

ANDROID APPLICATION DEVELOPMENT

Software Requirements Specification

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1. Introduction

This document presents a detailed description of the android application for barcode and qrcode scanner and calendar scheduler.

1.1 Purpose

This document describes the software functional and nonfunctional requirements for the ANDROID APPLICATION DEVELOPMENT (Barcode and Qrcode scanner ; Calendar Scheduler).

This document is intended to be used by the members of the project team that will implement and verify the correct functioning of the system.

1.2 Scope

The ANDROID APPLICATION DEVELOPMENT project contains two applications

- 1) Application for Barcode Scanner and Qr code Scanner.
- 2) Application for Calendar Scheduler.

1) Barcode and Qrcode Scanner :-

This application is mainly for scanning of any product barcode and qr code to check that whether the product is verified or not by checking its records present in the database.

If the product details is not present in the database then the application also provides the option to add the product in the database.

It also has the feature of providing the location of the product where it was scanned.

2) Calendar Scheduler :-

This application provides the user with a calendar where they can provide their routine for the month and the application will remind them for the same.

This application has very wide range of use. Its can be used by students for planning their study. It can be used by the professionals for planning their work routine as well.

It has a extra feature of switching user's mobile profile to save them from the guilt they feel if their mobile rings between the work (ex. During class) .

1.3 Abbreviations

§ Android - The operating system, developed by Google, made to run on mobile phones.

§ GUI (Graphical User Interface) - The part of the application that user sees and interacts with.

§ IP Address - A unique number given to every computer on a network to uniquely identify it.

§ PC (Personal Computer) - A desktop or laptop running the Microsoft Windows operating system.

§ SDK (Software Development Kit) - set of tools that makes it possible to create software for a particular piece of software or hardware, in our case the Android 6.0 operating system.

§ Thumbnail - A scaled down version of an image used to save space but still allow you to preview the image.

§ XML (Extensible Markup Language) - A widely used type of text data organization and storage language that use '<' and '>' to label and distinguish sections of data or instructions from each other.

1.4 Overview

The next section, General Description section, of this document gives an overview of the product functionalities of the software. It will also give information about the developer's and user's constraints, the factors that will affect the software functioning. The third section, Specific Requirement section, of this document is written for developers, where the D-requirements detailed is given.

Both the sections of documents are of the same software but will be for different audiences, end users and developers.

2. General Description

This section provides a high-level description of the entire application. It describes the product perspective, functionality, and characteristics of an expected user, constraints, assumptions and dependencies, and the apportioning of requirements.

2.1 Product Perspective

This application is specifically designed for the Android. There needs to be barcode based database for the application access. The interface will be made to have a similar look and feel that is consistent with the other Android applications. Most Android applications have a similar way to display and navigate through data. The display that will be implemented by this

application will be consistent and extended with other applications. This familiar GUI will make the user feel more comfortable navigating and viewing the data on our system.

2.2 Product Functions

- Provides a means to easily navigate, using the Android's touch screen interface and keyboard, to the details of any of the product information.
- Provides access to different types of details of the product that is scanned including images, text-based documents.

2.3 User Characteristics

The user should be familiar with the basic functionality of the phone. The user should be able to use the touch screen and the other navigation buttons along with the camera to scan the data. The user will also have to know some basic camera and scanner terminology and information to understand the application and the different categories.

2.4 General Constraints

One major constraint on the application is the amount of memory size that can be used on the phone. The database may contain large sized files such as images, location details and different information about the products. These large files can quickly use up a lot of the space available on the Android, so our application doesn't save these files stored locally. Instead, a thumbnail is saved on the Android and the user can choose to download the image & product information, if they feel it is important. This will save space by limiting the amount of images and information actually stored on the phone. One other constraint is that this application will not work on other phones. This application will only work on the Android 4.4 and above operating system.

3. Specific Requirements

- v The very first thing needed for the android application development is the ANDROID STUDIO and the java SDK tools.
- v The system's virtual technology must be enabled for launching the emulator (a demo android phone).
- v For running the emulator, the system must have at least 2 GB RAM.

- v If their system is not compatible then they can also use their own android phone for testing and running of the application.
- v Few of the google API's are also used like google location API etc.
- v The ZXing Barcode Scanner library has been used for the barcode scanner and qrcode scanner.
- v The application has been made compatible with the API 19 ANDROID KITKAT 4.4 and above version of android.

3.1 External Interface Requirements

3.1.1 User Interfaces

User must have a touchscreen smartphone with Android version of kitkat 4.4 and beyond to use these applications.

3.1.2 Hardware Interfaces

Smart phone must be of API 19 and above.

3.1.3 Software Interfaces

The phone must have at least Android kitkat 4.4 version or any version after it.

3.1.4 Communications Interfaces

The system shall use HTTPS protocol for communication over the internet and for the intranet communication will be through TCP/IP protocol suit.

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.

A) Calendar Scheduler Application :-

3.2.1 To create an event on a certain date.

3.2.1.1 Introduction

User can create an event on calendar on any date as well as user can set reminder for that event if required. Event consists of a 'Title' followed by 'Description'. Where title is mandatory to mention.

3.2.1.2 Inputs

User will have to first select date from the calendar shown on screen. Then user has select the option to create an event followed by event title. Then user can also add description for that event in description field. User can also set reminder for that event.

3.2.1.3 Processing

The recorded data will be saved in database.

3.2.1.4 Outputs

One marker will be added on that date in calendar and reminder will be given when the time comes.

3.2.2 Alert modes

3.2.2.1 Introduction

The application works on two different modes.

a) General mode

In this mode user will be reminded of event normally with reminder tone and message on screen.

b) Silent mode

In this mode there will no reminder tone played just message on screen will be displayed.

B) Barcode and Qr code scanner Application :-

3.2.3 Scanning and verifying barcode and Qr code

3.2.3.1 Introduction

User can scan any barcode and Qr code by this application and verify whether that code exist in the database.

3.2.3.2 Input

Input will be taken through the camera of the phone which will be used to scan the Barcode or Qr code.

3.2.3.3 Processing

Taken input will be scanned and will be verified from database.

3.2.3.4 Output

If the scanned input is present in the database then it will show item details on screen. If the input is absent in database then it will display an option to add the item in database.

3.2.4 Adding an item to database

3.2.4.1 Introduction

If the scanned barcode or Qr code is not present in database user can add item in database.

3.2.4.2 Input

Inputs will be as followed

- a) Item name
- b) Item cost
- c) Location of scanning(automatically detected)
- d) Date of manufacturing

e) Brand name

3.2.4.3 Processing

The recorded data will be saved in database.

3.2.4.4 Output

The recorded information will be shown if saved successfully.

3.2.5 Location of scanning

3.2.5.1 Introduction

While adding an item the location where it is being scanned will be automatically detected and will be recorded in the database.

3.2.5.2 Processing

The location will be detected using GSM network signal and it will be recorded into database.

3.4 Non-Functional Requirements

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. State the requirements in the following sections in measurable terms (e.g., 95% of transaction shall be processed in less than a second, system downtime may not exceed 1 minute per day, > 30 day MTBF value, etc).

3.4.1 Performance

It is best used in full HD screens(1920x1080p). Both the apps use very little RAM hence can be use in any RAM.

3.4.2 Reliability

Both the apps are fairly reliable and the output generated can be trusted.

3.4.3 Security

Calendar app requires no security measures however scanner app have user login feature to maintain security.

3.4.5 Maintainability

Since both the apps are developed in systematic manner therefore they can be maintained by any developer easily.

3.4.6 Portability

Both apps are highly portable.

3.5 Inverse Requirements

There are no useful inverse requirements.

3.6 Design Constraints

The system should be built in using android studio tools. Response time for loading the product should not take more than 1 minute. General knowledge of basic smart phone skills is required.

3.7 Logical Database Requirements

The database used should be created by SQLite. The data integrity and consistency should be maintained all the time.