



Sri Lanka Institute Of Information Technology

CUSTOMER TRACKING SYSTEM FOR PROMOTIONS AND OFFERS

Software Requirement Specification
(Notify offers and promotion based on location)

Comprehensive Design Analysis Project – 1

Project Id – 19-081

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Declaration

I declare that this is my own work and this proposal does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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1 Introduction

1.1 Purpose

This SRS provides a detailed description of notifying customer with offers and promotion based on location and its specifications for the proposed customer tracking system for promotions and offers. Furthermore, it will explain the features, interfaces of the functions, what the functions will do when interacting with interfaces, the constraints under which it must operate and how the functions will react. This Document will be focusing on describing the design decisions, architectural design and detailed design needed to implement the above-mentioned functions.

This also illustrates the way that the functions expected to work and also developers, users, testers could refer this document for appropriate necessities. This document will help developer, designers, tester to assist in their software Delivery lifecycle process.

1.2 Scope

This SRS document covers functional and non-functional requirements of a main component of the customer tracking system. Which are notifying customer with offers and promotion based on customer location. And this document will help developers and designers throughout the development process. This functionality will notify the user with offers and promotion of a shop based near the user on their location as well based on their personal preferences, using machine learn technology.

1.3 Definitions, Acronyms, and Abbreviations

Acronym/Abbreviation	Definitions
SRS	Software Requirement Specification
DB	Database
SDK	Software development kit
UI	User interface

1.4 Overview

The rest of this SRS contains 2 chapters, appendixes and references. The second chapter provides an overview of the system. The third chapter provides requirement specification in detail and describes different system interfaces in detail.

The remaining of this document contains few chapters overview of the system and functionalities, requirement specification in detailed and a description of the different system interfaces and the appendixes in the end of the document includes the all results of the requirements.

2 Overall Descriptions

Customer tracking system for promotions and offers application which will be helpful for people who are keen for offers and promotions when doing purchasing. This system provides functions like search for offers and promotions, notify customer with offers based on their location, and provide suggestions for merchants with regards to offers.

2.1 Product perspective

There are some apps related to this topic. But they do not provide all the functions mentioned above in a single application. Most of the applications focus on just having data of promotions and offers only where we should search for offers and some are location based but it does not provide according to customer behavior. Some of the similar applications and their functionalities are described in below table.

	Feature	Proposed System	ODEL	Groupon.com	Webengage.com
1	Location based	yes	yes	No	No
2	Gather existing offers using public FB pages and shop's website	yes	No	No	No
3	Prioritize offers according to customer's behavior	yes	No	No	No

2.1.1 System interfaces

- Cross Platform Mobile Application – Every Smartphone user can use the Application.
- A relational database built using MongoDB will be used to store and retrieve data generated by the application.

2.1.2 User interfaces

- **Customer Favorite Merchants Selection Interface**



Figure 2.1.2.1: Review interface

- **Offers and Promotion notification Interface**

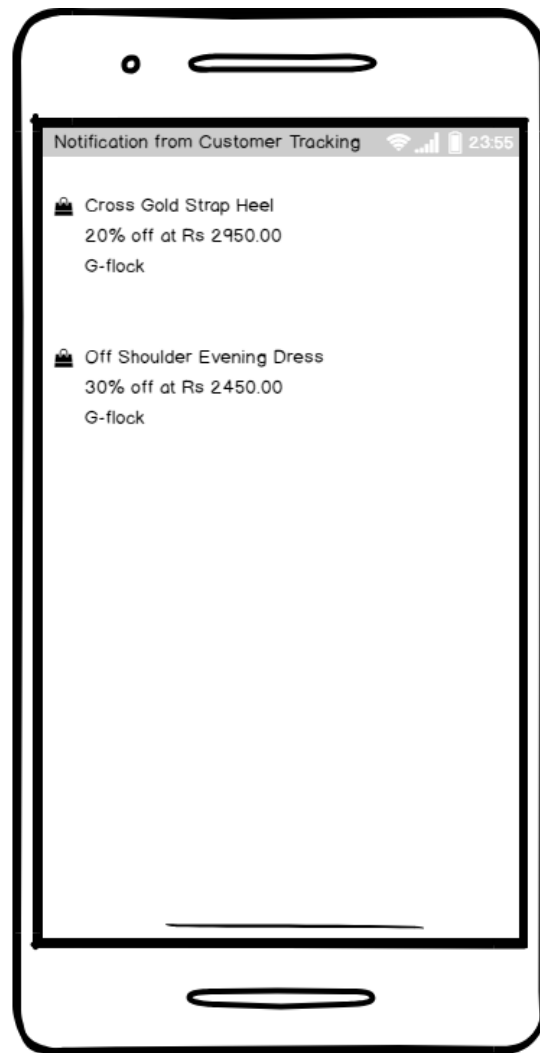


Figure 2.1.2.2: Offers and Promotion notification interface

2.1.3 Hardware interfaces

- A smart phone with internet connection and GPS capability will be needed for use this application.

2.1.4 Software interfaces

- Development

This application will be developed using Webstorm by JetBrains.

- Source control

GitHub will be used for source controlling.

2.1.5 Communication interfaces

- Internet is required by app to communicate with the DB will be deployed in the cloud.
- Since customer is tracked using GPS, active internet connection is needed.
- Active internet connection required to track customer through GPS.

2.1.6 Memory constraints

- Our System is expected to utilize the following amount of space for each application
- 20-30 MB of RAM
- 40 – 50 MB of Storage
- 2-5 GB of Cloud Storage for Application DB(Not Fixed)

2.1.7 Operations

Following are the operations that can be followed by the users when get notified with offers and promotions.

- Enable internet and GPS when using the application.
- User should register for the application.
- Can select their preferences when registering to the application.
- User should login to application with valid credentials.
- Can update their preferences periodically according to their wish.
- User can select the favorite shops and other offers related configurations.
- Get notified with offers and promotions based on User Location and preferences.

2.1.8 Site adaptation requirements

To run the mobile application successfully the user needs a mobile device with a minimum SDK of android 4.1(Jelly Bean) or above and if the user is using an iPhone SDK of iOS 7 or above. Also, the mobile device will have to contain sufficient amount of memory (minimum 1024 MB) and at least 200 MB of secondary memory.

2.2 Product functions

This Customer tracking system for offers and promotions consist with major components including tracking customer locations and nearest shop and Notifying customer with offers and promotions based on their preferences are two of the major components.

1. Track Customer Location and Locate Nearest shops

Main objective of this function is to track customer location using GPS and locate the shops near to the user location which are registered with the application.

2. Notify User with offers and promotions

Main objective of this function is to notify user with offers and promotions based on their location as mentioned in the above function.

Offers and promotions notifications are filtered using user preferences by extracting data by following ways

Data extracted in following ways will be used to improve predictions;

- When registering, users will be provided with a small questionnaire which will help to get an idea about the interests of the user and notify them based on that.
- Search history data will be collected and will be used with the algorithm for making offer and promotion predictions.

According to the analyzed data user will notified with more personalized offers and promotions.

2.3 User characteristics

- The intended user of this system mainly focused on people who do shopping in all kind of way. Every user can use the system to get information about offers and promotions by searching manually or automatically notified when going near a shop.

2.4 Constraints

- Customer location tracking and notifying the user will work if the mobile device is connected to internet and GPS enabled

2.5 Assumptions and dependencies

- The proposed mobile application is a cross-platform which is compatible with any smartphone.
- Mobile Data or Wi-Fi and GPS enabled when the mobile application is running.
- Minimum android SDK: Android 4.1(Jelly Bean) or iOS version 7.

2.6 Apportioning of requirements

The requirements specified in above first two sections of this document are referred to as primary specifications; the requirements in section 3 are referred to as requirements (or functional) specifications. If a requirement is mentioned in both primary and functional specifications, the application will be developed as a functional specification. All necessary requirements identified will be developed in this version. It is expected that there will be future updates depending on bugs and additional requirements.

3 Specific requirements

3.1 External interface requirements

3.1.1 User interfaces

- **Customer Favorite Merchants Selection Interface**



Figure 3.1.1: Select Favorite merchant interface

Users will be able to select their favorite merchants to their preferences using this interface where this will be used as a filter when sending notifications to the User

- **Offers and Promotion notification Interface**

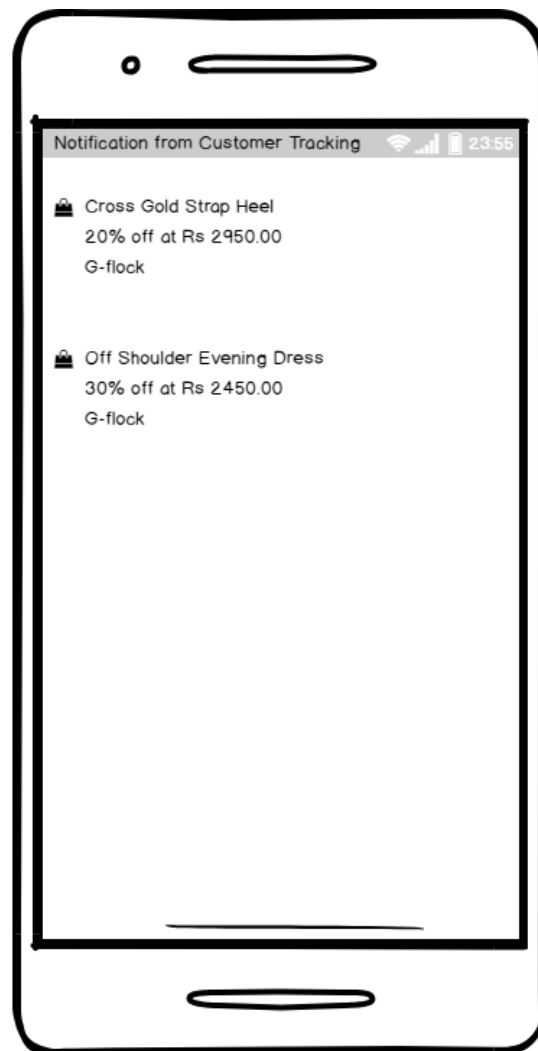


Figure 3.1.1.10: Offers and Promotion notification interface

Users will be able to view the offers and promotions notification of the shops near to user using this notification panel interface

3.1.2 Hardware interfaces

- Any smartphone running minimum SDK will need to use application.

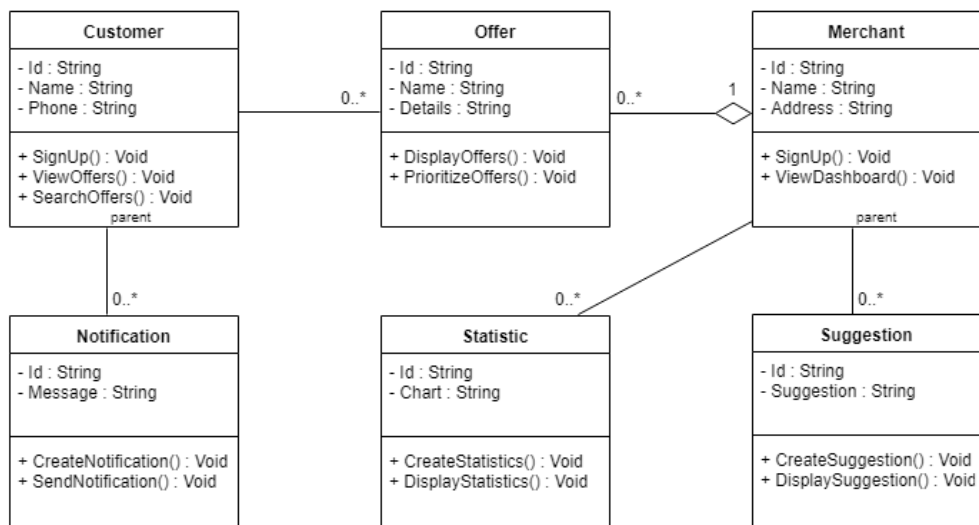
3.1.3 Software interfaces

- Webstorm by JetBrains – IDE for mobile application development.
- MongoDB – Document Database for application.
- TensorFlow – machine learning models building framework.

3.1.4 Communication interfaces

This system shall use the HTTP and TCP/IP protocols for communication over internet and intranet

3.2 Classes/Objects



3.2.1 : Class Diagram Of the System

3.3 Performance requirements

- This mobile application will be developed for minimum android API level 16 and iOS 7, which will need smartphone with minimum of dual core processor.
- Minimum of 2GB RAM will be required.
- 50MB of internal memory is a must.

3.4 Design constraints

- User interfaces of the application should be simple as the product focuses on non-technical users, attractive and consistent.

3.5 Software system attributes

3.5.1 Reliability

- System should be able to perform all intended functions and operations without a failure where functionalities should work without crashing.
- Reliability is essential in the system where many users may use the application for offers so solution should reply or notify as soon as the request comes without any delay.

3.5.2 Availability

- Application should be able to access, available anytime for the user.

3.5.3 Security

- Users must be logged in to their accounts before using this application.

3.5.4 Maintainability

- Maintaining proper coding standards and documenting the code functions
- Fix errors at the time of occurring

Above mentioned things will be useful to increase maintainability

3.6 Other requirements

3.6.1 Accessibility

- All UI must be easily understandable for users with different experience levels.

3.6.2 Modifiability

- The system should accept extensions or modifications with low cost.

4 References

- [1]"Dialog and Odel pioneer revolutionary smart retail with D-Beacon" [Online]. Available: <http://www.ft.lk/article/425697/Dialog-and-Odel-pioneer-revolutionary-smart-retail-with-D-Beacon>
- [2] "Groupon.com" [Online]. Available: <https://www.groupon.com/>
- [3] "WebEngage.com" [Online]. Available: <https://webengage.com/>