

**COMSATS University Islamabad,   
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**Software Requirements Specification**

**For**

**Data Science Toolkit for Social Scientists**

(*Web Application*)

Version 1.0

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## Introduction

This document provides brief overview for System specification requirements for the Data Science related system for Social Scientists. It contains document purpose, product scope, audience, definition and overall view of the product.

## Document Purpose

This **SRS** document contains the software functional requirement and its non-functional requirement. It will provide a brief overview of use-case, which will provide ease of understanding of software for others. It contains performance and minimum requirements that are needed to run the application smoothly on smart-phone. Our application will be web-based, but this document will allow ease of importing it.

## Product Scope

Extraction of useful information from detailed and complex data is time consuming as we are surrounded by a lot of data these days. Our system will help user solve this problem by getting required information in no time by creating user-friendly environment. This system is especially for Social Scientists, who are always looking for useful information to perform analysis on it and get benefits from it. User of application can create his account on website. After that user will be able to upload the document from which they want to extract information. After uploading the document, using OCR techniques we will convert document into editable form for users. User can now perform update or delete operation on document before applying Data Science Tools. User will be also provided data cleaning tools so that they can clean document before implementing data science tools. After processing the data, Data Science Toolkit will provide user many options like text summarization, topic modeling, sentiment analysis and many other to perform on uploaded document. Using toolkit, system will provide user summery of uploaded document, user can upload multiple documents and system will categorize documents, system can determine whether writer attitude towards particular topic, product etc. is positive, negative or neutral. System will provide user document summary, user can go to topics in document in which he/she is interested, user can search what this document is about and many more. System will provide user report of the tools applied on document. User can keep history of document, so he/she can access it any time. User can also maintain repository and share their content with other users. User have to create and manage his/her account before accessing Data Science Toolkit

## Intended Audience

This document is intended for developers, users (social scientists) and testers.

It will help developers to create and develop the FRs for the system. User can view use case as a guide to understand and learn the application. Testers can use the document to validate the FRs based on the dependencies on the software.

## Definitions, Acronyms and Abbreviations

Following are the definitions, acronyms and abbreviations used:

**Table 1: Definitions, Acronyms and Abbreviations**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| User | Someone (social scientists) who will interact with the application. |
| SRS | Software Requirement Specification |
| Testers | Someone who will test modules of the application |
| Developers | Someone who will code the application |
| Data Science | Field that uses algorithms to extract knowledge from data. |

## Overall Description

This section of the **SRS** describes the product perspective and in which environment it will be deployed on. It also contains software assumption and dependencies that may help the developers in coding. It will also help testers to test the software based on those dependencies. This section user characteristics and general constraint on the system.

## Operating Environment

The application will be web-based and it can run on computers, laptops and android phones. It supports windows, mac and android operating system. Internet connection is necessary to run this application because it is web application. This application can run on almost all the modern devices.

## General Constraints

This is web application so internet connectivity is must to run it. It will run on windows 7 and greater versions. Application will not run on windows version less than 7. It also does not support older versions of mac and android.

## Requirement Elicitation Techniques.

Following are the requirement elicitation Techniques:

* **Brainstorming Session:** For gathering and creating new ideas for the document.
* **Document Analysis:** To gather information for Functional Requirements and Non-functional Requirements.

## Use Cases.

Following are the use cases:

**Module 1: User Profiling**

|  |  |  |
| --- | --- | --- |
| **Use Case ID** | **Use Case Title** | **Use Case Description** |
| **M1-UC1** | Sign In | Provide credentials to enter the application. |
| **M1-UC2** | Sign Up | To register for application. |
| **M1-UC3** | Forgot Password | To reset the password of application if you forgot. |
| **M1-UC4** | Remember me | To remember the password and username. |
| **M1-UC5** | Change Password | To reset the password of application. |
| **M1-UC6** | Add profession | To add profession. |
| **M1-UC7** | Edit information | To change the personal information entered. |
| **M1-UC8** | View information | To view the information entered. |
| **M1-UC9** | Logout | To logout of the account. |

**Module 2: Data Collection and Pre-Processing**

|  |  |  |
| --- | --- | --- |
| **Use Case ID** | **Use Case Title** | **Use Case Description** |
| **M2-UC1** | Upload Document | User can upload the document on which data science tools will be used. |
| **M2-UC2** | Edit Document | User can edit the text of document. |
| **M2-UC3** | Delete document | User can delete the content of document which he/she uploaded |
| **M2-UC4** | View Cleaning tools | User will be given different data cleaning techniques to clean document. |
| **M2-UC5** | Removal of extra spaces | User can get rid of any extra spaces in the document. |
| **M2-UC6** | Convert Case | User can convert text between different letter cases. |
| **M2-UC7** | Lowercase | User can convert text into lowercase. |
| **M2-UC8** | Uppercase | User can convert text into uppercase |
| **M2-UC9** | Proper case | User can convert text into proper case. |
| **M2-UC10** | Remove non alphabetic characters | User can remove words with special characters from the document. |

**Module 3: Development and Integration of Data Science Tools**

|  |  |  |
| --- | --- | --- |
| **Use Case ID** | **Use Case Title** | **Use Case Description** |
| **M3-UC1** | View Toolkit | User can view and select different data science tools. |
| **M3-UC2** | Text Summarization | User can get the summary of the document he/she uploaded. |
| **M3-UC3** | Topic Modeling | User can discover topics that occur in a collection of documents. |
| **M3-UC4** | Upload more documents | User can upload more topics to apply topic modeling. |
| **M3-UC5** | Sentiment Analysis | User can detect polarity of the document either its positive or negative. |

**Module 4: Report**

|  |  |  |
| --- | --- | --- |
| **Use Case ID** | **Use Case Title** | **Use Case Description** |
| **M4-UC1** | Get Report | User can extract the information he/she wants to extract from uploaded document. |
| **M4-UC2** | Add Description | User can add description of the report that is created. |
| **M4-UC3** | Save Report | User can save the report. It will be saved in database. |
| **M4-UC4** | Delete Report | User can delete the report from database. |
| **M4-UC5** | View Report | User can view the list of reports that have been created from his/her account. |
| **M4-UC6** | Download Report | User will be able to download the report. |

**Module 5: Data Repository Management and Sharing**

|  |  |  |
| --- | --- | --- |
| **Use Case ID** | **Use Case Title** | **Use Case Description** |
| **M5-UC1** | Store document in repository | User can store uploaded documents in repository. |
| **M5-UC2** | Download document | User can download the uploaded document. |
| **M5-UC3** | Edit Document | User can convert document into editable form. |
| **M5-UC4** | Share document | User can share document with other users. |

## Use Case(s) Diagram:

Following are the use case diagrams:

A close up of text on a white background

Description automatically generated

**Figure 1: Use case Diagram (1/2)**

A close up of a map

Description automatically generated

**Figure 2: Use case diagram (2/2)**

## Use Case(s):

## Use Case(s) (Tabular):

The tabular forms of use cases are given below:

**Module 1: User Management**

* 1. UC 1.1: Sign In

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.1 |
| **Use Case Name:** | Log In |
| **Actors:** | User |
| **Description:** | A form will appear. User needs to enter username and password to Log In to the website. |
| **Level:** | High |
| **Trigger:** | User will click the **Log in button** |
| **Preconditions:** | 1. Internet should be available. 2. User should already have an account for the website |
| **Includes:** | UC-1.2 |
| **Normal Flow:** | 1. User opens the web application. 2. User clicks the log in button. 3. User enters his/her username and password. 4. User then clicks on login button in order to access the web application. |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. User enters the wrong password or username. 2. User is unable to connect to the server. |
| **Post conditions:** | 1. User logged in to website. 2. User moves to home page of website. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Sign Up

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.2 |
| **Use Case Name:** | Sign Up |
| **Actors:** | User |
| **Description:** | A form will appear. User needs to input username, password, email, profession and date of birth. |
| **Level:** | High |
| **Trigger:** | User starts the application and selects sign up button |
| **Preconditions:** | 1. User should run the application. 2. User needs to select sign up button. |
| **Includes:** | None |
| **Normal Flow:** | 1. User starts the application. 2. User selects the sign-up button. 3. User enters a username, password, email, profession and date of birth. 4. User then clicks the Create Account button. |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. User enters username that is already in used. 2. User is unable to connect to the server. |
| **Post conditions:** | 1. User will be able to create an account successfully. 2. User can Sign-in to application. |
| **Special Requirements:** | The size of password must be greater than six. |
| **Assumptions:** |  |
| **Notes and Issues:** | Size of password and username.  Special characters may or may not be allowed |

* 1. Remember me

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.3 |
| **Use Case Name:** | Remember me |
| **Actors:** | User |
| **Description:** | A checkbox enables user to save the password for the future. |
| **Level:** | Low |
| **Trigger:** | User clicks the checkbox of remember me. |
| **Preconditions:** | 1. User should run the application 2. User has to select the sign in button 3. User has to enter username, email and password. |
| **Includes:** | UC 1.2 |
| **Normal Flow:** | 1. User starts the application. 2. User selects the sign in button. 3. User enters username, email and password. 4. User checks the checkbox of remember me. |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. User does not have an account 2. User is unable to connect to the server. |
| **Post conditions:** | 1. User can select the login button |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | Size of password. |

* 1. Forgot password

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.4 |
| **Use Case Name:** | Forgot password |
| **Actors:** | User |
| **Description:** | A form will appear. User needs to input recovery email that user provided in sign up. A reset password link will be provided in that link. User can reset his/her password from that link. |
| **Level:** | Medium |
| **Trigger:** | User starts the application and selects forgot password button |
| **Preconditions:** | 1. User should have an account 2. User should have an internet access. |
| **Includes:** | UC 1.2 |
| **Normal Flow:** | 1. User starts the application. 2. User selects log in button 3. User enters username. 4. User selects the forgot password button. 5. User enters an email address. 6. User then clicks the OK button |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. User does not have an account 2. User is unable to connect to the server. |
| **Post conditions:** | 1. User has provided new password for the account. |
| **Special Requirements:** | The user should enter a working email address. |
| **Assumptions:** |  |
| **Notes and Issues:** | Size of password. |

* 1. Change Password

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.5 |
| **Use Case Name:** | Change password |
| **Actors:** | User |
| **Description:** | A form will appear. User needs to provide the old password and a new one. The new password should follow the rules. |
| **Level:** | Medium |
| **Trigger:** | User goes to the settings and selects change password button |
| **Preconditions:** | 1. User should have logged in. 2. User must remember the old password 3. User should have an internet access. |
| **Includes:** | UC 1.1 |
| **Normal Flow:** | 1. User starts the application. 2. User goes to profile and then settings. 3. User enters old password and new password. 4. User then clicks the Done button. |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. User does not have an account. 2. User is unable to connect server. 3. User doesn’t remember old password. |
| **Post conditions:** | 1. User will log in again with the new password. |
| **Special Requirements:** | The new password must follow the standards. |
| **Assumptions:** |  |
| **Notes and Issues:** | Size of password. |

* 1. Add information

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.6 |
| **Use Case Name:** | Add Information |
| **Actors:** | User |
| **Description:** | A form will appear to add personal information. |
| **Level:** | Medium |
| **Trigger:** | User selects create account button |
| **Preconditions:** | 1. User must be logged in to the application 2. User must select create account button. |
| **Includes:** | UC 1.2 |
| **Normal Flow:** | 1. User opens the application. 2. User selects the sign-up button. 3. User signs up 4. User clicks create account button. 5. The form to add information appears. |
| **Alternative Flows:** | None |
| **Exceptions:** | 1. Application is unable to fetch profile information from the server. |
| **Post conditions:** | 1. User can view their profile information. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Edit information

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.7 |
| **Use Case Name:** | Edit Information |
| **Actors:** | User |
| **Description:** | A form filled earlier will appear to change the information |
| **Level:** | Medium |
| **Trigger:** | User selects edit information button from settings |
| **Preconditions:** | 1. User must be logged in to the application 2. User must enter information |
| **Includes:** | UC 1.2, UC-1.6 |
| **Normal Flow:** | 1. User opens the application. 2. User logs in 3. User goes to the settings from profile. 4. User then selects the account information button. 5. User then selects edit information button. 6. User edits information and selects done button. |
| **Alternative Flows:** | None |
| **Exceptions:** | Application is unable to fetch profile information from the server. |
| **Post conditions:** | User can view his/her profile information. |
| **Special Requirements:** | The information must be valid. |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. View information

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.8 |
| **Use Case Name:** | View Information |
| **Actors:** | User |
| **Description:** | A form filled earlier will appear. |
| **Level:** | Medium |
| **Trigger:** | User selects view information from settings |
| **Preconditions:** | 1. User must be logged in to the application 2. User must enter information |
| **Includes:** | UC 1.1, UC-1.6 |
| **Normal Flow:** | 1. User opens the application 2. User signs in 3. User goes to the settings from profile. 4. User then selects the account information button. 5. User then selects view information button |
| **Alternative Flows:** | None |
| **Exceptions:** | Application is unable to fetch information from the server. |
| **Post conditions:** | The user will be able to edit information if it is wrong. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Log out

|  |  |
| --- | --- |
| **Use Case ID:** | UC 1.9 |
| **Use Case Name:** | Log out |
| **Actors:** | User |
| **Description:** | User would be able to logout from his account |
| **Level:** | High |
| **Trigger:** | User selects logout button from the profile |
| **Preconditions:** | 1. User goes to the profile 2. User needs to select logout button |
| **Includes:** | UC 1.1 |
| **Normal Flow:** | 1. User opens the application 2. User logs in 3. User goes to profile 4. User selects logout button. |
| **Alternative Flows:** | None |
| **Exceptions:** | User is unable to connect to server. |
| **Post conditions:** | User can login in again to use the application |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

**Module 2: Data Collection and Pre-Processing**

* 1. Upload Document

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.1 |
| **Use Case Name:** | Upload Document |
| **Actors:** | User |
| **Description:** | User can upload document of any type. |
| **Level:** |  |
| **Trigger:** | User clicks/taps on upload document. |
| **Preconditions:** | 1. User must be logged in to the application. |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in to application. 2. User clicks on upload document. 3. User selects a document of their choice. 4. User clicks on upload. |
| **Alternative Flows:** | User applies web scraping |
| **Exceptions:** |  |
| **Post conditions:** | 1. The document has been uploaded. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Edit Document

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.2 |
| **Use Case Name:** | Edit Document |
| **Actors:** | User |
| **Description:** | User can edit the text of document that is uploaded. |
| **Level:** |  |
| **Trigger:** |  |
| **Preconditions:** | 1. User must have uploaded the document. |
| **Includes:** |  |
| **Normal Flow:** | 1. User uploads a document. 2. User edits the text of document. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** |  |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Delete Document

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.3 |
| **Use Case Name:** | Delete Document |
| **Actors:** | User |
| **Description:** | User can delete the uploaded document. |
| **Level:** |  |
| **Trigger:** | User clicks on delete button. |
| **Preconditions:** | 1. Document must be uploaded. |
| **Includes:** |  |
| **Normal Flow:** | 1. User uploads a document. 2. User clicks on delete button. 3. User selects another document to upload. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. Document is removed. 2. User uploads another document. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** |  |

* 1. View Cleaning tools

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.4 |
| **Use Case Name:** | View Cleaning tools |
| **Actors:** | User |
| **Description:** | User can view data cleaning techniques. |
| **Level:** |  |
| **Trigger:** | User clicks on Clean Document. |
| **Preconditions:** | 1. User must have uploaded a document. 2. Document must be in editable form. |
| **Includes:** |  |
| **Normal Flow:** | 1. User uploads a document. 2. User clicks on Clean document. 3. User gets options of different data cleaning techniques. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. User selects some data cleaning technique to apply. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Removal of extra spaces

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.5 |
| **Use Case Name:** | Removal of extra spaces |
| **Actors:** | User |
| **Description:** | User can remove irrelevant/extra spaces in the document. |
| **Level:** |  |
| **Trigger:** | User selects Remove Extra Spaces from cleaning options. |
| **Preconditions:** | 1. User must upload the document. 2. User must select Clean Data. |
| **Includes:** |  |
| **Normal Flow:** | 1. User uploads a document. 2. User then clicks on Clean Data. 3. User views different data cleaning techniques. 4. User clicks on Remove extra spaces. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. User will get the clean document with no extra spaces. 2. User can apply more cleaning options. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Convert Case

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.6 |
| **Use Case Name:** | Convert Case |
| **Actors:** | User |
| **Description:** | User can view three convert case techniques. |
| **Level:** |  |
| **Trigger:** | User selects Convert case from options. |
| **Preconditions:** | User must click Clean Data.  User must select Convert Case. |
| **Includes:** |  |
| **Normal Flow:** | 1. User clicks on Clean Data. 2. User gets a list of data cleaning techniques. 3. User then clicks on Convert case. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. User can view three convert case strategies.  2. User can select from these options. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Lowercase

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.7 |
| **Use Case Name:** | Lowercase |
| **Actors:** | User |
| **Description:** | User can convert text of document into lowercase |
| **Level:** |  |
| **Trigger:** | User selects Lowercase option. |
| **Preconditions:** | 1. User must select Convert Case from data cleaning techniques. |
| **Includes:** |  |
| **Normal Flow:** | 1. User selects Convert case. 2. User then clicks on Lowercase. |
| **Alternative Flows:** | 1. User clicks on Uppercase. 2. User clicks Proper case. |
| **Exceptions:** |  |
| **Post conditions:** | 1. User will get the document with whole text in lowercase. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Uppercase

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.8 |
| **Use Case Name:** | Uppercase |
| **Actors:** | User |
| **Description:** | User can convert text of document into uppercase. |
| **Level:** |  |
| **Trigger:** | User selects Uppercase from options. |
| **Preconditions:** | User must select Convert Case from data cleaning techniques. |
| **Includes:** |  |
| **Normal Flow:** | User selects Convert case.  User then clicks on Uppercase. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. User will get the document with whole text in lowercase. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Proper case

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.9 |
| **Use Case Name:** | Proper case |
| **Actors:** | User |
| **Description:** | User can convert text of document in proper case. |
| **Level:** |  |
| **Trigger:** | User selects Proper case from options. |
| **Preconditions:** | User must select Convert Case from data cleaning techniques. |
| **Includes:** |  |
| **Normal Flow:** | 1. User selects Convert case. 2. User then clicks on Proper case |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | 1. User will get the document with whole text in proper case. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

* 1. Remove non-alphabetic characters

|  |  |
| --- | --- |
| **Use Case ID:** | UC 2.10 |
| **Use Case Name:** | Remove non alphabetic characters. |
| **Actors:** | User |
| **Description:** | User can remove all non-alphabetic characters from the document. |
| **Level:** |  |
| **Trigger:** | User selects Remove special characters option. |
| **Preconditions:** | User must upload a document.  User must select Clean Document. |
| **Includes:** |  |
| **Normal Flow:** | 1. User uploads a document.  2. User selects Clean document.  3. User then clicks the Remove special character button. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | User gets the document without any non-alphabetic characters. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | None. |

**Module 3: Development and Integration of Data science tools**

* 1. View Info

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.1 |
| **Use Case Name:** | View Info |
| **Actors:** | User |
| **Description:** | User can view details about data science tools from info option in navbar. |
| **Level:** | Medium |
| **Trigger:** | User clicks on Info option in navbar to view details about data science tools. |
| **Preconditions:** | 1. User must be logged in. |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in to the website. 2. User clicks on Info option in navbar. |
| **Alternative Flows:** | None |
| **Exceptions:** |  |
| **Post conditions:** | Information about all data science tools will be displayed on the screen. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Text Summarization

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.2 |
| **Use Case Name:** | Text Summarization |
| **Actors:** | User |
| **Description:** | User can get summary of text/document that is uploaded. |
| **Level:** | High |
| **Trigger:** | User clicks on Text Summarization from navbar. |
| **Preconditions:** | 1. User must be logged in. |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in to the application. 2. User selects Text Summarization from navbar. |
| **Alternative Flows:** | None |
| **Exceptions:** |  |
| **Post conditions:** | Text Summarization interface will be displayed. |
| **Special Requirements:** |  |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Manual Summary

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.3 |
| **Use Case Name:** | Manual Summary |
| **Actors:** | User |
| **Description:** | User can get summary of text/document in specified number of lines. |
| **Level:** | High |
| **Trigger:** | User clicks on Manual button. |
| **Preconditions:** | 1. User must be logged in.   1. User must select Text Summarization. 2. User must have entered text in textbox or uploaded a document. |
| **Includes:** |  |
| **Normal Flow:** | User logs in to the application.  User selects Text Summarization from navbar.  User enters text in textbox or user uploads a document.  User clicks on Manual option.  User enters the number of lines of summary he/she wants.  User clicks Apply. |
| **Alternative Flows:** | None |
| **Exceptions:** |  |
| **Post conditions:** | Summary of document in specified number of lines is displayed. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Analyze

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.4 |
| **Use Case Name:** | Analyze |
| **Actors:** | User |
| **Description:** | User can get important words of the document in highlighted form. |
| **Level:** | Medium |
| **Trigger:** | User clicks on Analyze button. |
| **Preconditions:** | User must be logged in.  User must select Text Summarization.  User must have entered text in textbox or uploaded a document. |
| **Includes:** |  |
| **Normal Flow:** | User logs in to the application.  User selects Text Summarization from navbar.  User enters text in textbox or user uploads a document.  User clicks on Analyze button.  User clicks Apply. |
| **Alternative Flows:** | None |
| **Exceptions:** |  |
| **Post conditions:** | All the important words in the document are displayed in bold form. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Automatic Summary

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.5 |
| **Use Case Name:** | Automatic Summary |
| **Actors:** | User |
| **Description:** | User can get automatic summary of text/document. |
| **Level:** | High |
| **Trigger:** | User clicks on Automatic button. |
| **Preconditions:** | 1. User must be logged in.   1. User must select Text Summarization. 2. User must have entered text in textbox or uploaded a document. |
| **Normal Flow:** | User logs in to the application.  User selects Text Summarization from navbar.  User enters text in textbox or user uploads a document.  User clicks on Automatic option.  User clicks Apply. |
| **Exceptions:** | If text is not written in textbox, then system will notify user to first write text or upload document. |
| **Post conditions:** | Automatic summary of document will be displayed on the screen. |

* 1. Topic Modeling

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.6 |
| **Use Case Name:** | Topic Modeling |
| **Actors:** | User |
| **Description:** | User can discover topics that occur in a collection of documents. |
| **Level:** | High |
| **Trigger:** | User clicks on Topic Modeling from navbar. |
| **Preconditions:** | 1. User must be logged in. |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in to the application 2. User selects Topic Modeling from navbar. |
| **Alternative Flows:** | None |
| **Exceptions:** |  |
| **Post conditions:** | Topic Modeling interface will be displayed. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Sentiment Analysis

|  |  |
| --- | --- |
| **Use Case ID:** | UC-3.7 |
| **Use Case Name:** | Sentiment Analysis |
| **Actors:** | User |
| **Description:** | User can detect polarity of the document either its positive or negative. |
| **Level:** | High |
| **Trigger:** | Clicking on the capture button |
| **Preconditions:** | 1. User must be signed in |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in to the application. 2. User clicks on Sentiment Analysis in navbar. 3. User Uploads a document or enter text in textbox. 4. User clicks Apply. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | Results will be displayed to user in a graph form. |
| **Special Requirements:** | None |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

**Module 4: Report**

* 1. Save Report

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4.1 |
| **Use Case Name:** | Save Report |
| **Actors:** | User |
| **Description:** | User can save report of the document after applying data science tools. |
| **Level:** | High |
| **Trigger:** | User clicks on Save button. |
| **Preconditions:** | User has entered some texts or uploaded a document.  User has applied at least one data cleaning tool. |
| **Includes:** |  |
| **Normal Flow:** | 1. User logs in. 2. User selects a data science tool from navbar. 3. User uploads document/enters text. 4. User applies the tools. 5. User clicks on save report button. 6. A textbox will appear which asks user to enter description of the report. 7. User enters description. 8. User clicks Done. |
| **Alternative Flows:**  **[Alternative Flow 1 – Not in Network]** | NA |
| **Exceptions:** |  |
| **Postconditions:** | The report of document is saved in the database. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. View Report

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4.2 |
| **Use Case Name:** | View Report |
| **Actors:** | User |
| **Description:** | User can view reports saved in database from report section in navbar. |
| **Level:** | Medium |
| **Trigger:** |  |
| **Preconditions:** |  |
| **Includes:** | NA |
| **Normal Flow:** | 1. User logs in. 2. User clicks Report from navbar. |
| **Alternative Flows:** |  |
| **Exceptions:** | User has no saved reports in database. |
| **Post conditions:** | A list of all saved reports will be displayed to user. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Delete Report

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4.3 |
| **Use Case Name:** | Delete report |
| **Actors:** | User |
| **Description:** | User can delete saved reports from the database. |
| **Level:** | Medium |
| **Trigger:** | User clicks on Delete button. |
| **Preconditions:** | User has opened report. |
| **Includes:** | NA |
| **Normal Flow:** | User logs in.  User clicks Report from navbar.  User select a report from a list of saved reports.  User opens a report  User clicks on Delete button. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | The intended report is deleted from the database and list of reports. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Delete Report

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4.4 |
| **Use Case Name:** | Delete report |
| **Actors:** | User |
| **Description:** | User can delete saved reports from the database. |
| **Level:** | Medium |
| **Trigger:** | User clicks on Delete button. |
| **Preconditions:** | User has opened report. |
| **Includes:** | NA |
| **Normal Flow:** | User logs in.  User clicks Report from navbar.  User select a report from a list of saved reports.  User opens a report  User clicks on Delete button. |
| **Alternative Flows:** |  |
| **Exceptions:** |  |
| **Post conditions:** | The intended report is deleted from the database and list of reports. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Download Report

|  |  |
| --- | --- |
| **Use Case ID:** | UC-4.5 |
| **Use Case Name:** | Download Report |
| **Actors:** | User |
| **Description:** | User can download the reports from the list of reports. |
| **Level:** | Medium |
| **Trigger:** | User clicks on Download button. |
| **Preconditions:** | User has opened a report from list. |
| **Includes:** | NA |
| **Normal Flow:** | User clicks on Report button from navbar.  User selects a report from list of reports.  User clicks on Download button. |
| **Alternative Flows:** |  |
| **Exceptions:** | NA |
| **Post conditions:** | The selected report is downloaded on the device. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

**Module 5: Data Repository Management and Sharing**

* 1. Store document in repository

|  |  |
| --- | --- |
| **Use Case ID:** | UC-5.1 |
| **Use Case Name:** | Store document in repository. |
| **Actors:** | User |
| **Description:** | User can store the document he/she uploaded in the repository. |
| **Level:** | Medium |
| **Trigger:** | User clicks on upload document. |
| **Preconditions:** | User must be logged in. |
| **Includes:** | NA |
| **Normal Flow:** | User logs in to account.  User clicks on Repository option from navbar.  User clicks Upload button.  User selects a document to upload. |
| **Alternative Flows:**  **[Alternative Flow 1 – Not in Network]** | NA |
| **Exceptions:** |  |
| **Post conditions:** | Selected document will be uploaded in the repository. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Download document

|  |  |
| --- | --- |
| **Use Case ID:** | UC-5.2 |
| **Use Case Name:** | Download document |
| **Actors:** | User |
| **Description:** | User can download document from repository. |
| **Level:** | Low |
| **Trigger:** | User clicks on download button. |
| **Preconditions:** | User has selected a document. |
| **Includes:** |  |
| **Normal Flow:** | User logs in.  User clicks on Repository from navbar.  User selects a previously uploaded document.  User clicks on Download button. |
| **Alternative Flows:** | NA |
| **Exceptions:** |  |
| **Postconditions:** | Document is download on the device. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Edit Document

|  |  |
| --- | --- |
| **Use Case ID:** | UC-5.3 |
| **Use Case Name:** | Edit document |
| **Actors:** | User |
| **Description:** | User can use the document to perform operations |
| **Level:** | High |
| **Trigger:** | Clicking on the item. |
| **Preconditions:** | The user must add item |
| **Includes:** | UC-4.1 |
| **Normal Flow:** | 1. Go to Exchange items 2. Click on the item |
| **Alternative Flows:**  **[Alternative Flow 1 – Not in Network]** | NA |
| **Exceptions:** |  |
| **Post conditions:** | The details can be edited. |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

* 1. Share Document

|  |  |
| --- | --- |
| **Use Case ID:** | UC-5.4 |
| **Use Case Name:** | Read articles |
| **Actors:** | User |
| **Description:** | User can read articles or blogs from the self-grooming sites |
| **Level:** | Medium |
| **Trigger:** | Clicking on the read articles button |
| **Preconditions:** |  |
| **Includes:** | NA |
| **Normal Flow:** | 1. Go to Exchange items 2. Click on read articles. |
| **Alternative Flows:**  **[Alternative Flow 1 – Not in Network]** |  |
| **Exceptions:** | NA |
| **Post conditions:** |  |
| **Special Requirements:** | NA |
| **Assumptions:** |  |
| **Notes and Issues:** | NA |

# 5. Specific Requirements

Following are the functional requirements of **Data Science Toolkit for Social Scientists**

## FR 1: Email Address

|  |  |
| --- | --- |
| Identifier | FR-1 |
| Title | Email Address |
| Requirement | User will input Email Address in order to log in to the application |
| Source | Umer, Yusra |
| Rationale | Email Address will help in signing in. |
| Restrictions and Risk | Email Address must be unique |
| Dependencies | None |
| Priority | High |

## FR 2: Password

|  |  |
| --- | --- |
| Identifier | FR-2 |
| Title | Password |
| Requirement | User will input Password of his account. |
| Source | Umer, Yusra |
| Rationale | Password is set in order to protect account from unauthorized access |
| Restrictions and Risk | Password must be 8 character long. |
| Dependencies | None |
| Priority | High |

## FR 3: Log in button

|  |  |
| --- | --- |
| Identifier | FR-3 |
| Title | Log in button |
| Requirement | User will click log in button to log into his/her account. |
| Source | Umer, Yusra |
| Rationale | Log in button sends the form data to server |
| Restrictions and Risk | Email Address and Password must be entered. |
| Dependencies | FR-1, FR-2 |
| Priority | High |

## FR 4: Gmail

|  |  |
| --- | --- |
| Identifier | FR-4 |
| Title | Gmail |
| Requirement | User clicks sign up through Gmail button to create account. |
| Source | Umer, Yusra |
| Rationale | User can sign up through Gmail and does not have to go through the sign up procedure again. |
| Restrictions and Risk | User should have Gmail account. |
| Dependencies | None |
| Priority | Medium |

## FR 5: Password

|  |  |
| --- | --- |
| Identifier | FR-5 |
| Title | Password |
| Requirement | User needs to set a password for his/her account |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password is needed to log in to account |
| Dependencies | None |
| Priority | High |

## FR 6: Confirm Password

|  |  |
| --- | --- |
| Identifier | FR-6 |
| Title | Confirm Password |
| Requirement | User needs to confirm before setting a password for his/her account |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password is needed to log in to account |
| Dependencies | FR-5 |
| Priority | High |

## FR 7: Email

|  |  |
| --- | --- |
| Identifier | FR-7 |
| Title | Email |
| Requirement | User will provide email address for the application |
| Source | Umer, Yusra |
| Rationale | It will link their account to their email. They can reset password with their email address in case they forgot it |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 8: Sign up button

|  |  |
| --- | --- |
| Identifier | FR-8 |
| Title | Sign up button |
| Requirement | It will send the form data to server. |
| Source | Umer, Yusra |
| Rationale | Form data contains user information. It needs to be stored in server, so user can later log in to account |
| Restrictions and Risk | The following strings must be filled i.e. user-name, password and email. |
| Dependencies | FR-5, FR-6, FR-7 |
| Priority | High |

## FR 9: Email verification

|  |  |
| --- | --- |
| Identifier | FR-9 |
| Title | Email verification |
| Requirement | It will allow user to reset his/her account password. Email of the account will be provided to reset the password. |
| Source | Umer, Yusra |
| Rationale | It is required in case user forgets his/her account password |
| Restrictions and Risk | User can reset password if he/she provided correct email of account |
| Dependencies | FR-7 |
| Priority | Medium |

## FR 10: New Password

|  |  |
| --- | --- |
| Identifier | FR-10 |
| Title | New Password |
| Requirement | User needs to reset a password for his/her account incase he/she forgets it |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password must be 8 character long. |
| Dependencies | None |
| Priority | High |

## FR 11: Confirm Password

|  |  |
| --- | --- |
| Identifier | FR-11 |
| Title | Confirm Password |
| Requirement | User needs to confirm before setting a new password for his/her account |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password must be 8 character long |
| Dependencies | FR-10 |
| Priority | High |

## FR 12: Submit button

|  |  |
| --- | --- |
| Identifier | FR-12 |
| Title | Submit button |
| Requirement | It will send the form data to server. |
| Source | Umer, Yusra |
| Rationale | Form data contains password information. It needs to be stored in server, so user can later log in to account |
| Restrictions and Risk | All fields must be filled i-e password and email |
| Dependencies | FR-10, FR-11 |
| Priority | High |

## FR 13: Remember user email

|  |  |
| --- | --- |
| Identifier | FR-13 |
| Title | Remember user email |
| Requirement | User can check remember me option to be remembered for next time. |
| Source | Umer, Yusra |
| Rationale | Next time user can select username without typing it |
| Restrictions and Risk | None |
| Dependencies | FR-1 |
| Priority | Low |

## FR 14: Remember Login Information

|  |  |
| --- | --- |
| Identifier | FR-14 |
| Title | Remember Login Information |
| Requirement | User can check remember Login Information option to be remembered for next time. |
| Source | Yusra, Umer |
| Rationale | Next time user can select username and password will automatically be entered. |
| Restrictions and Risk | None |
| Dependencies | FR-2 |
| Priority | Low |

## FR 15: Sign in button

|  |  |
| --- | --- |
| Identifier | FR-15 |
| Title | Sign in button |
| Requirement | It will send the form data to server. |
| Source |  |
| Rationale | Form data contains user information. It needs to be stored in server, so user can later log in to account |
| Restrictions and Risk | All fields must be filled i.e. user-name, password |
| Dependencies | FR-13, FR-14 |
| Priority | High |

## FR 16: Old Password

|  |  |
| --- | --- |
| Identifier | FR-16 |
| Title | Old Password |
| Requirement | User needs to enter old password for his/her account to reset. |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password is needed to log in to account |
| Dependencies | FR-2 |
| Priority | Medium |

## 5.FR 17: New Password

|  |  |
| --- | --- |
| Identifier | FR-17 |
| Title | New Password |
| Requirement | User needs to new a password for his/her account. |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password must be 8 character long |
| Dependencies | None |
| Priority | Medium |

## FR 18: Confirm Password

|  |  |
| --- | --- |
| Identifier | FR-18 |
| Title | Confirm Password |
| Requirement | User needs to confirm before setting a new password for his/her account |
| Source | Umer, Yusra |
| Rationale | Password stops unauthorized access to account |
| Restrictions and Risk | Password must be 8 character long |
| Dependencies | FR-17 |
| Priority | Medium |

## FR 19: Submit button

|  |  |
| --- | --- |
| Identifier | FR-19 |
| Title | Submit button |
| Requirement | It will send the data to server. |
| Source | Umer, Yusra |
| Rationale | The data needs to be stored in server, so user can later log in to account |
| Restrictions and Risk | All fields must be filled. |
| Dependencies | FR-16, FR-17, FR-18 |
| Priority | Medium |

## FR 20: Name

|  |  |
| --- | --- |
| Identifier | FR-20 |
| Title | Name |
| Requirement | It will show the user’s name that user provided in account |
| Source | Yusra, Umer |
| Rationale | User can give their profile a name, so others can view their name |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Low |

## FR 21: Profession

|  |  |
| --- | --- |
| Identifier | FR-21 |
| Title | Profession |
| Requirement | It will display users Profession |
| Source | Yusra, Umer |
| Rationale | User can view their date of birth. Other users can also view date of birth |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Low |

## FR 22: Abouts

|  |  |
| --- | --- |
| Identifier | FR-22 |
| Title | Abouts |
| Requirement | It contains all of user personal information. |
| Source | Umer, Yusra |
| Rationale | Users can view their profile and other users can also view their profile. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Low |

## FR 23: Nationality

|  |  |
| --- | --- |
| Identifier | FR-23 |
| Title | Nationality |
| Requirement | It will display user nationality. |
| Source | Yusra, Umer |
| Rationale | Users can view their nationality and others users can also view it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Low |

## FR 24: Date of Birth

|  |  |
| --- | --- |
| Identifier | FR-24 |
| Title | Date of Birth |
| Requirement | It will ask the user to enter his/her date of birth. |
| Source | Umer, Yusra |
| Rationale | User can view their date of birth and other users can also view it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Low |

## FR 25: Edit Nationality

|  |  |
| --- | --- |
| Identifier | FR-25 |
| Title | Edit Nationality |
| Requirement | It will allow to edit the user’s nationality that user provided in account |
| Source | Yusra, Umer |
| Rationale | User can give their nationality, so that others can view it. |
| Restrictions and Risk | Nationality must be entered. |
| Dependencies | None |
| Priority | Low |

## FR 26: Edit Name

|  |  |
| --- | --- |
| Identifier | FR-26 |
| Title | Edit Name |
| Requirement | It will allow to edit the user’s name that user provided in account |
| Source | Yusra, Umer |
| Rationale | User can give their profile a name, so others can view their name |
| Restrictions and Risk | Name must be entered. |
| Dependencies | FR-20 |
| Priority | Low |

## FR 27: Edit Date of birth

|  |  |
| --- | --- |
| Identifier | FR-27 |
| Title | Edit Date of birth |
| Requirement | It will edit user date of birth |
| Source | Yusra, Umer |
| Rationale | User can view their date of birth. Other users can also view date of birth |
| Restrictions and Risk | Date of birth must already be provided |
| Dependencies | FR-24 |
| Priority | Low |

## FR 28: Edit Profession

|  |  |
| --- | --- |
| Identifier | FR-28 |
| Title | Edit Profession |
| Requirement | It will edit the user’s profession |
| Source | Yusra, Umer |
| Rationale | Users can view their profession and other users can also view it. |
| Restrictions and Risk | None |
| Dependencies | FR-22 |
| Priority | Low |

## FR 29: Documents

|  |  |
| --- | --- |
| Identifier | FR-29 |
| Title | Documents |
| Requirement | It contains documents shared by users. |
| Source | Yusra, Umer |
| Rationale | Users can view documents shared and other users can also view it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 30: Delete Shared Documents from Profile

|  |  |
| --- | --- |
| Identifier | FR-30 |
| Title | Delete Shared Documents from Profile |
| Requirement | It deletes the document that he/she shared with other users. |
| Source | Yusra, Umer |
| Rationale | Users share and delete the documents they want other users to view. |
| Restrictions and Risk | Document must be shared. |
| Dependencies | FR-24 |
| Priority | Low |

## FR 31: View Documents

|  |  |
| --- | --- |
| Identifier | FR-31 |
| Title | View Documents |
| Requirement | It allows other users to view documents shared by users. |
| Source | Yusra, Umer |
| Rationale | Users can view documents shared by other users. |
| Restrictions and Risk | Document must be shared. |
| Dependencies | None |
| Priority | High |

## FR 32: View Profile Picture

|  |  |
| --- | --- |
| Identifier | FR-32 |
| Title | View Profile Picture |
| Requirement | It will display user Profile picture to other users. |
| Source | Yusra, Umer |
| Rationale | User can view their profile picture and other users can also view it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Medium |

## FR 33: Log out

|  |  |
| --- | --- |
| Identifier | FR-33 |
| Title | Log out |
| Requirement | User can log out of their account. |
| Source | Yusra, Umer |
| Rationale | User cannot use Data Science tools. |
| Restrictions and Risk | None |
| Dependencies | FR-1, FR-2 |
| Priority | Low |

## FR 34: Confirm logout

|  |  |
| --- | --- |
| Identifier | FR-34 |
| Title | Confirm logout |
| Requirement | It will ask for confirmation to log out. |
| Source | Yusra, Umer |
| Rationale | It will prevent the mistaken log out. |
| Restrictions and Risk | None |
| Dependencies | FR-33 |
| Priority | Medium |

## FR 35: Change Profile Picture

|  |  |
| --- | --- |
| Identifier | FR-35 |
| Title | Change Profile Picture |
| Requirement | It will the user to change profile picture. |
| Source | Yusra, Umer |
| Rationale | User can select different picture from computer to replace as profile. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 36: Search

|  |  |
| --- | --- |
| Identifier | FR-36 |
| Title | Search |
| Requirement | It allows user to search for other user’s profile. |
| Source | Yusra, Umer |
| Rationale | It will help users to view other users profile |
| Restrictions and Risk | User profile must exist in system. |
| Dependencies | None |
| Priority | High |

## FR 37: View Profile

|  |  |
| --- | --- |
| Identifier | FR-37 |
| Title | View Profile |
| Requirement | It will allow users to view other users profile. |
| Source | Yusra, Umer |
| Rationale | Users can view documents shared by users and view their personal information. |
| Restrictions and Risk | None |
| Dependencies | FR-36 |
| Priority | High |

## FR 38: Select Profile

|  |  |
| --- | --- |
| Identifier | FR-38 |
| Title | Select Profile |
| Requirement | It allows users to select user profile from multiple user profiles searched. |
| Source | Yusra, Umer |
| Rationale | User can view user profile. |
| Restrictions and Risk | Account must exist |
| Dependencies | FR-36 |
| Priority | High |

## FR 39: Search Button

|  |  |
| --- | --- |
| Identifier | FR-39 |
| Title | Search Button |
| Requirement | It allows user to search for user. |
| Source | Yusra, Umer |
| Rationale | User can view users profiles. |
| Restrictions and Risk | User name must be typed |
| Dependencies | FR-35 |
| Priority | High |

## FR 40: Upload document

|  |  |
| --- | --- |
| Identifier | FR-40 |
| Title | Upload document |
| Requirement | It allows user to upload document from computer. |
| Source | Yusra, Umer |
| Rationale | User can now perform data science tools. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 41: Upload PDF

|  |  |
| --- | --- |
| Identifier | FR-41 |
| Title | Upload PDF |
| Requirement | It allows user to upload pdf documents |
| Source | Yusra, Umer |
| Rationale | User can now perform data science tools on pdf document. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 42: Upload Scanned Images

|  |  |
| --- | --- |
| Identifier | FR-42 |
| Title | Upload Scanned Images |
| Requirement | It allows user to upload Scanned images. |
| Source | Yusra, Umer |
| Rationale | User can now perform data science tools on Scanned images. |
| Restrictions and Risk | Text must be clear in Scanned Images. |
| Dependencies | None |
| Priority | High |

## FR 43: Web Scrapping

|  |  |
| --- | --- |
| Identifier | FR-43 |
| Title | Web Scrapping |
| Requirement | It allows user to provide link so that system extract document from there. |
| Source | Yusra, Umer |
| Rationale | User can now perform data science tools on document. |
| Restrictions and Risk | Link must contain documents. |
| Dependencies | None |
| Priority | High |

## FR 44: Upload from epub

|  |  |
| --- | --- |
| Identifier | FR-44 |
| Title | Upload from epub |
| Requirement | It allows user to upload document from epub. |
| Source | Umer, Yusra |
| Rationale | User can now perform data science tools on document from epub. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 45: Upload from mobi

|  |  |
| --- | --- |
| Identifier | FR-45 |
| Title | Upload from mobi |
| Requirement | It allows user to upload document from mobi. |
| Source | Umer, Yusra |
| Rationale | User can now perform data science tools on document from mobi. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 46: Upload from divu

|  |  |
| --- | --- |
| Identifier | FR-46 |
| Title | Upload from divu |
| Requirement | It allows user to upload document from divu. |
| Source | Umer, Yusra |
| Rationale | User can now perform data science tools on document from divu. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 47: Editable Document

|  |  |
| --- | --- |
| Identifier | FR-47 |
| Title | Editable Document |
| Requirement | It converts uploaded document into editable form. |
| Source | Yusra, Umer |
| Rationale | User can view editable document. |
| Restrictions and Risk | None |
| Dependencies | FR-41, FR-42, FR-43, FR-44, FR-45, FR-46 |
| Priority | High |

## FR 48: Edit Text

|  |  |
| --- | --- |
| Identifier | FR-48 |
| Title | Edit Text |
| Requirement | It allows user to edit text in editable document. |
| Source | Yusra, Umer |
| Rationale | User can change text in uploaded document |
| Restrictions and Risk | None |
| Dependencies | FR-47 |
| Priority | Medium |

## FR 49: Delete Text

|  |  |
| --- | --- |
| Identifier | FR-49 |
| Title | Delete Text |
| Requirement | It allows user to delete text in editable document. |
| Source | Yusra, Umer |
| Rationale | User can change text in uploaded document |
| Restrictions and Risk | None |
| Dependencies | FR-47 |
| Priority | Medium |

## FR 50: Update Text

|  |  |
| --- | --- |
| Identifier | FR-50 |
| Title | Update Text |
| Requirement | It allows user to update text in editable document. |
| Source | Yusra, Umer |
| Rationale | User can change text in uploaded document |
| Restrictions and Risk | None |
| Dependencies | FR-47 |
| Priority | Medium |

## FR 51: Data Cleaning Tools

|  |  |
| --- | --- |
| Identifier | FR-51 |
| Title | Data Cleaning Tools |
| Requirement | It allows user to apply various data cleaning tools on uploaded document |
| Source | Umer, Yusra |
| Rationale | User can make the document in uppercase, lowercase, proper case and remove non-alphabetic characters from text. |
| Restrictions and Risk | Document must be uploaded |
| Dependencies | FR-40 |
| Priority | Medium |

## FR 52: Remove extra spaces

|  |  |
| --- | --- |
| Identifier | FR-52 |
| Title | Remove extra spaces |
| Requirement | It will allow user to remove extra spaces in document. |
| Source | Yusra, Umer |
| Rationale | User can make document more clean and clear. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | Medium |

## FR 53: Uppercase

|  |  |
| --- | --- |
| Identifier | FR-53 |
| Title | Uppercase |
| Requirement | It will allow user to convert document into uppercase. |
| Source | Yusra, Umer |
| Rationale | This task is done in just one button click. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | Medium |

## FR 54: Lowercase

|  |  |
| --- | --- |
| Identifier | FR-54 |
| Title | Lowercase |
| Requirement | It will allow user to convert document into lowercase. |
| Source | Yusra, Umer |
| Rationale | This task is done in just one button click. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | Medium |

## FR 55: Proper case

|  |  |
| --- | --- |
| Identifier | FR-55 |
| Title | Proper case |
| Requirement | It will allow user to convert document into proper case. |
| Source | Yusra, Umer |
| Rationale | This task is done in just one button click. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | Medium |

## FR 56: Remove non-alphabetic characters

|  |  |
| --- | --- |
| Identifier | FR-56 |
| Title | Remove non-alphabetic characters |
| Requirement | It will allow user to remove non-alphabetic characters from document. |
| Source | Yusra, Umer |
| Rationale | This task is done in just one button click. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | Medium |

## FR 57: Data Science Toolkit

|  |  |
| --- | --- |
| Identifier | FR-57 |
| Title | Data Science Toolkit |
| Requirement | It will allow user to implement Data Science tools on document. |
| Source | Yusra, Umer |
| Rationale | User can apply data science tools. |
| Restrictions and Risk | Document must be selected. |
| Dependencies | FR-51 |
| Priority | High |

## FR 58: Select Document

|  |  |
| --- | --- |
| Identifier | FR-58 |
| Title | Select Document |
| Requirement | It allows user to select document on which he/she wants to implement tools. |
| Source | Umer, Yusra |
| Rationale | User can now apply tools. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-51 |
| Priority | High |

## FR 59: Text Summarization

|  |  |
| --- | --- |
| Identifier | FR-59 |
| Title | Text Summarization |
| Requirement | It allows user to implement text summarization on document. |
| Source | Yusra, Umer |
| Rationale | User can view summary of document. |
| Restrictions and Risk | Document must be editable form. |
| Dependencies | FR-47 |
| Priority | High |

## FR 60: Automatic Sentence Size

|  |  |
| --- | --- |
| Identifier | FR-60 |
| Title | Automatic Sentence Size |
| Requirement | System will summarize document in pre-defined lines of sentences. |
| Source | Yusra, Umer |
| Rationale | User can view summary of document. |
| Restrictions and Risk | Text Summarization option must be selected. |
| Dependencies | FR-59 |
| Priority | Medium |

## FR 61: Manual Sentence Size

|  |  |
| --- | --- |
| Identifier | FR-61 |
| Title | Manual Sentence Size |
| Requirement | It allows user to manually select sentence size of summary. |
| Source | Yusra, Umer |
| Rationale | User can view summary of document. |
| Restrictions and Risk | Text Summarization option must be selected. |
| Dependencies | FR-56 |
| Priority | Medium |

## FR 62: Analyze document

|  |  |
| --- | --- |
| Identifier | FR-62 |
| Title | Analyze document |
| Requirement | It allows user to view important sentences in paragraph |
| Source | Yusra, Umer |
| Rationale | User can view important sentences in paragraph |
| Restrictions and Risk | Text Summarization option must be selected. |
| Dependencies | FR-56 |
| Priority | Medium |

## FR 63: Save Text Summarization Result

|  |  |
| --- | --- |
| Identifier | FR-63 |
| Title | Save Text Summarization Result |
| Requirement | It allows user to save results in report section. |
| Source | Yusra, Umer |
| Rationale | User can view result later. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-60, FR-61, FR-62 |
| Priority | Medium |

## FR 64: Download Text Summarization Result

|  |  |
| --- | --- |
| Identifier | FR-64 |
| Title | Download Text Summarization Result |
| Requirement | It allows user to download the text summarization result. |
| Source | Yusra, Umer |
| Rationale | User can view result offline. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-60, FR-61, FR-62 |
| Priority | Medium |

## FR 65: Paste Text for Text Summarization

|  |  |
| --- | --- |
| Identifier | FR-65 |
| Title | Paste Text for Text Summarization |
| Requirement | It allows user to type or copy and paste text for text summarization. |
| Source | Yusra, Umer |
| Rationale | User can view results. |
| Restrictions and Risk | Text summarization option must be selected. |
| Dependencies | FR-59 |
| Priority | High |

## FR 66: Select document for text summarization

|  |  |
| --- | --- |
| Identifier | FR-66 |
| Title | Select document for text summarization. |
| Requirement | It allows user to select document from computer or repository to implement text summarization |
| Source | Yusra, Umer |
| Rationale | User can view summarized text. |
| Restrictions and Risk | Text summarization option must be selected |
| Dependencies | FR-59 |
| Priority | High |

## FR 67: Delete Text for Text Summarization

|  |  |
| --- | --- |
| Identifier | FR-67 |
| Title | Delete Text for Text Summarization |
| Requirement | It allows user to delete text for text summarization. |
| Source | Yusra, Umer |
| Rationale | User can enter new text. |
| Restrictions and Risk | Text summarization option must be selected. |
| Dependencies | FR-59 |
| Priority | High |

## FR 68: Topic Modeling

|  |  |
| --- | --- |
| Identifier | FR-68 |
| Title | Topic Modeling |
| Requirement | It allows user to implement topic modeling on document. |
| Source | Yusra, Umer |
| Rationale | User can put multiple documents into categories. |
| Restrictions and Risk | Documents must be selected. |
| Dependencies | None |
| Priority | High |

## FR 69: Topic Modeling Result button

|  |  |
| --- | --- |
| Identifier | FR-69 |
| Title | Topic Modeling Result button |
| Requirement | It allows user to view results for topic modeling |
| Source | Yusra, Umer |
| Rationale | User can view results. |
| Restrictions and Risk | It may take time. |
| Dependencies | FR-68 |
| Priority | High |

## FR 70: Save Topic Modeling Result

|  |  |
| --- | --- |
| Identifier | FR-70 |
| Title | Save Topic Modeling Result |
| Requirement | It allows user to save results in report section. |
| Source | Yusra, Umer |
| Rationale | User can view result later. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-68, FR-69 |
| Priority | Medium |

## FR 71: Download Topic Modeling Result

|  |  |
| --- | --- |
| Identifier | FR-71 |
| Title | Download Topic Modeling Result |
| Requirement | It allows user to download the topic modeling result. |
| Source | Yusra, Umer |
| Rationale | User can view result offline. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-68, FR-69 |
| Priority | Medium |

## FR 72: Upload documents for Topic Modeling

|  |  |
| --- | --- |
| Identifier | FR-72 |
| Title | Upload documents for Topic Modeling |
| Requirement | It allows user to upload multiple documents for topic modeling. |
| Source | Yusra, Umer |
| Rationale | User can now implement topic modeling. |
| Restrictions and Risk | Text summarization option must be selected. |
| Dependencies | FR-68 |
| Priority | High |

## FR 73: Stemming and Lemmatization

|  |  |
| --- | --- |
| Identifier | FR-73 |
| Title | Stemming and Lemmatization |
| Requirement | This allows system to merge words that are equivalent in meaning for topics in topic modeling. |
| Source | Yusra, Umer |
| Rationale | To make topic modeling process easy. |
| Restrictions and Risk | Lemmatization works better in many cases. |
| Dependencies | FR-72 |
| Priority | Medium |

## FR 74: Topics

|  |  |
| --- | --- |
| Identifier | FR-74 |
| Title | Topics |
| Requirement | This allows user to view multiple topics generated from the documents uploaded by user. |
| Source | Yusra, Umer |
| Rationale | User can find out the content of topics |
| Restrictions and Risk | Result must be calculated |
| Dependencies | FR-69 |
| Priority | High |

## FR 75: Document Category

|  |  |
| --- | --- |
| Identifier | FR-75 |
| Title | Document Category |
| Requirement | It allows user to see which documents are related to which topic and he/she can also view the percentage of relation. |
| Source | Yusra, Umer |
| Rationale | One document can be related to multiple topics. |
| Restrictions and Risk | There can be topic content which is not making topic clear. |
| Dependencies | FR-69 |
| Priority | Medium |

## FR 76: Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-76 |
| Title | Sentiment Analysis |
| Requirement | It allows user to implement sentiment analysis on document uploaded or text written. |
| Source | Yusra, Umer |
| Rationale | User can view results of different emotions in document. |
| Restrictions and Risk | Sentiment Analysis option must be selected. |
| Dependencies | FR-72 |
| Priority | Medium |

## FR 77: Edit Text for sentiment analysis

|  |  |
| --- | --- |
| Identifier | FR-77 |
| Title | Edit Text for sentiment analysis |
| Requirement | It allows to edit text in textbox |
| Source | Yusra, Umer |
| Rationale | User can edit text in textbox. |
| Restrictions and Risk | Sentiment Analysis option must be selected. |
| Dependencies | FR-76 |
| Priority | Low |

## FR 78: Paste Text for Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-78 |
| Title | Paste Text for Sentiment Analysis |
| Requirement | It allows user to copy and paste text into text box for sentiment analysis. |
| Source | Yusra, Umer |
| Rationale | User can copy text from other places and paste it inside textbox. |
| Restrictions and Risk | Sentiment Analysis option must be selected. |
| Dependencies | FR-76 |
| Priority | Medium |

## FR 79: Upload document from computer for Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-79 |
| Title | Upload document from computer for Sentiment Analysis |
| Requirement | It allows user to upload document of various formats like scanned images, pdf etc. |
| Source | Yusra, Umer |
| Rationale | User can use documents of various formats for sentiment analysis. |
| Restrictions and Risk | Sentiment Analysis option must be selected. |
| Dependencies | FR-76 |
| Priority | Medium |

## FR 80: Select document from repository for Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-80 |
| Title | Select document from repository for Sentiment Analysis |
| Requirement | It allows user to select document from repository to implement sentiment analysis on it. |
| Source | Yusra, Umer |
| Rationale | User can use already uploaded documents for sentiment analysis. |
| Restrictions and Risk | Sentiment Analysis option must be selected. |
| Dependencies | FR-76 |
| Priority | Medium |

## FR 81: Result Button for Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-81 |
| Title | Result Button for Sentiment Analysis |
| Requirement | It allows user to view results for document uploaded for sentiment analysis |
| Source | Yusra, Umer |
| Rationale | User can view results. |
| Restrictions and Risk | There must be text in textbox. |
| Dependencies | FR-76 |
| Priority | Medium |

## FR 82: Graph of Sentiment Analysis

|  |  |
| --- | --- |
| Identifier | FR-82 |
| Title | Graph of Sentiment Analysis |
| Requirement | It allows user to view percentage of different emotions like angry, sad, happy, positivity, negativity etc in the document. |
| Source | Yusra, Umer |
| Rationale | User can view different emotions expressed in document. |
| Restrictions and Risk | Result button must be clicked. |
| Dependencies | FR-81 |
| Priority | High |

## FR 83: Download Sentiment Analysis Result

|  |  |
| --- | --- |
| Identifier | FR-83 |
| Title | Download Sentiment Analysis Result |
| Requirement | It allows user to download the sentiment analysis result. |
| Source | Yusra, Umer |
| Rationale | User can view result offline. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-81, FR-82 |
| Priority | Medium |

## 

## FR 84: Save Sentiment Analysis Result

|  |  |
| --- | --- |
| Identifier | FR-84 |
| Title | Save Sentiment Analysis Result |
| Requirement | It allows user to save the sentiment analysis result in report section of website. |
| Source | Yusra, Umer |
| Rationale | User can view results later. |
| Restrictions and Risk | Result must be calculated. |
| Dependencies | FR-81, FR-82 |
| Priority | Medium |

## FR 85: Editable form

|  |  |
| --- | --- |
| Identifier | FR-85 |
| Title | Editable form |
| Requirement | It allows user to view uploaded document of various types like pdf, scanned images, doc etc in editable form. This is done in sentiment analysis and text summarization. |
| Source | Yusra, Umer. |
| Rationale | User can view uploaded documents in editable form so they can change text in document. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | None |
| Priority | High |

## FR 86: Report

|  |  |
| --- | --- |
| Identifier | FR-86 |
| Title | Report |
| Requirement | It is a section in website where all of results of documents shared by users are stored. |
| Source | Yusra, Umer |
| Rationale | User can view different documents in report section |
| Restrictions and Risk | Results must be calculated. |
| Dependencies | None |
| Priority | High |

## FR 87: Open Report

|  |  |
| --- | --- |
| Identifier | FR-87 |
| Title | Open Report |
| Requirement | It allows user to open documents in report section and view results |
| Source | Yusra, Umer |
| Rationale | User can view results and documents are sorted by time. |
| Restrictions and Risk | Results must be calculated. |
| Dependencies | None |
| Priority | Medium |

## FR 88: Download Report

|  |  |
| --- | --- |
| Identifier | FR-88 |
| Title | Download Report |
| Requirement | It allows user to download a document in report section. |
| Source | Yusra, Umer |
| Rationale | User can download a copy on computer to view it offline. |
| Restrictions and Risk | None. |
| Dependencies | Results must be calculated. |
| Priority | Low |

## FR 89: Repository and Sharing

|  |  |
| --- | --- |
| Identifier | FR-89 |
| Title | Repository and Sharing |
| Requirement | It is section in website where documents uploaded by user are stored without changes in it. User can also share it with other users. |
| Source | Yusra, Umer |
| Rationale | User can view multiple document uploaded in this section and can also share it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 90: Share Button

|  |  |
| --- | --- |
| Identifier | FR-90 |
| Title | Share Button |
| Requirement | It is a button in repository and sharing section which allows user to share that document with other users and other users can see that document in feed and also by searching profile of user they can view it in their profile. |
| Source | Yusra, Umer |
| Rationale | User can share documents with other users. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-89 |
| Priority | Medium |

## FR 91: View document in Repository

|  |  |
| --- | --- |
| Identifier | FR-91 |
| Title | View document in Repository. |
| Requirement | It allows users to view documents uploaded by them in repository section by clicking of view button. |
| Source | Umer, Yusra |
| Rationale | User can view document and documents are sorted by date. |
| Restrictions and Risk | Document must be uploaded. |
| Dependencies | FR-89 |
| Priority | Medium |

## FR 92: Upload button in repository section

|  |  |
| --- | --- |
| Identifier | FR-92 |
| Title | Upload button in repository section |
| Requirement | It allows user to upload and save document in repository section without implementing algorithms on it. |
| Source | Yusra, Umer |
| Rationale | Users can upload document and save it in this section so that later they can use it for toolkit. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Medium |

## FR 93: Feed

|  |  |
| --- | --- |
| Identifier | FR-93 |
| Title | Feed |
| Requirement | It allows user to view documents uploaded by users and also download that document. |
| Source | Yusra, Umer |
| Rationale | User can scroll through documents upload by users and also download it. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | High |

## FR 94: Upload button in feed

|  |  |
| --- | --- |
| Identifier | FR-94 |
| Title | Upload button in feed |
| Requirement | It allows user to upload document in repository section and also share it with others automatically. |
| Source | Yusra, Umer |
| Rationale | Users can share document with other users automatically. |
| Restrictions and Risk | None |
| Dependencies | None |
| Priority | Medium |

### Non-functional Requirements

Following are the NFRs for the system.

#### Performance Requirements

The performance requirements of **Data Science Toolkit for Social Scientists** are as follows:

* + 1. **Response Time**

The system would not be slow in most cases but due to some algorithms like topic modeling it may take some time for processing results but the System average response time will be 2ms and maximum would be 5 min.

##### Throughput

The system would be able to respond quickly in most cases by handling 1000 alerts per second.

* + 1. **Capacity**

It will be able to accommodate more than ten thousand user data.

#### Reliability

Following is the reliability of the system.

* + 1. **Availability**

System will be available 24/7.

* + - 1. **Mean Time Between Failures (MTBF)**

The mean time between failures would be less than 6hours

* + - 1. **Mean Time to Repair (MTTR)**

The mean time to repair would be Less than 6 hours

* + - 1. **Maximum Bugs or Defect Rate**

The system will achieve such a standard in which it experiences 2 bugs per hundred of lines of code at maximum.

* + 1. **Usability**

Application will confirm certain common International usability standards such as user interface design and usability assurance. Usability assurance standards provide guidelines and some requirements on how to prepare, run, and document usability tests to make sure that product is usable.

#### Design Constraints

Following are the design constraints of the system.

* + 1. **Visual Studio Code**

The software tool would be used to develop the web application. Its latest version 16.4 will be used to make this application.

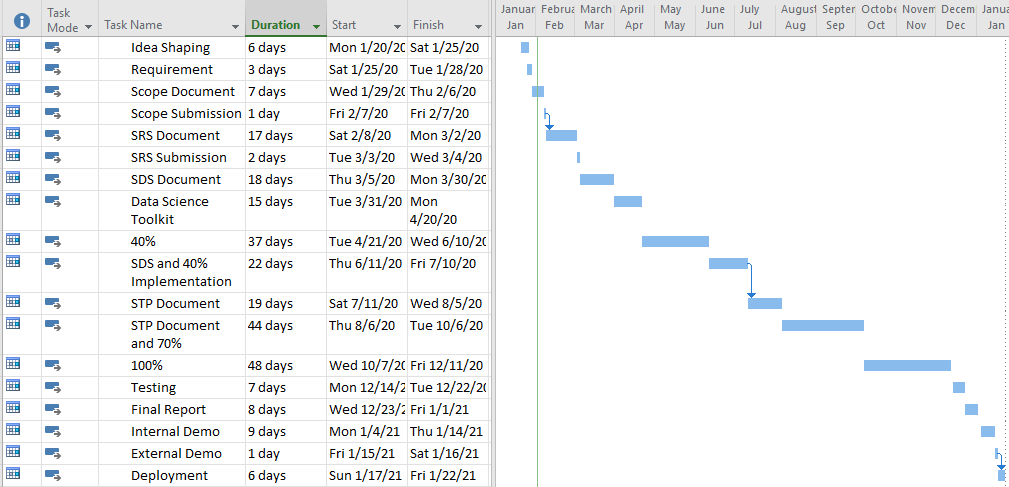
* + 1. **Node.js/Flask**

This software tool would be used to develop the database of the system.

#### Security

System should have password encryption. The database will not allow an authorized user to modify the data and thus it will be hard to get into the system.

## Gantt chart



**Figure 3: Gantt chart**

## Conclusion

This document will help the developer and customer to understand the details of the application as a whole including all its requirements. The document will not only analyze the requirements but also the system.

## References

**Web links:**

* <http://www.datasciencetoolkit.org/>
* <https://resoomer.com/en/>

**Book links:**

**Big Data Glossary A Guide to Public Data, First Edition, Pete Warden.**

* + https://www.amazon.com/Big-Data-Glossary-Guide-Generation/dp/1449314597

**Data Source Handbook A Guide to the New Generation of Data Tools, First edition, Pete Warden.**

* + https://www.amazon.com/Data-Source-Handbook-Guide-Public/dp/1449303145

## Plagiarism Report

Following is the plagiarism report of the document:

**Figure 4: Plagarism Report**