Software Requirements Specification

for

<SoundCloud>

Version 1.0 approved

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Introduction

1.1 Purpose

The purpose of this document is to give a detailed description of the requirements for "SoundCloud". It will illustrate the purpose and complete declaration for the development of system. It will also explain system constraints, interface and interactions with other external applications. This document is primarily intended to be proposed to the customer company for their approval and a reference for development of the system.

1.2 Document Conventions

Term	Definition
User	SoundCloud users
JSON	JavaScript Object Notation
Std	Standard

Table 1 Document Convention

1.3 Intended Audience and Reading Suggestions

This document is highly intended for the developers, users, marketing staff and youngsters. The rest of SRS document contains the detailed description of the SoundCloud app. One who wants to read this document, he should firstly read the overall description of the document then the product scope, then introduction and then system specifications. Reading the document in this way will clear the ambiguities of the reader more efficiently.

1.4 Product Scope

SoundCloud is a music recommendation system, which provides users songs which they may like, based on the songs that they previously listened. Every logged in user should have access to the recommender system. The system will go through the songs that user previously listened and rated, then according to those information it should provide songs to the user. The project's main aim is to provide accurate music recommendations to the user. This project is beneficial for the user as well as for the founder (Alexander Ljung Eric Wahlforss). For users, they may find songs that they may like without consuming time and even they can encounter new songs which they like from the recommendations. For the founder, they make the website more attractive, so they draw more users to the website and the system makes the users of the website spend more time online.

1.5 References

- IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
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- Francesco Ricci and Lior Rokach and Bracha Shapira, Introduction to Recommender Systems Handbook, Recommender Systems Handbook, Springer, 2011, pp. 1-35
- Sarwar, B.; Karypis, G.; Konstan, J.; Riedl, J. (2000). "Application of Dimensionality Reduction in Recommender System A Case Study",
- Andrew I. Schein, Alexandrin Popescul, Lyle H. Ungar, David M. Pennock (2002). "Methods and Metrics for Cold-Start Recommendations". Proceedings of the 25th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2002). New York City, New York: ACM. pp. 253–260. ISBN 1-58113- 561-0. Retrieved 2008-02-02.

2. Overall Description

2.1 Product Perspective

SoundCloud is a sub-component of a larger music system. It uses the larger system's data and makes recommendations to users. Therefore, Soundcloud needs to be compatible with larger system. The data used by the SoundCloud, which includes user profiles and music types, has to be the same type with the one collected in the website. Nosql database will be used to work on the database.

2.2 Product Functions

With SoundCloud, the user will be able to see music recommendations made especially for him/her. The recommendations will be based on the user's previous actions and the actions of the other users who have a similar taste of music as the user, who will get the recommendations. Since the recommendations are made based on the user, they are likely to be unique.

2.3 User Classes and Characteristics

Name	**Type**	**Description**
Age	Int	Age of the user
Gender	Character	Gender of the user
Occupation	Int	Job of the user
UserId	Int	Unique Id of the user of the application
artistId	Int	Unique Id of an artist
albumId	Int	An Id for the album of the artist whose Id given in the same data set
songId	Int	An Id for the song in the album whose artist Id and album Id given in the same data set
Timeofaction	Date/Time	The time when the user listened the song

Rating Value	Float	Rating value is a derived value obtained by a formula depending on user's actions(listened,downloaded,listened before etc)
Channel	String	The abbreviation of where the user listened to the song from(music list, search bar or recommendation list

Table 2 User Classes

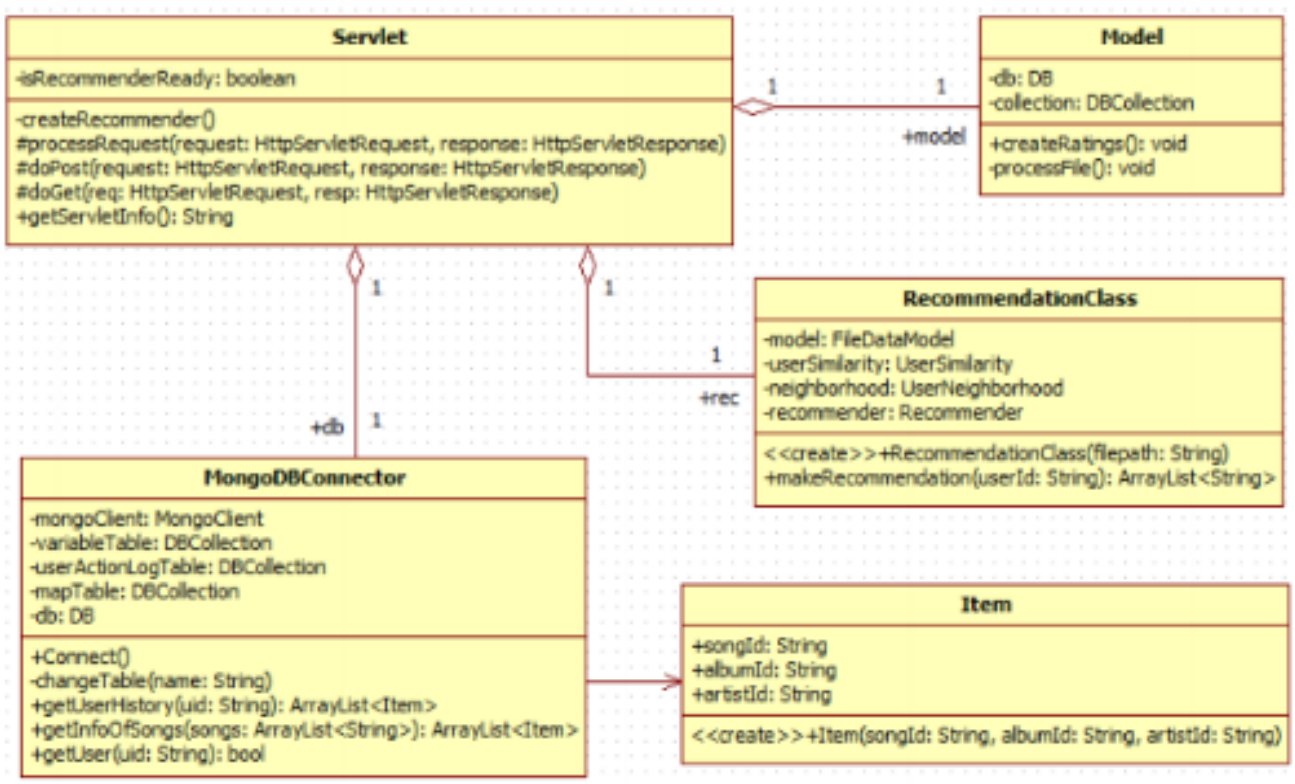

Figure 1 Class Diagram

2.4 Operating Environment

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- User login
- Good Internet Connection
- Access to website or app

The lone activity of Music Recommender is handling the information recovered from the data set and making suggestions to the client, when the client is seeing a site page, on which the proposals ought to be shown. Consequently, there is no predetermined time of tasks. The recommender has no compelling reason to perform reinforcement and recuperation tasks, since these activities are the bigger framework's anxiety.

2.5 Design and Implementation Constraints

In the implementation process of this system, Java Programming Language will be the main development language. Since Java is selected to be the main development language, Java Programming Language Code Convention published by Oracle is chosen as a standard for the development process of the system. In the process of the documentation of the system, IEEE standards will be used and UML standard will be used while designing the diagrams. Since this system will be a part of much larger system, it must be portable to this larger system. That's why portability is one of the most important attributes of this system. Since the larger system is a website that has the potential of increasing its number of users, user traffic and number of songs, this system needs to be scale up with the website in the correct order. Therefore, scalability must be the number one attribute that system will have. The Internet connection is a constraint for the application. Since the application fetches data from the server over the Internet, it is crucial that there is an Internet connection for the application to function. The web portal will be constrained by the capacity of the database. Since the database is shared with the larger system, it may be forced to queue incoming requests and as a result, increase the time it takes to fetch data. The computers must be equipped with web browsers such as Internet explorer. Execution time for the algorithm should take no longer than one second. All Java code shall conform to the Java Code Convention standards. SoundCloud will be a sub-component of Music website. Users shall be required to log in to the website to get recommendations. Music Recommender shall be available to users 99.9% of the time when the Music website is available. The system must be operational for each user. It also needs to give unique recommendations for each user.

2.6 User Documentation

Advertisements will be done after launching the software in the market. Pamphlets will also be provided to get a better understanding of the software. Another helpline option will be provided in the software for the user, where they will be free to ask any query regarding software.

2.7 Assumptions and Dependencies

It is assumed that at least daily one million logs will be provided for the system's use and the past 60 days' logs will be provided. Another assumption is that the user has a web browser and a capable hardware in order to launch the website. It is also assumed that larger system is able to provide necessary requirements for the recommender system to run.

3. External Interface Requirements

3.1 User Interfaces

On the larger system, every user should see a main page with login, register and log-in with Facebook buttons. If the user is a first time user, he/she should be able to register to the website by clicking the register new user button or be able to directly login with his/her Facebook account by clicking login with Facebook button. If the user chooses to register to the system, he/she should login the system by clicking the login button. The logged in user should see a maximum number of fifteen recommendations on the webpages of the website, in which Music Recommender is integrated to.

Figure 2 User Interface

3.2 Hardware Interfaces

Since the web portal does not have any designated hardware, it does not have any direct hardware interfaces. The hardware connection to the database server is managed by the underlying operating system on the web server.

3.3 Software Interfaces

The web component communicates with the database in order to get the user rating logs of the larger system. The communication between the database and the web component consists of operation concerning both reading and modifying the data, while the communication between Music Recommender and the website consists of sending a JSON object from the recommender to the website to be displayed on the webpage

3.4 Communications Interfaces

The communication between the different parts of the system is important, since they depend on each other. However, in what way the communication is achieved is not important for the system and is therefore handled by the underlying operating systems for the web portal.

3.5 Product Functions

With Music Recommender, the client will have the option to see music proposals made particularly for him/her. The proposals will be founded on the client's past activities and the activities of different clients who have a comparative taste of music as the client, who will get the suggestions. Since the suggestions are made dependent on the client, they are probably going to be exceptional.

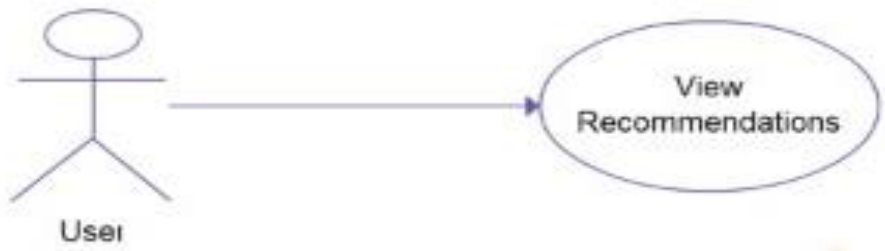


Figure 3 Product Functions

4. System Features

Some of the main Features of SoundCloud are discussed below:

4.1 System Feature 1

Dashboard

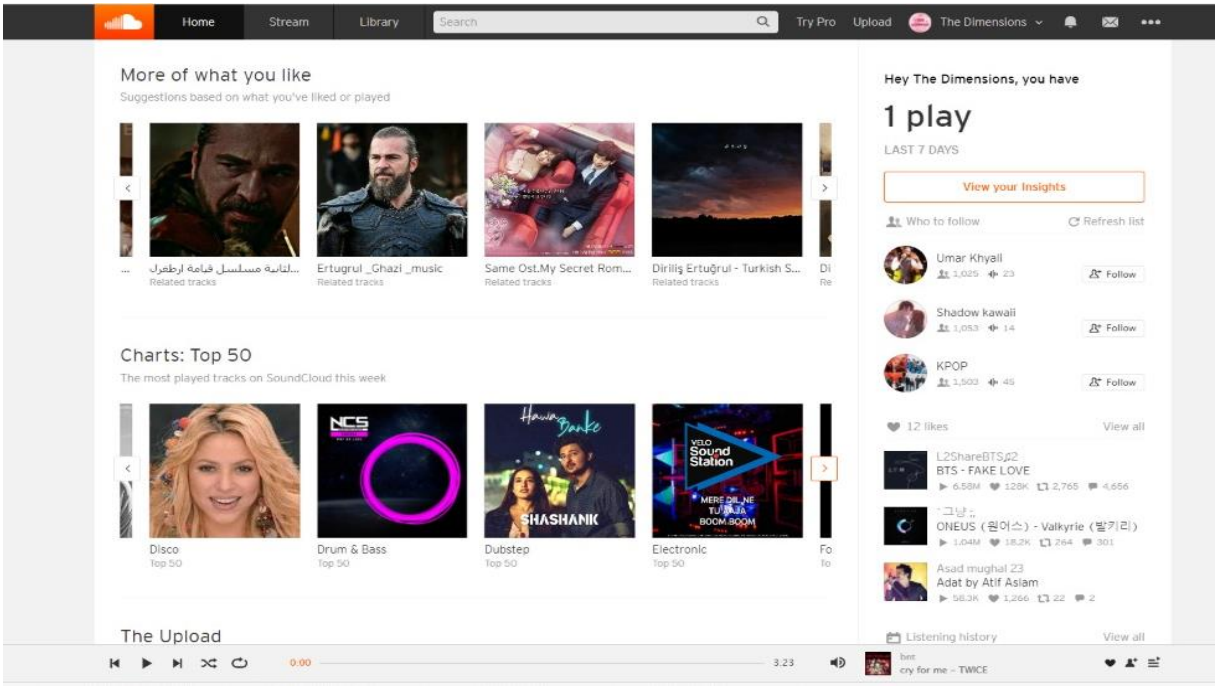
4.1.1

4.1.2 Description and Priority

On the dashboard of this product, you can locate the best new music and top tracks alongside their portrayal. A Genres area to peruse music of various classifications is likewise offered by it, for example, Rock, Electronic, Alternative, Indie, Pop, and more

4.1.3 Stimulus/Response Sequences

- User will Login to soundcloud app
- The first screen that the user interacts with is the user dashboard
- New songs and their relevant details are shown on the dashboard



4.2 Functional Requirements

This section outlines the use cases for each user registered to the website (larger system).

4.2.1 Login Use Case

Use case: Login
Diagram

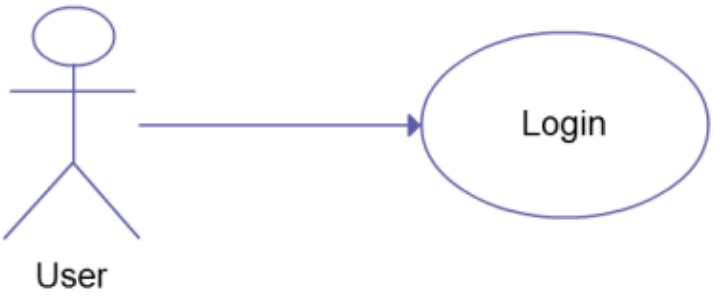


Figure 4 Use Case Diagram 1

Brief Description:
The client logins to the framework to perceive what proposals he/she has.

Initial Step-By-Step Description
- The client needs to open the site.
- The client needs to type his/her username and secret phrase to login

4.2.2 View History Use Case

Use case: View History
Diagram

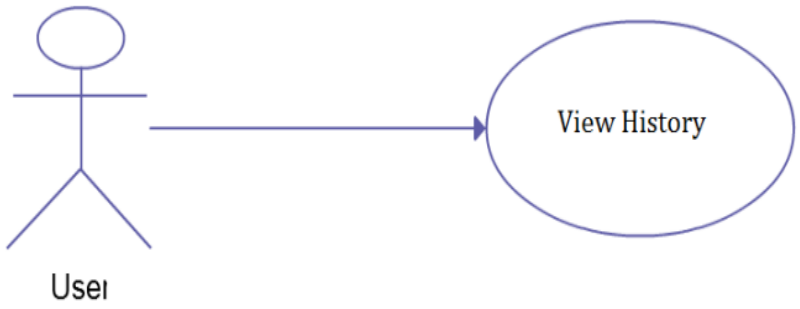


Figure 5 Use Case Diagram 2

Brief Description:
The client can tune in to music on the site on the web.

Initial Step-By-Step Description:
- The client needs to open the website.
- The client needs to login to the framework.
- Subsequent to being signed in, the client can see his/her previous activities.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

As a larger system, the website has a monthly traffic of over 4 million users. Since recommendation system is planned to be designed for the use of every user in the larger system, it is easy to say that this system will have a monthly traffic of over 4 million users. Every day, over 3 million songs are listened on the larger system. However, not all 3 million songs are logged by the website or not all logged information will be given for the use of the system. By the company, daily 1 million logs will be given to be handled. User information of the past 60 days will be the reference point of the system, that's why 60 million logs need to be handled in order to implement the whole recommender system.

5.2 Safety Requirements

SoundCloud should have certain policies regarding their resources, account ownership, content and feature use. Safety should be maintained throughout. There content policies should be quite strict. People data, content, information should be safeguarded.

5.3 Security Requirements

- Users accessibility is censured in all the ways
- Users are advised to change their password on first use
- Users are advised not to tell their password to anyone
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- The content to be uploaded should not be vulgar.

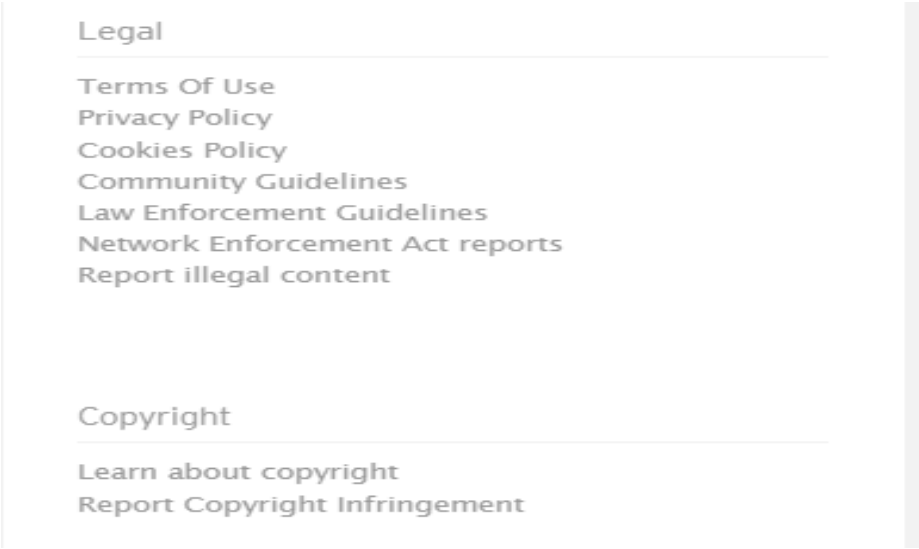

Figure 6 Security Requirements

5.4 Software Quality Attributes

5.4.1 Reliability:

- The data communication protocol shall be such that it ensures reliability and quality of data and voice transmission in a mobile environment.
- The memory system shall be of non-volatile type.

5.4.2 Availability:

- The product will have a backup power supply in case of power failures.
- Any abnormal operations shall result in the shutting down of the system.
- After abnormal shutdown of the SoundCloud, the system shall have to be manually restarted by maintenance personnel.

5.4.3 Security:

- The system shall be compatible with AIMS security standards.
- The password shall be 6-14 characters long.
- Passwords shall not contain name of customers as they are easy to be hacked.

- Passwords can contain digit, hyphen and underscore.
- User should be provided with only three attempts for login failing
- The product shall be manufactured considering all important factors of security

5.4.4 Maintainability:

- Software should have updates in order to use the application more efficiently
- Efficiency, security and safety should be maintained by the system.

5.5 Business Rules

- Agree to the Terms of Use Essentially, by utilizing SoundCloud, you consent to our Terms of Use and Our Community Guidelines and consent to conform to them.
- Changes to these Terms of Use This segment clarifies that our Terms of Use may change occasionally.
- Depiction of the stage. This part is an overall portrayal of the stage, its highlights, and its highlights.
- Your SoundCloud account. This part manages your obligation in the event that you choose to enlist a record with SoundCloud.
- Your utilization of the Platform. This part discloses your entitlement to utilize the Platform and the terms and conditions material to your utilization of the Platform.
- Your Content. This part manages the responsibility for Content and incorporates your commitment not to transfer whatever abuses the privileges of others.
- Permit Granting. This part discloses how to utilize your substance on SoundCloud® and the authorizations you award by transferring content, such as.B. the privilege of different clients to tune in to your tracks.
- Guarantees. This segment contains significant guarantees and guarantees that you make and warrant when transferring substance to SoundCloud® — specifically, you guarantee that all substance transferred and shared by you is your property and that it doesn't encroach the privileges of others.
- Content Obligation. This segment clarifies that SoundCloud is a facilitating administration and that its clients are exclusively liable for the material they transfer to SoundCloud®.
- Encroachment Reporting. This segment clarifies the methodology by which you can tell us of substance on SoundCloud that you accept abuses your copyright or other licensed innovation rights, or that is unlawful, hostile, abusive, or in any case disallowed by our Terms of Use or Community Guidelines. For more data on copyright encroachment revealing, kindly visit our Copyright Information page .

6. Other Requirements

6.1 SoundCloud as a Social Media

SoundCloud also provides a platform for communication among its community.

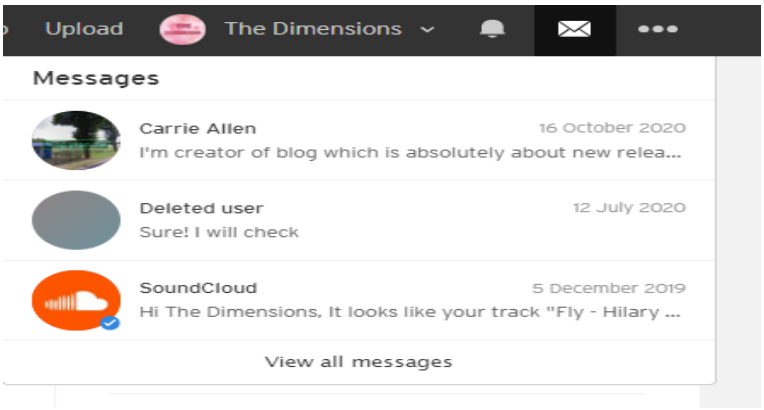

Figure 7 SoundCloud Message Portal

7. CONCLUSION

This Software Requirement Specification report is set up to give prerequisite subtleties of the task, "Souncloud". To begin with, meaning of the issue and the overall portrayal of the framework are given. At that point, all the useful, non-useful and interface necessities, information and conduct models are expressed in an itemized way. At long last, structure of the advancement group, fundamental arranging and assessment of the improvement cycle and the model of the improvement cycle are clarified. This archive will be useful at comprising a reason for plan and advancement of the framework to be created. Configuration subtleties of the undertaking will be clarified in the Software Design Description report.