1. Introduction

* 1. **Purpose:** The goal of your project and the objectives it aims to accomplish

We are going to develop a web ideally for clinicians to generate dosing guideline by matching the variances of patients with database through mutated gene names.

* 1. **Document conventions:** The typographical methodologies followed within the document. For e.g. any abbreviations, typographical stylization of content or change of fonts and its significance.

* 1. **Intended audience:** Describe which part of the SRS document is intended for which reader. Include a list of all stakeholders of the project, developers, project managers, and testers for better clarity.
  2. **Scope:** Specify how the software goals align with the overall business goals and outline the benefits of the project to business.

**The software goal is to match sequencing files uploaded by users (i.e. clinicians)**

* 1. **References:** A list of other documents that the SRS document refers to including sources such as websites or written literature.

## 3. System Requirements

**3.1 Functional requirements**

All the requirements within the system or sub-system in order to determine the output that the software is expected to give in relation to the given input. These consist of the design requirements, graphics requirements, operating system requirements and constraints if any.

**Design requirements:**

1. Users can choose the type of the input database file (tsv or bam ).
2. Software allows users to upload the sequencing files with anotation.
3. Software could access to the database in the posgreSQL and match the input files with database based on the gene name of variances.
4. Software could show the matched results on the web page
5. Software allows users to download the matched results on the local device.
6. Database of the software is updated monthly.
7. The files that users uploaded could be deleted by administrators.

**Graphics requirements**:

1. There is a button for users to select the type of the input files to database

2. The output data shown on the webpage should be stored in lists or tables. The data is grouped by type and stored in several collapsible text boxes which can be click on to get the data.

3. There is a button which users can click on to get the clinical report.

**Operating system requirements:**

1. MySQL 8.0+ or other relational database / JDBC

2. Java SDK 11+

3. JetBrains IDEA or Eclipse (IDE)

4. Servlet & JSP (dynamic webpage)

5. JSTL (template)

6. SLF4J (logging framework)

7. Json/Gson (data passing mechanism)

**Constraints:**

There are requirements for the format of the database and unformatted data cannot be read.

## 4.External Interface Requirements

4.1 User Interfaces

The logic behind the interactions between the users and the software. This includes the sample screen layout, buttons and functions that would appear on every screen, messages to be displayed on each screen and the style guides to be used.

UI includes uploading interface, three display interfaces (Drugs, Drug Labels, Dosing Guideline). Those three display interfaces will show the users corresponding information(Drugs: serial numbers, name of drugs, drug URL, biomarker; Drug Labels: serial numbers, source, dosing Information, summary markdown; serial number, name, recommendation, drug ID, source, summary markdown). The uploading interface contains a “upload” button, an input box for name of submitter, a “select” button. Users can input the file after being annotated to this web page, then the web page will analyze the file and output a recommended drugs report.

4.2 Hardware Interfaces

The software is implemented on a web page (website) on personal devices.

Connect to the pre-processed database: (not sure to put in which categories)

Input the seq analysis file: connect to the hardware device, uploaded from local disk to web site

Get analysis result: connect to the database and run the software on the serve, show the results on the web page (if time permits, web site send the final file to the local disk.)

4.3 Communications Interfaces

Determination of all the communication standards to be utilized by the software as a part of the project

1. Hypertext Transfer Protocol (HTTP protocol)
2. Transmission Control Protocol/Internet Protocol (TCP/IP protocol)

4.4 Software Interfaces

The interaction of the software to be developed with other software components such as frontend and the backend framework to the used, the database management system and libraries describing the need and the purpose behind each of them.

1. Web site connect with postgreSQL. (It can be specific to the name of the database)

## 5. Non-Functional Requirements

**5.1 Performance requirements**

The performance requirements need to be specified for every functional requirement. The rationale behind it also needs to be elaborated upon.

Drugs: personal drugs based on the results of comparison input seq data.

Drug labels: corresponse to the drugs base

Dosing guideline:

(Occurrence: based on the Literature Occurrence to research special situations of variants that need to pay attention to)

(Could this software be utilized in research as there is a dataset of Pathways in PGKB)

**5.2 Safety requirements**

Users need to log in via their user name and passwords (maybe it is hard to implement this but we could ignore user name just focus on the passwords)

The way connecting to the database and input seq analysis needs algorithm to protect.

(to avoid temparing the database that may lead to misdiagnosis.)

The analysis results need protection.

When uploading the local file, we can use regular expression to avoid the injection of computer viruses.

**5.3 Security requirements**

There is no way to get access to the origainal data once the user put in and get data analyzed.

The analysis results could be refered to later by inputing passwards but cannot download to devices.

There is search and rank button on the interface helping users to make decisions.

**5.4 Software quality attributes**

Maintainability: Test work

(adaptability, flexibility, usability, reliability, portability etc.)

Adaptability: this web site can run at different browsers and different hardware platform. (How to prove it in documentation?)

**Usability: The tester will upload different format of files to see if there is message to tell users what’s the problem and how to do with it.**

**5.5 Other requirements**

legal requirements: no idea

resource utilizations: Rearrange the infomation and columns of the datasets, make the dataset tidy and

future updates : The database of our web will be generated via code console rather than manually download, unzip, rearrange and upload to PosgreSQL. Therefore the update will be easier