Online Shopping System

Software Engineering

Project Report

(CSHP - 410)

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Problem Statement

Online shopping is a web application which provides all kinds of products to everyone at their doorstep.

The users living anywhere can connect through internet to get these services. This web application is more effective and fast in response.

Process Model

The model chosen for our project is 'Waterfall Model'. The requirements are well known i.e. it is known what all functionalities and behavior should be there .The technology is understood and well incorporated in the project. There is no ambiguity in requirements and they are met in the project .Very less customer interaction is involved during the development of the product. Once the product is ready then only it can be demoed to the end users. Thus this model suits the best for project.

1. SOFTWARE REQUIREMENT SPECIFICATION

This system provides an easy solution for customers to buy the product without going to the shop and also to seller to sale the product.

This proposed system can be used by any naïve user and it does not require any educational level, experience or technical expertise in computer field but it will be of good use if user has the good knowledge of how to operate a computer.

1.1 OVERALL DESCRIPTION

An online shopping system that permits a customer to submit online orders. The online shopping system presents an online display of an order cut off time and an associated delivery window for items selected by the customer. The system accepts the customer's submission of a purchase order for the item in response to a time of submission being before the order cut off time. The system accepts the customer's submission of a purchase order for the item in response to a time of submission being before the order cut off time. The online shopping system does not settle with a credit supplier of the customer until the item selected by the customer is picked from inventory but before it is delivered. Therefore, the customer can go online and make changes to the order. When ordering goods, many shopping systems provide a virtual shopping cart until a customer completes their shopping trip. Virtual shopping carts may be examined at any time, and their contents can be

edited or deleted at the option of the customer. Once the customer decides to submit a purchase order, the customer may print the contents of the virtual shopping basket in order to obtain a hard copy record of the transaction.

Advantages that this project offers are as follows :-

1-Easy access to the data.

The categorically arranged data and the filters provided to sort each and every stuff provides the customer with ease of shopping.

2-The new system is more users friendly, reliable and flexible.

Affordable shipping rates for the customers living at far away places.

3-Pop-up means to carry out transactions for a new user, and for other alert messages.

4-Timely report generation.

1.1.1 PRODUCT FUNCTIONS

- The online shopping application would have the following basic functions:
- Display all the categories available for shopping on the system's main page.
- Display all the items linked to each category listed on the main page.
- Allow the administrator to add new items to the existing list of available items. Allow administrator to remove items
- Allow the administrator to modify the price of each item.
- Allow the administrator to update the description about each item.

- Allow the administrator to view and edit information about each user that checkouts the items from the system.

1.1.2 USER CHARACTERISTICS

USER:

As soon as the website page pops up the user is entitled to browse,view and go through the items of his interest. The user can type in the search bar for the items he wishes to shop and thus can straight away enroute himself to his desired item. The website will display all the items related to the search made, of varying prices provided by different stores. If the user doesn't fit in the price bar, then he can filter the items according to the prices he can afford. There are also other filters made available for the ease of the customers-

Category	Men's and Women's Fashion	Electronics	Home and Kitchen	Fitness and sports
Price	Low	Moderate	High	-
Brand	Monte Carlo	Woodland	Lifestyle	Max
Color	Blue	Black	Green	Yellow
Size	Small	Medium	Large	XL

The table above provides a brief description of the great prices ,wide selection and top brands available to the customers to choose from.

Once the user finds his cherished item from the various collections , he can add them to the shopping cart by clicking on the ‘ add to cart ’ option. Shopping cart is made available to all the users wherein they can push all the items they wish to purchase and can even pop them out if they are not of interest anymore to them. Sometimes the items themselves get popped out of one’s shopping cart if they go out of stock from the particular store. Once the user is done with his browsing and has added all the items he wishes to purchase to the shopping cart he can proceed to checkout.

The user must be registered in order to purchase any item. For unregistered users a CREATE ACCOUNT option is available. For creating an account the user will have to enter his name,mobile number,email address and a password. For verification, an otp will be sent on the registered phone number. After entering the OTP correctly, the user is successfully registered.

If the user already had an account then he can straightaway login -

In the login activity user will have to enter his username which is unique for every user and his password, and once he is done with this he will move ahead to fill in

the other details. Next which comes up is the address where his package delivery will be made. The user must ensure that the address has been correctly filled up in order to have an on-point delivery. While filling up the address he will have to mention about his House no. , locality, Pin- code among the necessary one's. Once he is done with this he will be specified with the different shipping speeds available, precisely: Standard delivery and Speedy Delivery. However, speedy delivery comes with extra expenses.

Next comes the payment options, a number of payment options are there for the customer so as to make it easy for them, like: COD or Cash on Delivery where the customer can ensure that his package has arrived safely and then pay its amount. For the people familiar with digital money wallets and credit/debit card options are also available. So as to ensure the customer that such private details won't be leaked out special SSL software is used to maintain security. Finally, the customer will be done with his job and will receive the confirmation mail/ message about his order.

ADMIN:

The primary duty of the administrator is to keep a regular check on the website such that there are no issues which the customers are facing and also keep note of all the feedbacks sent by the users.

Next, the admin needs to take care of the brands and shopping centres with which the website has collaborated.

To collaborate with a particular brand the admin will first analyse the brand performance in the market along with the guarantee that it delivers the same quality of the product which it has promised.

Once the admin finds the brand suitable for his website he will provide the respected person with a 6 month contract which can be extended later if the brand does well on the site. If the brand does not keep upto mark then the admin has all the right to send a 2 months notice to the brand owing which it has to improve its quality and all the backlogs the customers have been sharing else the contract will stand null and void.

The price of the items are completely in hands of the brand employees however the admin still keeps a check that the brand prices have not crossed the maximum mark which it should demand according to the product.

1.1.3 General Constraints

Hardware Limitations: The minimum hardware requirement for the system is 128 MB of Ram and a 32-MB hard-disc drive.

Accessibility: Initially, the software should be available as a desktop application for a small set of users to test.

Others: The application should be built using Java and JavaScript inscribed in HTML, and it should, initially, be accessible through the eclipse IDE and later published on a server when the application passes the test from small set of users.

1.1.4 Assumptions and Dependencies

Users and the administrator would require training to use the online shopping.

The system is dependent on the availability of an Apache Tomcat Server to run.

We assume that system users adhere to the system's minimum software and hardware requirements.

1.2 EXTERNAL INTERFACE REQUIREMENTS

1.2.1 User Interfaces :

The users will work on a graphical user interface.

All the required steps for the user to perform must me specified on each page so that it is easy for users to understand the procedure to perform. The steps must be brief so that the content is not a trouble.

There must be a search bar on every page for basic queries. Limited feedbacks and reviews should be there on main page.

The screen should be formatted in such a way so that instructions and messages always get displayed in a general area.

The user must not be taken forward without correcting the error.

The system user should never get any operating system failure or any fatal error.

1.2.2- Hardware Interfaces

SERVER SIDE REQUIREMENTS

Processor	1.0 GHz or more
RAM	1 GB
Hard Disc	3 GB of free space

CLIENT SIDE REQUIREMENTS

Processor	1.0 GHz or above
RAM	512 MB
Hard Disc	1 GB(if downloading is required)
Internet Speed	512 kbps or more

1.2.3- Software Interfaces

Operating System	Any Window
Web Browser	Any Browser

1.3 FUNCTIONAL REQUIREMENTS

FR 1:

The system must be able to register a new user.

FR 2:

Confirmation message will pop up to the new user when signing up will be successful.

FR 3:

Database having information regarding users can be accessed only by admins for security purpose.

FR 4:

The system will provide adding items to the cart for the registered users.

FR 5:

The system should offer a feedback section for the registered users for any query or enhancement suggestion.

FR 6:

The system must be able to process orders including payment handling when the customer places an order.

1.4 PERFORMANCE REQUIREMENTS

1.The users shall be able to add an item to the cart in fewer than 7 seconds.

2. The users shall be able to view information about an item in fewer than 7 seconds.

3.The navigation between pages shall take fewer than 10 seconds.

4. The application shall be able to do a validation check on the information provided in the user-authentication form and the place-order form to avoid false or incomplete information.

5. Number of users must be at most 1000 and the number of files in the database must be no more than 10,000

1.5 Design Constraints

1-Standard Compliance:

All the languages and database format must be according to the software requirements listed below.

2-Hardware Requirements :

Pentium or AMD processors with speed minimum 1GHz.

2GB RAM

Accelerated Graphics Card.

Minimum 32GB Hard Disk.

Better performance with 82KB and above Cache Memory.

Monitor – 15” colour monitor

Keyboard – 122 keys

3-Software Requirements :

Database: MS SQL Server2000 with Microsoft SQL Desktop Engine installed.

Framework: NET Framework Version

Server : Apache Tomcat Server

Technology: ASP.Net

Browser: Internet Explorer6.0

Operating System :Linux

JAVA development toolkit.

Database JDBC Driver : MySQL Jconnector

4-SECURITY

1- The access to the database can only be done by the admin.

2- A log of all the activities must be maintained.

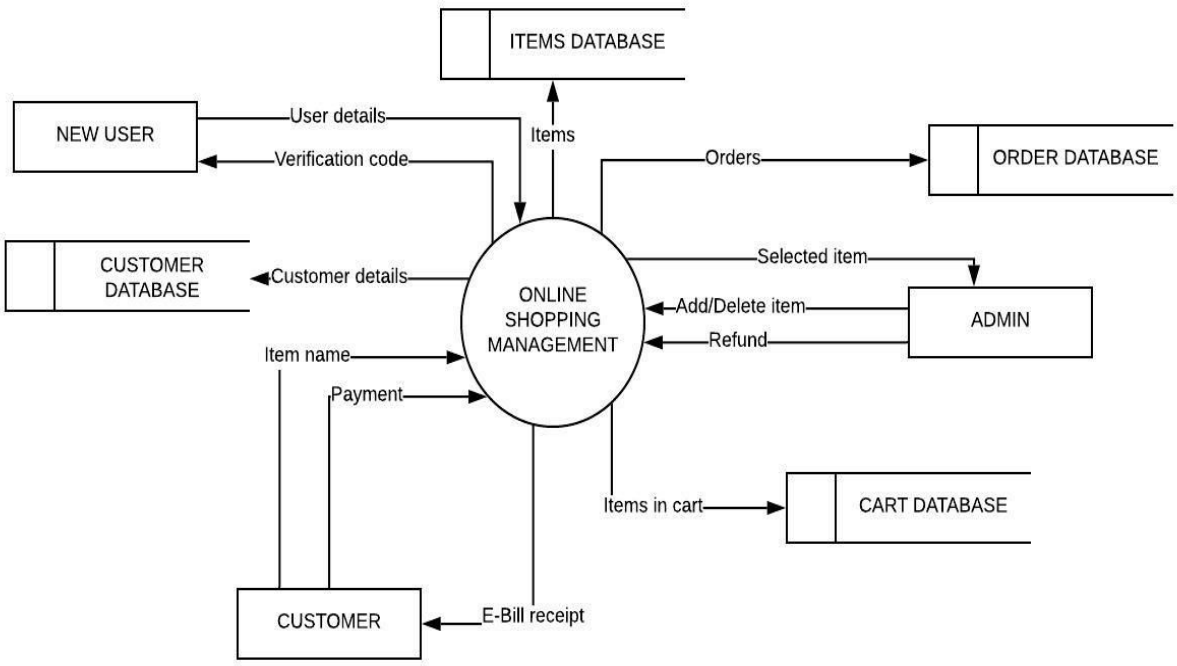
5-RELIABILITY

1- The database must be properly maintained and regularly updated.

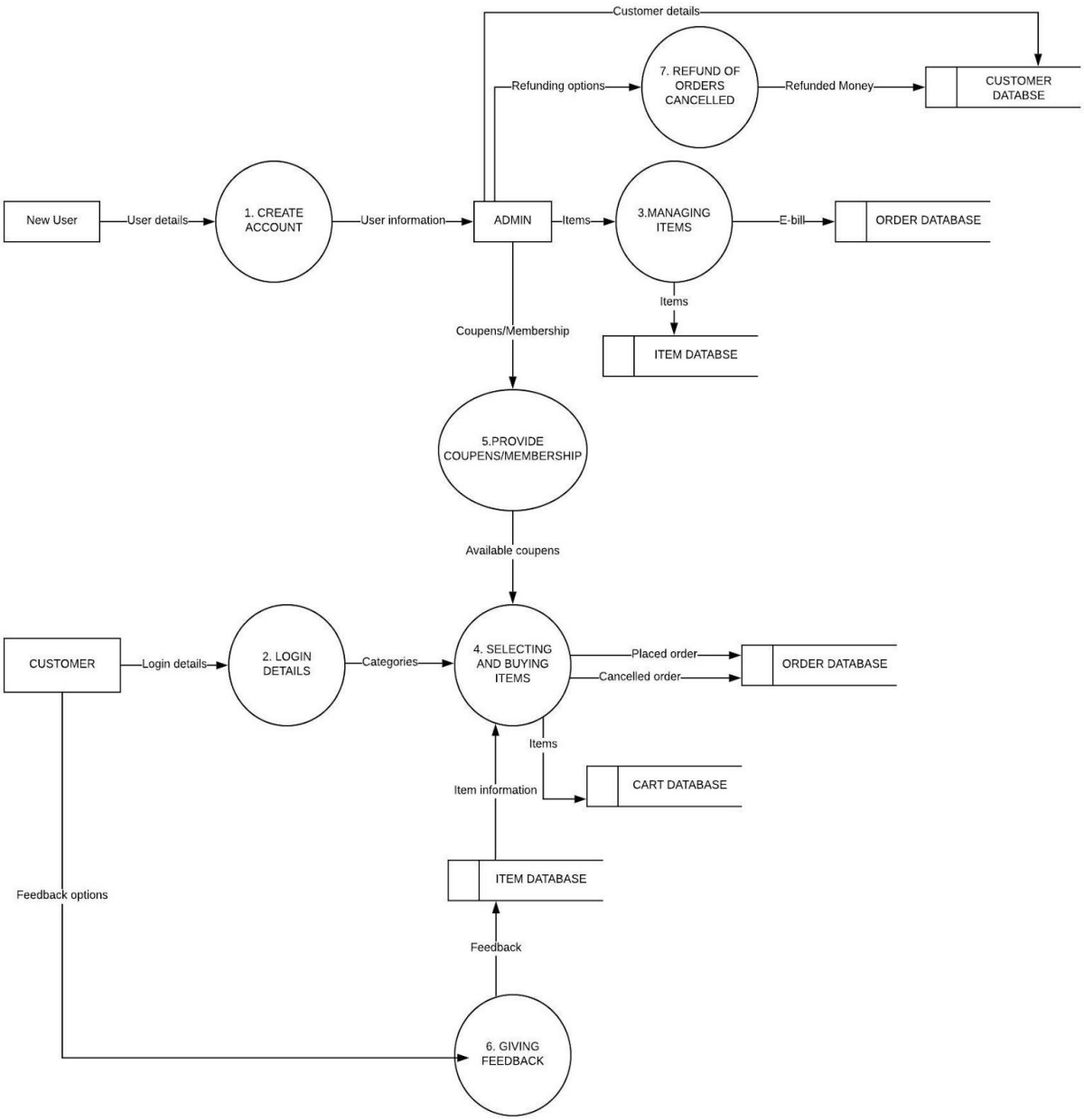
2- In case the user forget his password,then by clicking on Forgot password an email would be sent immediately for the user to reset his password.

1.6 DATA FLOW DIAGRAM

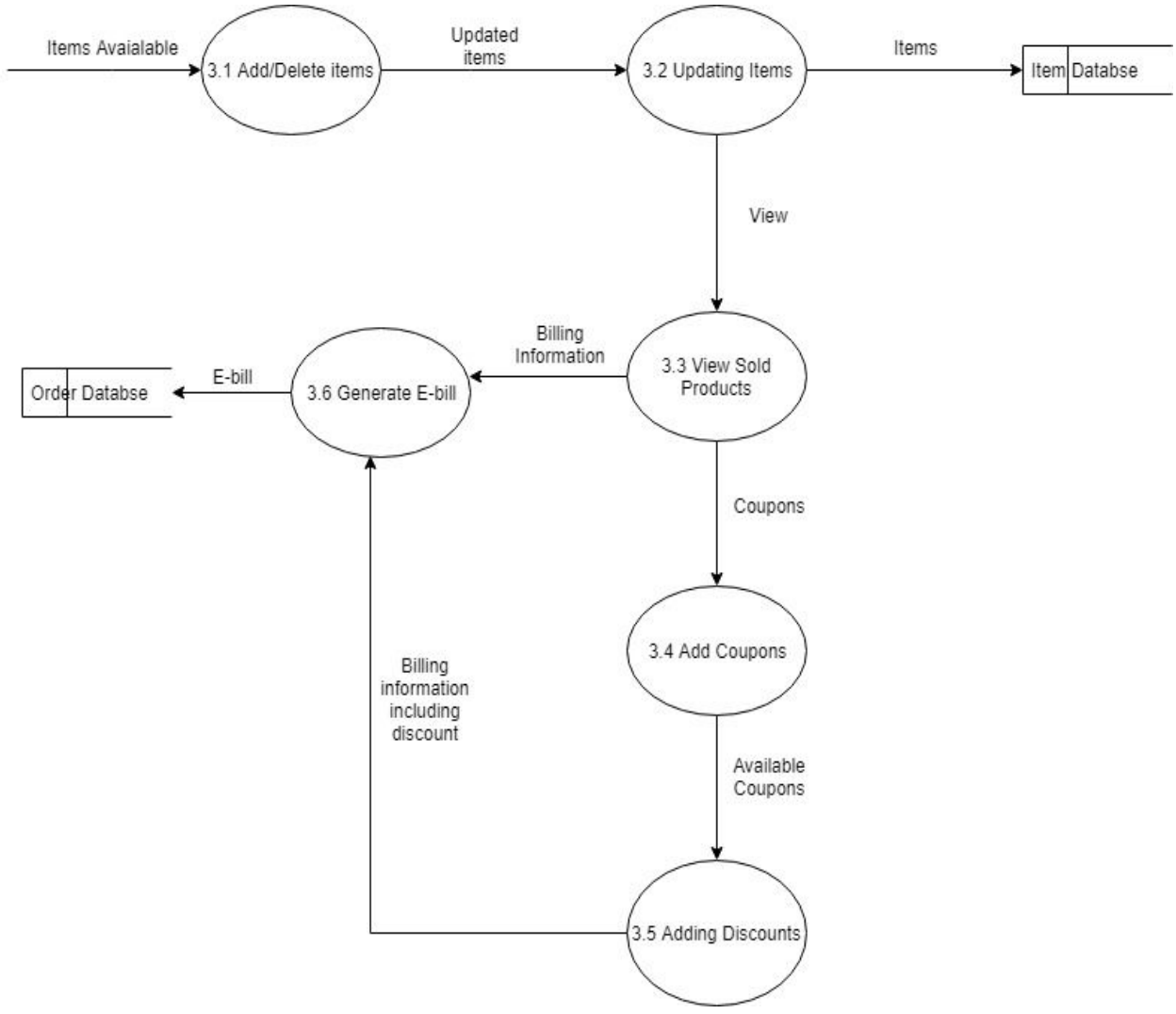
CONTEXT LEVEL DIAGRAM



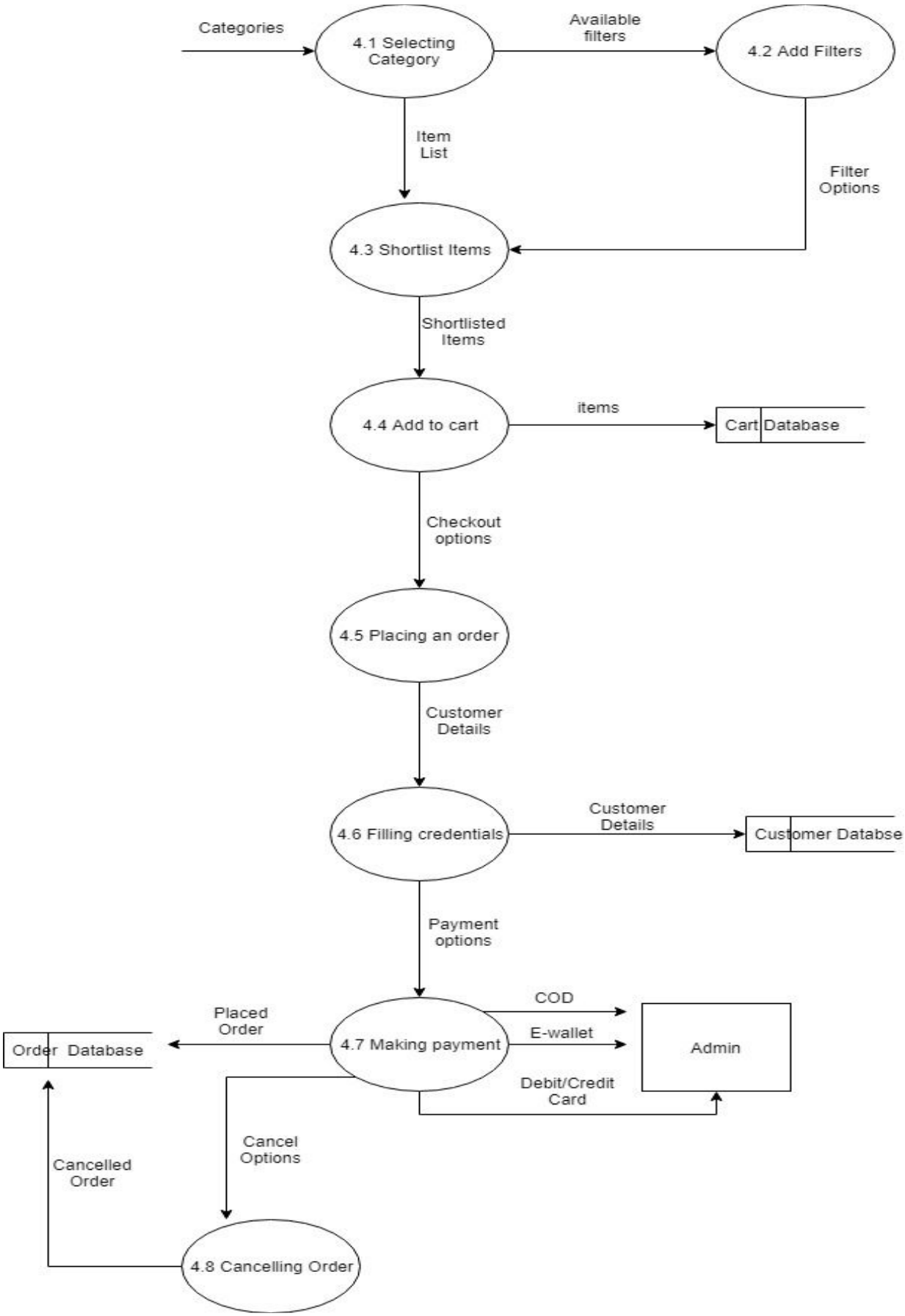
LEVEL 1 DFD


Customer details
7. REFUND OF ORDERS CANCELLED
Refunding options
Refunded Money
CUSTOMER DATABSE
New User
User details
1. CREATE ACCOUNT
User information
ADMIN
Items
3.MANAGING ITEMS
E-bill
ORDER DATABASE
Items
Coupens/Membership
ITEM DATABSE
5.PROVIDE COUPENS/MEMBERSHIP
Available coupens
CUSTOMER
Login details
2. LOGIN DETAILS
Categories
4. SELECTING AND BUYING ITEMS
Placed order
Cancelled order
ORDER DATABASE
Items
Item information
CART DATABASE
ITEM DATABASE
Feedback options
Feedback
6. GIVING FEEDBACK

LEVEL 2 DFD


Items Avaialable
3.1 Add/Delete items
Updated items
3.2 Updating Items
Items
Item Databse
View
3.3 View Sold Products
Billing Information
3.6 Generate E-bill
E-bill
Order Databse
Coupons
3.4 Add Coupons
Billing information including discount
Available Coupons
3.5 Adding Discounts

LEVEL 3 DFD


Categories
4.1 Selecting Category
Available filters
4.2 Add Filters
Item List
Filter Options
4.3 Shortlist Items
Shortlisted Items
4.4 Add to cart
items
Cart Database
Checkout options
4.5 Placing an order
Customer Details
4.6 Filling credentials
Customer Details
Customer Databse
Payment options
COD
E-wallet
Debit/Credit Card
Admin
Placed Order
Order Database
4.7 Making payment
Cancel Options
Cancelled Order
4.8 Cancelling Order

1.7 DATA DICTIONARY

Login=user_name+password

Customer_name = first_name + last_name

Account_details = account_no. + CVV + card_holder_name + expiry_date

Customer_Details=customer_name+customer_id+email_id+contact_

No+address+account_details

Receipt=customer_name+customer_id+price+date+quantity+product_name

Give_item=product_name+quantity+size+date

Add_item=product_name+quantity

Delete_item=product_name+quantity

Search_item=product_name

2 ESTIMATION

2.1 FUNCTION POINT

External Inputs(Els)- 5

Login Details

Product Search

Product details or specifications

Order Details

Payment Details

External outputs(EOs)- 4

Product specifications

Order confirmation

E-bill Generation

Feedback

External Inquiries(EQs)- 3

Fetching product details

Fetching order details

Purchase Details

Internal Logical Files(ILFs)- 4

User Table

Order Table

Product Table

Cart Table

External Interface Files(EIFs)- 0

Information Domain Value	Count	Simple	Average	Complex	Total
External Inputs(EIs)	5	3	4*	6	15
External Outputs(EQs)	4	4	5*	7	16
External inquiries (EQs)	3	3	4*	6	9
Internal logical files(ILFs)	4	7	10*	15	28
External interface files(EIFs)	0	5	7*	10	0
Count Total					68

Factors	Rating
1- Does the system require reliable backup	4

and recovery?	
2-Are specialized data communications required to transfer information to or from the application?	3
3-Does distributed processing function exist?	2
4-Is performance critical?	2
5-Will the system run in existing operating environment?	3
6-Does the system require online data entry?	5
7-Does the online data entry require input transaction over multiple screens?	2
8-Are the master files updated online?	4
9-Are the information domain values complex?	3
10-Is the internal processing complex?	3
11-Is code design to be reusable?	4
12-Are conversion/installation included in the design?	3
13-Is the system designed for multiple installations?	5

14-Is the application designed to facilitate change?	4

$\sum fi = 47$

To compute function point, the following relationship is used:

FP = count total *[0.65 + 0.01* ∑ fi]

= 68 * [0.65 + 0.01 * 47]

= 68 * 1.12

= 76.16

2.2 EFFORTS :

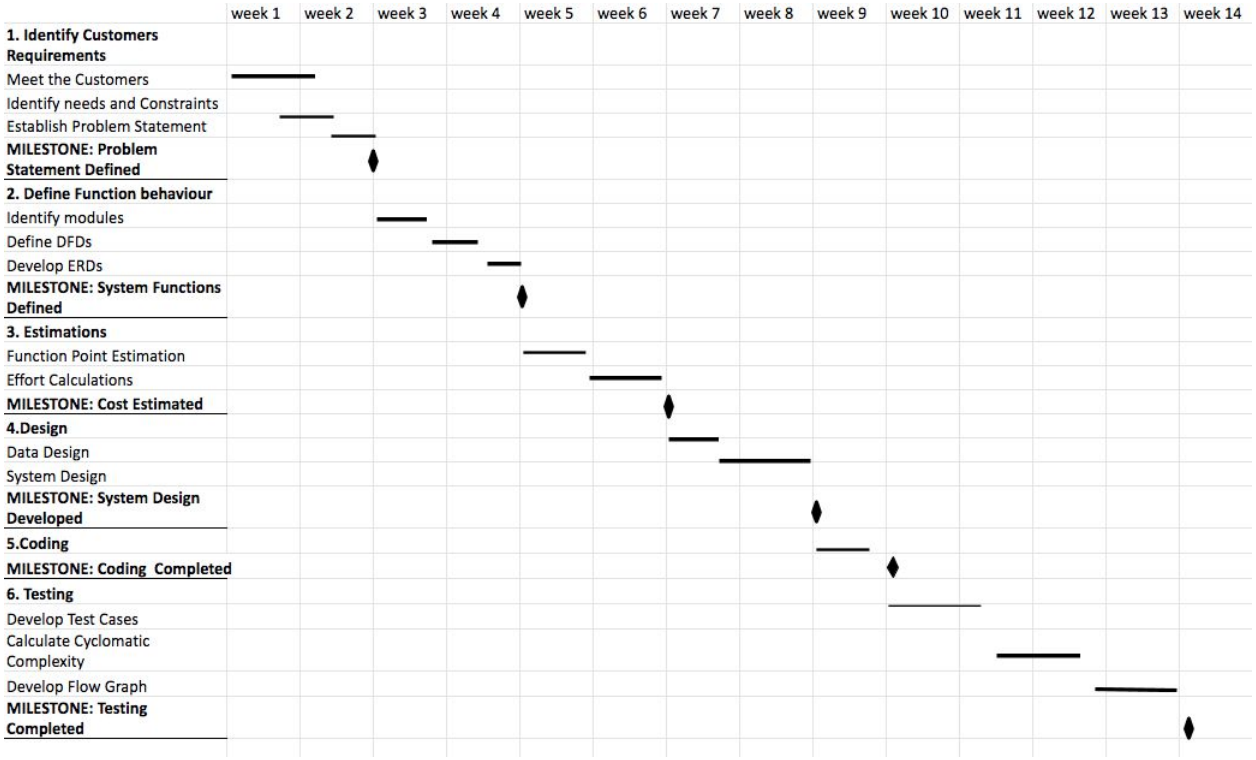
Assume that the productivity of the project is 6 function-point per month.

Assume burdened labour cost to be Rs 15,000 and cost per function point to be Rs 1100.

Total Efforts = Function point(Calculated)/Average Productivity
=76.16/6
=12.6

Estimated project cost = 1100*76.16 = Rs 83,776

3 SCHEDULING



4 RISK MANAGEMENT

1- Privacy Issues

The website may get hacked by someone leading to huge loss in terms of both money and data. Customers personal data could be compromised and could be used for spamming or identity theft.

2- User Reliability

The internet service provider(ISP) server could crash due to which the users will not be able to connect to our website.

3- Data Loss

If the system get crashed, all the necessary data would be lost which is a major issue.

4- Deteriorated Quality Of The Product

If the quality of the products goes down, then the customers would no longer be interested in shopping from our site resulting in a decrease in the expected number of customers.

5- User Resist System

It is quite difficult to convince people to shop online since they are not so sure about the quality of online products and would like to purchase the product directly from the store after a proper quality check.

Some people might be more attracted towards other other shopping portals, hence it will reduce our customers.

6- Large Number Of Users Than Planned

With the increase in the demand of the product, the number of users may increase largely. The number of users thus will be greater than the estimated number of users.

7- Customer Disputes

A customer might not have received the product till the expected date, their credit card was charged twice or the product they received didn’t fit the online description.

RISK TABLE

RISKS	CATEGORY	PROBABILITY	IMPACT
Data Loss	TI	70%	**1**
Large Number Of Users Than Planned	PS	60%	**3**
Deteriorated Quality Of The Product	BU	50%	**1**
User Reliability	BU	40%	**2**
User Resist System	BU	20%	**2**
Privacy Issues	TI	20%	**2**
Customer Disputes	TI	10%	**2**

RISK MITIGATION, MONITORING AND MANAGEMENT

Risk - Data Loss

1- MITIGATION

One of the most critical risks in online shopping system includes the data loss which could lead to the entire process being freezed. In order to avoid that the system will keep multiple copies of the stored data in as a backup strategy in order to prevent such deadlock situation to occur.

2- MONITORING

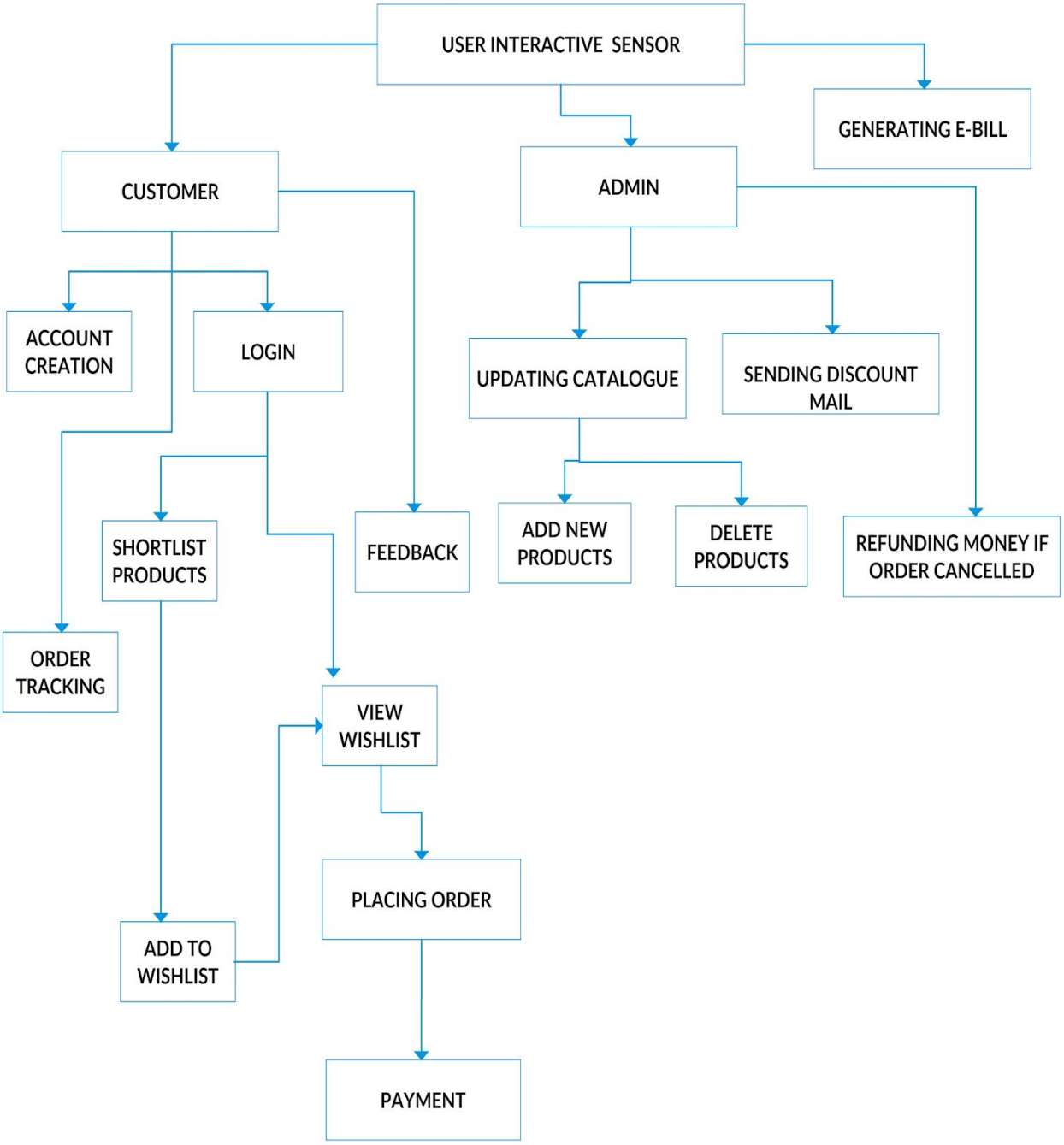
While working on the system it the stability of the servers and the system must be taken into account and if any deteriorating factor is observed it must be taken into consideration seriously in order to prevent the predicted risks such as data loss due to connection issues.

3- MANAGEMENT

In case the system has not been functioning well the team must shift itself to a more stable system in order to prevent any loss.

5 DESIGN

5.1 SYSTEM DESIGN


USER INTERACTIVE SENSOR
GENERATING E-BILL
CUSTOMER
ADMIN
ACCOUNT CREATION
LOGIN
UPDATING CATALOGUE
SENDING DISCOUNT MAIL
SHORTLIST PRODUCTS
FEEDBACK
ADD NEW PRODUCTS
DELETE PRODUCTS
REFUNDING MONEY IF ORDER CANCELLED
ORDER TRACKING
VIEW WISHLIST
PLACING ORDER
ADD TO WISHLIST
PAYMENT

5.2 DATA DESIGN

ORDER DATABASE

ATTRIBUTES	DATA TYPE	SIZE	CONSTRAINTS
ORDER ID	VARCHAR 2	10	PRIMARY KEY
PRODUCT ID	VARCHAR 2	10	FOREIGN KEY(REFERENCES PRODUCT ID OF PRODUCT DATABASE)
CUSTOMER ID	VARCHAR 2	10	FOREIGN KEY(REFERENCES CUSTOMER ID OF CUSTOMER DATABASE)
ORDER STATUS	VARCHAR 2	20	NOT NULL

CUSTOMER DATABASE

ATTRIBUTES	DATA TYPE	SIZE	CONSTRAINTS
CUSTOMER NAME	STRING	20	NOT NULL
CONTACT DETAILS	NUMERIC	10	NOT NULL
ADDRESS	VARCHAR 2	30	NOT NULL
CUSTOMER ID	VARCHAR 2	10	PRIMARY KEY

CART DATABASE

CUSTOMER ID + PRODUCT ID = PRIMARY KEY

ATTRIBUTES	DATA TYPE	SIZE	CONSTRAINTS
CUSTOMER ID	VARCHAR 2	10	FOREIGN KEY(REFERENCES CUSTOMER ID OF CUSTOMER DATABASE)
PRODUCT ID	VARCHAR 2	10	FOREIGN KEY(REFERENCES PRODUCT ID OF PRODUCT DATABASE)
DATE OF ENTRY	DATE	8	NOT NULL

PRODUCT DATABASE

ATTRIBUTES	DATA TYPE	SIZE	CONSTRAINTS
SUPPLIER NAME	STRING	20	NOT NULL
PRODUCT ID	VARCHAR 2	10	PRIMARY KEY
PURCHASE DATE	DATE	8	NOT NULL
CONTACT DETAILS	VARCHAR 2	10	NOT NULL
FEEDBACK	VARCHAR 2	50	

ORDER DATABASE

ORDER STATUS	CUSTOMER ID	ORDERED PRODUCT	ORDER ID

PRODUCT DATABASE

FEEDBACK	CONTACT DETAILS	PURCHASE DATE	SUPPLIER NAME	PRODUCT ID

CART DATABASE

DATE OF ENTRY	PRODUCT ID	CUSTOMER ID

CUSTOMER DATABASE

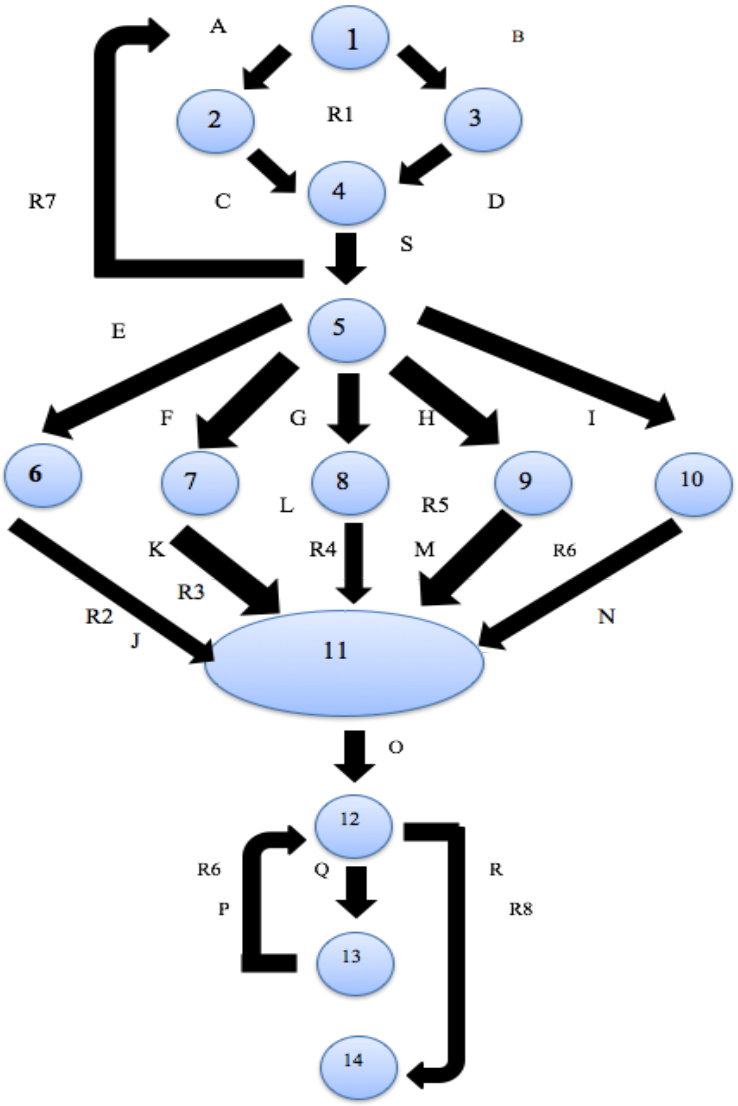
CUSTOMER ID	ADDRESS	CONTACT DETAILS	CUSTOMER NAME

6 CODING

```
{
if(login_id==customerid & password==customerpassword).....(1)}
else{
        display"invalid credentials";.....(2)
}
{
        display"login sucessful";.....(3)
}
switch s .....(4)
(s>0).....(5)
{
        display
         "choose the category"
1:electronics.....(6)
        electronics();
         break;
2:appliances.....(7)
        appliances();
        break;
3:men.....(8)
                men();
                break;
```

```
4:women.....(9)
                women();
                break;
5:baby&kids.....(10)
                baby&kids();
                break;
}
int i, n;//total no of products.....(11)
while(i<n).....(12)
{
display product[i];.....(13)
i++;
}
end while.....(14)
```

7. Testing


1
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F
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J
K
L
M
N
O
P
Q
R
R1
R2
R3
R4
R5
R6
R7
R8
S

Graph Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1			A	B											
2					C										
3					D										
4						S									
5							E	F	G	H	I				
6												J			
7												K			
8												L			
9												M			
10												N			
11													O		
12														Q	R
13													P		
14															

Regions : 7

No of Nodes : 14

No of edges : 20

Cyclomatic Complexity

1 NO. OF REGIONS+1=7+1=8

1 EDGES-NODES+2 =6+2=8

2 Predicate Nodes +1 = 7+1 =8

INDEPENDENT PATHS

1)1->2->4->5->6->11->12->13->12->14

2)1->3->4->5->6->11->12->13->12->14

3)1->2->4->5->7->11->12->13->12->14

4)1->2->4->5->8->11->12->13->12->14

5)1->2->4->5->9->11->12->13->12->14

6)1->2->4->5->10->11->12->13->12->14

7)1->2->4->5->6->11->12->13->12->14

8)1->3->4->1->2->4->5->6->11->12->14

8 REFERENCES

- **SOFTWARE ENGINEERING TEXTBOOK (S. PRESSMAN)**
- **INTERNET**