin can maintain the whole system.
- Admin can remove the records.
- This system support only Windows 7/8/10.

Gantt chart:

Days / Tasks	7 February -13 February	14 February -16 February	17 February -6 March	7 March-10 April	11 April-17 April	18 April-25 April
Feasibility Study						
Requirement Analysis and Specification						
Design						
Coding and Unit Testing						
Integration and System Testing						
Maintenance						

Waterfall model:

This project will follow the waterfall model. The waterfall model is a linear, sequential approach to the software development life cycle that is popular in software engineering. It begins with customer specification of requirements and process through planning, modelling, construction and deployment. It serves as a useful process model where requirements are fixed and work is processed in liner manner.

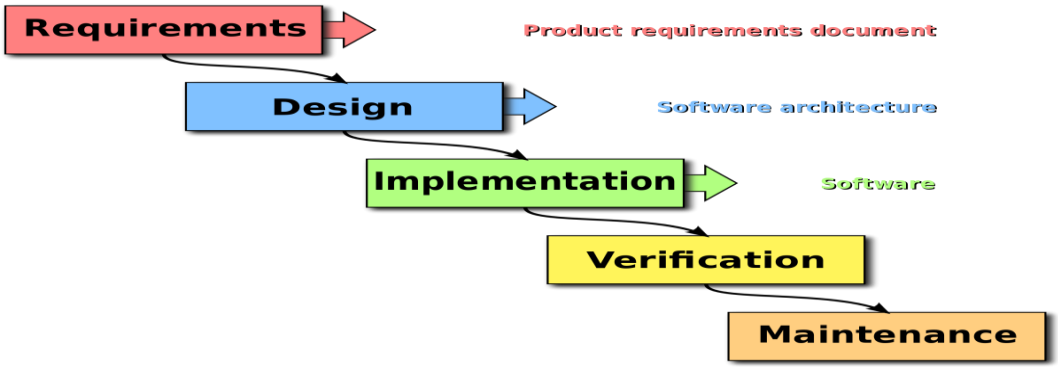
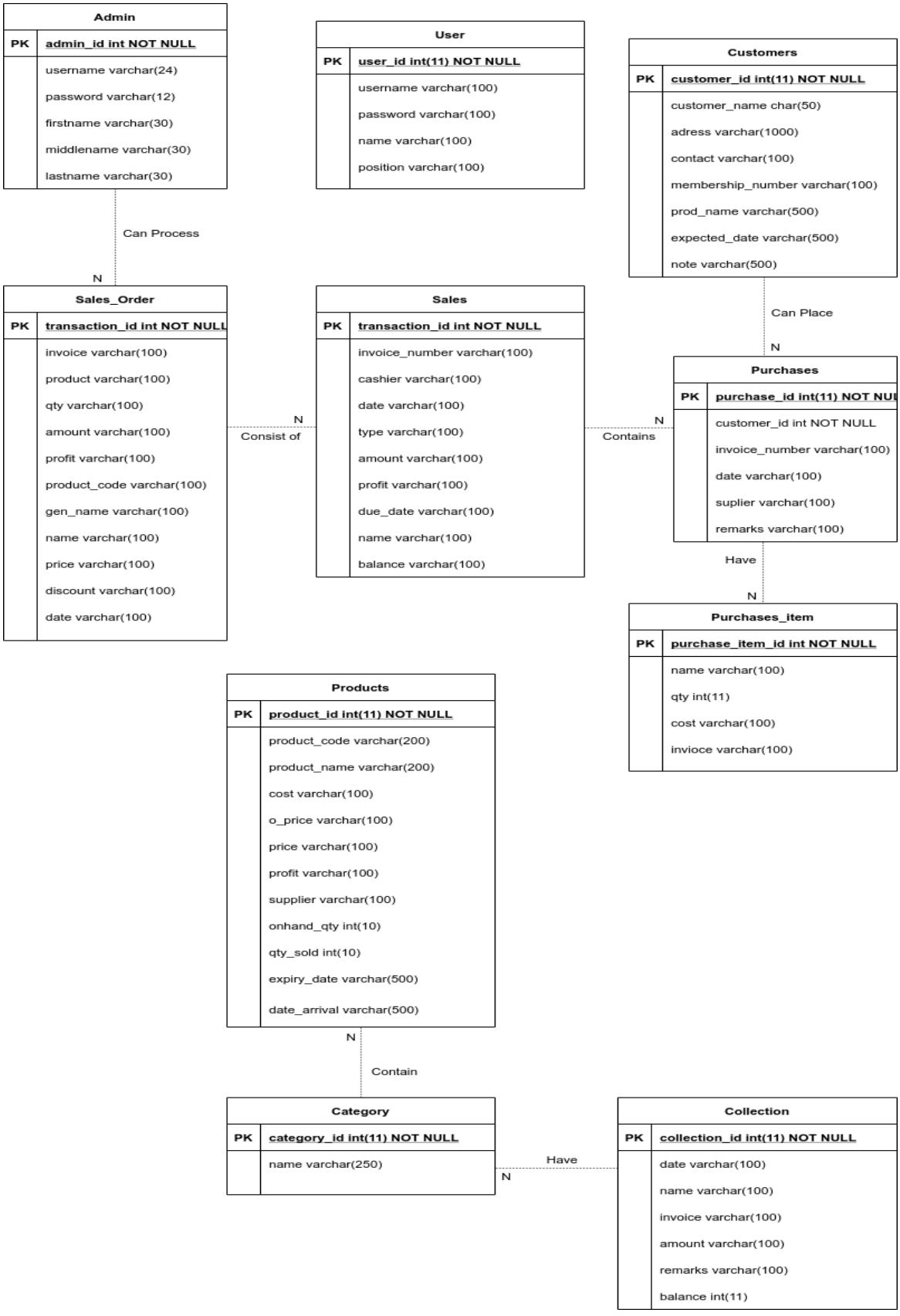
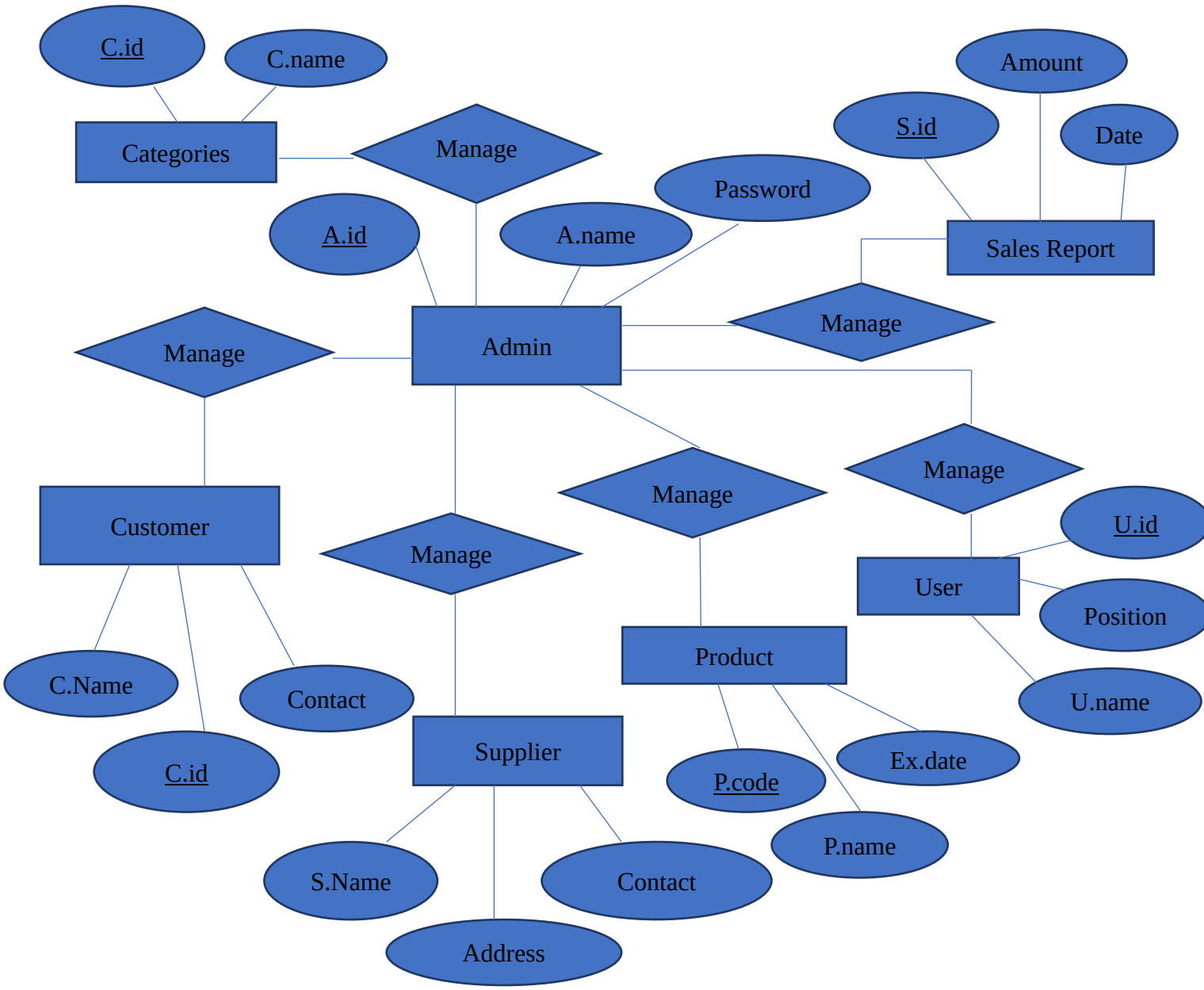


Fig: Waterfall Model

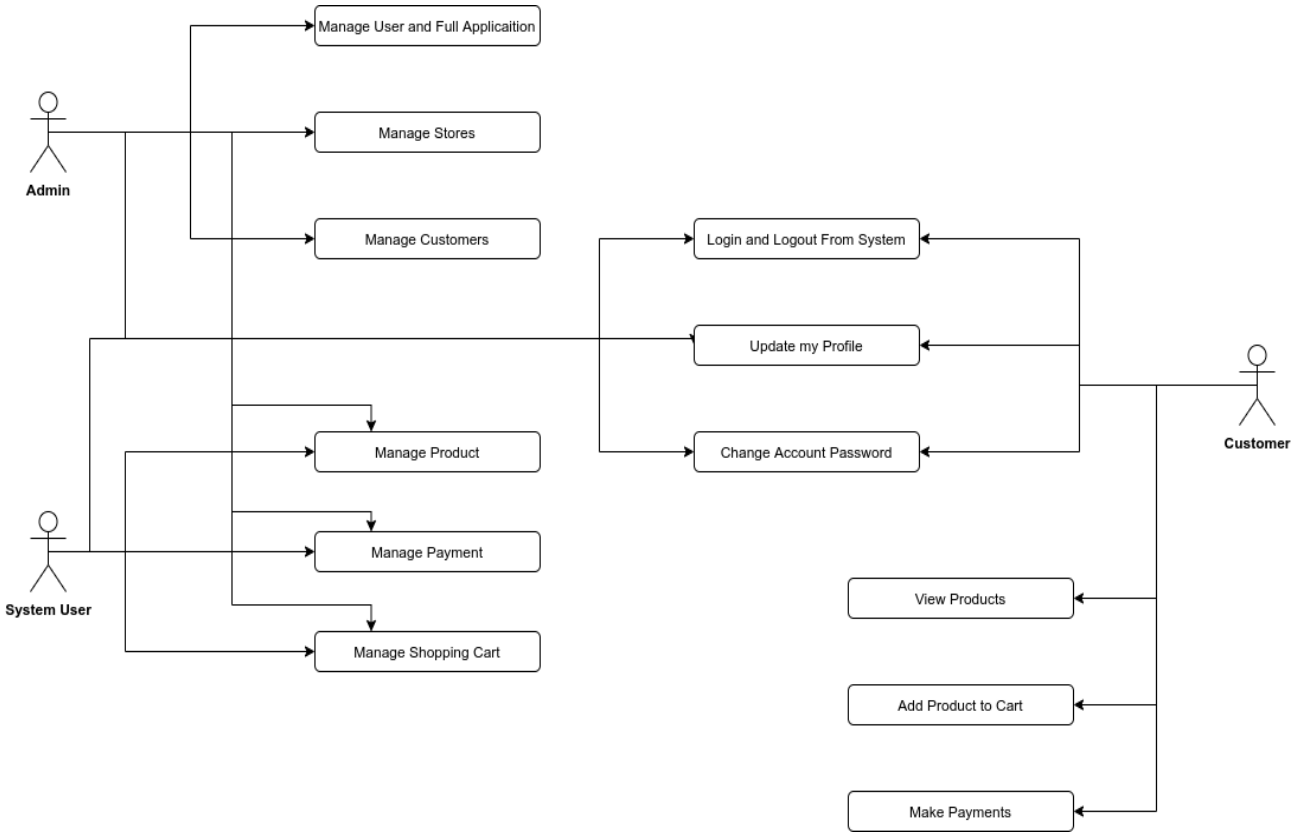
Class Diagram:



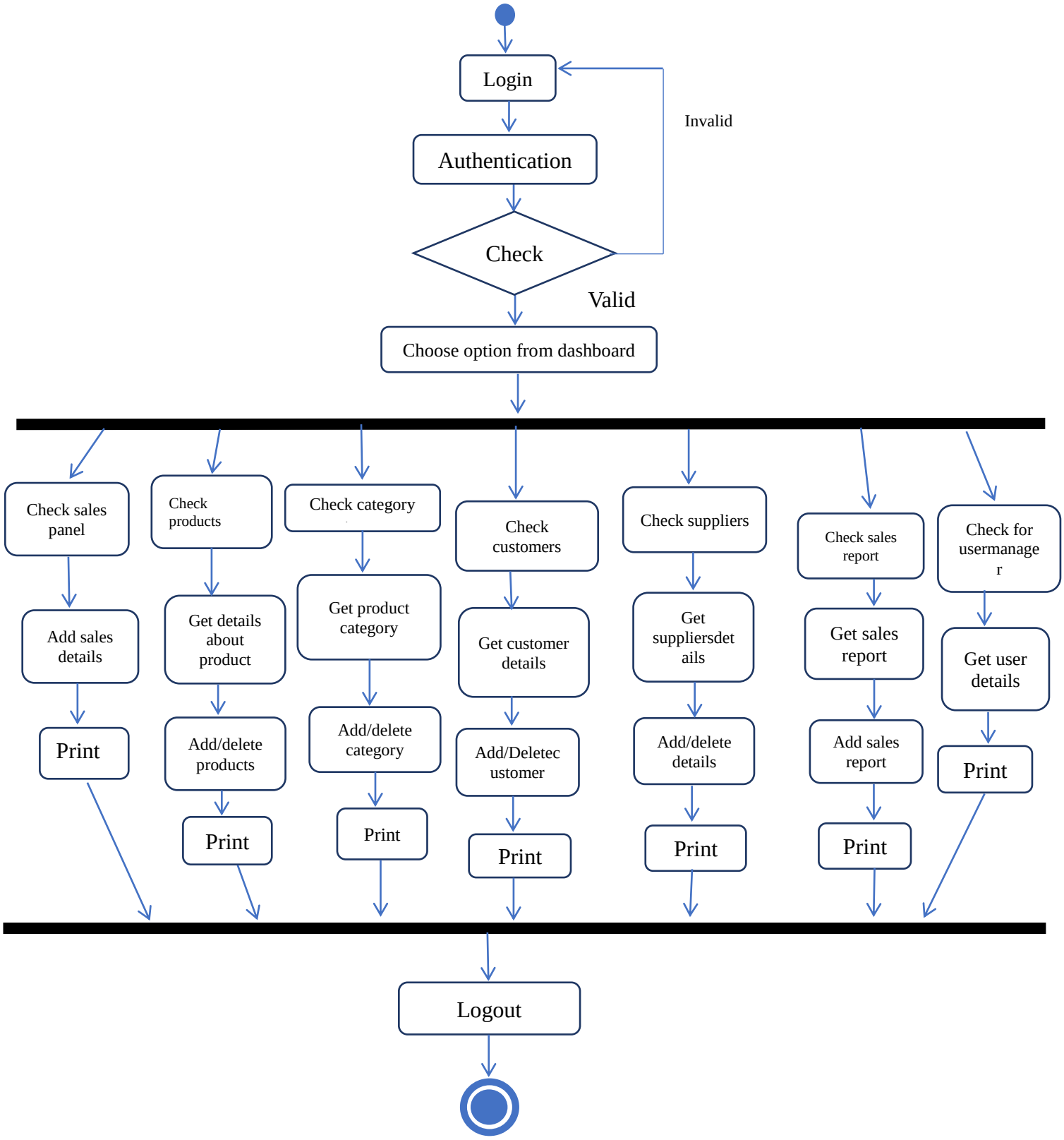
ER Diagram


C.id
C.name
Categories
Manage
Amount
S.id
Date
Password
A.id
A.name
Sales Report
Admin
Manage
Manage
Manage
Manage
Manage
Customer
U.id
User
Position
C.Name
Contact
Product
U.name
C.id
Supplier
P.code
Ex.date
P.name
S.Name
Contact
Address

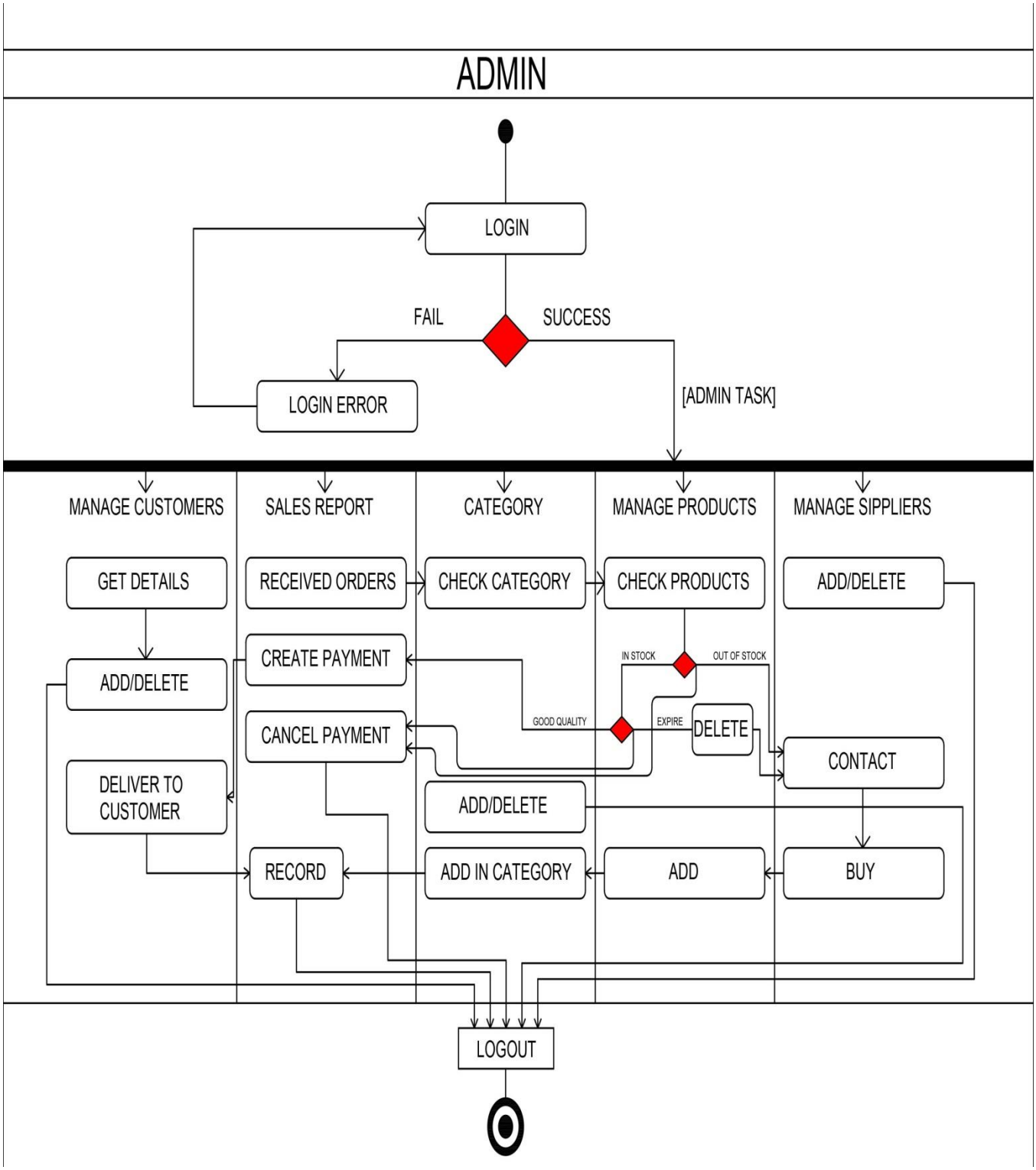
Use Case:


Manage User and Full Applicaition
Manage Stores
Manage Customers
Login and Logout From System
Update my Profile
Change Account Password
Manage Product
Manage Payment
Manage Shopping Cart
View Products
Add Product to Cart
Make Payments
Admin
System User
Customer

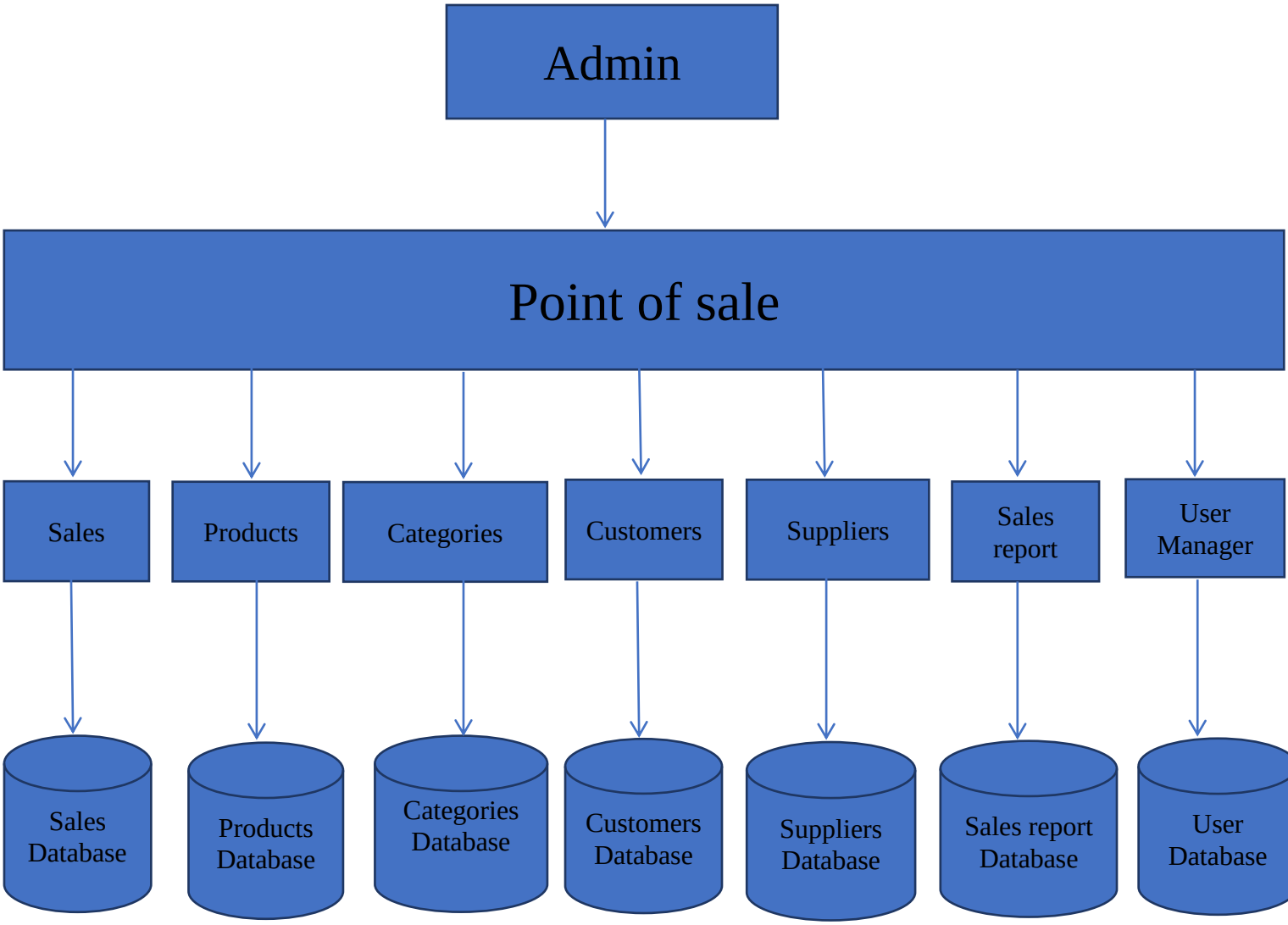
Activity Diagram



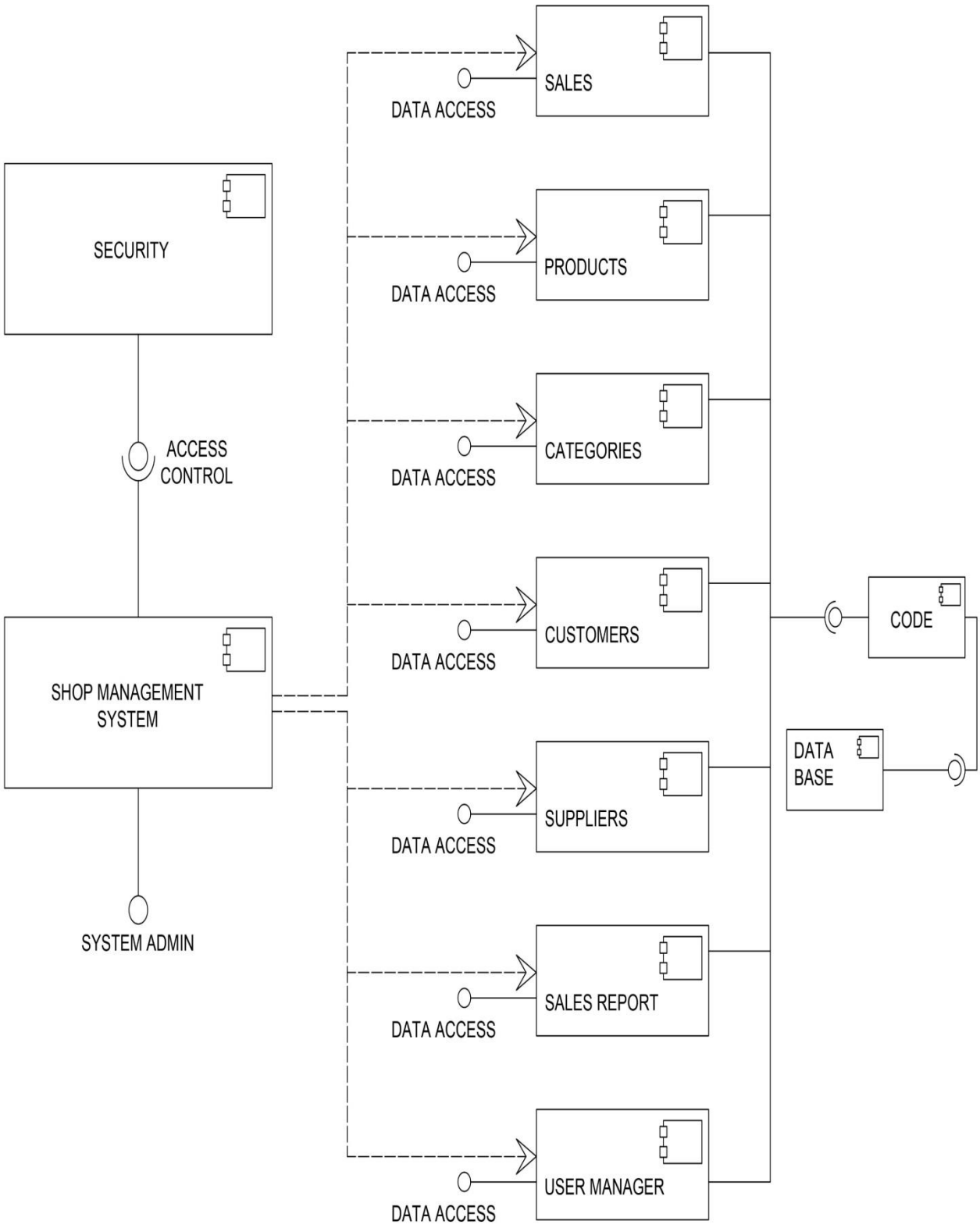
Swim lane Diagram



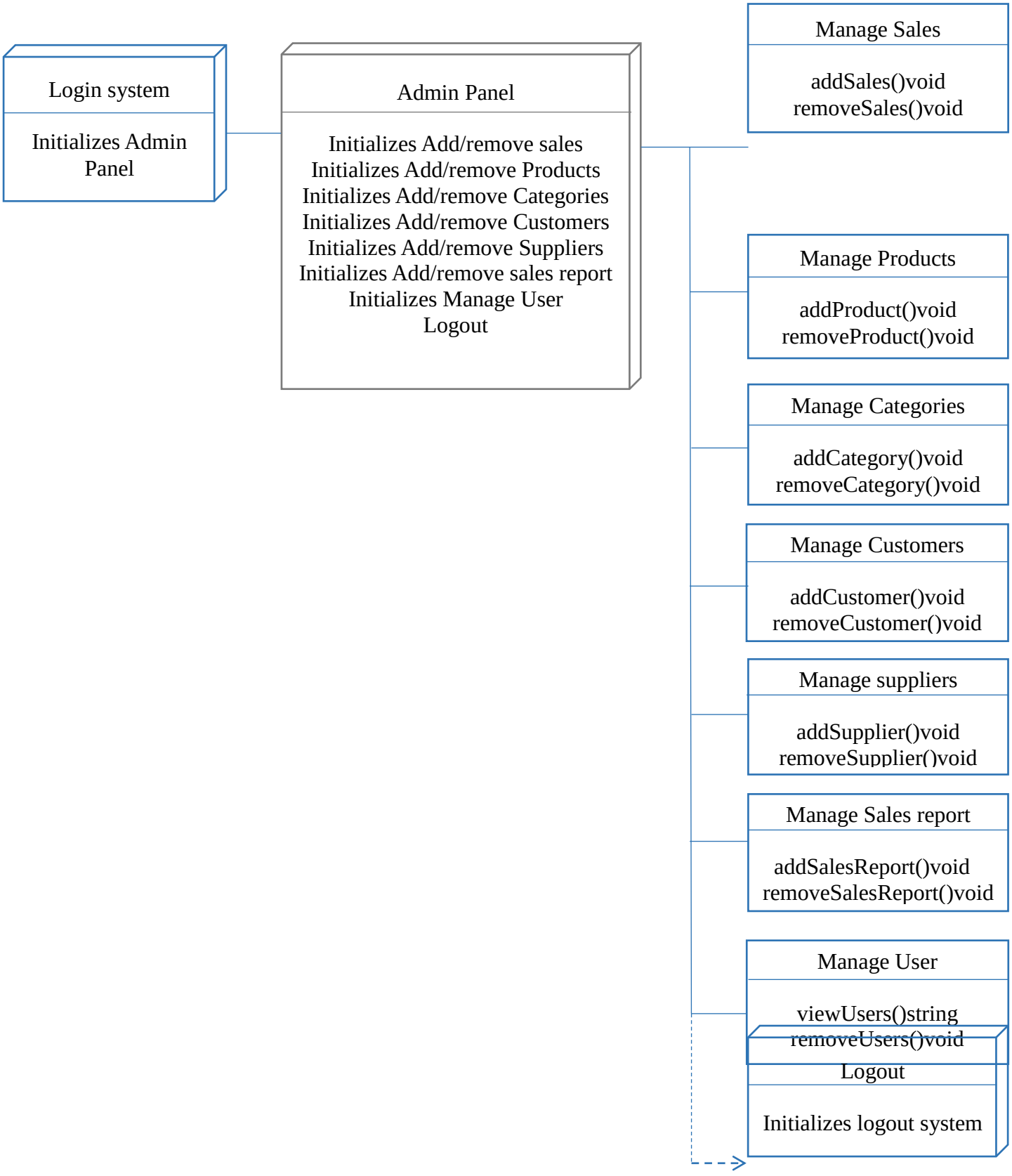
Architectural Design



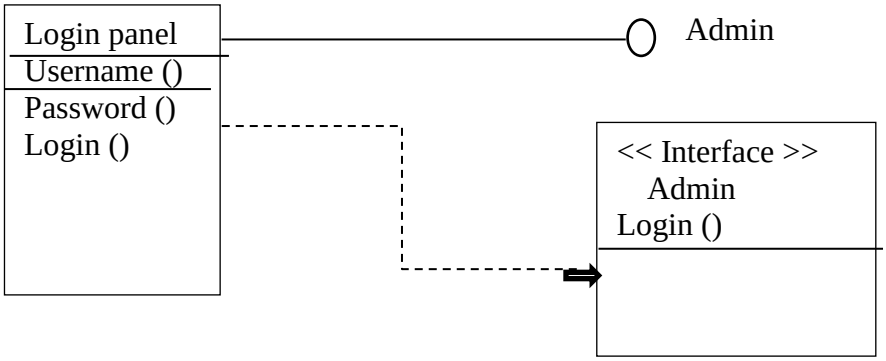
Component Design

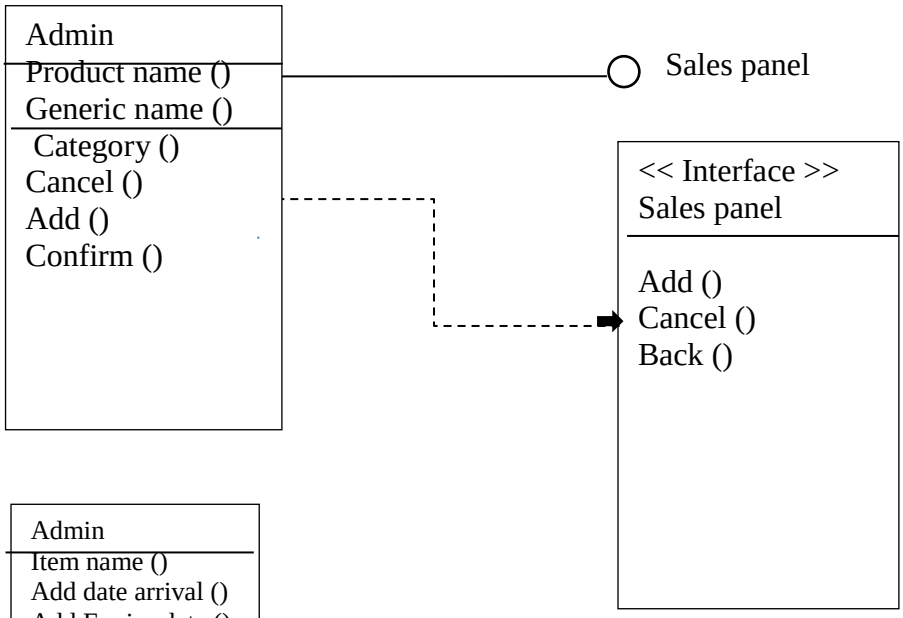


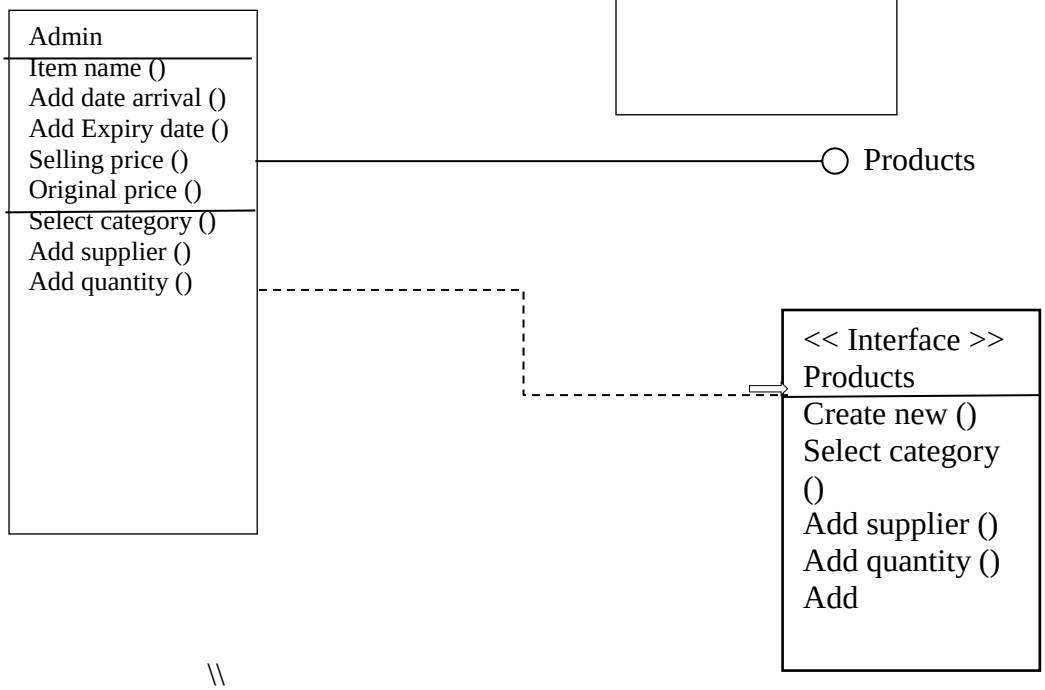
Deployment Diagram



Interface-Design







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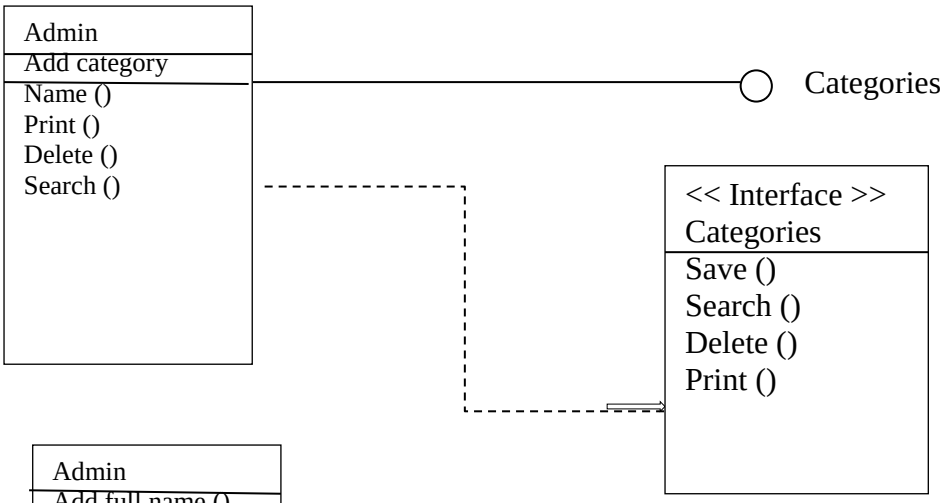
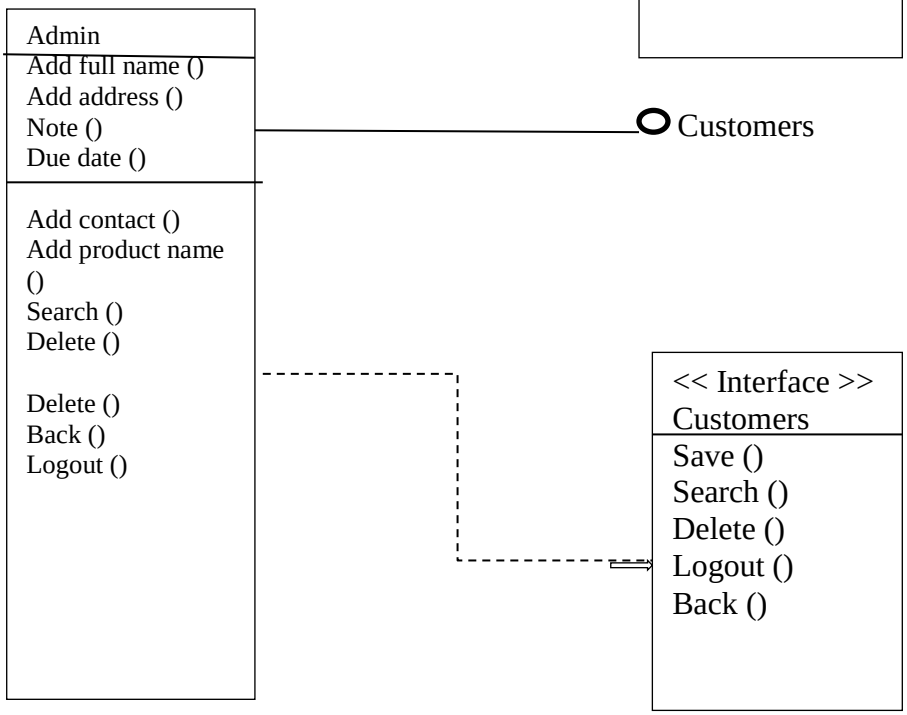
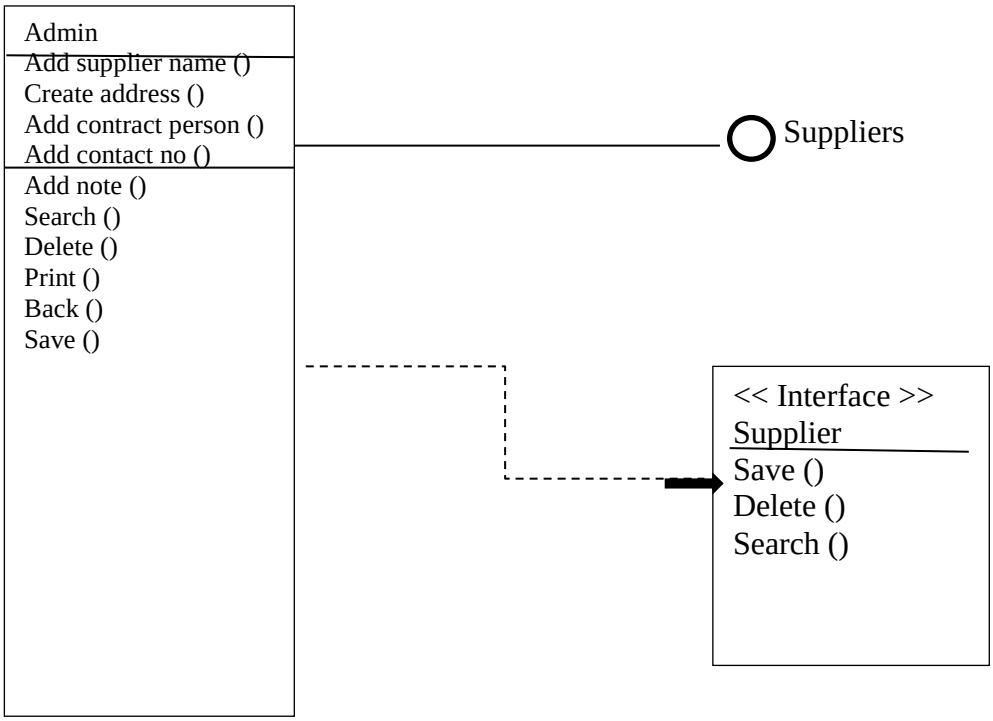
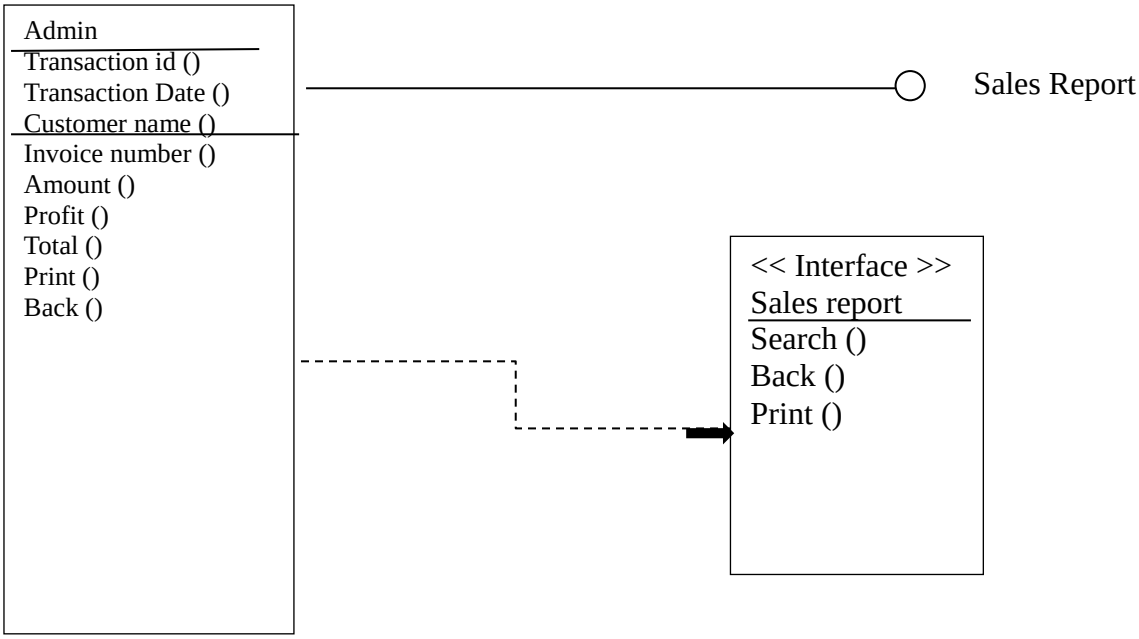
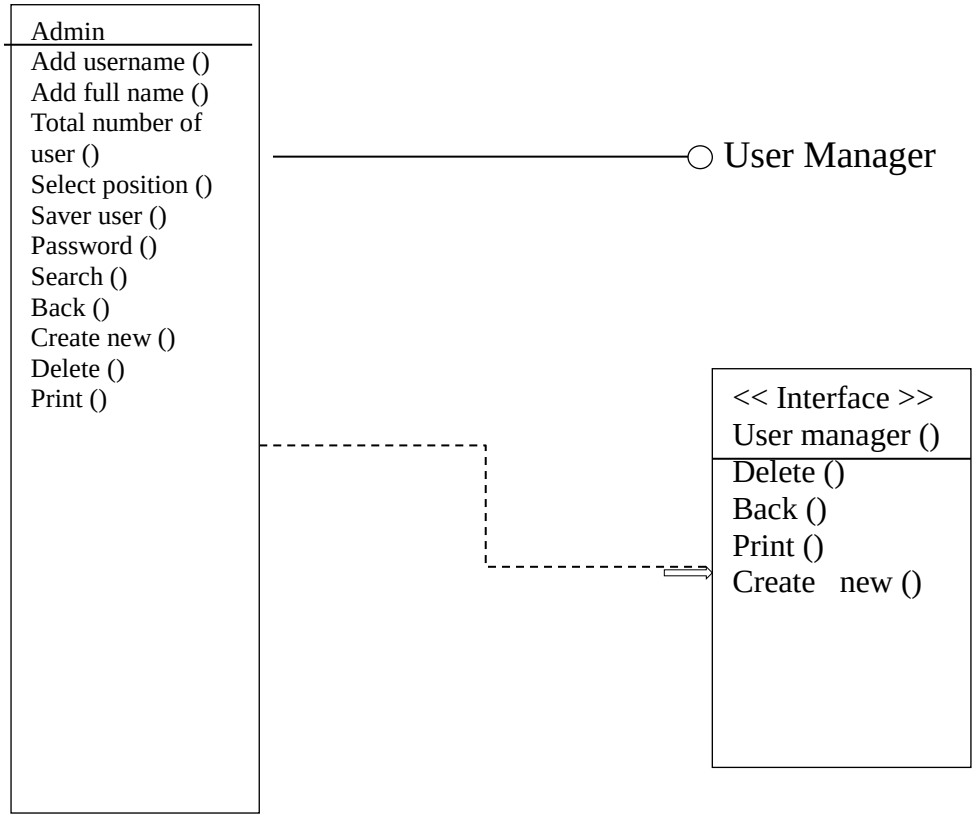

Admin
Add category
Name ()
Print ()
Delete ()
Search ()
Categories
<< Interface >>
Categories
Save ()
Search ()
Delete ()
Print ()


Admin
Add full name ()
Add address ()
Note ()
Due date ()
Add contact ()
Add product name ()
Search ()
Delete ()
Delete ()
Back ()
Logout ()
Customers
<< Interface >>
Customers
Save ()
Search ()
Delete ()
Logout ()
Back ()


Admin
Add supplier name ()
Create address ()
Add contract person ()
Add contact no ()
Add note ()
Search ()
Delete ()
Print ()
Back ()
Save ()
Suppliers
<< Interface >>
Supplier
Save ()
Delete ()
Search ()


Admin
Transaction id ()
Transaction Date ()
Customer name ()
Invoice number ()
Amount ()
Profit ()
Total ()
Print ()
Back ()
Sales Report
<< Interface >>
Sales report
Search ()
Back ()
Print ()


Admin
Add username ()
Add full name ()
Total number of user ()
Select position ()
Saver user ()
Password ()
Search ()
Back ()
Create new ()
Delete ()
Print ()
User Manager
<< Interface >>
User manager ()
Delete ()
Back ()
Print ()
Create new ()

Costing:-

System Start-up and Development Cost

System Analysis & Requirements
System Design
30 Days(198 hrs) -Rs. 900
Development & Implementation
84 Days(494 hrs) -Rs. 5500
Equipment Purchase -Rs. 4000
Software Cost -Rs. 20000

Implementation Cost
Computer Furniture -Rs. 7000
Site Preparation -Rs. 3000

Total - Rs. 40,400

System Maintenance Cost
Additional equipments -Rs. 1000
Program Maintenance -Rs. 4000
Total Operation Cost/year -Rs. 4000

System Benefits (Tangible cost reduction)
Elimination of Errors in ledgers -Rs. 20000
Elimination of Errors in Report Generation -Rs. 40000
Reduction in outsourcing cost -Rs. 40000

Total -Rs. 149,400

Complexity Matrix:

EI	1-4 DETs	5-15 DETs	16+ DETs
FTRs<2	Low	Low	Average
FTRs=2	Low	Average	High
FTRs=>3	Average	High	High

EO/EQ	1-5 DETs	6-19 DETs	20+ DETs

FTRs<=1	Low	Low	Average
2<=FTRs<=3	Low	Average	High
FTRs>3	Average	High	High

ILF/EIF	**1-19 DETs**	**20-50 DETs**	**51+ DETs**
RETs<=1	Low	Low	Average
2<=RETs<=5	Low	Average	High
RETs>5	Average	High	High

Complexity	**Data Function Type**		**Transaction Function Type**	
	EI/EQ	**EO**	**ILF**	**EIF**
L(Low)	3	4	7	7
A(Average)	4	5	10	10
H(High)	6	7	15	15

Unadjusted Function Point Contribution for Data Functions:

Data Function	**FTRs**	**DETs**	**Complexity**	**UFP**
Login [EI]	1	3	Low	3
Logout [EI]	1	1	Low	3
Add New Sales [EI]	1	7	Low	3

Delete Sales [EI]	1	4	Low	3
Add New Product [EI]	1	5	Low	3
Delete product List [EI]	1	4	Low	3
Add New Customer [EI]	1	8	Low	3
Edit Customer List [EI]	1	8	Low	3
Delete Customer List [EI]	1	4	Low	3
Add New Supplier [EI]	1	10	Low	3
Delete Supplier [EI]	1	4	Low	3
Add New Categories [EI]	1	3	Low	3
Delete Categories [EI]	1	4	Low	4
Add New Sales Report [EI]	1	7	Low	4
Delete Sales Report[EI]	1	4	Low	4
Add New User [EI]	1	3	Low	4
Delete Existing User [EI]	1	3	Low	4
Generating User Information [EO]	1	1	Low	4
Generating Sales List [EO]	1	6	Low	4
Generating Product List [EO]	1	5	Low	4
Generating Category List [EO]	1	3	Low	4
Generating Customer List [EO]	1	7	Low	4
Generating Supplier List [EO]	1	8	Low	4
Generating Sales Report List [EO]	1	3	Low	4
Total=				**84**

Unadjusted Function Point Contribution for Transaction Functions:

	Transition Function	**FTRs**	**DETs**	**Complexity**	**UFP**
1	Signup (EI)	1	7	Low	3
2	Login (EI)	1	2	Low	3
3	Add Product (EI)	10	20	High	5
4	Update Product (EI)	10	20	High	6
5	View Products	1	11	High	5
6	Delete Products	2	11	High	4
7	Add user (EI)	1	7	Low	3
8	View User (EO)	1	7	Low	4
9	Update user (EI)	1	5	Low	3
10	Delete users(EI)	1	6	Low	3
11	Add Sales (EI)	2	11	High	5
12	Update Sales	2	10	High	5
	Total				**49**

Performance and Environmental Impact

GSC	TDI
Data Communication	3
Distributed Data Processing	0
Performance	2
Heavily Used Configuration	1
Transaction Rate	0
Online Data Entry	5
End-user Efficiency	5
Online Update	4
Complex Processing	1

Reusability	5
Operational Ease	4
Total Degree of Influence (TDI) (Range 0 to 70->influence size by +-32%)	30

Final Calculation

Value adjustment factor (VAF) = (0.65+ (0.01* TDI))
= (0.65+ (0.01* 30)) = 0.95

UFP= UFP (Data function) + UFP (Transaction function) = 84 + 49 = 133

AFP= UFP * VAF = 133 * 0.95= 126 Approx. Total time

Calculation frame = 126* 15.5

[Productivity of PHP is 15.5] = 1953 per hour
= 1953 person hours / 9 hours
= 217 person days / 4 [person in a group]
= 54 days
= 1 months 24 days

Approximately 2 months required for four persons to finish the project.

Limitations:

1. Not mobile friendly: The website lacks responsiveness and thus won't work properly on mobile phones.
2. The website doesn't have any cookie options.
3. The database is strong enough to support large number of users at the same time.
4. The website can't be used in a large shopping center. It is limited to a very small only.

Possible future updates that can be made:
All of the above mentioned limitations are not a good sign of any modern website. So a lot can be done in order to make it user friendly modern website. We can firstly start working on responsive and then increase the strength of our database along with adding support for cookie system.

Testing

System testing
Software testing is the process of evaluation a software item to detect differences between given input and expected output. Also, to assess the feature of a software item. Testing assesses the quality of the product. Software testing is a process that should be done during the development process. In other words, software testing is a verification and validation process.

- **Verification:** Verification is the process to make sure the product satisfies the conditions imposed at the start of the development phase. In other words, to make sure the product behaves the way we want it to.
- **Validation:** Validation is the process to make sure the product satisfies the specified requirements at the end of the development phase. In other words, to make sure the product is built as per customer requirements

The objectives of software testing are:
- ✓ Testing is a process of executing a program with the intent of finding an error.
- ✓ A good test case is one that has a high probability of finding an as-yet-undiscovered error.
- ✓ A successful test is one that uncovers an as-yet-undiscovered error.

The design of tests for software can be challenging as the initial design of the product itself. Software can be tested in one of two ways:

- Knowing the specified function that the software has been designed to perform, tests can be conducted that demonstrate each function fully while at the same time searching for errors in each function. This approach is known as black-box testing.
- Knowing the internal workings of software, tests can be conducted to en-

sure that internal operations are performed according to specifications and all internal components have been adequately exercised. This approach is known as white-box testing.

Software Testing Strategy

A strategy for software testing integrates software test case design methods into a well- planned series of steps that result in the successful construction of a software. The strategy provides a road map that describes the steps to be conducted as part of testing.

Testing strategy that will be followed in this software project:

- ✓ Unit testing
- ✓ Integration testing
- ✓ Validation testing

The first step in software testing is unit testing. Unit testing concentrates on each unit of the software as implemented in source code. Unit testing focuses on each component individually. The unit test is whitebox oriented. Thus, unit testing of this library software will be done after completion of every module or component.

The next step is integration testing. Integration testing is a systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing.

The objective of integration testing is to take unit tested components and build a program structure that has been dictated by design.

The integration testing strategy that has been chosen for this project is top down testing. Black-box testing method is the most prevalent for integration testing. Top down integration strategy will be used to perform integration testing. Top down integration will be done by breadth-first manner. Breadth-firstintegration incorporates all components directly subordinate at each level, moving across the structure horizontally.

After the software has been integrated, a set of high order tests am conducted. Hence, the validation criteria that have been mentioned in requirements engineering should be tested. Validation testing provides final assurance that software meets all functional, behavioral and performance requirements. The black-box testing method is exclusively used in validation.

System Testing

Methodology

Black-box Testing

Black-box testing which is also known as behavioral testing focuses on the functional requirements of the software. It enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program. Black-box testing method will be applied to test the modules of LMS.

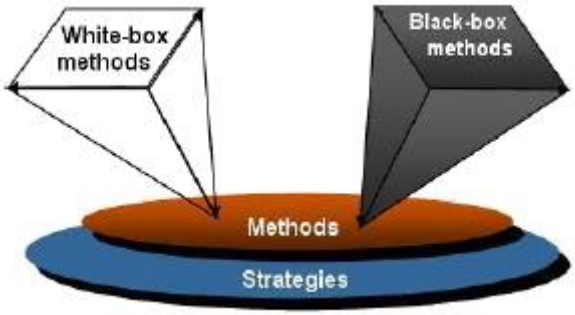


Figure 4.2.1 Black box and White box testing.

White-box Testing:

White-box testing, which also known as glass-box testing, is a test case design method that uses the control structure of the procedural design to derived test cases.

Using white-box testing methods, software engineer can derive test cases that,

- ✓ Guarantee that all independent paths within a module have been exercised at least once
- ✓ Exercise all logical decisions on their true and false sides
- ✓ Execute all loops at their boundaries and within their operational bounds
- ✓ Exercise internal data structures to ensure their validity

The modules that contain some complex calculations or decision-making code such as check the
Availability of the library item will be tested using white-box method.

Testing Design

Table - System Testing Scenario 1

Testing scenario No: 1	
Scenario	User Login testing scenario of the system

Input's	User Id, Password, User for Login
Desired Output's	When enter user id, password then get access level define
Actual Output's	For login our system works correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this System is successful for login.

Table- System Testing Scenario 2

Testing scenario No: 2	
Scenario	Add product name, Generic name, Category, delete list , cancel
Input's	Sales panel information
Desired Output's	When enter all basic information correctly in the system
Actual Output's	View product name, View List, Delete product, Search Particular Product work correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the Inventory

Table - System Testing Scenario 3

Testing scenario No: 3	
Scenario	Items Add, item name, View Existing Items List, View List, Delete Items, Search Particular Items testing scenario of the system
Input's	Product Information
Desired Output's	When enter all basic information correctly in the system
Actual Output's	Item code, view item name, category, Supplier, Date received, Expiry date, Original price, Selling price, QTY, Total, Delete Items, Search Particular Items work correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the task for Items module

Table - System Testing Scenario 4

Testing scenario No: 4	
Scenario	Create new, Category name, save, Search Particular Items

	testing scenario of the system
Input's	Category Information
Desired Output's	When enter all basic information correctly in the system
Actual Output's	View Category , delete, search, print, total number of category
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the task for Items module

Table - System Testing Scenario 5

Testing scenario No: 5	
Scenario	Customers Information Add, View Customers List, Delete List, Edit Information, Search Particular Customer testing scenario of the system
Input's	Customers Information
Desired Output's	When enter all basic information correctly in the system
Actual Output's	Customers Information Add, View Customers List, Delete List, Edit Information, Search Particular Customer work correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the task for Items module

Table - System Testing Scenario 6

Testing scenario No: 6	
Scenario	Add supplier, Address, Contact person, Contact number, Note, save
Input's	Supplier information
Desired Output's	When enter all basic information correctly in the system
Actual Output's	View supplier List, Delete List, Search Particular Supplier Item work correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this

	system can successfully make the task for Items module

Table - System Testing Scenario 7

Testing scenario No: 7	
Scenario	Add transaction id, transaction date, customer name, Invoice number, Amount, profit
Input's	Sales report
Desired Output's	When enter all basic information correctly in the system
Actual Output's	View search, view profit, view total, view transaction date, particular sales report work properly
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the task for Items module

Table - System Testing Scenario 8

Testing scenario No: 8	
Scenario	Add user full name, username, password, position, save
Input's	User manager
Desired Output's	When enter all basic information correctly in the system
Actual Output's	View Username, view full name, view position, view delete, user manager particular work correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this system can successfully make the task for Items module

Conclusion

Websites are playing important part in improvement of business.70% of the population is using dynamic and interactive websites because of their eye capturing visual effects. Static websites also have their own place for the platform where there is specific information required. Static websites require less investment as compare to dynamic websites. Our project is just to satisfy the demands of a shop to some extent. The project will be good for solving some of the critical problems faced by the organisation. Customers, along with shop owners and employers will be highly pleased after using this website.