E-MART:

An Android based app that facilitates daily consumer for households at his door-step through an online store .

SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENT

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Revision History

Date	Description	Author	Comments
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<24-12-2018>	<Version 3>	<Sarmad Maqbool>	<Third Draft>

Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

Signature	Printed Name	Title	Date
	Dr. Rao Akmal Khan	Supervisor, CSIT 21306	<26-12-2018>

26-12-2018

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1. Introduction

This SRS describes the requirements and specifications of E-MART, an e-commerce solution for home based consumer. It explains the functional features of the application, along with interface details, design constraints and related considerations such as performance characteristics.

1.1 Purpose

E-MART will be an android-based software system written in Java and SQLite to aid daily consumer and seller in purchases and sales with regard to simplifying and speeding up the process of selection, ordering and purchasing goods for customers as well as managing a database of users and a database of products for store owners through a conveniently designed Graphical User Interface which will utilize a user-friendly intuitive design approach. E-MART will be an android-based shopping application designed in the form of an e-commerce android app. The system will be designed to be used by daily consumer with little or no experience in using mobile phone applications and by store owners who will be trained to use E-MART. To aid users, documentation will be provided in the form of a user manuals which will contain a detailed description of all system functions.

1.2 Scope

The software product to be produced is named as E-MART. This app will ease our home based consumer in such a way that he can order online his required items and will be delivered on his door-step.

Benefit of this app will be that user will be facilitated on both ends. Consumer can buy goods at home and the store owners will have check on their sales and purchases by automated databases.

The system will be therefore designed to allow a user to perform the following functions:

1. log on either as a customer or a store owner.
2. browse through the database of available products.
3. register into the app.
4. add a product to a shopping cart.
5. provide a credit card information.
6. select a shipping method.
7. select the next screen to view.
8. update or delete a record information depending on the user authorization level.

1.3 Definitions, Acronyms, and Abbreviations.

Design Constraints	Design constraints are conditions that need to happen for a project to be successful.
Interface	A point where two systems, subjects, organizations, etc. meet and interact.
Functional features	Functional features include both the purpose of the design object such as support, stability, or strength.
GUI	This interface is a form of user interface that allows users to interact with electronic devices through graphical icons and visual.
System functions	input, storage, processing, and output are the basic system functions.
T3 Access	A **T3** line is a dedicated physical circuit that uses high-speed media to transmit data, voice and video at the rate of 45 Mbps.
SQLite	SQLite is a relational database management system contained in a C programming library. SQLite is not a client–server database engine.
CRM	Customer-Relationship-Management

1.4 References

The references used in this SRS are:

1. Ebay   (android app)   url https://www.ebay.com
2. Amazon   (android app)   url https://www.amazon.com
3. Daraz.pk   (android app)   url https://www.Daraz.pk
4. Kaymu.pk   (android app) url https://www.Kaymu.pk
5. Grofers.com   (android app) url https://www.Grofers.com

1.5 Overview

The rest of the SRS examines the specifications of the E-Mart in detail. Section 2 of the SRS presents the general factors that affect the E-mart and its requirements, such as user characteristics and project constraints. Section 3 outlines the detailed, specific functional, performance, system and other related requirements of the E-Mart.

2. The Overall Description

Product Perspective

Our project is the follow on general retail store type projects. It will contain most of the functionalities of these products with some new advancement. We will give an interactive touch to our store. The user interface and ease provided will not let go the user to search for alternative options for online shopping. It will be standalone product and not depend on other software.

2.1 Product Features

To keep in view all reader we will simply describe product features. It will give merchant opportunity to sale their product and to customer to purchase product. Also it will prompt the user first to make an account and become a member to continue shopping. We will also keep our user interested by giving him offers and promos.

User Classes and Characteristics

Class	Characteristics
System	It will be the system administrator class. He will maintain the overall app store.
Merchant	It includes the people who upload their products on the store.
Login	This class will make login of customers and merchants
Customer	It includes the people who will purchase the things. It will save the attributes of product sale.

2.2 Operating Environment

Our app must be compatible with all versions of android. A good graphics memory is also needed for the proper display of graphical fields. We will use SQLite for creating databases. Ram should be 1gb or greater than 1gb. Processor must be 1.5 dual core or greater.

2.3 Design and Implementation Constraints

There is a true need of our product in the cyber world. So we have to complete it in minimum time say four months.We should follow the IEEE standards.Default Language will be English. In next increment we will provide the facility to see the app in Urdu language. Project will follow all the copyright and cyber laws of PTA (Pakistan Telecommunication Authority).

2.4 User Documentation

We will give the complete documentation of the project along with software. A welcome video will be included in the app which will give us the virtual tour of the app first to get to know the app. For further queries we will make a blog to answer them or an online portal.

3. Specific Requirements

3.1 External Interface Requirements

Introduction:

This subsection contains the requirements for the E-MART. These requirements are organized by the features discussed in the vision document. Features from vision documents are then refined into use case diagrams and to sequence diagram to best capture the functional requirements of the system.

1. Functionality

Sell Configured to Ordered Products

1. The system shall display all the products that can be configured.
2. The system shall allow user to select the product to configure.
3. The system shall display all the available components of the product to configure.
4. The system shall enable user to add one or more component to the configuration.
5. The system shall notify the user about any conflict in the current configuration.
6. The system shall allow user to update the configuration to resolve conflict in the current configuration.
7. The system shall allow user to confirm the completion of current configuration.

Provide comprehensive product details

1. The system shall display detailed information of the selected products.
2. The system shall provide browsing options to see product details.

Detailed product Categorizations

1. The system shall display detailed product categorization to the user.

Provide Search facility

1. The system shall enable user to enter the search text on the screen.
2. The system shall enable user to select multiple options on the screen to search.
3. The system shall display all the matching products based on the search
4. The system shall display only 10 matching result on the current screen.
5. The system shall enable user to navigate between the search results.
6. The system shall notify the user when no matching product is found on the search.

Maintain customer profile

1. The system shall allow user to create profile and set his credential.
2. The system shall authenticate user credentials to view the profile.
3. The system shall allow user to update the profile information.

Provide personalized profile

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1. The system shall display both the active and completed order history in the customer profile.
2. The system shall allow user to select the order from the order history.
3. The system shall display the detailed information about the selected order.
4. The system shall display the most frequently searched items by the user in the profile.
5. The system shall allow user to register for newsletters and surveys in the profile.

Provide Customer Support

1. The system shall provide online help, FAQ's customer support, and sitemap options for customer support.
2. The system shall allow user to select the support type he wants.
3. The system shall allow user to enter the customer and product information for the support.
4. The system shall display the customer support contact numbers on the screen.
5. The system shall allow user to enter the contact number for support personnel to call.
6. The system shall display the online help upon request.
7. The system shall display the FAQ's upon request.

Email confirmation

1. The system shall maintain customer email information as a required part of customer profile.
2. The system shall send an order confirmation to the user through email.

Detailed invoice for customer

1. The system shall display detailed invoice for current order once it is confirmed.
2. The system shall optionally allow user to print the invoice.

Provide shopping cart facility

1. The system shall provide shopping cart during online purchase.
2. The system shall allow user to add/remove products in the shopping cart.

Provide multiple shipping methods

1. The system shall display different shipping options provided by shipping department.

2. The system shall enable user to select the shipping method during payment process.
3. The system shall display the shipping charges.
4. The system shall display tentative duration for shipping.

Online tracking of shipments

1. The system shall allow user to enter the order information for tracking.
2. The system shall display the current tracking information about the order.
3.

Allow online change or cancellation of order

1. The system shall display the orders that are eligible to change.
2. The system shall allow user to select the order to be changed.
3. The system shall allow user to cancel the order
4. The system shall allow user to change shipping, payment method.
5. The system shall notify the user about any changes made to the order.

Allow Online Product reviews and ratings

1. The system shall display the reviews and ratings of each product, when it is selected.
2. The system shall enable the user to enter their reviews and ratings.

Offer online promotions and rewards

1. The system shall display all the available promotions to the user.

2. The system shall allow user to select available promotion.

Online Purchase of products

1. The system shall allow user to confirm the purchase.
2. The system shall enable user to enter the payment information.

2. Usability

Graphical User Interface

1. The system shall provide a uniform look and feel between all the web activities.
2. The system shall provide a digital image for each product in the product catalog.
3. The system shall provide use of icons and toolbars.

Accessibility

1. The system shall provide handicap access.
2. The system shall provide multi language support.

3. Reliability & Availability

Back-end Internal Computers

1. The system shall provide storage of all databases on redundant computers with automatic switch over.
2. The system shall provide for replication of databases to off-site storage locations.

Internet Service Provider

1. The system shall provide a contractual agreement with an internet service provider for T3 access with 99.9999% availability.
2. The system shall provide a contractual agreement with an internet service provider who can provide 99.999% availability through their network facilities onto the internet.

Performance

1. The product shall be based on android and has to be run from a local server.
2. The product shall take initial load time depending on internet connection strength which also depends on the media from which the product is run.
3. The performance shall depend upon hardware components of the client/customer.

4.   Security

Data Transfer

1. The system shall use secure sockets in all transactions that include any confidential customer information.
2. The system shall automatically log out all customers after a period of inactivity.
3. The system shall confirm all transactions with the customer.
4. The system shall not leave any cookies on the customer's computer containing the user's password.
5. The system shall not leave any cookies on the customer's computer containing any of the user's confidential information.

Data Storage

1. The customer's app shall never display a customer's password. It shall always be echoed with special characters representing typed characters.
2. The customer's app shall never display a customer's credit card number after retrieving from the database. It shall always be shown with just the last 4 digits of the credit card number.
3. The system's back-end servers shall never display a customer's password. The customer's password may be reset but never shown.
4. The system's back-end servers shall only be accessible to authenticated administrators.
5. The system's back-end databases shall be encrypted.

5.   Supportability

Configuration Management Tool

1. The source code developed for this system shall be maintained in configuration management tool.

6.   Design Constraints

Standard Development Tools

1. The system shall be built using a standard android development tool that conforms to either IBM's CUA standards or Microsoft's GUI standards.

Android Based Product

1. Minimum of 50mb will be required for the app to install.
2. The device must be equipped with any latest android version.
3. The product must be stored in a way that allows the client easy access to it.
4. Response time for loading the product should take no longer than five minutes.
5. A general knowledge of basic mobile using skills is required to use the product

On-line User Documentation and Help System Requirements

1. As the product is E-store, On-line help system becomes a critical component of the system which shall provide.
2. It shall provide specific guidelines to a user for using the E-Store system and within the system.
3. To implement online user help, link and search fields shall be provided.

Interfaces

There are many types of interfaces as such supported by the E-Store software system User Interface, Software Interface and Hardware Interface. The protocol used shall be HTTP. There shall be logical address of the system in IPv4 format.

User Interfaces

The user interface for the software shall be compatible to any android version by which user can access to the system.The user interface shall be implemented using android studio.

Hardware Interfaces

Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system. As for e.g. Mobile Data Network, Wi-Fi, shared connection.

Software Interfaces

The E-MART system shall communicate with the Configurator to identify all the available components to configure the product. The E-MART shall communicate with the content manager to get the product specifications, offerings and promotions. The E-MART system shall communicate with billPay system to identify available payment methods , validate the payments and process payment. The E-MART system shall communicate to credit management system for handling financing options. The E-MART system shall communicate with CRM system to provide support. The E-MART system shall communicate with Sales system for order management. The E-MART system shall communicate with shipping system for tracking orders and updating of shipping methods.

3.2 Functional Requirements

This section describes specific features of the software project.   If desired, some requirements may be specified in the use-case format and listed in the Use Cases Section.

3.2.1   Initiate Tour

1   Tour as a Guest

1.1   Introduction

View our software system as a non-registered user.

1.2   Inputs

Default customer ID.

1.3   Processing

Assign the user a default customer ID implicitly.

Give him the basic rights to view products, to browse catalogs.

1.4   Outputs

Lead user to selection of viewing products, browsing catalogs and watching promos.

2   Tour as a Member

2.1   Introduction

Start using our software system as a registered member. The members can avail promotions and offers. They can also earn points on purchasing which they can redeem in future.

2.2   Inputs

Valid member ID and PIN.

2.3   Processing

Compare the user-input member ID and PIN with our database.

Determine if he is a member.

2.4   Outputs

Show his membership status.

If he is a member, give him coupons and promos to redeem his points.

3   Read News

3.1   Introduction

News informs user the exciting products and promotions offered lately. It also tells user all the services and new features that **E-MART** provides.

3.2   Inputs

Customer ID, either default (as for guests) or member ID.

3.3   Processing

Link to the list of news.

3.4   Outputs

The list of latest news. A list of all the services will be displayed as well.

3.2.2   Catalog

1   Browse Catalog

1.1   Introduction

All users have the authority to look at all the products that we provide. The users include guests, buyers and suppliers. Suppliers want to browse the catalog because they need to know the types and prices of products we already have to determine if it is worth posting their goods on our catalogs.

1.2   Inputs

Customer ID, either default (as for guests) or member ID.

1.3   Processing

Link to the list of products and product prices.

1.4   Outputs

The list of products types, price, their manufacturers and availabilities.

2   Post Products on Catalog

2.1   Introduction

Only suppliers have the authority to post products on our catalogs.

2.2   Inputs

Valid member ID and PIN.

2.3   Processing

If user is a guest, lead him to registration page. If the input ID and PIN are not consist with in database, give an error message to let them contact with database administrator.

Prompt supplier to input his product's name, type, price, number of items available in stock, handling and shipping time, contact phone and email. Update our catalog database in real time.

2.4   Outputs

Page of "registration" or "post on catalog".

3   Purchase

Making an order

1.1   Introduction

This is a service for buyers. Only members have the authority to buy products.

1.2   Inputs

Valid member ID and PIN.

1.3   Processing

If user has not registered or logged in, lead him to login page. Else if the input ID and PIN are not consist with in database, give an error message to let them contact wit database administrator.

Else if member does not provide his credit card information, lead him to page of inputting credit card information.

Else, lead him to page of purchase.Prompt buyer to input number of items wanted.Check the buyer's personal information. Assign buyer a confirmation number and display the page of receipt.Update our catalog database in real time.

1.4 Outputs

Page of "registration", "providing credit card information" or "purchase".

Order confirmation number and receipt.

4 Track Order and Cancellation Process

1 View Order Status

1.1 Introduction

This is a service to let buyer track his order. It also shows if it is too late to cancel the order process. Only member who has made the order can view order status.

1.2 Inputs

Valid member ID, PIN and order confirmation number.

1.3 Processing

If user has not registered or logged in, lead him to page of registration.

Else if the input ID and PIN are not consist with in database, give an error message to let them contact with database administrator.

Else, lead him to page of view order status.

If user does not have an order in database, show him nothing to track.

A link to shipping companies is provided, such as UPS, FedEx and etc.

1.4   Outputs

Page of "log in" or "track orders".

5   Cancel Order

1.1   Introduction

Only buyer who has made the order can cancel the order process.

1.2   Inputs

Valid member ID, PIN and order confirmation number.

1.3   Processing

If user has not registered or logged in, lead him to page of registration.

Else if the input ID and PIN are not consist with in database, give an error message to let them contact with password recovery methods.

Else, lead him to page of canceling orders.

If user does not have an order in database, show him nothing to cancel.

Cancellation can be done without penalty before stores handled the order.

No order can be cancelled after products have been shipped out to the buyer.

1.4   Outputs

Page of "log in" or "cancel orders". Confirmation number of cancellation.

6   Registration and Update Memberships

1   **Registration**

1.1   Introduction

This is a service for guests. User can input their credit card information now or later.

1.2   Inputs

Default customer ID.

1.3   Processing

If the member ID has been taken, prompt user to choose another one. Prompt user to select a password.

Prompt user to input information of his company, such as company name, location, phone, fax, and email.

User can select to input their credit card information now or later. Without credit card information, **E-MART** will not allow user to purchase products.

Update our membership database.

1.4   Outputs

Page of registration.

3.3 Use Cases

This section contains use cases of the E-MART, an e-commerce application.

USER SIDE USE CASE
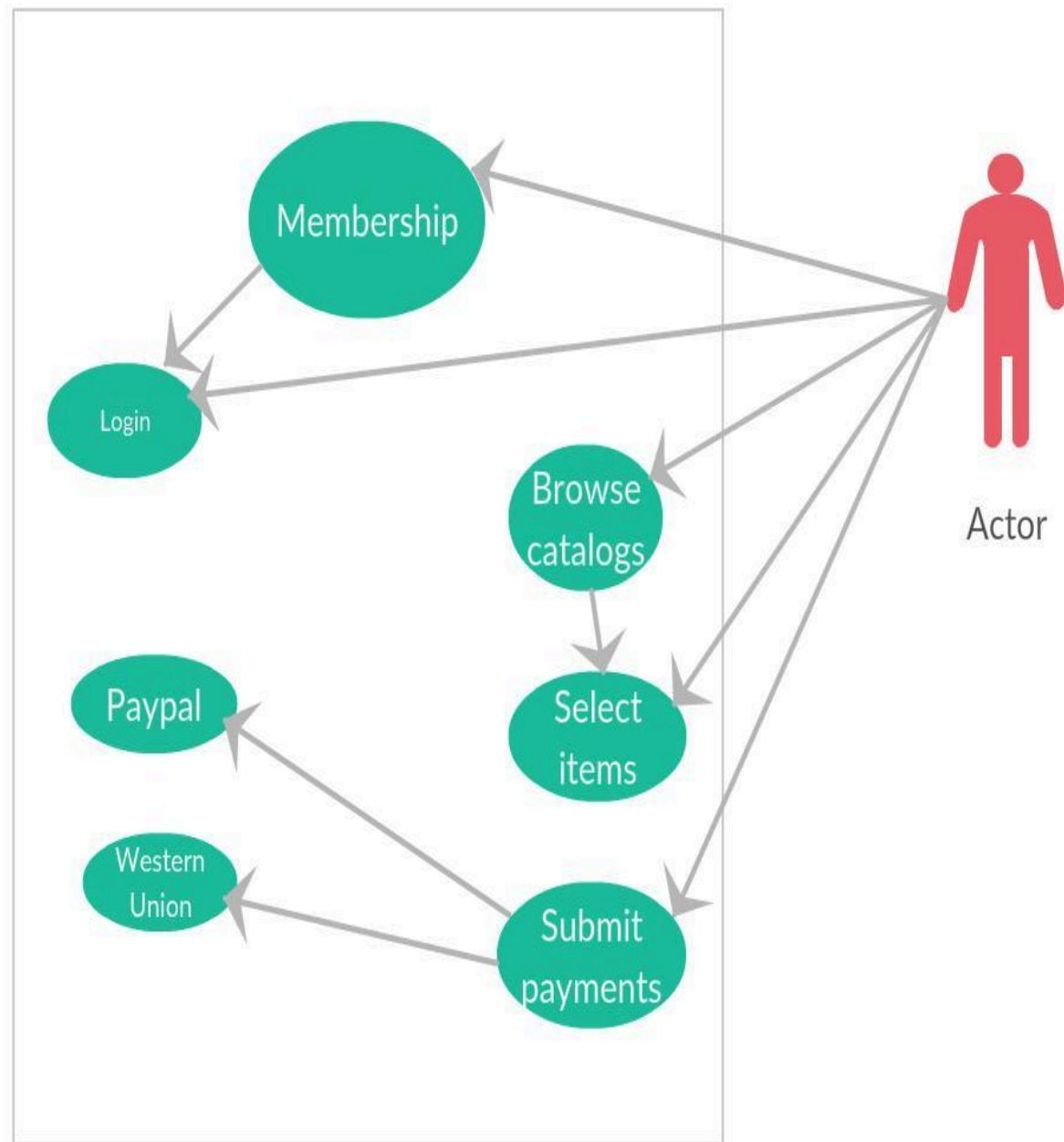
User side

The use case for the user side clearly tells us that the user will firstly register as a member then the user will login to the system. After that the user will take a tour of the app (i.e how it works). The user will browse through catalogs and select his desired category. There the user will browse items and select a product to ship to his address. Then the user will be asked a payment method to complete his order. After selecting a payment method and completing the formalities of address and payment method, the order will be shipped to user's given address.

Seller Side

The seller will have to register himself as a member the he will be prompted to logged in. after that the seller will post his products on catalog. He will also update the catalogs if there are new arrivals or stock was empty previously. Furthermore the seller can check for payments from the user, if the user have paid for the item then the seller will make item ready to dispatch. The seller can also withdraw his payments by the desired payment method.

SELLER SIDE USE CASE
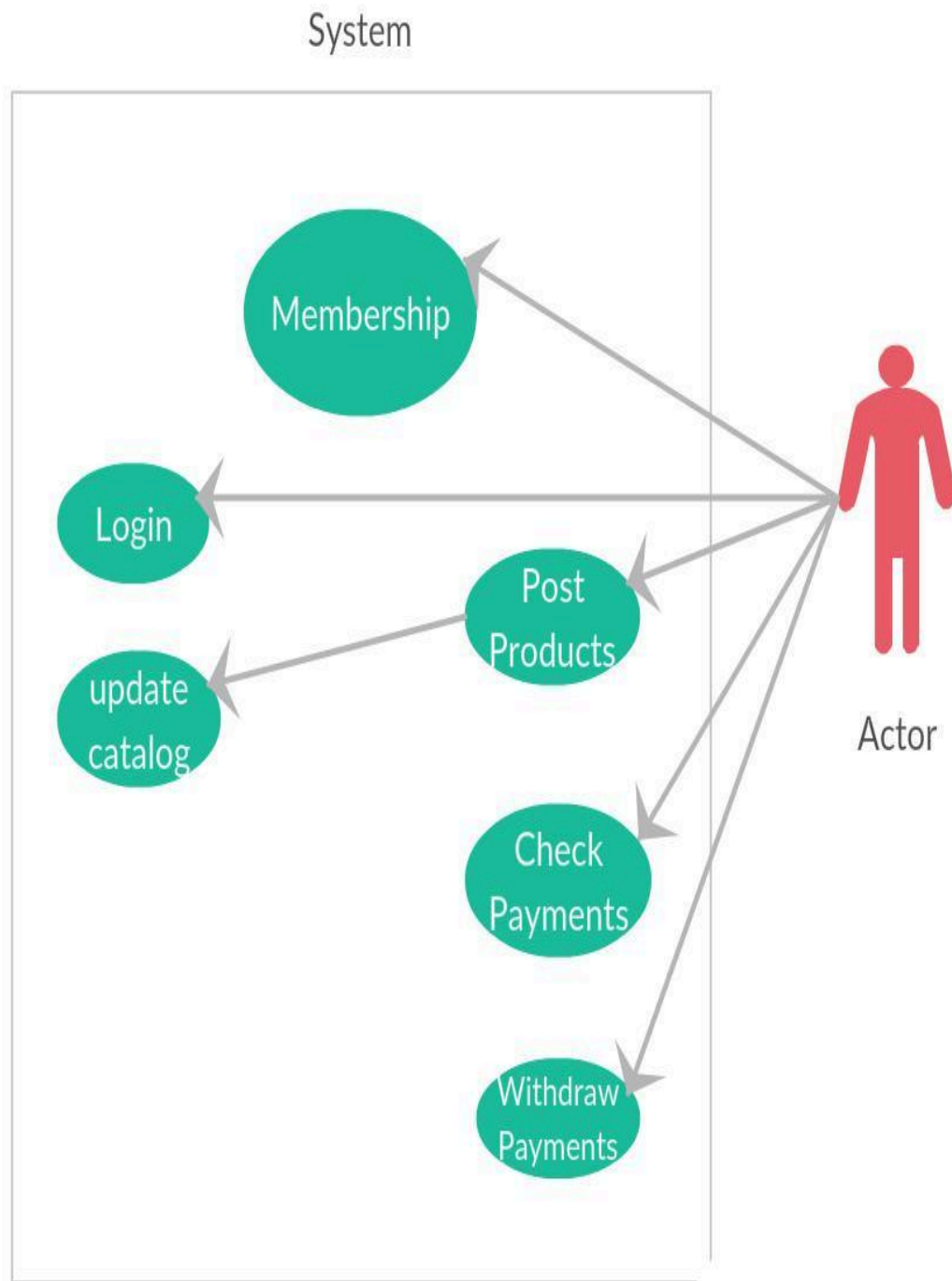
E-MART general USE CASE
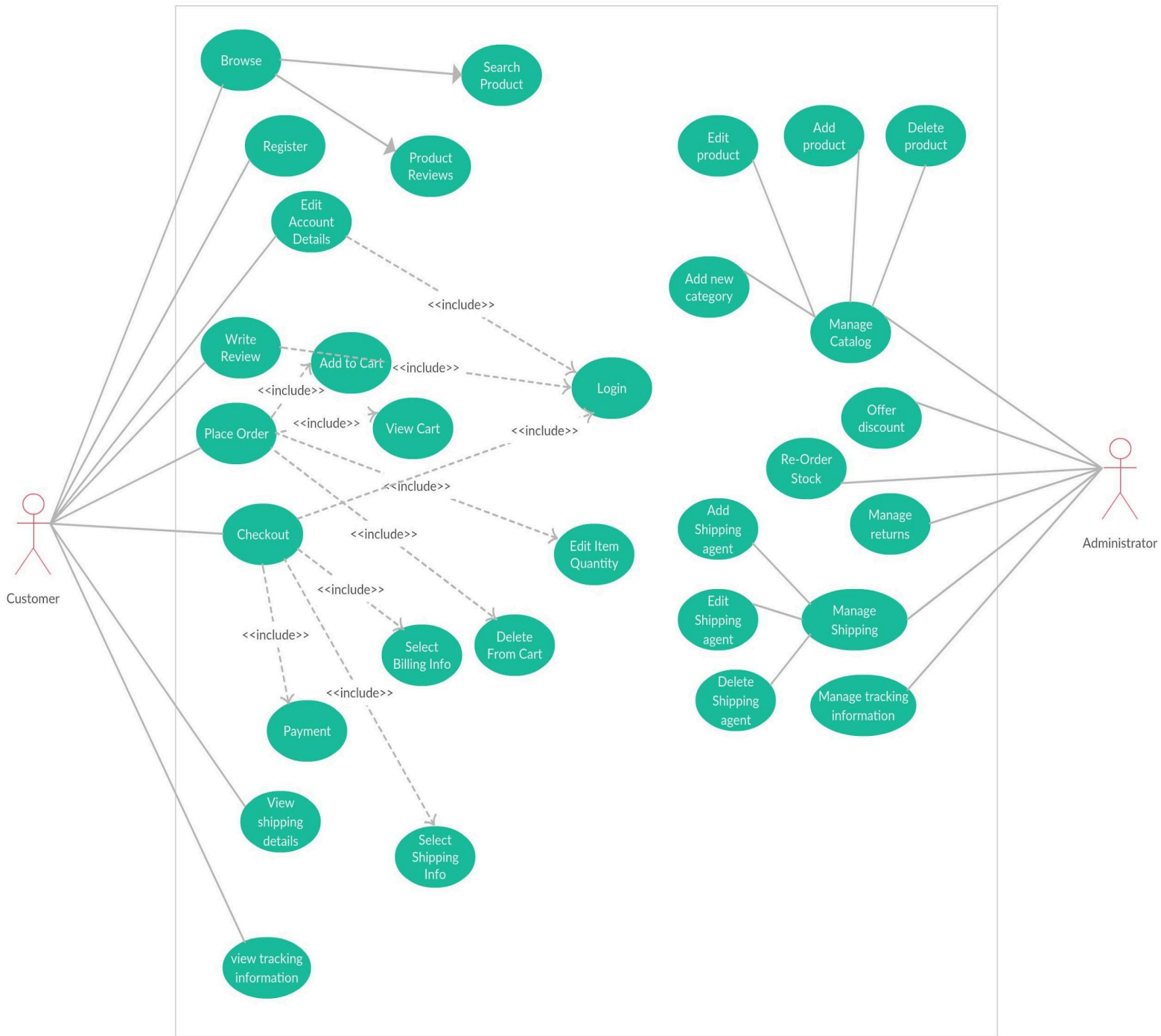
1st Actor (User)

This is the comprehensive use case of the entire app and there are two actors. First is user and the second one is administrator or seller. User will firstly register as a member then the user will login to the system. After that the user will take a tour of the app (i.e how it works). The user will browse through catalogs and select his desired category. There the user will browse items and select a product to ship to his address. Then the user will be asked a payment method to complete his order. After selecting a payment method and completing the formalities of address and payment method, the order will be shipped to user's given address. The details enhanced in this case for user side are that he can update his account and manage account. He can avail discount on his purchases. The user can write a review about the product and he can also also view the tracking information of the item. Moreover a user can also cancel his order if he is not sure about making the order.

2nd Actor (Administrator)

The Administrator will post products on catalog. He will also update the catalogs if there are new arrivals or stock was empty previously. Furthermore the admin can check for payments from the user, if the user have paid for the item then the seller will make item ready to dispatch. The administrator will also add a new category if new items or category is introduced. Moreover the admin will also allocate a shipping agent to the specific order to be delivered on door-step.

3.5 Non-Functional Requirements

A good **E-MART** system should meet the powerful functional requirement. It should also pay attention to its non-fictional requirements. This section describes the quality attributes that the **E-MART** software should have.

Availability

The system should be available 24 hours a day and 7 days a week.

Reliability

The **E-MART** system should be released after thoroughly tested. The system should operate properly 99% of the time over a 4-year period. Situations in which a request and response run unexpectedly will be very minimal.

Robustness

The system should have the ability to continue to function accurately even the customer input wrong commands. This would be done by exception handling.

Performance

The system should provide high performance so that it can be better than traditional EDI and others.

1. The responding time for answering a buyer's request should be no more than 2 seconds.
2. The time respond for menu changes should be less than 2 seconds.
3. The time to issue a confirm information after the customer request should be no more than 2 seconds.
4. The system should provide suppliers enough space to introduce their product, so that the buyers can get enough information to make a decision.
5. The system should provide error information to the user after 5 seconds.
6. The system should be able to serve 1000 customers concurrently.

User friendliness

The system should have a good user interface. The novice user can simply follow the instructions to use the system without special computer technique.

Maintainability

The system should be easy to maintain by administrators. The system's database should be backup every week. After certain amount of time, the system should be added new function, new features so that it can provide user good with qualities.

Portability

The system should be able to run in different environments, such as all versions of android and different android-based devices.

Security

The system should protect itself from external attacks that may be accidental or deliberate such as viruses, unauthorized use of system services, unauthorized use of system services, unauthorized modification of the system or its data. All customers' account information must be stored in the system's database. Only the database administrators have direct access to the database for making any change related to the database schema and for maintenance purposes.

4. Analysis Models

4.1 Data flow Diagrams DFD

A Data Flow Diagrams is a structured analysis and design tool that can be used flowcharting in place of, or in association with, information-oriented and process oriented systems flowcharts. A DFD is a network that describes the flow of data and the processes that change, or transform, data throughout a system. This network is constructed by using a set of symbols that do not imply a physical implementation. It has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design. So it is the starting point of the design phase that functionality decomposes the requirement specifications down to the lowest level of detail.The context level data flow diagram (DFD) is describe the whole system. The 0-level DFD describe the all user module who operate the system.

The Seller will have the access to create Product ads on the app. Once the seller has added item to sell list in the app catalog, administrator will receive the items details to take into consideration. Only after administrator approve, the item will only be allowed to go into sell list of the E-MART Online Shopping Store Application. So, the application is a medium between the seller and customer (buyer). Besides that, the E-MART will serve to provide the details of all product listed there, if a user intend to buy, he/she has to contact the seller and make payment through the app.

Meanwhile, the user can access the app for buying, selling or to get product information. As only a registered user can buy or sell items in E-MART Online Shopping Online Store Application, he/she must agree to the terms and conditions of the system. Once register, he/she will receive a verification mail to his/her email, which have a link to our application.

1st LEVEL USER

User

2.0
Login

1.0
Registration

User

3.0
Select item

Item

Login

Response

Select item

Request for Registration

Response

Response

User

Payment

Response

Place order

Buy

6.0
Make Payment

Payment

5.0
Buy Item

Response

Response

4.0
Make order

Order

Item

2nd level user DFD

User

1.0
Login

Request to login

2.0
View item

Item

reply

Request for view

User

edit profile

reply

update password

reply

Order

4.0
Confirm
order

3.0
Add to cart

Order

1st Level Admin

Admin

1.0
Login

2.0
Manage category

Category

Add Category

Response

Request for login

Response

Admin

Response

Manage order

Response

Manage item

Item

3.0
Manage Item

4.0
Manage order

Order

2nd level Admin

Admin

1.0
Login

2.0
View order

Order

Request for view

Response

Response

Request for login

Admin

Response

Request for confirm/cancel

Dispatch order

3.0
Confirm/
Cancel

Response

4.0
Dispatch
order

Order

Order

4.2 Sequence Diagrams

user login sequence diagram
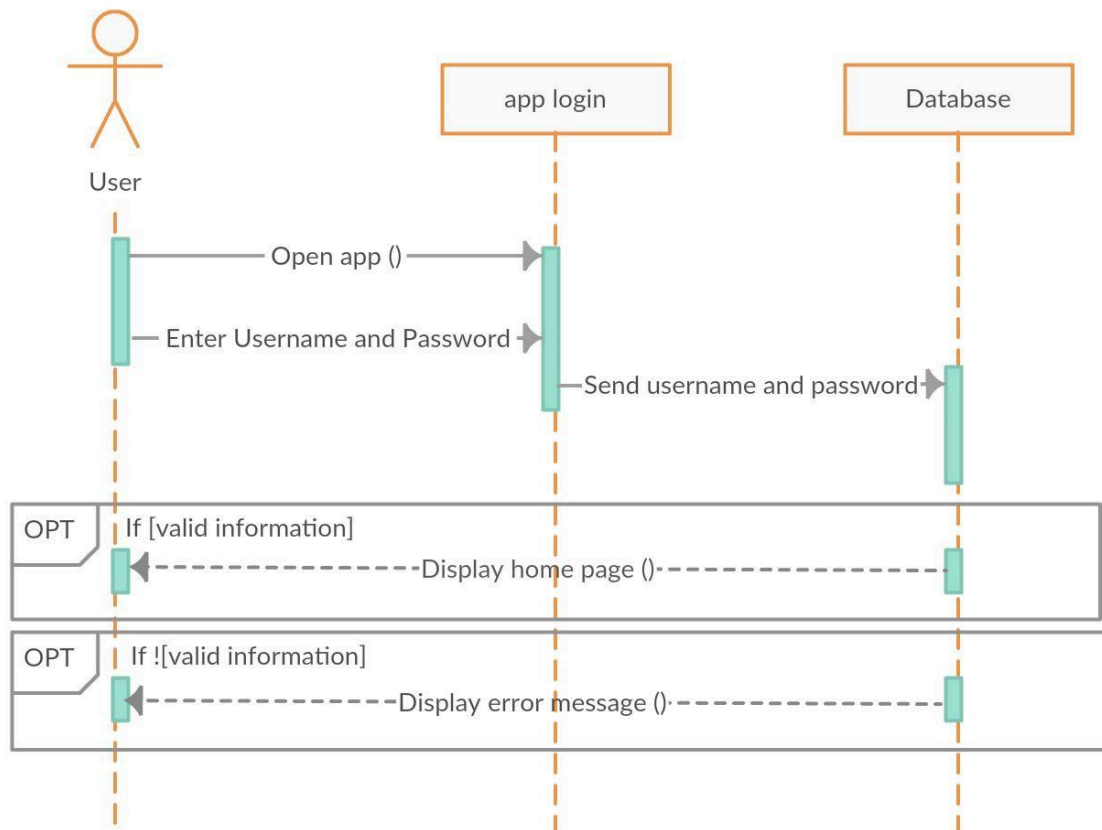
Logout Sequence Diagrams
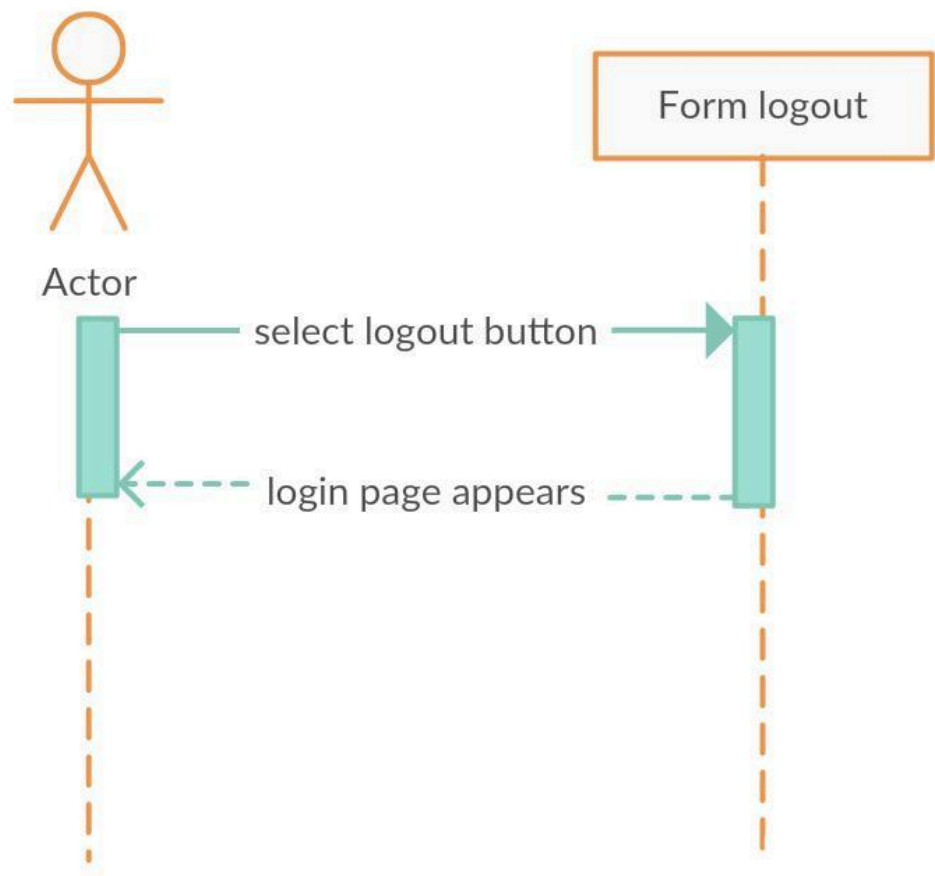
Placing order
E-MART Online Shopping
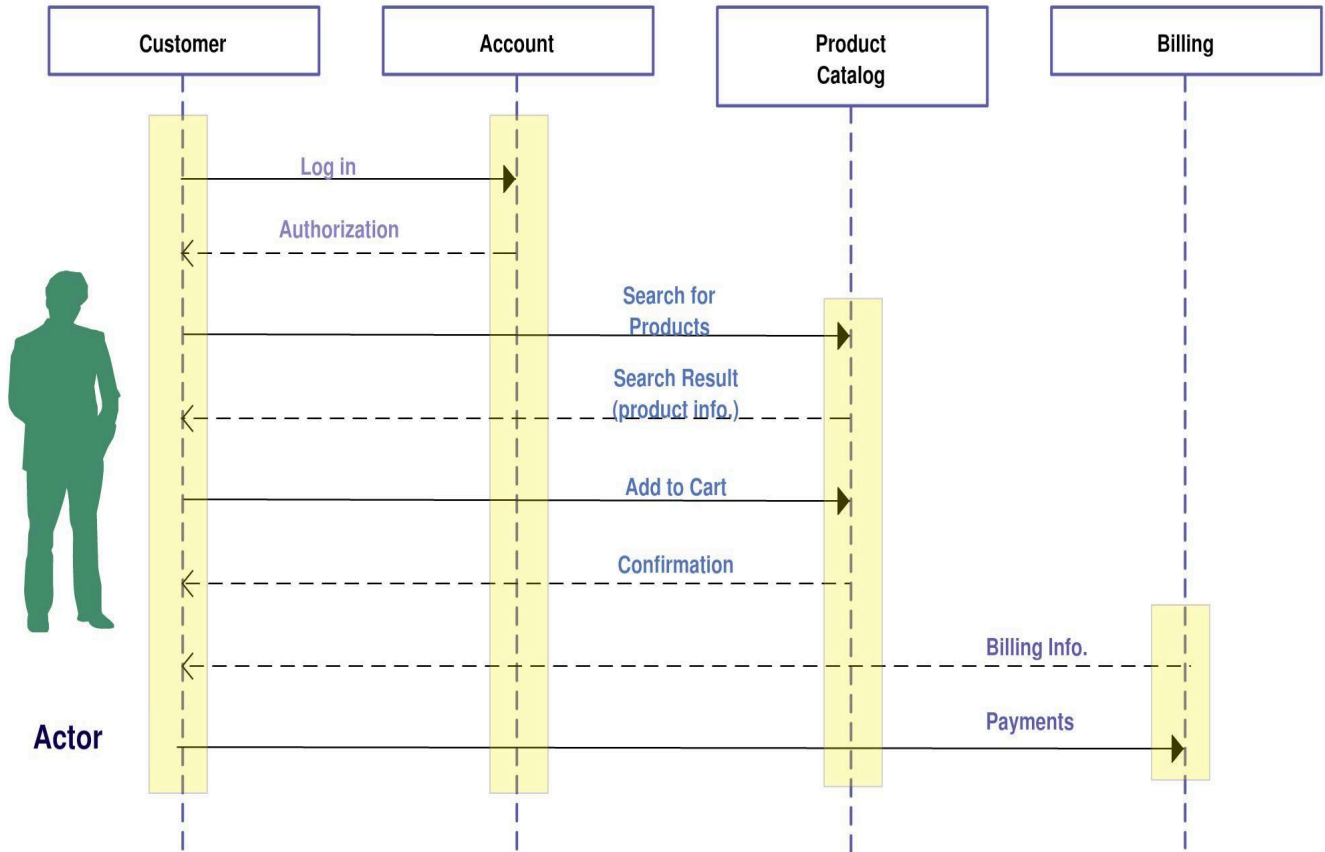
Admin side sequence diagram
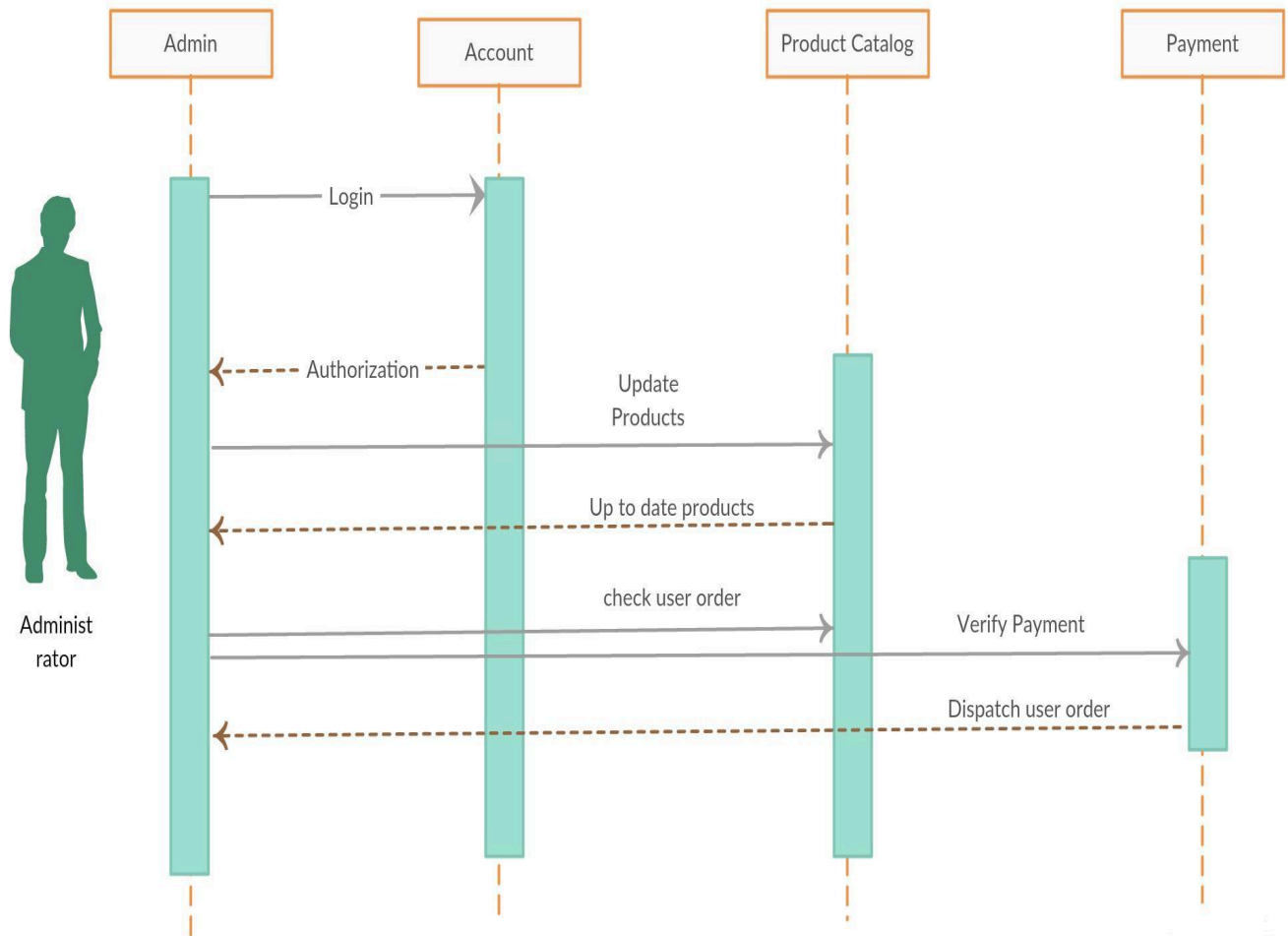
4.3 state diagrams

State Diagram
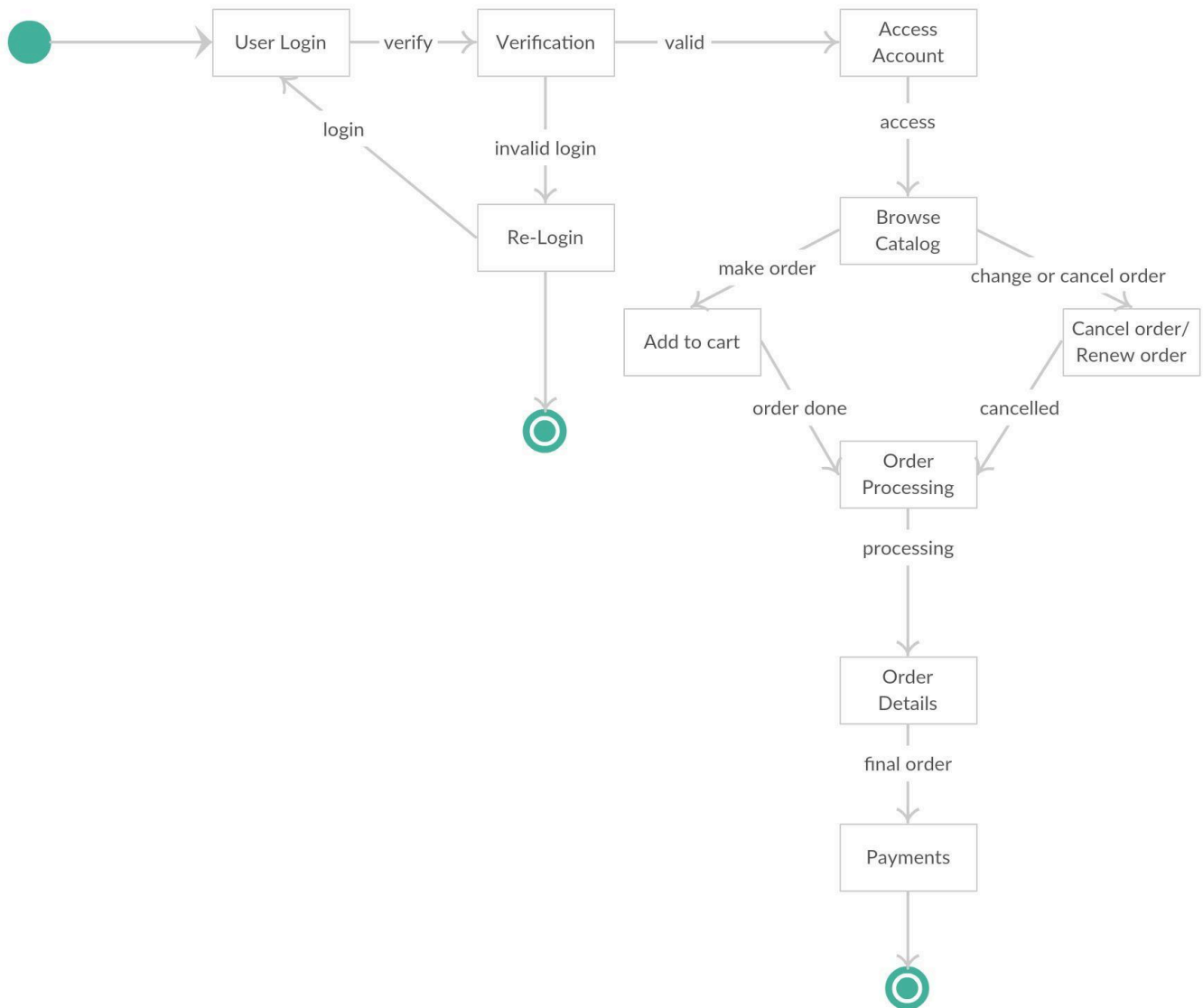
5. Supporting Information

Appendix A – Background Research on:

1. Ebay
2. Amazon
3. DARAZ.pk

AMAZON
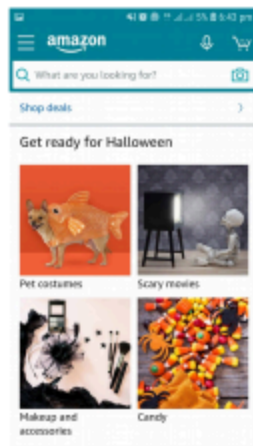
Amazon is the leading e-commerce store currently and what makes it to the top is the operations by amazon inc. but they have really put in all their efforts for online user's best experience.

KEY FEATURES
- simple designing
- well structured
- image recognition for products
- catchy animations

If we want to shop our items, there is multiple image views available for displaying the products. We can also add the location in this activity.

In the navigation window we will have lists containing buttons which are further implemented with login
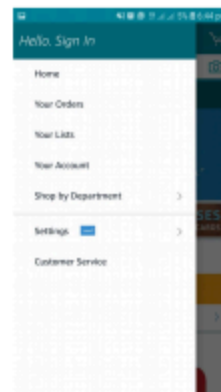
Ebay

Ebay is a top rated E-commerce android application. The thing which makes it one of the best and my personal favorite is the minimal approach applied on its designing. In many other applications there is much of mess or we can say excessive information in the main activity. But in ebay, it is perfectly engineered first and then developed. One can easily find his desired products with maximum simplicity.
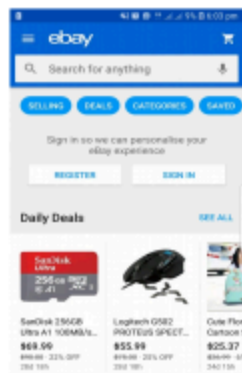
Key features:
- Elegant Design
- Simplicity
- Attractive UI
- Well structured

A navigation window in the second image can be be clearly seen. Which makes the app more user friendly. It consists of lists We can check our profile, notifications, promotions from here. We can also do the app settings.
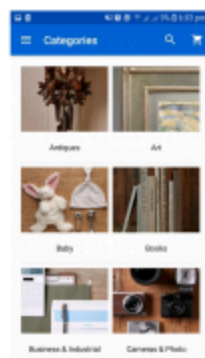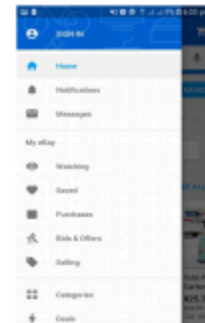
A perfect combo of user friendly interface and categories according to the most favorable choices of the users. This activity consists of image views and scroll views.
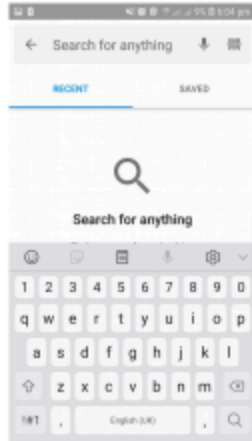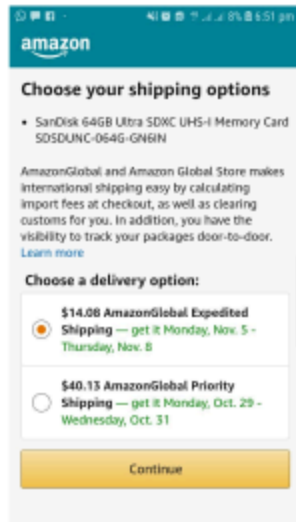
Searching algorithm implemented in this app is really great. Databases are written in a very good manner. Then there is feature for checking recent searches and what we have saved. The **voice recognition** feature helps us to find things more conveniently.
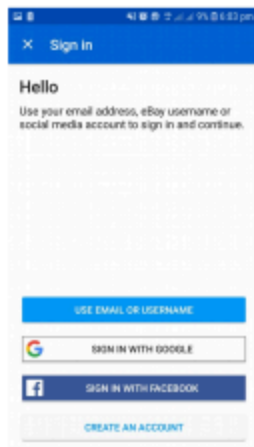
After selecting another activity leads us to our product we can proceed to further formalities like buying the product.
or we can add it to the cart for further shopping. We can buy this product by payment methods which are very securely implemented. The payment methods include debit/credit card or PayPal and etc.
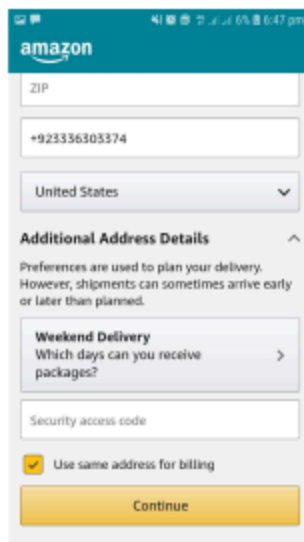
Users can also affiliate their selves with this online store by making an online account through their email id or facebook id. This will facilitate the user in browsing according to their search history and they can also avail coupons and deals. If user is not registered then he will be prompted to register first.

Radio buttons are available for our ease in selecting the shipping methods. Then we will further proceed to our final formalities.

In the end we will be prompted to fill out our addresses and other shipping information that we can provide via forms. Then we will chose payment method and item is bought.
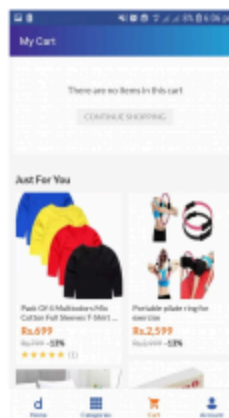
DARAZ.PK

Daraz.pk comprises a very powerful yet simple home page. A blend of colors of its basic functionalities and features. But somehow it feels like a mess at its home page with so much information
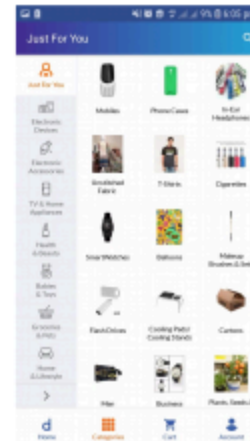
The category section in this app is very much impressive. A little navigation bar helps in easing the user experience according to his taste.

Adding things to cart is quite easy. We can further add things if we want to and after that we can proceed to payment methods. DARAZ.PK provides us with credit/debit card payment methods along with cash on delivery. Which all requires a stronger **DATABASE** to get things going smoothly.

Appendix B – Data Category