Software Requirements Specification

for

Error Assistance Tool

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The main objective of this application is to help programmers to find errors in their program and if there are any errors found, it will automatically land up in the stackoverflow page related to that error. We all come across errors while coding, whenever we encounter an error, the first thing we do is that we search for those errors in google and ultimately we land up in a stackoverflow page. It will be hectic at times when we cannot find the right answer to the error. So what if an application detects the errors in your code and searches about it on stackoverflow and shows you the related answers, this is the ultimate aim of this application. In addition, it will maintain the history of previously searched errors if one wants to revisit the same page and it has the FAQ part (which facilitates the user to understand the application easily) which stores the errors which were encountered most number of times and it also collects the feedback from the user for the well functioning of the application.

1.2 Document Conventions

Main Heading	F- Times New Roman(Bold)	S- 18
Subheading	F- Times New Roman(Bold)	S- 14
Content	F- Times New Roman	S- 12
Images	Fig No.(Bold) F- Arial FD- (italics) F- Arial	S- 11

F-Font,S-Size,FD-Figure Description

1.3 Intended Audience and Reading Suggestion

This document is written for programmers, designers, developers, documentation writers, testers, and students who want to develop the Error Assistance tool. This document consists of the various sections starting with the Introduction, it contains an overall description of the application, external interface requirements which includes user interface, hardware interface, software interface and communication interface and system features tells about all the functionalities of the system in detail and other non functional requirements like performance, security, safety requirements.

1.4 Product Scope

The scope of this product is to help programmers to find errors in their program and if there are any errors found, they will be directed to stack overflow pages with related programs. Here Stack overflow is a platform where users ask questions related to computer programming and there are professionals who could help answer the questions the user requires. In addition to directing the users to stack overflow, this product will also maintain the history of the previously searched errors. This can reflect the user's interests, needs, and browsing habits. Finally, there is a FAQ and Feedback form. Here FAQ is generally to provide information on frequent questions or concerns and feedback is essential to guide and inform our decision making and influence innovations and changes to our product or service.

2. Overall Description

2.1 Product Perspective

The web application has been designed keeping in mind day-to-day programmers and programming enthusiasts. It supports users' programming techniques by providing prompt error handling aid and management. When developing products/services, programmers often experience coding errors which arise due to carelessness or due to lack of knowledge on the particular instance. The Error Assistance Tool is initiated from this perspective of taking into account the difficulties faced during coding which may end up consuming a lot of time. Stack Overflow, being the go to platform for programming related doubts, it can sometimes be overwhelming to ask the perfect question. And often we may revisit the same error, wherein keeping track of all these errors and managing them without the aid of an application can become cumbersome. The product was designed to address these issues.

2.2 Product Functions

The major product functions are:

1. Login and registration
   Allows users to login or register themselves with the application using appropriate credentials.
2. History of previous searches
   Registered users can view their previous StackOverflow searches.
3. Coding errors aid
   Registered users can upload their file and be redirected to related StackOverflow threads.
4. Display of Frequently Asked Questions
   Display of FAQ for easy navigation through the application.
5. Feedback receival
   Users can provide feedback for improving product function.

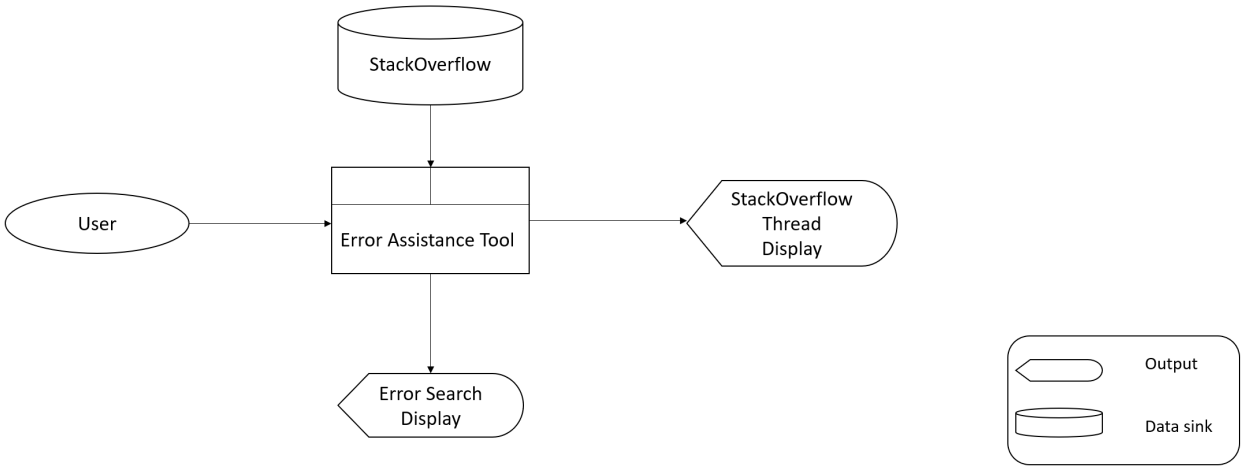

Fig 1. *Context Diagram*

2.3 User Classes and Characteristics

General User:

- User can avail the full functionalities of the application provided he/she is registered with the application.
- User can search for FAQs, provide feedback, upload their files to get related error support.

General User Characteristics:

- Basic understanding of file extensions and website navigation.

Admin:

- Admin is responsible for the overall functioning of the application.
- Admin can receive feedback from users and make changes based on his/her own discretion.
- Has the ability to add or remove user registrations.

Admin Characteristics:

- Good understanding of the working of the web application.
- Responsible for the functioning of the system.

2.4 Operating Environment

The Error Assistance Tool is a web application and requires a system with Windows 7.0 or above operating system with a good web browser, preferably Google Chrome.

2.5 Design and Implementation Constraints

The following are the constraints imposed:

- The user must not be involved in any activity that may disrupt the working of the web application.
- Information regarding user login details to be maintained in a database accessible by the web application.
- Users must provide authenticated credentials.
- Updated information must be stored in the database.
- Users cannot edit credentials once registered.

2.6 Assumptions and Dependencies

Following are the assumptions for the smooth operation of the application:

- User has basic understanding of computers, the internet and its navigation.
- Device on which the application is running has met the requirements.
- Web application has access to device's memory.

Following are the third-party products/services needed:

- MySQL database service.
- Assistance of flask micro web framework.
- Bootstrap CSS framework for front-end development.
- StackOverflow API

3. External Interface Requirements

3.1 User Interface

The application interacts with the user through GUI in which users are able to use the app without any assistance

The interface is :

- Simple.
- Easy to handle.
- Self explanatory

Once opened , user will easily able to come to the flow with the app and can use all its interfaces easily

The web application is designed to make sure that the user-interface is friendly so that users can easily navigate through the application to avail maximum benefits. Html, CSS and Bootstrap CSS framework are used to achieve this.

These are the sample images how the web application looks :

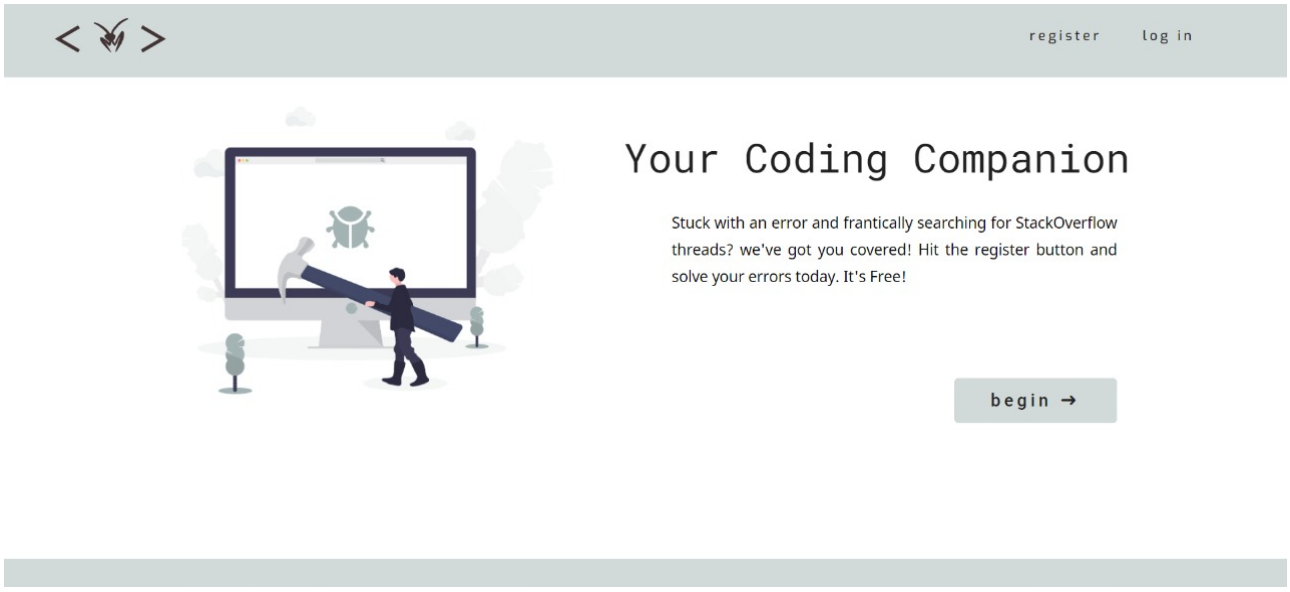

Fig 2. *Home Page*

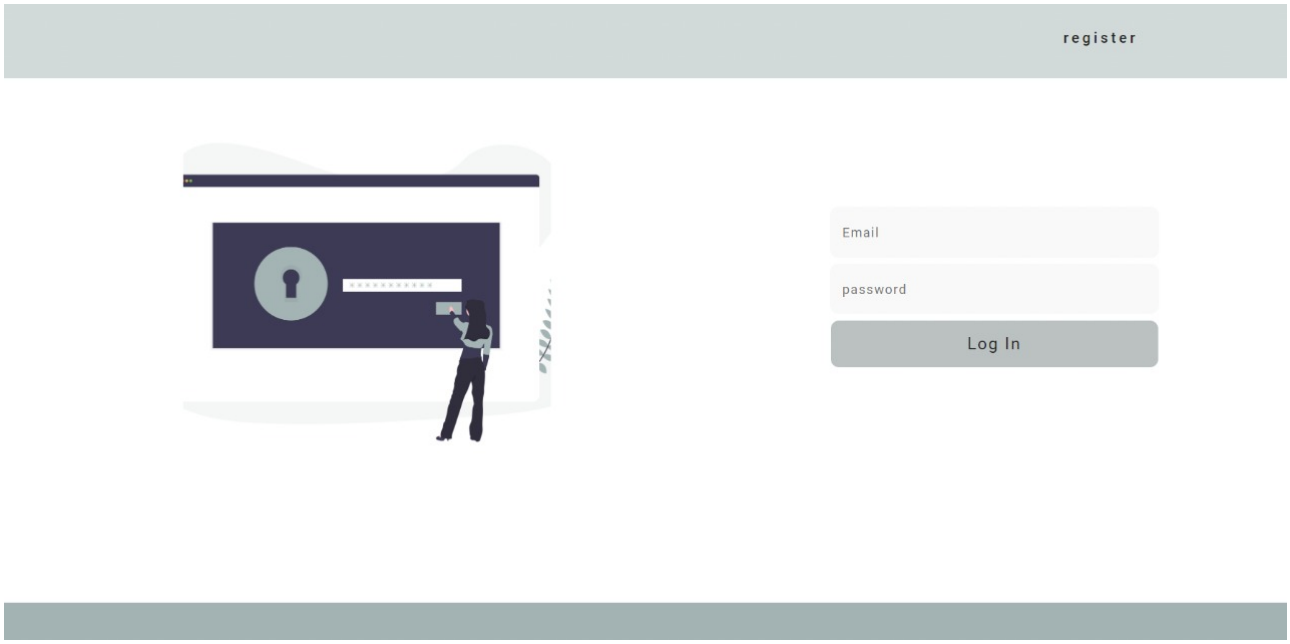

***Fig 3**. Login page*

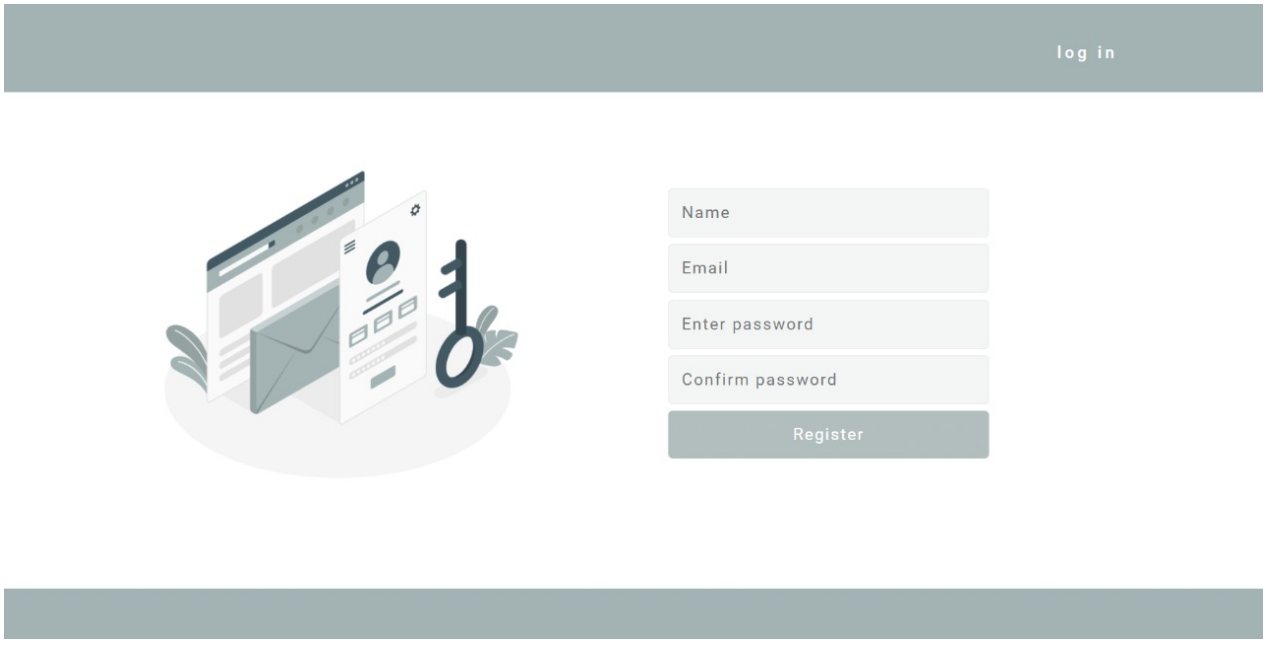

***Fig 4**. Register Page*

3.2 Hardware Interfaces

- CONNECT TO THE INTERNET:
  The application should run over the internet , So all the hardware required to connect to the internet will be the hardware interface for the system. It can be connected through LAN or Modem or cable.
- PERMISSIONS:
  Get the permission to access the files .
  Permission to access exchange data over internet
- DEVICE:
  Using Laptop or computer is recommended. Preferable OS: Windows 7 and above.

3.3 Software Interfaces

- MySql database service
  It is used to store the login data and user search history .
- Assistance of flask micro web framework.
- Bootstrap CSS framework.
  It is used for front end development of the application.
- StackOverflow API

3.4 Communications Interfaces

The product has a separate website developed for easy access. If needed , an application will also be provided so that communication becomes broad. It requires a good web browser which supports HTML for functioning .

4. System Features

This section describes the features provided by our proposed system.

4.1 Registration and Login

4.1.1 Description and Priority

The system allows registration of new users and login of registered users. The user id and password of registered users are maintained in a database. The passwords are encrypted and stored. The user id and password of new users are checked for validity and stored in the database. The

priority of the registration and login is rated high in the scale of 9 as this feature helps in authentication and authorization of users.

4.1.2 Stimulus/Response Sequences

Registration:

- User prompted to enter name, user id, email and password
- User prompted to enter Captcha
- User details verified and entered into the database

Login:

- User prompted to enter registered user id and password
- User details verified
- Home page displayed

4.1.3 Functional Requirements

- **REQ1 :** Validate User Name

  User id is read and checked for validity. While login, the user id must be registered already. Otherwise, an error message is displayed and the user is prompted to try again. While registration, the user id must be checked for uniqueness. It should not be the same as the id of already registered users. User name and password must match the syntax defined - username should start with an alphabet and must be at least 3 characters long. Passwords should have a combination of lowercase and uppercase alphabets, digits and special characters and be of length 6 to 13 characters.

- **REQ2 :** Encrypt password

  User passwords are encrypted and stored in the password file.
User passwords are masked in the display and only '*' is displayed for every character entered

- **REQ3:** Validation of password

  On reading the password, it is matched with the stored one. If a mismatch is found, the user is prompted to enter the password again.

4.2 History of Previous Searches

4.2.1 Description and Priority

This feature provides an option to list the previous searches. This enables the user to quickly refer to the search posted recently. This feature is ranked at 9 indicating high priority.

4.2.2 Stimulus/Response Sequences

- The results of previous searches are retrieved.
- Results are displayed in the order of search date.

- If filters are applied, the search results are pruned based on filters and displayed.

4.2.3 Functional Requirements

- **REQ4 : Access to previous search**

Access to previous search is to be obtained. When the user clicks on the history button, the previous search results are displayed in the window.

4.3 Coding error aids

4.3.1 Description and Priority

Coding errors files are uploaded by programmers. Based on the error, appropriate StackOverflow threads are opened in new tabs. As this feature is one of the core features of the system, it is set at high priority with a rank of 9.

4.3.2 Stimulus/Response Sequences

- Users are prompted to upload the program file.
- Errors are recorded.
- The User is redirected to at least three related Stackoverflow threads.

4.3.3 Functional Requirements

- **REQ5 : Permission to connect to Stackoverflow**

System should have access to connect to Stackoverflow and to execute the corresponding API.

4.4 Frequently asked questions

4.4.1 Description and Priority

The common errors and suggestions are listed separately to provide faster access to the solutions with a detailed search again. This feature is provided in addition to the basic core features. Hence the priority is medium and is ranked 7.

4.4.2 Stimulus/Response Sequences

The common and frequently asked questions and the suggestions are displayed in the corresponding window.

4.4.3 Functional Requirements

- **REQ6 :** Collection of commonly asked questions

Commonly asked questions are collected and their responses are also included and stored in a table. This information is retrieved and displayed in the appropriate window.

4.5 Feedback

4.5.1 Description and Priority

Users are given an option to provide their feedback on the system and on the suggestions provided. This feature is also a value addition feature apart from the core feature. Hence is ranked 5 and marked with medium priority.

4.5.2 Stimulus/Response Sequences

- A feedback text box is displayed.
- The text entered by the user is read.
- The message is directed to the administrator of the system for follow up.

4.5.3 Functional Requirements

- **REQ7 : Message communication to Administrator**

Messages read from the user in the feedback textbox are sent to the administrator mail for further follow up action.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

The application that we are going to develop is used by the public no matter wherever they are all around the world.Therefore it is expected that the database would perform its functionality and fulfil the requirements that are generated by the user.

- The performance of the web application should be fast and accurate.
- This web application shall handle all the errors (expected or unexpected) that make us lose the information that we already have. Thus it should have inbuilt error testing to identify the valid username and password.
- This system should be able to handle large amounts of data. Thus the database should be designed to accommodate a large number of users .

5.2 Safety Requirements

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to have adequate database backups so that the data is not lost. Proper UPS/inverter facility should be there in case of power supply failure.

5.3 Security Requirements

System will use secured database

- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- Systems will have different types of users and every user has access constraints Proper user authentication should be provided. No one should be able to hack users' passwords.
- There should be separate accounts for members such that no member can access the database and only the admin has the rights to update the database.

5.4 Software Quality Attributes

- The admin creating the project will have the right to introduce changes to the system. But the members or other users cannot do so.
- This application is open and free to all so anyone who has the account can avail the facilities provided.
- The Quality of the database is maintained in such a way so that it can be very user friendly to all the users of the database
- The user is able to easily access and make use of the web application.

5.5 Business Rules

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, make a decision, or infer new data from existing data. This includes the rules and regulations that the product users should abide by. This includes the cost of the project and the discount offers provided. The users should avoid illegal rules and protocols. Neither the admin nor the members should cross the rules and regulations.

6. Other Requirements

6.1 Database requirement

It is necessary to have a data store in an organized fashion which can be retrieved and manipulated in future, thus we use a database to achieve it. Integrating a database to the web application allows us to access data using specific commands. In this application we use an open source, relational database management system called MySQL to store data such as user credentials, history of previously searched errors of a user and to keep count of each errors to determine the error which were encountered the most number of times and to store user feedback.

Appendix A: Glossary

- **FAQ -** Frequently Asked Questions
- **CSS -** Cascading Style Sheets
- **API -** Application Programming Interface
- **SQL -** Structured Query Language

Appendix B: Analysis Models

ER diagram

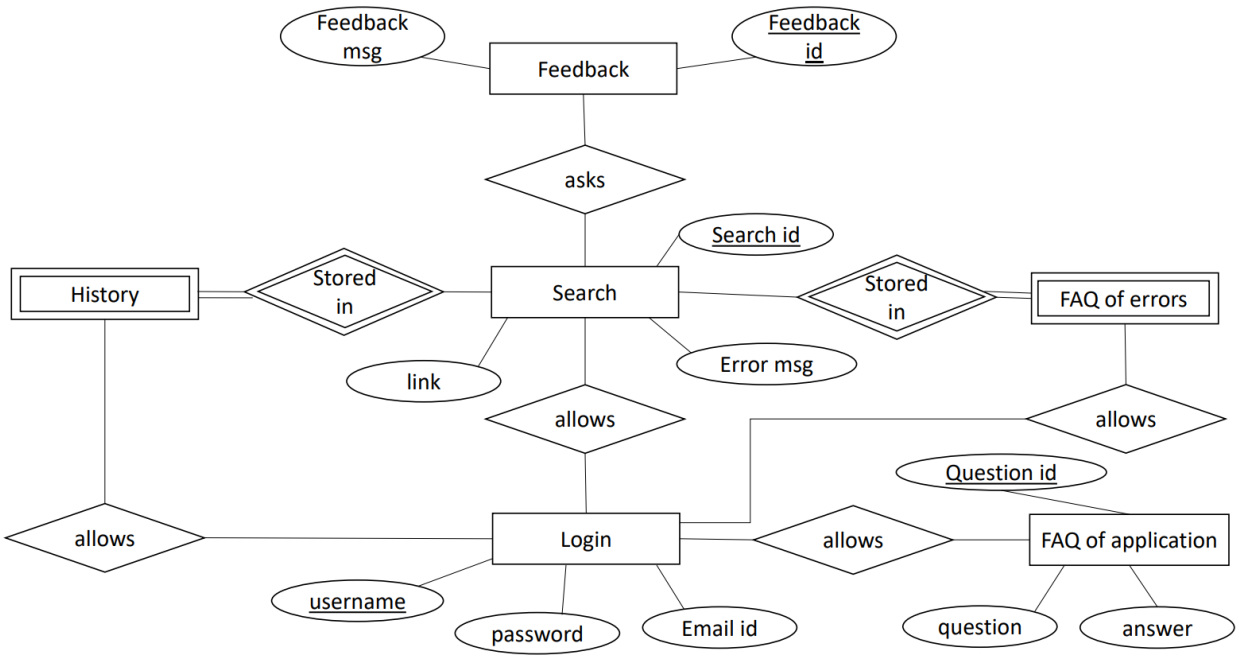

***Fig 5**. ER Diagram*

Data Flow Diagram - Level 1

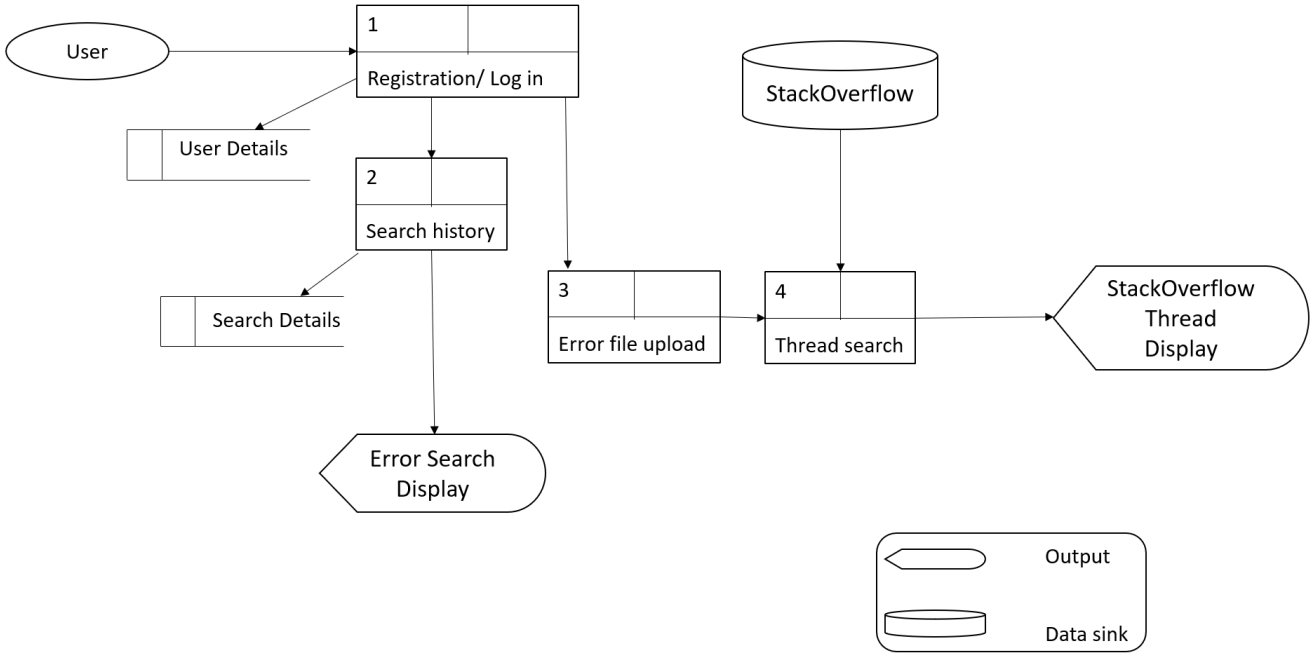

***Fig 6**. Data Flow Diagram Level 1*