DevDest Programmers' Application

Software Requirements Specification

24th April 2020

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Submitted as Minor Project SRS document by:

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1. Introduction

This document gives a project plan for "DevDest Programmers' Application", designed and developed by our team. The growing enthusiasm in technology and its understructure is leading to a large number of competitive coders around the globe. Being a vast field of development, the chances of inconsistencies, confusions and mistakes are high and people involved in this profession need help from others who can provide them with proper answers. DevDest is designed and developed for those enthusiasts who need answers to their problems in the area of technological development, in a fast and interactive way.

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1.1. Purpose

This project provides an overview of how our application works. The plan will include, but is not restricted to, a summary of the system functionality, the scope of the project from the perspective of the "DevDest Application" team, various estimates, project risks and how those risks will be mitigated, the process by which we developed the project, and metrics and measurements that were recorded throughout the project.
This document is written primarily for the stakeholders, such as the developers, programmers and maintainers of the system.

1.2. Goals and Scope of Project

This project is developed for the coder family around the globe, and various people who are experts in their domains of programming. The goals and scope of this project are:

- Users should be able to sign up with their existing email accounts.
- They should be able to make their own profile with their own fields of interests, their age group, proficient languages etc.
- Users should be able to post answers to new problems, as well as post new problems if any into the main question bank.
- Experts should get questions filtered on their choice of interests only, hence reducing the spams and increasing accuracy.
- Users should be able to access the answers available on the application, and also search for them.

1.3. References

- The guidance and support Divya Kumari Mam
- Ideation of the application from Stack Overflow as a live example
- 10% of the Questions and Answers with their tags of Stack Overflow from Kaggle- *https://www.kaggle.com/stackoverflow/stacksample*
- draw.io website was used for drawing the diagrams-*https://draw.io*

2. Overall Description

Our project DevDest is designed and developed to gather questions related to programming into a single place and providing answers to them by users worldwide. Also, the processing involves extracting different tags from the questions so that the only people related to the required field can answer them, and rest of the users are not bothered. This application includes posting questions and answers, along with tools like daily feed and hot topics revolving around programming. With the use of various Machine Learning algorithms, we have designed a model in this application that provides a personal recommendation to every user based on his/her past searches.

2.1 Product Perspective

- It solves the hustle of developers in finding the accurate solution to their programming problems.
- Its work as a learning platform where user can gather knowledge of enormous technology domains according to his/her interest.
- Provides opportunities to the coders who have gained high knowledge in their respective domains, to help out others.
- Users will be recommended feeds according to his/her activity which gives them a personalized user experience
- User can assess their accuracies by the count of upvotes they get on answering a question.

2.2 Product Functions

Provide a summary of the major functions that the software will perform:

- Login and signup: This function allows an existing user to login to his/her account, or create a new account.
- Search: This function allows a user to search for any question in the application's database.
- Post: This function allows a user to post a new question on the application which will be directed to experts of the respective domain.
- Feed: This function will show the trending feeds in the tech world.
- My Account: This function allows the user to see or update the information in his/her account. This includes personal data, proficient languages, gathered points, areas of interests etc.
- Ask DevDest Live: This function provides a meeting with a chatbot from the application's side that will guide the user through the application, along with answering various basic questions.

2.3 User Characteristics

This application is developed for the developers related to any domain of programming. Users must be familiar with the use of android applications. Apart from that, the application will have a very intuitive design, so the user gets a user-friendly environment.
The user should be comfortable with English language. Anyone can use this application ranging from a child to an old-age person.

2.4 Constraints

- Android device with Android vs 5.0 or higher
- Internet connectivity
- A verified email account to login

3. Specific Requirements

There are not many software, hardware and other system requirements that the user must ensure to achieve a fluidic access to all features of the application. These are listed out as follows.

3.1.1 User Interfaces

This project is an application with a GUI (Graphical User Interface), hosted on Android platform, such that the user will easily and instinctively be able to interact with the interface to get the desired functionality, as one of the chief purposes for this project is to improve user convenience.

3.1.2 Hardware Interfaces

User of this application is any Android device user that loads this application to their device. All of the users are in the same class, only one type of user exists. Operating environment is, as just mentioned above, is an Android OS mobile device. An android device that can support basic dependencies of the application is expected for proper user experience.

3.1.3 Software Interfaces

The application will be loaded with the models and algorithm which will perform the task and the functionalities. The backend is dedicated to machine learning processing, database management and transfer of data in various phases.

3.1.4 Communications Interfaces

A moderate speed Internet Connectivity is required for the proper experience of the application.

3.1.5 Memory Constraints

This first version of this application takes about 30MB of storage space in the mobile phones resulting to be very space optimised application. The size may vary in successive versions depending on future patches and updates.

3.1.6 Operations

- All the user data is backed up on the cloud in our database and recommendations are made accordingly. This data improves tag recognition for the particular user and also in finding the appropriate solution to his/her queries.
- The posted questions and queries are available to the user at any time sooner or later in the database as per his choice. Also, no copy of the data is available for anyone except the original user. Hence, data is safe from intrusion.

3.1.7 Site Adaptation Requirements

- To verify that the user is a not a spammer and to provide access to genuine users, a verified email account is required to initiate signup in the application.
- A wired or wireless Internet connection would be needed for the application to function and communicate with the various users available on the application.

3.2 Functional Requirements

The following will be the major functional requirements from the project, apart from which many minor functionalities might also be introduced either from the beginning or in future versions.

3.2.1 User Login & Sign Up

- Login and password: This is the criterion through which the authenticity of a client is checked. The system initially prompts the user to fill their login ID and respective password, and then proceeds further.
- New User Creation: In case the user has not registered for an ID, he/she can check the Sign-Up option and will be redirected to a new page to create a new account.

3.2.2 Input of Queries and Details

- Post Question: User will post a question as an input, providing details of the problem or output that they want to be executed. For instance, the user might post a question like “How to find sum of all elements in an array?”.
- Search Questions: User should enter the question on the search tab to find the solutions already given by other users earlier before it .

3.2.3 Search a Question

- Some questions might already be present in the database and the user could save time by directly searching for the problem here. This function allows the user to get solutions related to his query quickly.

3.2.4 View Account Details

In case the user wants to alter or view his/her account details, this function is available. For instance, changing the account password, viewing the recent queries posted etc.

3.3 Use Case

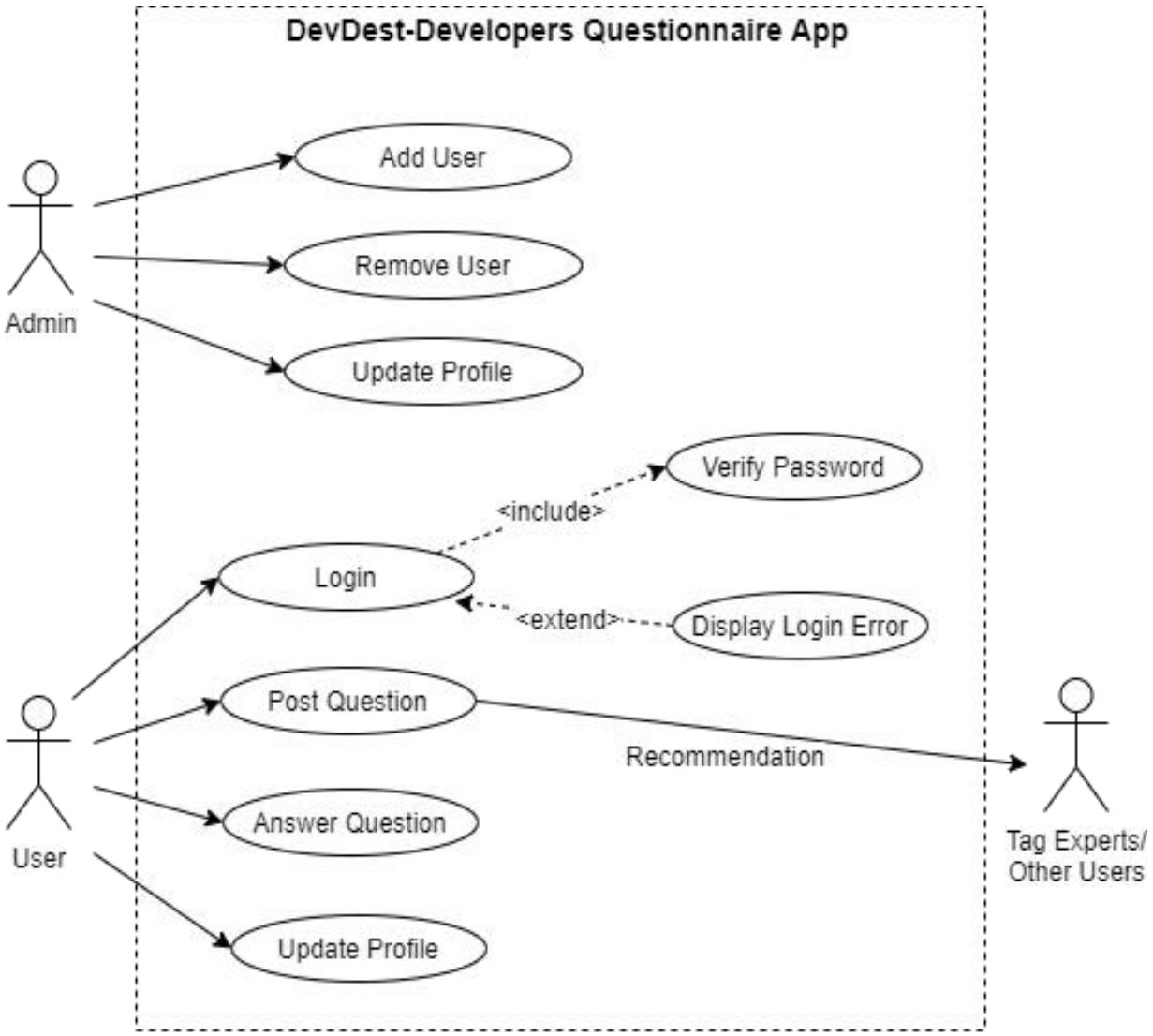

Figure 1: Use Case Diagram

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. The requirements are stated in the following sections in measurable terms.

3.4.1 Performance

- Speed of the Internet connection from the remote computer and the speed of the connection to the server will affect performance. The DevDest Programmers' application will be designed to be capable of operating even with slow Internet connections e.g. a standard 56K wireless connection to the network.
- The DevDest Application will be designed to operate on a standard Android smartphone. Response times to commands should be minimal.

3.4.2 Reliability

The system has to be highly reliable due to the importance of data. The system will run 7 days a week, 24 hours a day. Also, since it is a recommendation driven product, the system has to be reliable such that all tags and questions posted by the user are received by the appropriate accurately, and are executed properly; incorrect questions should not be sent by the application. Moreover, since the software improves over time after learning from the habits of the user, it needs to be reliable in the recommendations it gives to the user based on what it has learned about the preferences of the user.

3.4.3 Availability

- Since the software is being developed for the developers' doubts and convenience in getting solutions to problems, it is a huge value service for the consumer, and so consumer convenience is key. To ensure consumer convenience, the system has to be available 100% for the user and is used 24 hours a day, 7 days a week and 365 days a year.
- Availability of an internet connection needs to be ensured for proper functioning.

3.4.4 Security

There are not many security risks associated with using the DevDest application as it is designed to operate in a secured way, including a little amount of data exchanges over the internet. When accessing the application, the user needs to be assured that intruders, such as hacker attempts and third-party invasions, cannot have access to their accounts. Thus, proper authentication at the time of signup is essential. The system will accept this information as proof of the identity and allow the user to access the application. Also, the data of the user, if saved, should be safely encrypted and protected against any kinds of security threats like hacks or other cyber or socio-engineering attacks.

3.4.5 Maintainability

The rapid progression of the technology means frequent software updates from manufacturers. These updates come in the form of application updates. Generally speaking, the app updates can be handled automatically by the user's smartphone or tablet and don't require much user attention.

3.4.6 Portability

Changes must be verified once per day at least. The system should automatically provide notification to users by email about posts overdue, query results, new questions etc. Also, the software should be re-installable and accessible from all smartphones, given that the user is able to authenticate his/her login on any such device. So, none of the code should be host-dependent.

4. Analysis Model

4.1 Data Flow Diagram

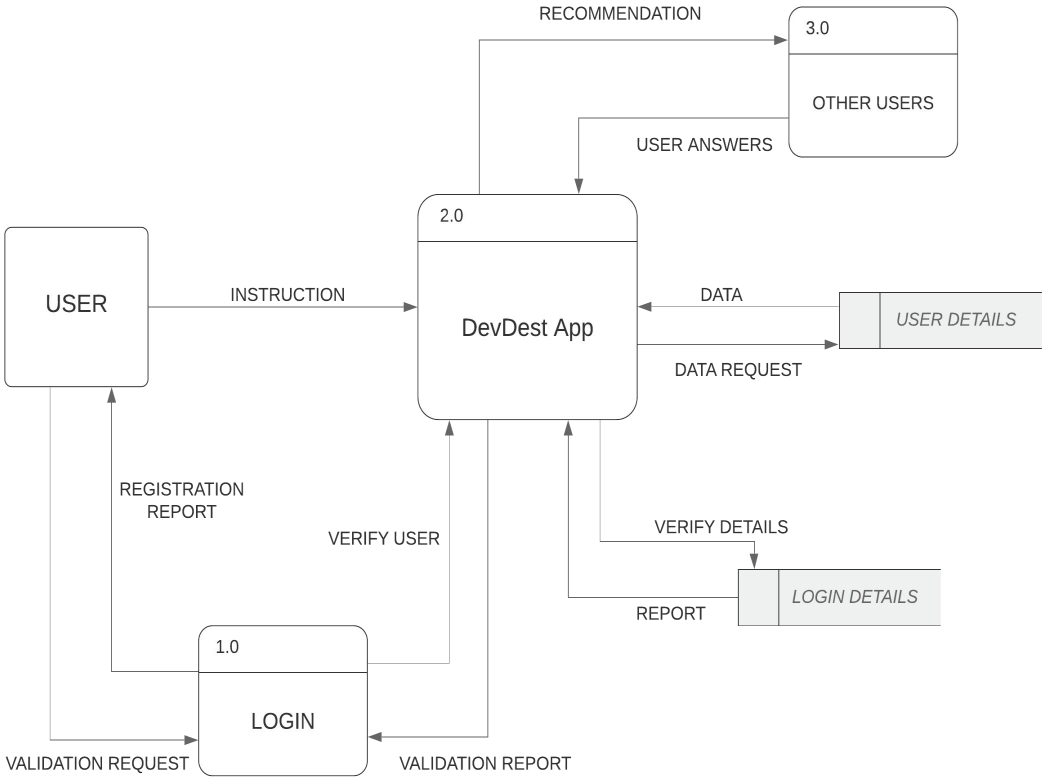

Figure 2: Data Flow Diagram

4.2 Activity Diagram

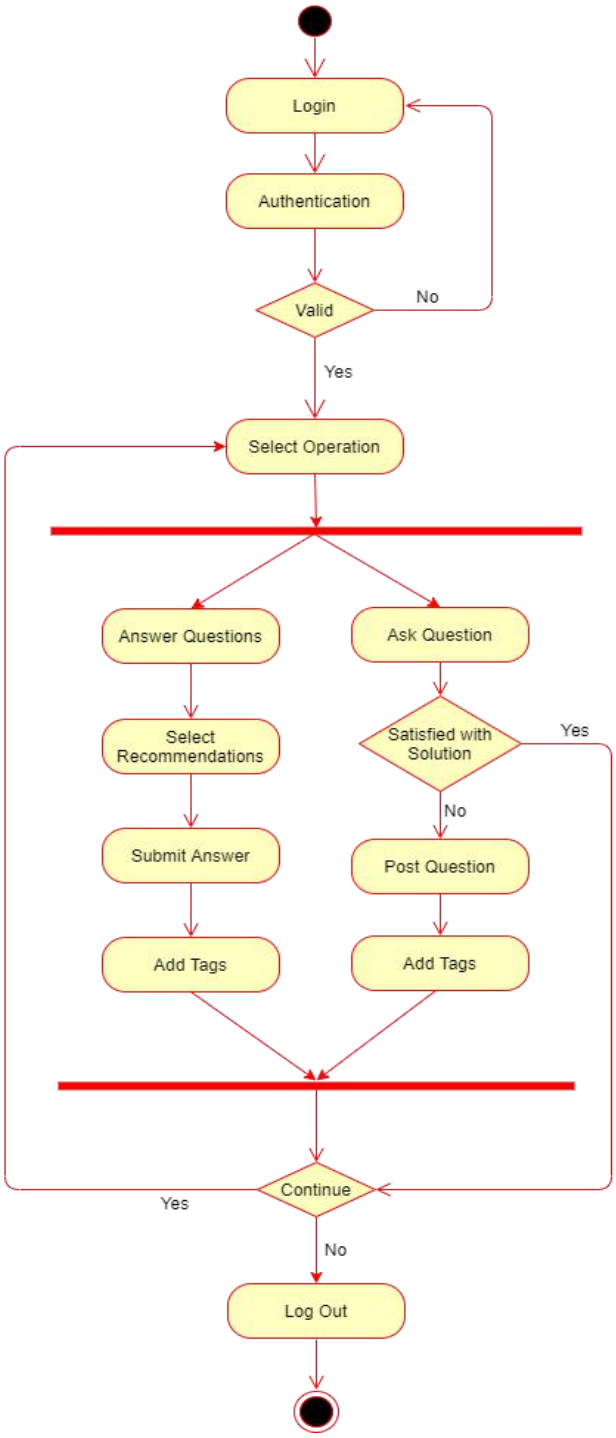

Figure 3: Activity Diagram

4.3 Sequence Diagram

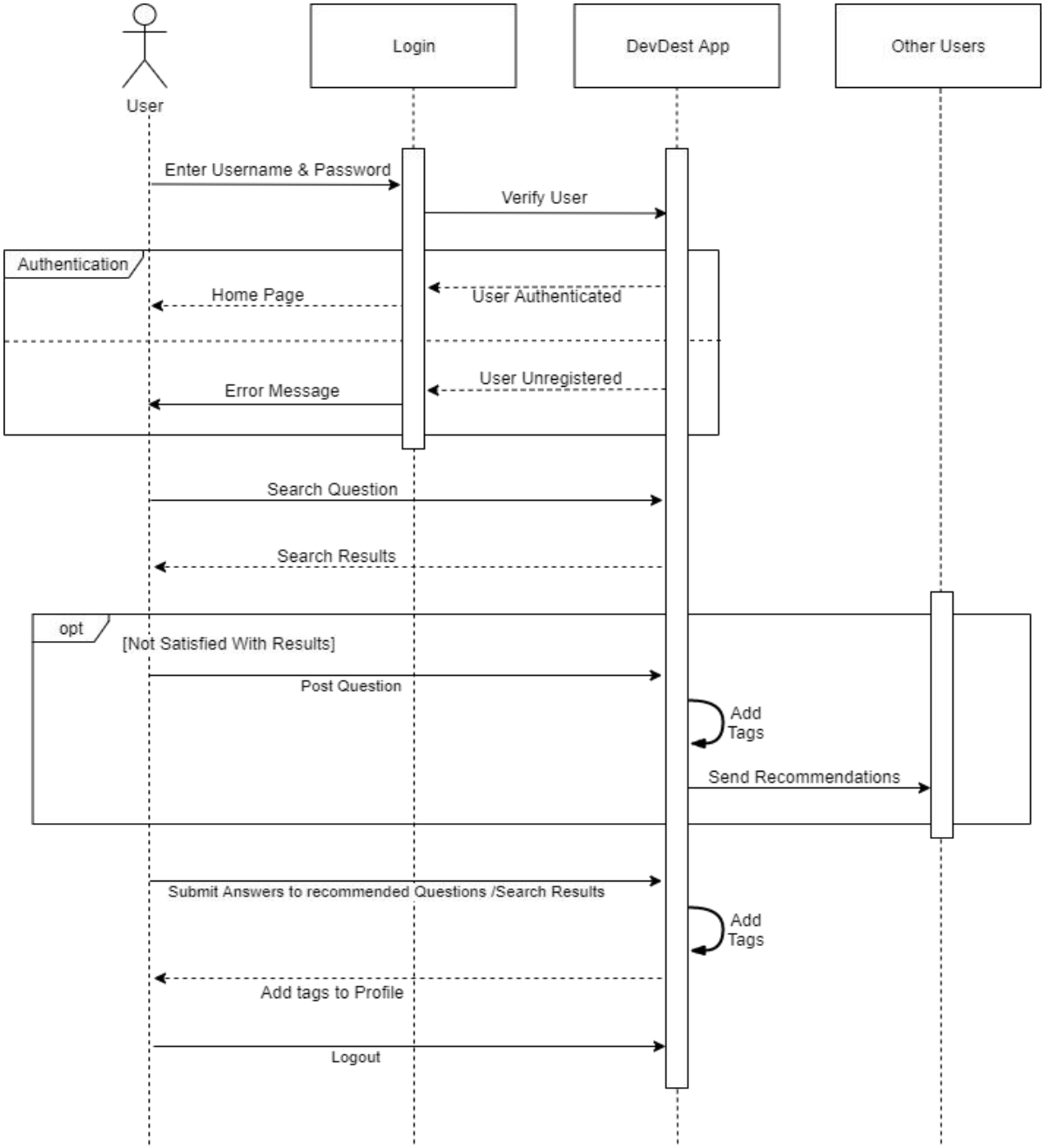

Figure 4: Sequence Diagram