DIABETES DETECTION

BY

GROUP A

RECESS PROJECT-SYSTEM REQUIREMENTS SPECIFICATION

DEPARTMENT OF NETWORKS

SCHOOL OF COMPUTING AND INFORTION TECHNOLOGY

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This documentation provides a high level over view of the diabetes detection system. It examines the functional modules that this system provides to the data analyst and how the Analyst interacts with the system to perform these functionalities.

The diabetes detection system provides functional modules such as data loading, data cleaning/wrangling, visualization, application of machine learning algorithm (detection), and evaluation of machine learning algorithm as shown in the use case diagram below.

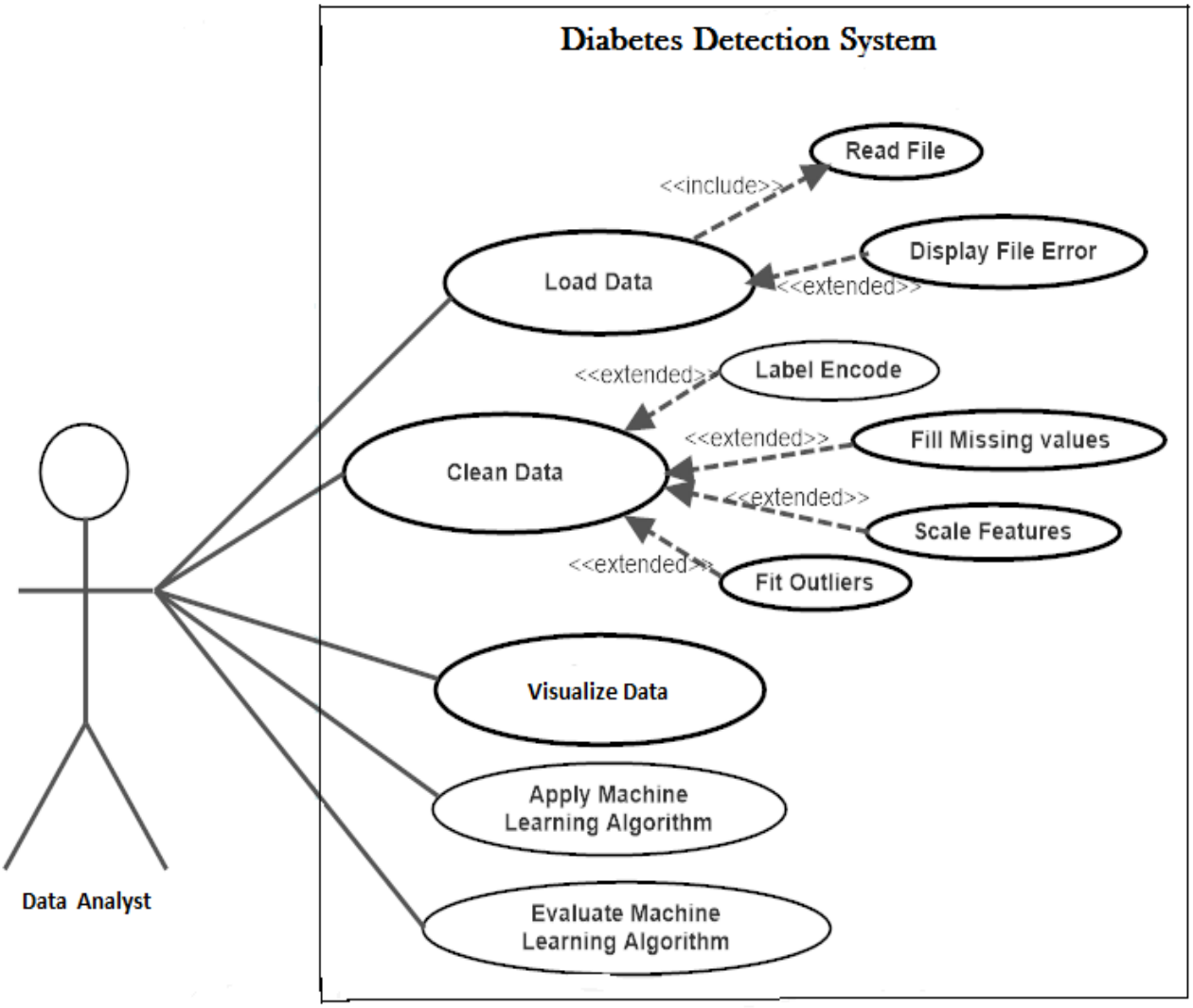

Figure 1.shows a use case diagram for diabetes detection system.

Load Data

Data loading is the first functional module in the system that enables the Analyst to load data into the system. It is represented by the "**Load Data**" use case. Data loading includes another module, file reading which is represented by "**Read File**" use case. This means that each time the analyst execute the "**loads data**" module, "**Read File**" module must also be executed. But when the file is being loaded it may or may not display an error message, hence "**Display File Error**" use case is extended by "**Load Data**" use case in relationship.

Clean Data.

After data is loaded in the system, data cleaning is the next functional module provided by the system. It is represented by "**Clean Data**" use case. "**Clean Data**" use case extends other functional modules such as label encoding, filling missing values, feature scaling, and fitting outliers which are represented by "**Label Encode**", "**Fill Missing Values**", "**Scale Features**", "**Fit Outliers**" use cases respectively. Meaning that each time "**Clean Data**" module is being executed, any or even all of the above extended modules may be executed. When this module is executed the resultant is a clean data ready for visualization and modeling.

Visualize Data

At this point the system enables the analyst to visualize the data. This module enables the analyst to plot different graphs and plots from the clean data. When this module is executed the output is the graphical representation of the data which enable the analyst to view the skewness of the data.

Apply Machine Learning Algorithm

This module enables the analyst to apply machine learning algorithm on the data to detect the present of diabetes. For this system it uses **Logistic Regration Algorithm.** When this module is executed the outcome is either the present or absent of diabetes.

Evaluation of Machine learning Algorithm

After the transformation of machine learning algorithm, evaluation module enables the analyst to prove the level of correctness of the algorithm. This module is represented by the "**Evaluation of Machine learning Algorithm**" use case. When this module is executed the outcome is the percentage level of accuracy of the algorithm.

All the above functional modules perform the intended activity of our system. At the end of the execution the visualizations and the predicted results will be stored in files which can later be accessed by a web application.

The second use case below shows how the medical personnel interact with the web application.

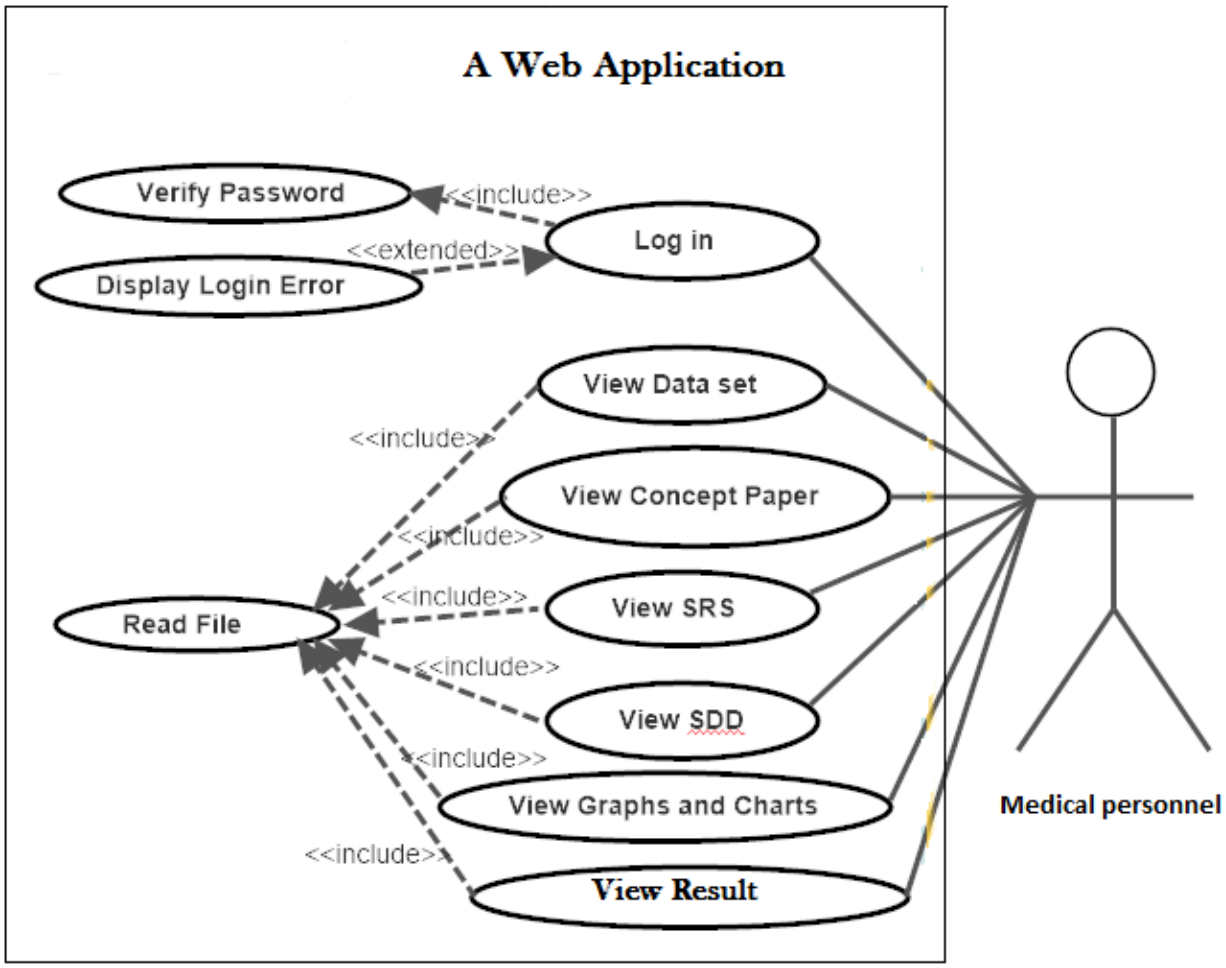

Figure 2.shows a use case diagram for the web application.

Log In

The user should first log in to the system in order to access other system functionalities. This module is represented by "**Log In**" use case. The **Log In module** includes the verification of password module which is represented by "**Verify Password**" use case. Each time the user login his or her password must be verified, but the error message may or may not be displayed. Hence "**Display Login Error**" use case is a module extended by the "**Log In**" use case in relationship.

View Data set

This module allows the user to view the dataset used by this system. When this module is executed it displays dataset in a table format.

View Concept Paper

This module allows the user view the concept paper for this project. When it is executed, the concept paper for this project is displayed.

View SRS

This module allows the user to view the System Requirement Specification for the project. When it is executed, the System Requirement Specification for this project is displayed.

View SDD

This module allows the user to view the System Design Document for this project. When it is executed, the System Design Document for this project is displayed.

View Graphs and Charts

This module allows the user to view graphical representation of the dataset such as bar graphs, histogram, etc. when it is executed the graphs, charts and plots are displayed on the screen.

View result

This module provides the output from the machine learning algorithm detecting whether diabetes is present or not. When it is executed the user shall be in position to see either the present or absent of the diabetes.