Software Requirements Specification

for

Android Weather Application

**Version 1.0**

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## I. Preface

### Introduction

This section introduces the client to the requirement document. All members have agreed on all aspects of this document.

### Purpose

A weather application that delivers real-time information about the weather to the user near the user’s location or a location at the user’s request.

### Document Conventions

This document uses the dotted-numbered outline format to organize information. There are different sections within this document to describe various kinds of information pertaining to the account creation and management system.

### Intended audience

This requirements document is intended for end-users and programmers of this system.

### Proposed Document Scope

This requirements document provides information about the weather application.

The system has the following functions:

1. Authenticating user’s position using GPS technology and other Android API.
2. Display real-time weather from user’s position.
3. Allow user to request real-time weather information from other locations.
4. Display real-time weather near the position at the user’s request.

### Definitions

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## II. Overall Description

### Document Perspective

The software specification document describes the functional and nonfunctional requirements of an account creation and management system for an Android weather application. For functional requirements, the document first describes a basic path taken by a user, and then describes the requirements the software shall fulfill in order to follow the said basic path. The document also describes some nonfunctional yet essential qualities the software shall possess.

### Document Functions

This document provides the client with a basic guide on how the user will operate the software. The developers are provided with a rudimentary blueprint for the software.

### User Characteristics

The system is designed with average web users in mind. So, the user is expected to have basic knowledge on how to operate a computer/laptop/phone/tablet.

### End-User Operating Environment

The service can be used anywhere, anytime, by anyone over the age of eighteen. The service shall be compatible with most platforms. So the only requirements are, a stable internet connection, and an uninterrupted payment plan.

### Design and Implementation Constraints

Network constraints are contingent with low-to-moderate business network capacity. The user can only access information for their account and not allowed to view other accounts. The user can make some changes to their account and is the only one that can set and change the password for the account. The administrator can view all users accounts and make changes to user’s account. However, the administrator is not allowed to change a user’s password, but can reset the password so the user can enter a new password. The system has two databases the information user’s information is saved on, the main database and the backup database. The main database is updated with information in real time. The main database will be copied to the backup database daily, which will overwrite the previous backup database.

## III. Functional Requirements

### Authenticate User Position

Authenticating the user’s position is the first step in delivering real-time weather updates. Following are some cases the user may encounter while trying to receive weather information.

* 1. **Use Case 1:**

Name : User authenticate position OK

Priority : Essential

Trigger : User interaction with mobile device

Precondition : User has valid Internet Connection

Basic Path : Default path on startup

1. User starts the Android application on mobile device.
2. The Android application calls for GPS position.
3. The Android application successfully receives the GPS position.
4. The Android application uses the position to fetch real-time weather information using OpenWeatherApp API.
5. The display shows real-time weather updates.

Requirements:

1. This use case is the default state for the application on startup.
   1. **Use Case 2:**

Name : User entered invalid email address

Priority : Essential

Trigger : User interaction with console

Precondition : User has invalid email address and access to internet

Basic Path :

1. On service homepage, user selects **Sign Up**.
2. On Sign Up page, the user is requested to enter a valid email address.
3. If the user types the email address incorrectly, they are asked to re-type the address.
4. When the email criterias are met, the user is asked to choose a password based on the provided criteria.
5. User is asked to re-enter the password for confirmation.
6. The user is asked to verify their age.
7. The user selects **Submit** to visit the **Billing Information** page.

Requirements:

1. When the user enters the email address, the system shall check the validity of the given address.
2. If the address is valid, the system shall check for a match in an existing email database.
3. If the result is negative, the system shall check if the password meets the password security criteria.
   1. The password **must** contain
      1. 7-10 characters.
      2. At least one capital character.
      3. At least one number.
4. The user is asked to check a box confirming they are eighteen years of age.
5. When both these conditions are met, the system shall create a new account in the database with a **pending** status.
6. Selecting **Submit** shall take the user to **Billing Information** page.
   1. **Use case 3:**

Name : User wants to reactivate account after 6 months

Priority : Optional

Trigger : User interaction with console

Precondition : User already had an account

Basic Path :

1. On service homepage, user selects **Log In**.
2. On **Log In** page, the user shall enter their account credentials i.e. email and password.
3. A message saying “Account no longer exists.” shall appear on the page along with a **Take Me To** **Sign Up** button.
4. When the user **Take Me To** **Sign Up** button, they are taken to the **Sign Up** page.
5. On **Sign Up** page, the user is requested to enter a valid email address.
6. When the email criterias are met, the user is asked to choose a password based on the provided criteria.
7. User is asked to re-enter the password for confirmation.
8. The user is asked to verify their age.
9. The user selects **Submit** to visit the **Billing Information** page.

Requirements :

1. When the user enters the email address and password on the **Log In** page, the system shall check for a match in an existing email database.
2. If the result is negative, a message saying “Account does not exist.” shall appear on the page with an explanation.
3. The page shall explain that either there was no account created with that email address or, the account information was deleted due to inactivity for six months or more.
4. The page shall also have a link to the **Sign Up** page if the user wants to create an account.
5. The **Take Me To Sign Up** button shall link to the signup page.
6. When the user enters the email address, the system shall check the validity of the given address.
7. If the address is valid, the user will be asked to choose a new password based on the password security criteria.
   1. The password **must** contain:
      1. 7-10 characters.
      2. At least one capital character.
      3. At least one number.
8. The user is asked to re-enter the password for confirmation.
9. The user is asked to check a box confirming they are eighteen years of age.
10. When both these conditions are met, the system shall create the account in the database with a **pending** status.
11. Selecting **Submit** shall take the user to **Billing Information** page.

### Billing Information

The end user will be prompted to input their billing information.

* 1. **Use Case 1**

Name : Original billing information entry using credit card

Priority : Essential

Trigger : User interaction with console

Precondition : Verification email has been verified

Basic Path :

1. User is asked to enter their 16 digit credit card number.
2. User is asked to enter the expiration date of their credit card.
3. User is asked to enter the security code (last 3 digits on back of credit card).
4. User is asked to enter their first name.
5. User is asked to enter their last name.
6. User is asked to enter their billing address.
7. User is asked to enter their city.
8. User is asked to enter their state/province.
9. User is asked to enter their zip code/postal code.
10. User is asked to enter their Country.
11. User selects **Submit** to proceed to next screen.
    1. If successful, user will see a Congratulations page and will have access to our library of streaming services.

Requirements:

1. The data entered by user is as stated on their credit card.
   1. This applies to first name, last name, expiration date, and security code.
2. The billing information page must allow input for the user for all of the information listed above.
3. The data will be verified with the respective credit card company.
4. If successful, the user’s account status will change to **Active** as long as monthly payments are confirmed.
   1. **Use Case 2**

Name : Original billing information entry using PayPal

Priority : Essential

Trigger : User interaction with console

Precondition : Verification email has been verified

Basic Path :

1. User select **Use PayPal**.
2. Page is directed to PayPal webpage or PayPal Mobile Application (if installed).
3. The user will login to PayPal or create a new PayPal account.
4. Once logged in, the user can select **Submit** to proceed to the Confirmation Page.

Requirements:

1. The user must have a valid PayPal account.
2. The user must know the login credentials for their account.
3. If successful, the user’s account status will change to **Active** as long as monthly payments are confirmed.
   1. **Use Case 3**

Name : User has entered an incorrect set of data

Priority : Essential

Trigger : User interaction with console

Precondition : Verification email has been verified, user has selected **Submit**

Basic Path :

1. The page will redirect to the same Billing Information page.
2. A banner across the top of the page will read: “Some of your data could not be verified. Please we the red highlighted sections below.”
3. Sections of incorrect data will be highlighted red.
4. User must edit and verify this data before submitting again.

Requirements :

1. The data will be verified against card issuer’s records.
2. Credit card must not be expired.

### User Account Management

**3.1 Assumptions and Dependencies**

* + 1. Subscribed user has an account status other than **pending** and the email address must be on file.
    2. Database exists stores each user’s information that can be accessed and data stored can be changed.
    3. An email system to send the user notification of changes to the user’s account by sending an email to the user’s stored email.
  1. **Use Case 1**

Name : User want to change billing information

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user has the option to change the billing information by selecting **Manage** then proceed to the **Appeals Option** page.
2. User can select the following options of changing name, changing billing address, change credit card, change PayPal account and appeal account status.

Requirements:

1. The user has access to the user’s personal information within the database.
2. The user doesn’t have access to other user’s personal accounts within the database.
   1. **Use Case 2**

Name : User wants to change name

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects **Change Name**.
2. The user is asked to enter their first name.
3. The user is asked to enter their last name.
4. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user must have access to the user’s personal information within the database.
2. The user cannot have access to any other user personal information within the database.
3. The system sends the user an email to the user’s stored email address.
   1. **Use Case 3**

Name : User wants to change password

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user select **Change** **Password**.
2. The user enters the password.
3. The system shall check if the password meets the password security criteria.
   1. If the criteria hasn’t been met the user must re-enter the password.
4. The user needs to re-enter the password for verification.
   1. The two passwords don’t match the user must re-enter the password.
5. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user must have access the user’s personal information.
2. The user cannot have access to any other user personal information.
3. The password must meet the following criteria:
   1. 7 - 10 characters.
   2. At least one capital character.
   3. At least one number.
4. The user is asked to re-enter the password for confirmation.
   1. The two entered passwords must match.
5. The system sends the user an email to the user’s stored email address.
   1. **Use Case 4**

Name : User wants to change billing address

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects **Change Billing Address**.
2. User is asked to enter their billing address.
3. User is asked to enter their city.
4. User is asked to enter their state/province.
5. User is asked to enter their zip code/postal code.
6. User is asked to enter their Country.
7. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user must have access to the user’s personal information within the database.
2. The user cannot have access to any other user personal information within the database.
3. The system sends the user an email to the user’s stored email address.
   1. **Use Case 5**

Name : User wants to change credit card information

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects **Change** **Credit Card**.
2. User is asked to enter their 16 digit credit card number.
3. User is asked to enter their expiration date of their credit card.
4. User is asked to enter their security code (last 3 digits on back of credit card).
5. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user must have access to the user’s personal information.
2. The user cannot have access to any other user personal information.
3. The user must enter working credit card information.
   1. The expiration date of the credit card must be later than the current month and year.
4. The old credit card information must be deleted.
5. The new credit card information must be encrypted.
6. The system sends the user an email to the user’s stored email address.
   1. **Use Case 6**

Name : User wants to change PayPal

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. User selects **Change PayPal**.
2. Page is directed to PayPal webpage or PayPal Mobile Application (if installed).
3. The user will login to PayPal or create a new PayPal account.
4. The user selects **Submit** to proceed to Confirmation Page

Requirements :

1. The user must have access to the user’s personal information.
2. The user cannot have access to any other user personal information.
3. The user must have a valid PayPal account.
4. The system sends the user an email to the user’s stored email address.
   1. **Use Case 7**

Name : User challenges account status

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects **Appeal Account Status**.
2. The user selects from a menu the reason for appealing the account status.
   1. The user selects “The account has been overcharged.”
   2. The user selects “The user wants to temporarily suspend account.”
      1. The user enters the number of months the account will be suspended.
   3. The user selects “Unable to user service and account is in good standing.”
3. The user given options to contact an administrator
   1. The user can select direct message.
   2. The user can see a phone number to call.
   3. The user can see an email to contact with a link provided.

Requirements:

1. The administrator must confirm the account has been overcharged.
   1. The administrator can add credit to user’s account.
   2. The administrator also has access to all financial transactions.
2. The administrator must know the correct login credentials to change user information.
3. The administrator must have access to all users in the database.
   1. The administrator must be able to search the database.
4. The administrator must have access to the user’s account information.
   1. The administrator can change the user’s account status.
   2. The administrator can change the user’s email address.
   3. The administrator can change the user’s billing address.
   4. The administrator can change the user’s payment.
   5. The administrator can reset the user’s password.
5. The administrator sent notification of issue.
6. The system sends the user an email to the user’s stored email address.
   1. **Use Case 8**

Name : User cancels account

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects to **Cancel Account**.
2. The user enters login credential information.
3. The user types in “CONFIRM” and selects **Submit**.
4. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user’s account status will be placed to **Inactive**.
2. The user’s account will not be billed.
3. The system sends the user an email to the user’s stored email address.
4. The account system needs to record the time of cancellation in order to delete account information in a 6 month time frame.
   1. Once the time has expired, and the user has not reactivated the account, the account information must be deleted in the database.
   2. **Use Case 9**

Name : User reactivates the account before the 6 months **Inactive** status

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user select to **Activate Account**.
2. The selects **Submit** on the confirmation page.

Requirements :

1. The user must have access the user’s personal information with the database.
2. The user cannot have access to other user’s personal information.
3. The user’s account status changed to **Active**.
4. The system sends the user an email to the user’s stored email address.
   1. **Use Case 10**

Name : User suspends account

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user selects to **Suspend Account**.
2. The user is asked how many months the account will be suspend, but only up to 6 months.
   1. After 6 months of the account being in **Hold** status, the account status will be changed to **Inactive**.
3. The user selects **Submit** to proceed to Confirmation Page.

Requirements :

1. The user must have access the user’s personal information with the database.
2. The user cannot have access to other user’s personal information.
3. The user’s account status changed to **Hold**.
4. The system sends the user an email to the user’s stored email address.
   1. **Use Case 11**

Name : User unsuspends Account

Priority : Essential

Trigger : User interaction with console

Precondition : User has successfully logged in

Basic Path :

1. The user select to **Activate Account**.
2. The selects **Submit** on the confirmation page.

Requirements :

1. The user must have access to the user’s personal information.
2. The user cannot have access to any other user’s personal information.
3. The user’s account status changed to **Active**.
4. The system sends the user an email to the user’s stored email address.
   1. **Use Case 12**

Name : Administrator Changing User information

Priority : Essential

Trigger : Administrator interaction with console

Precondition : Administrator has successfully logged in

Basic Path :

1. The administrator provides correct login credentials.
2. The administrator accesses user’s account.
3. The administrator enters the data that the user wants to update.
   1. The administrator adds credit to the user’s account.
   2. The administrator changes the user billing address.
   3. The administrator changes the user credit card information.
4. The administrator selects **Submit** on the confirmation page.

Requirements :

1. The administrator must know the login credentials.
2. The administrator must have a stable internet connection.
3. The administrator must have access to the notifications.
4. The administrator must have access to user information.
   1. The administrator can change the user information.
5. The system sends the user an email to the user’s stored email address.
   1. **Use Case 13**

Name : User forgot password

Priority : Essential

Trigger : User interaction with console

Precondition : User has email stored within the database

Basic Path :

1. From the login screen the user selects forgot password.
2. The user enters the user’s email address.
3. From the user’s email account the user selects link within the email and opens the Change password screen.
4. The user enters new password.
5. The user selects **Submit** on the confirmation page.

Requirements :

1. The user must have an email stored in the database.
   1. If no email on file the user needs to be notified.
      1. The user has to re-enter the email address.
2. The system must send an email to the user’s entered email address
3. The password must meet the following criteria:
   1. 7 - 10 characters.
   2. At least one capital character.
   3. At least one number.
4. The user is asked to re-enter the password for confirmation.
   1. The two entered passwords must match.
5. The system sends the user an email to the user’s stored email address.
   1. **Use Case 14**

Name : User account information has been corrupted

Priority : Essential

Trigger : Administrator interaction with console

Precondition : Administrator login credentials are verified.

Basic Path :

1. The administrator finds the user’s information in the back-up database.
2. The administrator deletes the user’s corrupted file.
3. The administrator copies the back-up file to the main database.

Requirements :

1. The administrator has access the main database.
2. The administrator has access to the back-up database.
3. The administrator must have access to change information in the back-up database

### Device Recording Software

* 1. **Assumptions and Dependencies**
     1. Subscribed user must be currently activated and paying.
     2. Database exists that records the number of devices using streaming services under the respective account.
     3. Validation system in place to ensure records of total devices are accurate and reliable.
  2. **Interaction with users**
     1. In the case where an account has exceeded its allotted devices, a popup comes on the screen informing the user.
     2. An option to submit an appeal, in case of a compromise account should be available.
     3. The number of allowed devices on one account is 10 total.
     4. An email will be sent to the user as well, in case the actual user was not the last one to login into the account.
     5. An option to appeal will be available in the email.
  3. **Use Case 1**

Name : User

Priority : Essential

Trigger : User logs in

Precondition : User account is at maximum capacity of devices

Basic Path :

1. The user logs in.
2. The system checks from the list of recorded devices to determine if the device has been previously been associated with the respective account.
3. The device is not in the list.
4. A pop-up alerts the user that the account has reached its maximum capacity of allowed devices.

Requirements:

1. Account user exceeds the total amount of allowed devices upon login.
2. The system must check if the device is in the list of recorded devices is in the list of recorded devices.
3. In this case, the device would not be in the list of recorded devices.
4. A notice must be put on the screen describing the 10 device policy.
5. This notice should display for the mobile app and the website.
6. This notice should have a link to the appeals process if the customer suspects the account has been compromised.
7. The account holder should be sent an email with a similar message describing the 10 device policy and have a link to the appeals process.
   1. **Use Case 2**

Name : User

Priority : Essential

Trigger : User logins in from new device

Precondition : User has successfully logged in

Basic Path :

1. The user successfully logs into the streaming service.
2. The system records the unique identifier of the device with the respective account.
3. The user can access streaming services.

Requirements:

1. Account user is within the range of allowed devices upon login.
2. The system must check if the device the user logged into was previously recorded.
3. If the current device has been recorded, do not increment the amount of devices used on that account.
4. If the current device has not been recorded, increment the amount of devices used on that account as well as record the unique identifier.
5. This information should be recorded on the back-up as well.

## IV. Non Functional Requirements

The service shall have a user friendly interface, with pop-ups describing what exactly the user has to input in that space. Also, each page will have a feedback tab on the side , so the user can provide feedback for that specific page. The service will also display a 24/7 contact number on every page, in case the user requires extra assistance.

### User Authentication

* 1. Reliability:

The email and password provided by the user shall be saved into the database only after the users submits the information. The email database shall be encrypted and backed up on a separate drive. The administrator shall have access to the database.

* 1. Robustness:

The system shall validate the email address before the user can create an account. For more information, look at sub-section 3.2 in nonfunctional requirements for user account management.

### Billing Information

* 1. Reliability

The user's sensitive information will be encrypted and securely saved on backup servers to which only the system administrator will have access but not be able to decrypt.

* 1. Robustness

In the event of a crash during the entry of billing information, no data input shall be saved either locally on the end-user’s machine or on our secure servers before selecting **Submit.**

* 1. Maintainability

There shall be an option for users for users to submit feedback if they feel they have discovered a defect in the software. Also, if an error should occur during a billing procedure or account creation, a usage and crash report should be sent to the database for the development team to review for future improvements.

### User Account Management

* 1. Reliability

The highest likelihood of failure for the user account management is the user information not being attainable or corrupted information has been stored.

To improve reliability, the user’s information will be backed up on a separate drive and be accessible by a system administrator. The administrator will be able to replace the corrupted information.

* 1. Robustness

The system will use a network to receive the data supplied by the user, losing this network will cause loss of access to the data. If the loss of network occurs during data transmission, the impartial data will not be acceptable. A retransmission of the data will have to happen.

The system is powered by the client’s power source. After each data confirmation response, the data will be saved by the system.

* 1. Security

The credit card information will be encrypted when stored within the database system to protect the user’s information from being used beyond the application of the system. The user will be notified by email for any changes made to the account information.

### Device recording software

* 1. Reliability

This system require that there are no duplicate devices recorded for each account, which would unfairly count against the user.

To increase reliability, record information that is unique to each device to avoid recording duplicate device ID’s.

The MAC address could be a useful identifier for recording the devices in this system as each device that can access the streaming services must have a unique MAC address for the packets to reach the proper device according to the standards set by TCP/IP.

* 1. Robustness

Memory failure or corruption could cause issues with this system.

To increase the robustness of the system, implementing a backup of each account would mitigate any problems related to memory failure or corruption.