Requirement and Design document for Food Inspection

CSP 586
Computer Science
Illinois Institute of Technology

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Project Overview Statement:

Healthy food in today’s fast world is very important and there are many restaurants which provides healthy food, but there are few of the restaurant which don’t provide those. So, there is a need for statistical data analysis to which restaurants provide healthy food. Our project will model restaurants in New York, Chicago, Seattle, San Francisco and Los Angeles and displays the dataset with the inspection result perform on each of the restaurants. We can view the dataset in tabular format, you can also apply filters and visualize the data in charts. It can also download the dataset in csv and JSON format

Feature List:

- User can select different dataset of different cities to know the food inspection score of each city
- User can visualize the dataset in tabular format
- User can see the score of different restaurant in chart such as Line, Bar, pie, pivot, stacked
- User can set filter on columns and rows
- User can export the dataset in JSON or in CSV format

Project Requirements:

1. Dashboard View:

   Selected dataset must be able to load and visualize in tabular format. User must be able to view entire detail of the dataset in table.

2. Load different dataset:

   User can load any dataset from the list of datasets provided. User must given a choice of at least 5 dataset and can choice any one at a time and can view in tabular format

3. Filters

   User can apply filter based on column and row. Column filter is applied to select and deselect the column. Based on the selected column dataset in rendered and displayed back in tabular format. Row filter is applied to select rows based on the criteria selected on column name such as is, is not, contains, greater than, less than and in between.

4. Visualize:

   User must be able to visualize the dataset in chart such as line char, bar chart, pie chart, pivot chart and stacked chart. User can select columns on which charts need to be render. Label data and value data must be selected. When the chart is been displayed is also display the stats of the value data.

5. Stats:

   User must be able to visualize stats to the selected column. Stats such as max, min, count, average and standard deviation must be displayed on the column having integer values.

6. Export dataset:

   User must be able to export the dataset in CSV of in JSON format. User can able filter on the dataset and the filtered dataset must be able to download.

List of Use Cases:

1. Load dataset

   Dataset must be loaded into dashboard and displayed in tabular format.

2. Select Dataset

   User must be able to select any one of the dataset and load the dataset

3. Filter Dataset

   User can apply filter on rows or on column to get the clear understanding of the dataset and the filtered dataset must be able to load in dashboard

4. View Chart

   User can visualize dataset in charts such as bar chart, line chart, pie chart, pivot chart and stacked chart.

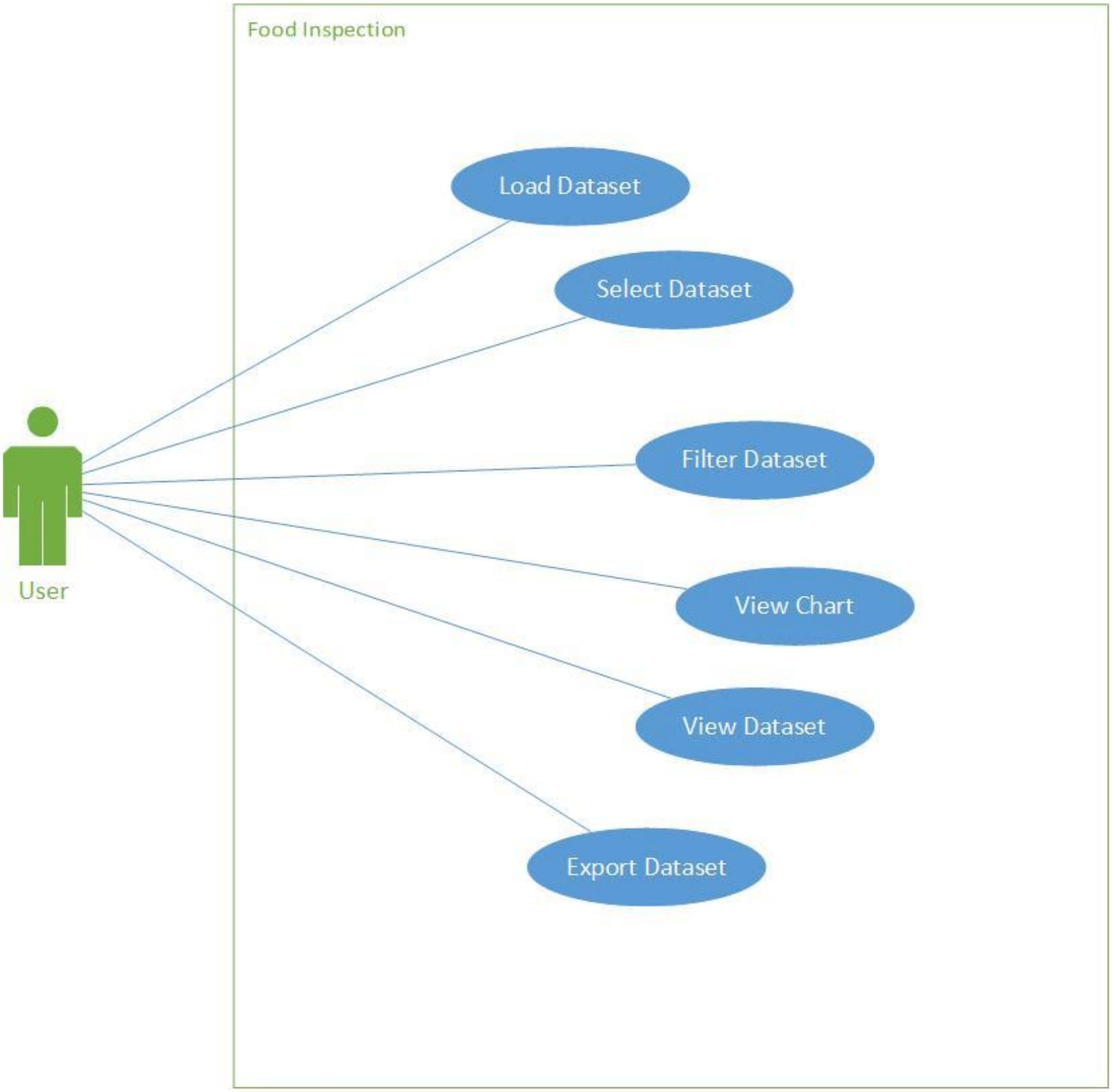
5. Export dataset

   User can download the dataset in csv or in JSON format.

6. View dataset

   User can view dataset in tabular format

Use Case Diagram:



Use Case Text (Fully Dressed Format):

1. Plot Line Chart

Use Case Name	Plot Line chart
Scenario	Plot dataset in bar chart using selected label data and value data
Triggering event	User wants to visualize dataset in line chart
Brief Description	User selects the dataset and select line charts and column for label data and value data is selected. The resultant data is displayed in line chart
Actors	User
Related Use Case	Select Chart options
Stakeholder	User: Line chart is plotted as per selected data
Precondition	Dataset Must be available
Postcondition	Line chart in plotted successfully
Flow of events	• User open dashboard portal • Selects dataset • Select line chart, label data and value data • Plot line chart
Exceptions	Invalid label data and value data selected

2. Select Row Filter

Use Case Name	Select Row filter
Scenario	Select column, parameter and value to apply row filter

Triggering event	User wants to load data as per row filter
Brief Description	User select dataset and apply row filter and select columns, parameters and value and filtered dataset is been displayed in tabular format
Actors	User
Related Use Case	Select Filter Option
Stakeholder	User: dataset displayed as per row filter selected
Precondition	Dataset must be present
Postcondition	Row filter is applied successfully
Flow of events	• User select dataset • Select row filter and select data • Apply Row filter
Exceptions	Dataset is not present

3. View Dataset

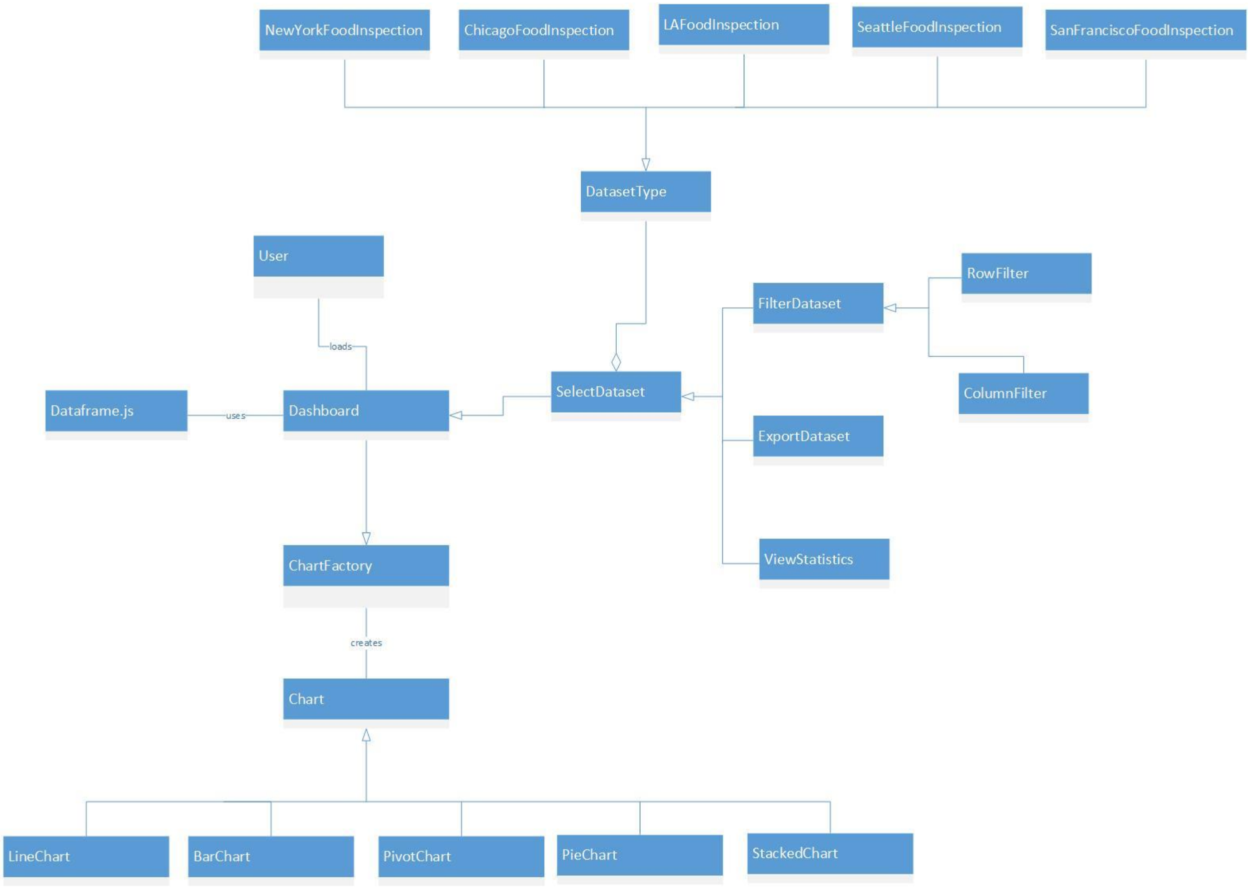
Use Case Name	View Dataset
Scenario	Select the dataset to view
Triggering event	User wants to select any dataset and displayed
Brief Description	User select Dataset he wants to visualize and its viewed in tabular format
Actors	User
Related Use Case	New York Food Inspection, Chicago Food Inspection, Seattle Food Inspection, Los Angeles Food Inspection, San Francisco Food Inspection
Stakeholder	Selected dataset loaded successfully
Precondition	Dataset must be present

Postcondition	Selected dataset is loaded successfully
Flow of events	User select any one dataset at a time and loaded in tabular format
Exceptions	Dataset does not exit

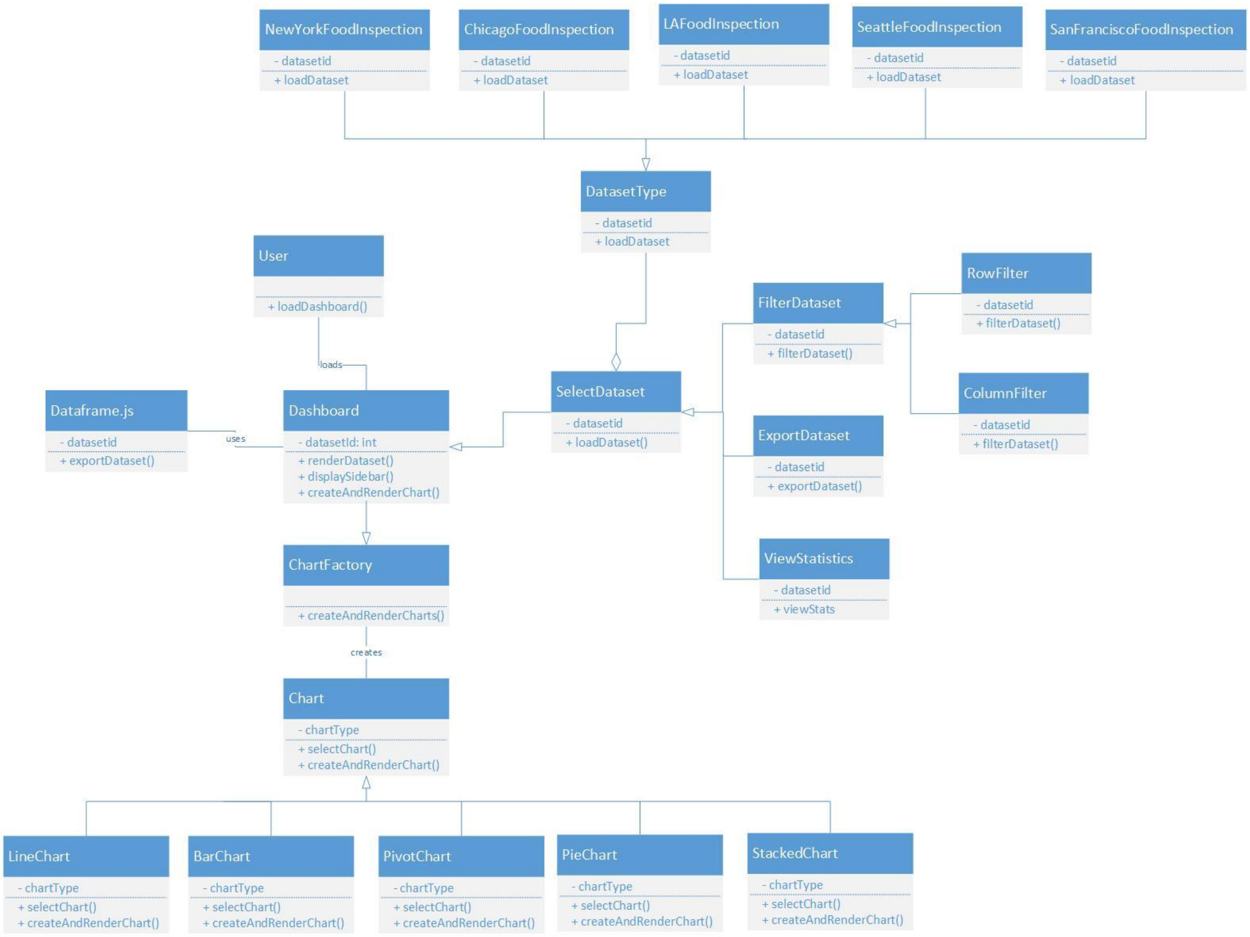
4. Export Dataset in CSV format

Use Case Name	Export Dataset in CSV format
Scenario	Select Export dataset in csv format on hover of export dataset tab
Triggering event	User want to download the dataset
Brief Description	User select the dataset and apply filter if he/she wants and click on export dataset in csv format to download dataset
Actors	User
Related Use Case	Select Export dataset tab
Stakeholder	Dataset is downloaded
Precondition	Dataset must be present
Postcondition	Dataset is downloaded in csv format
Flow of events	• User select dataset • User apply filter if he/ she want • Click on export dataset in csv format
Exceptions	Dataset does not exit

Domain Model Class Diagram

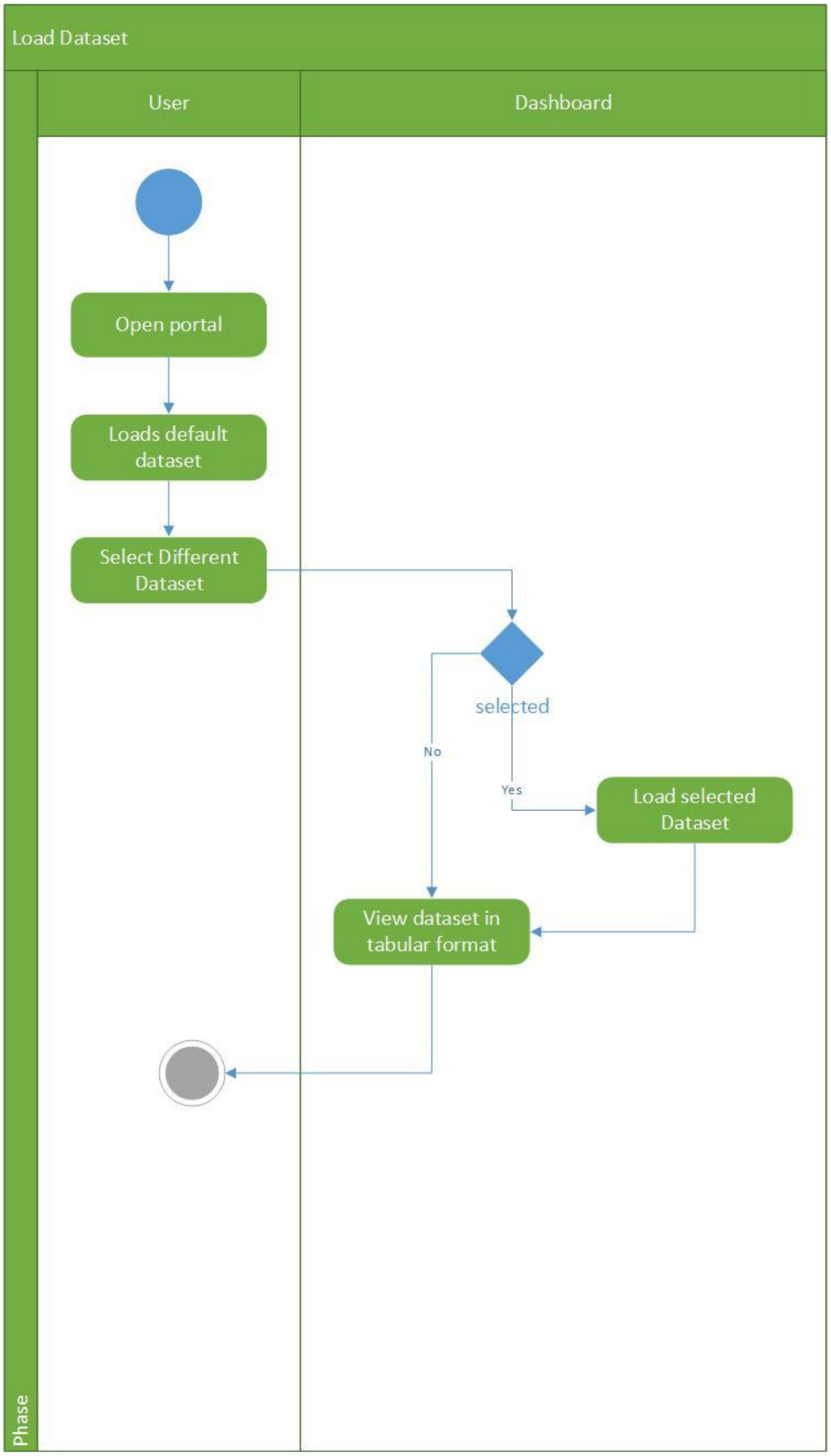


Design Model Class Diagram

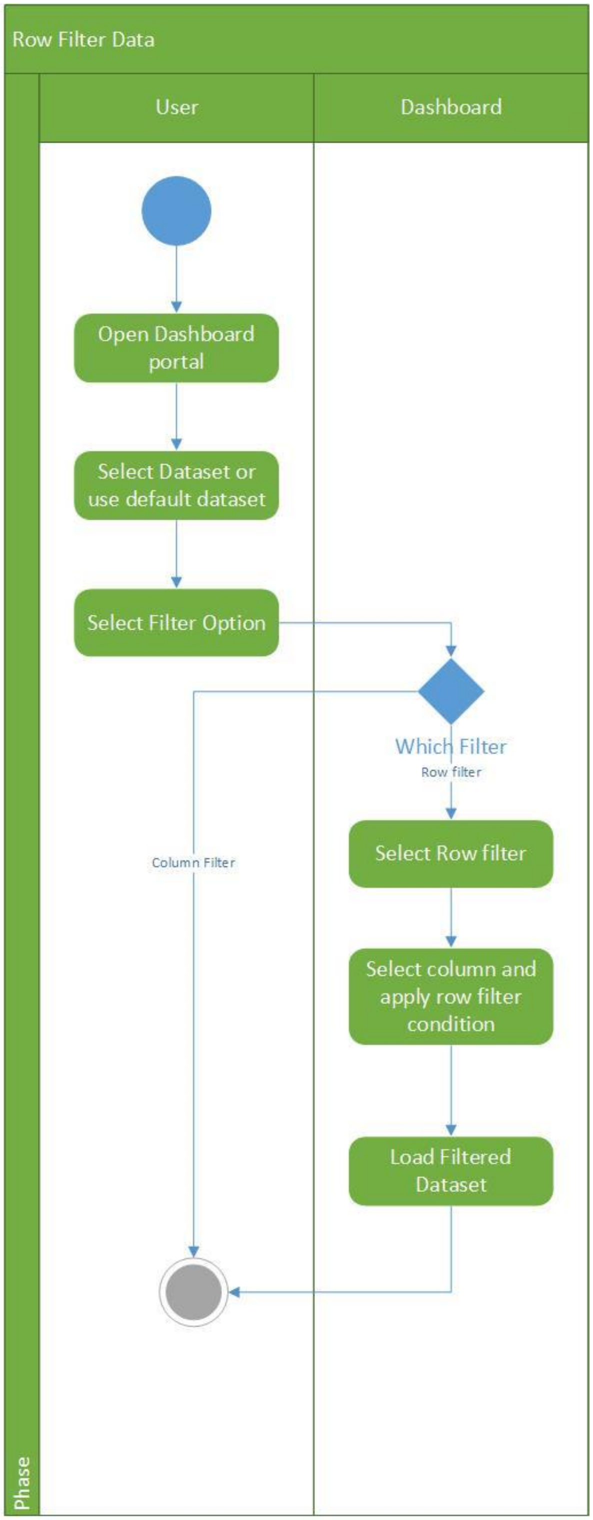


Activity Diagram:

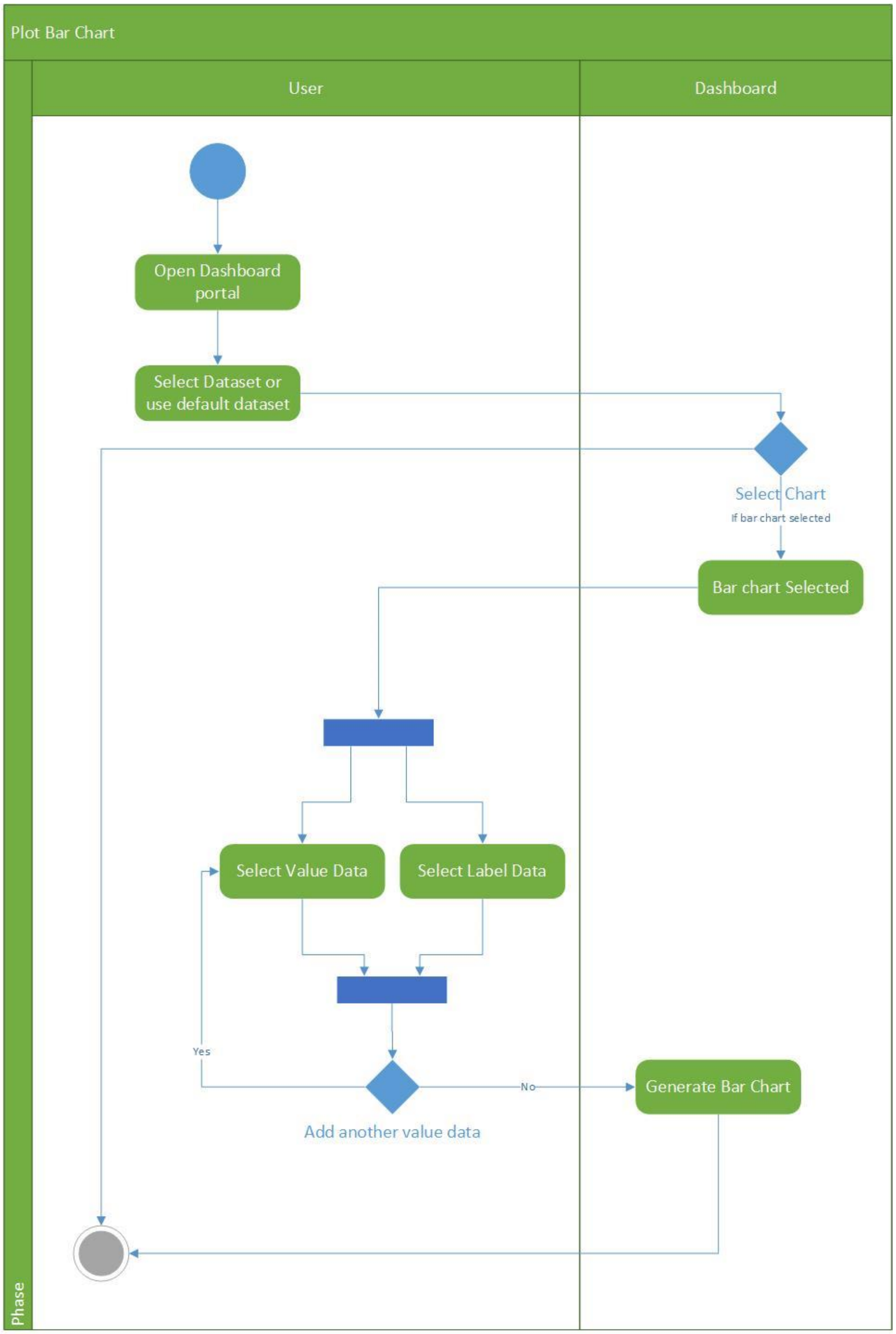
1. Load Dataset



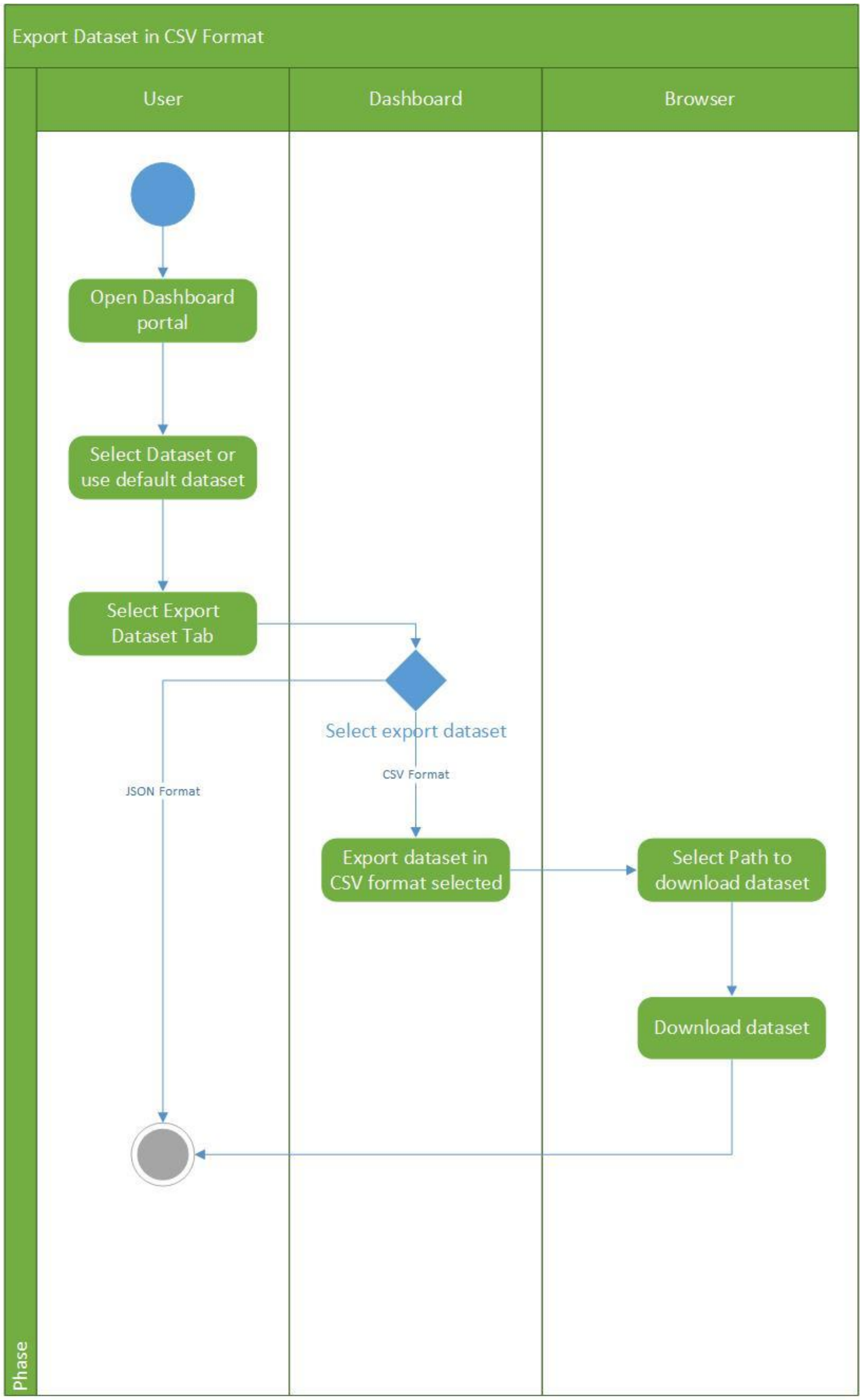
2. Row filter


Row Filter Data
User
Dashboard
Open Dashboard portal
Select Dataset or use default dataset
Select Filter Option
Which Filter
Row filter
Column Filter
Select Row filter
Select column and apply row filter condition
Load Filtered Dataset
Phase

3. Plot bar Chart



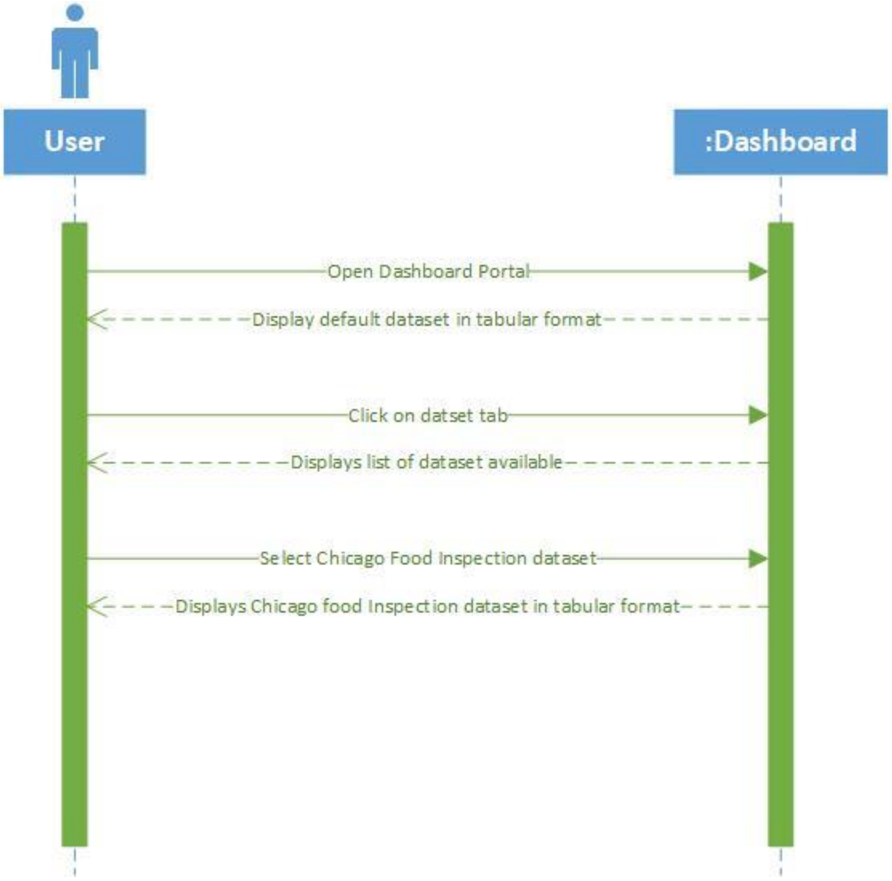
4. Export Dataset in CSV Format


Export Dataset in CSV Format
User
Dashboard
Browser
Phase
Open Dashboard portal
Select Dataset or use default dataset
Select Export Dataset Tab
Select export dataset
JSON Format
CSV Format
Export dataset in CSV format selected
Select Path to download dataset
Download dataset

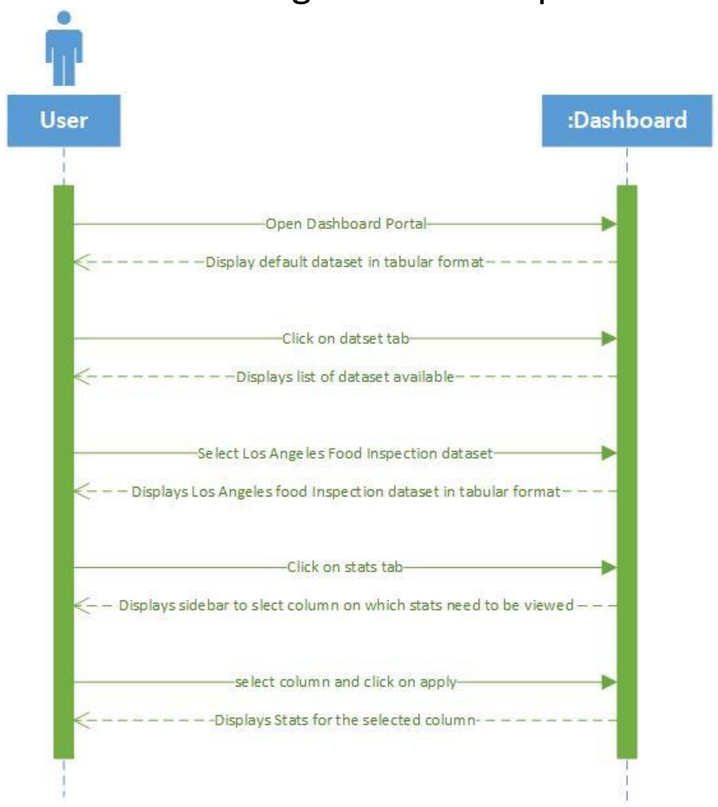
Sequence Diagram

System Sequence Diagram

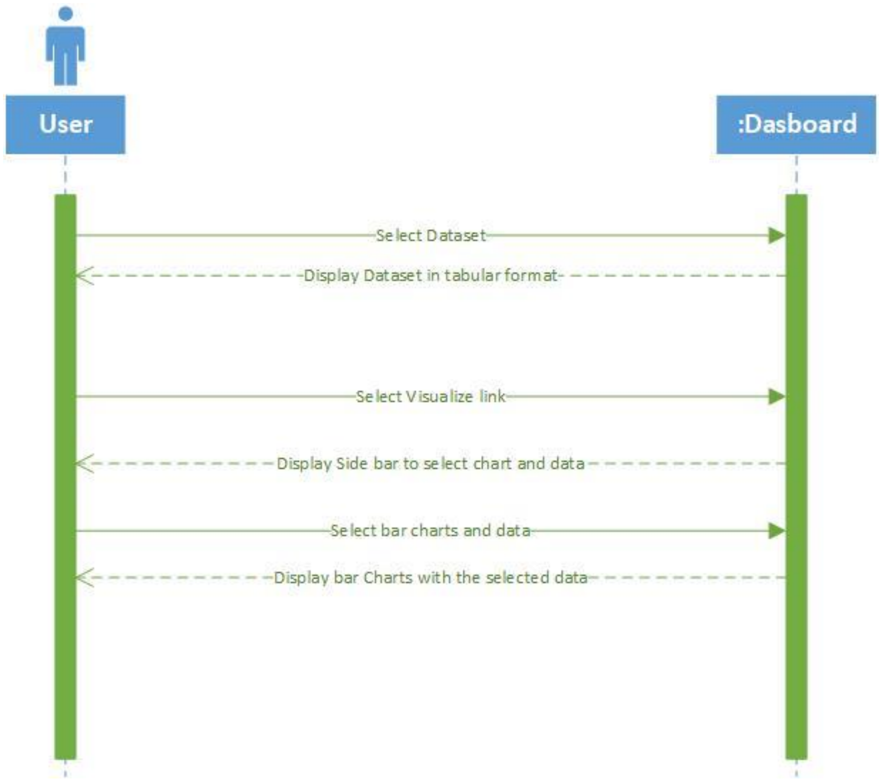
1. View Chicago Restaurant Food Inspection Dataset


User
:Dashboard
Open Dashboard Portal
Display default dataset in tabular format
Click on datset tab
Displays list of dataset available
Select Chicago Food Inspection dataset
Displays Chicago food Inspection dataset in tabular format

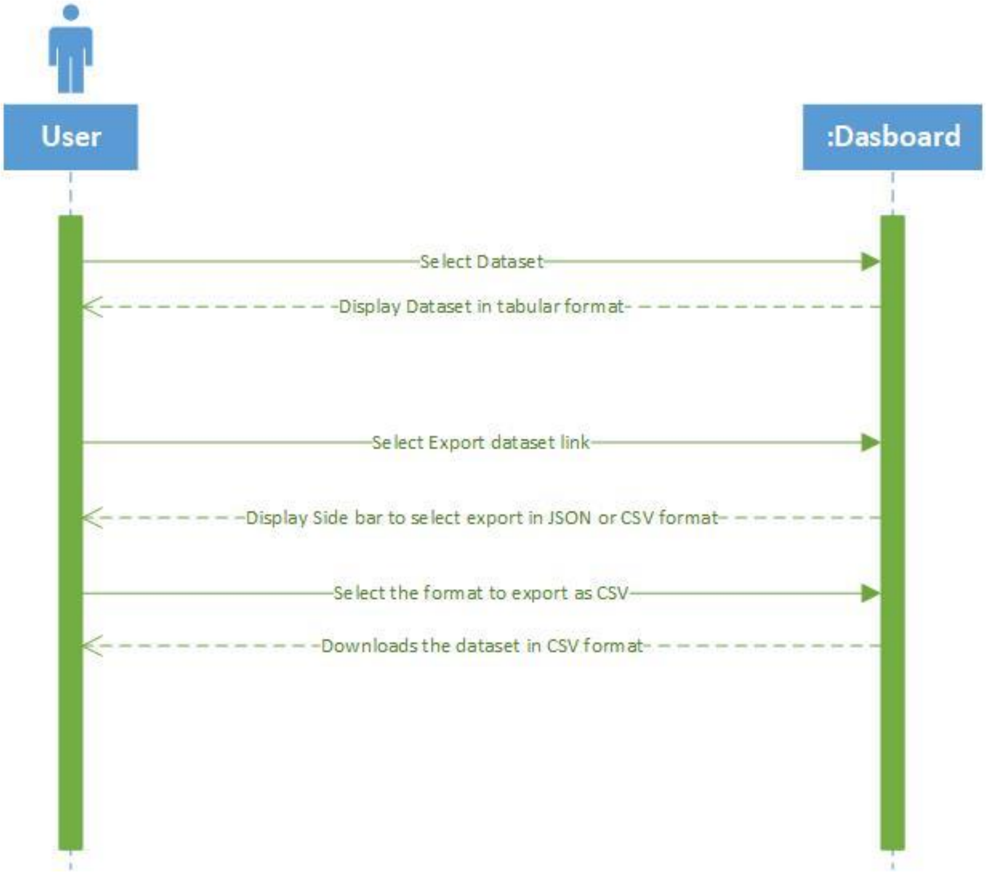
2. View Stats of Los Angeles Food Inspection Dataset


User
:Dashboard
Open Dashboard Portal
Display default dataset in tabular format
Click on datset tab
Displays list of dataset available
Select Los Angeles Food Inspection dataset
Displays Los Angeles food Inspection dataset in tabular format
Click on stats tab
Displays sidebar to slect column on which stats need to be viewed
select column and click on apply
Displays Stats for the selected column

3. Select Bar Chart to view dataset

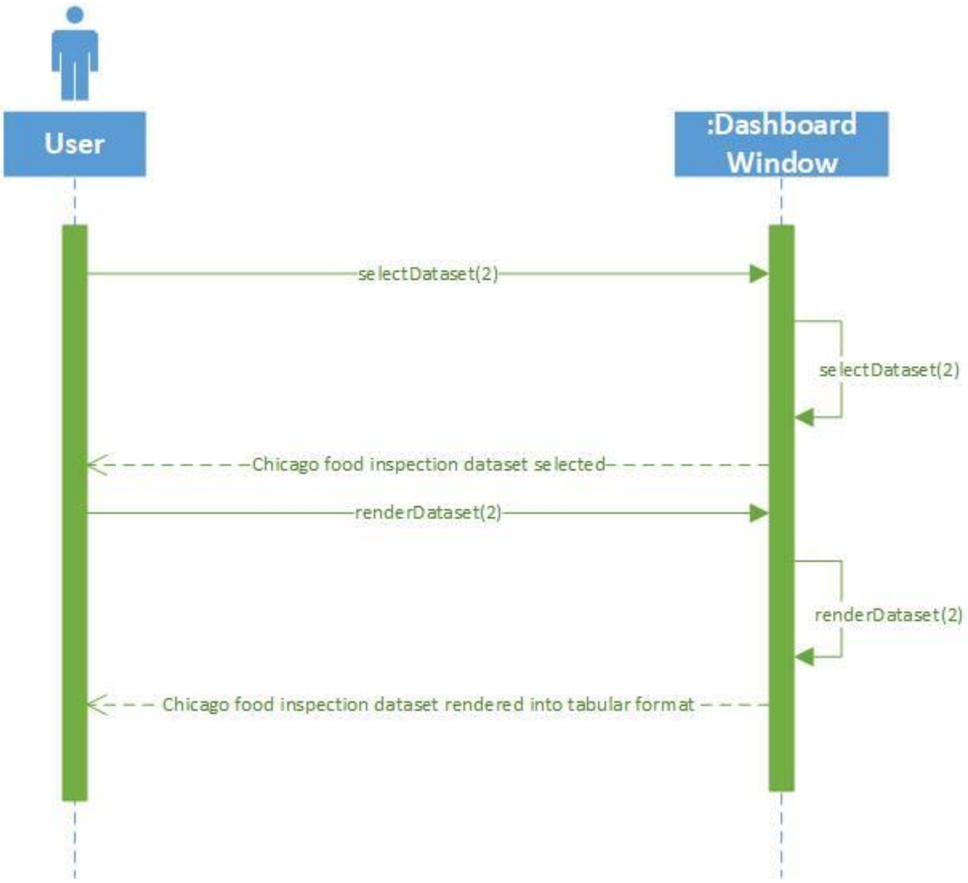

User
:Dasboard
Select Dataset
Display Dataset in tabular format
Select Visualize link
Display Side bar to select chart and data
Select bar charts and data
Display bar Charts with the selected data

4. Export Dataset in CSV format

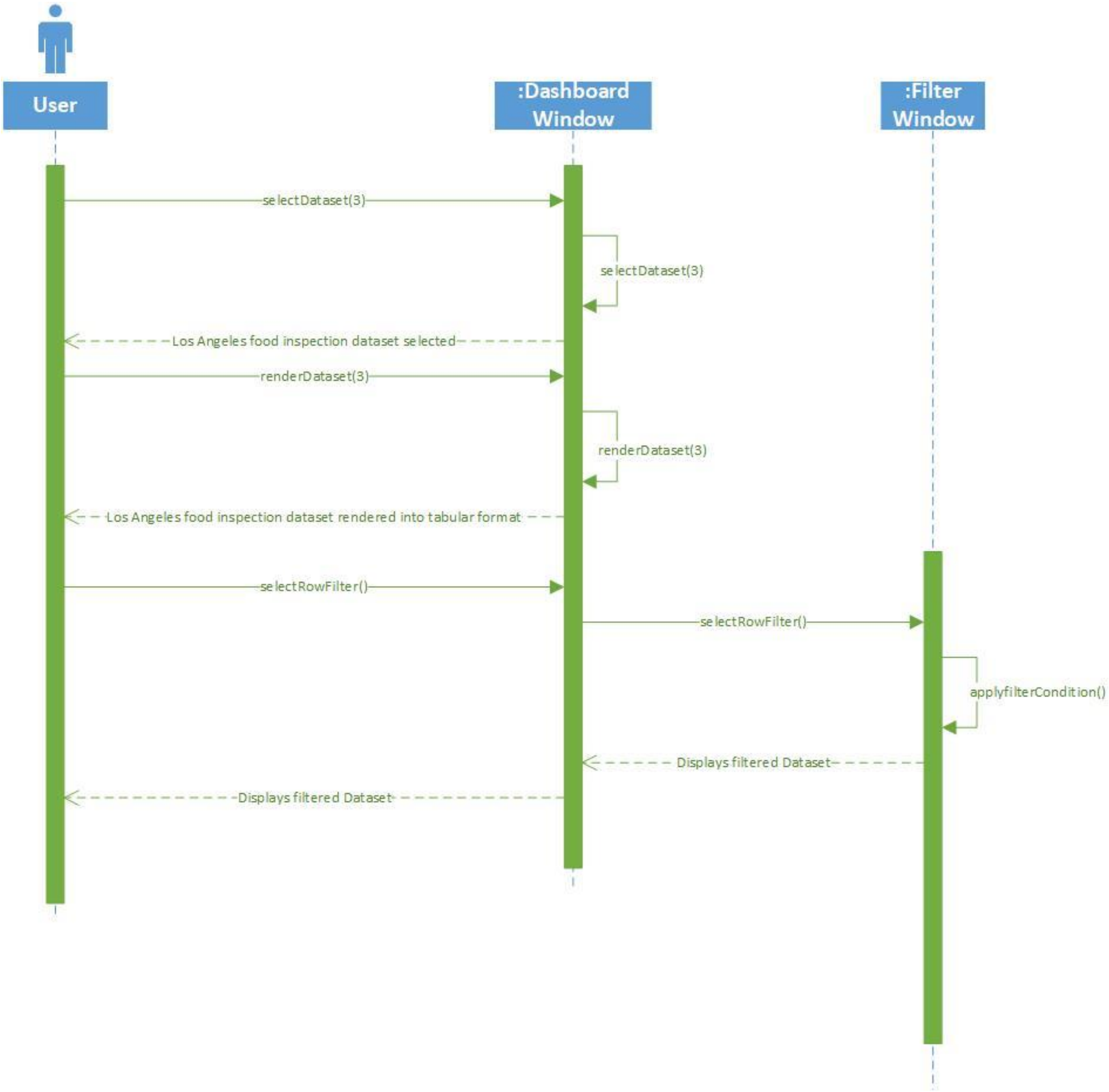

User
:Dasboard
Select Dataset
Display Dataset in tabular format
Select Export dataset link
Display Side bar to select export in JSON or CSV format
Select the format to export as CSV
Downloads the dataset in CSV format

Sequence Interaction Diagram

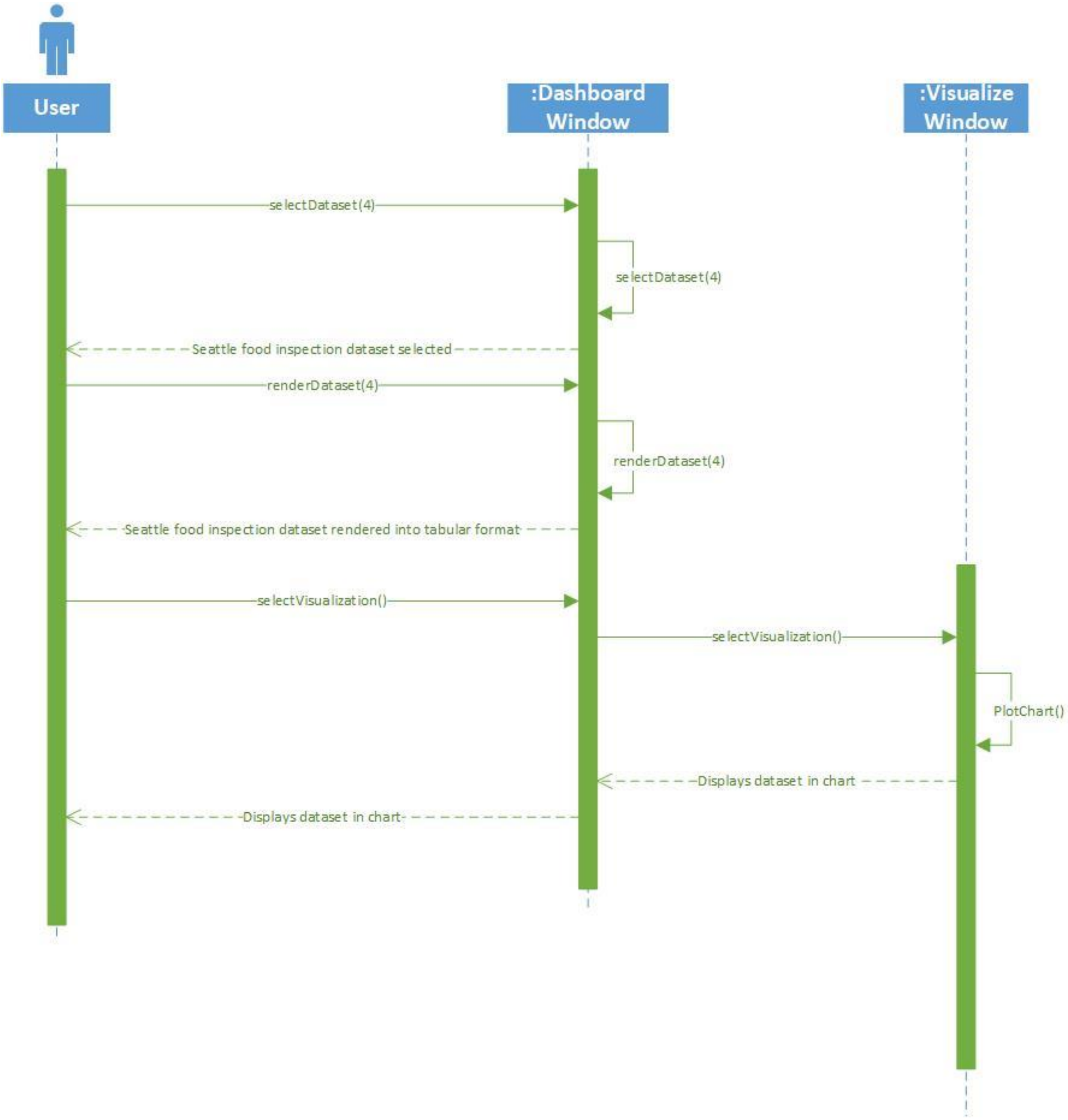
1. View San Francisco Food Inspection dataset:


User
:Dashboard Window
selectDataset(2)
selectDataset(2)
Chicago food inspection dataset selected
renderDataset(2)
renderDataset(2)
Chicago food inspection dataset rendered into tabular format

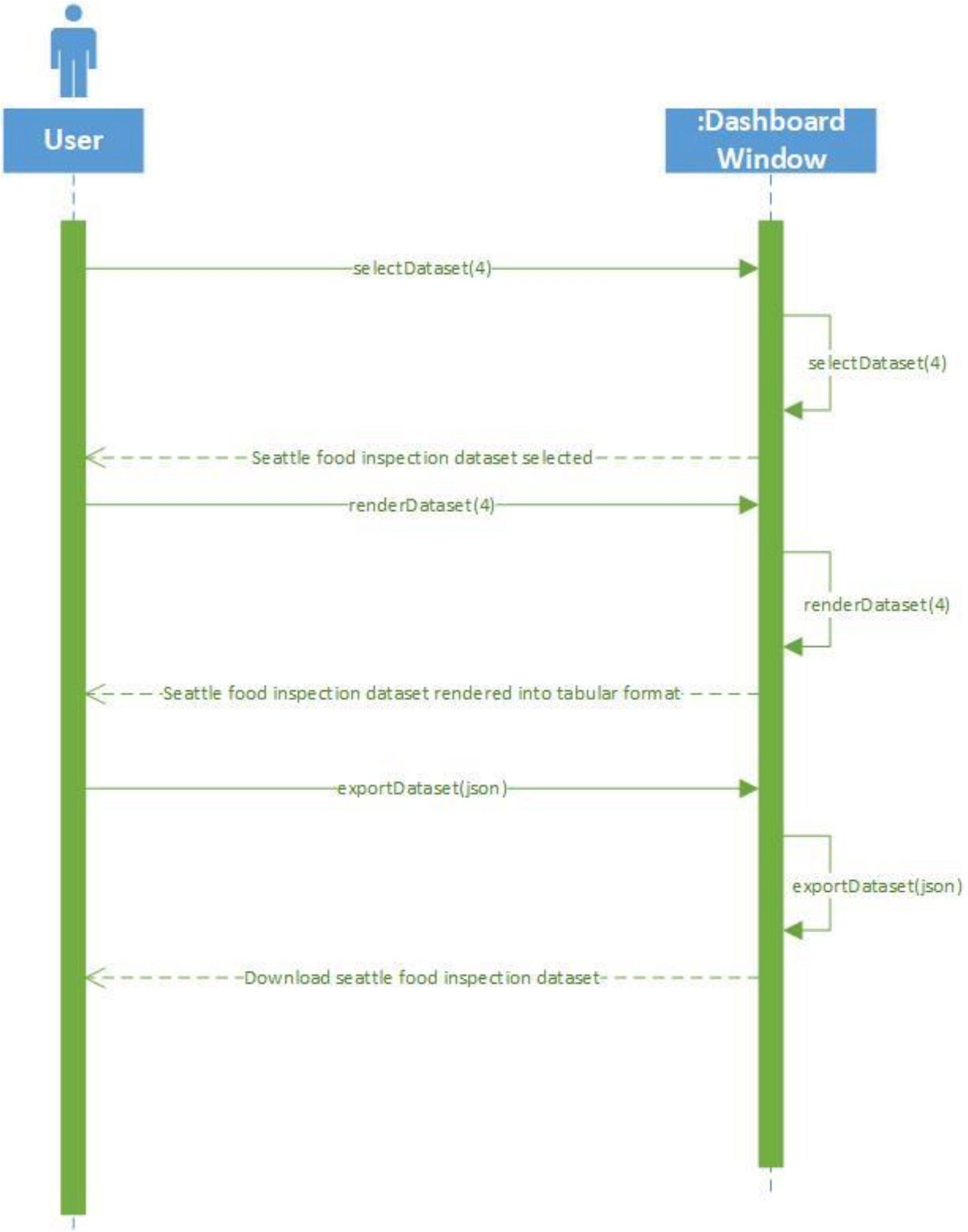
2. Apply Row filter on Los Angeles food inspection dataset


User
:Dashboard Window
:Filter Window
selectDataset(3)
selectDataset(3)
Los Angeles food inspection dataset selected
renderDataset(3)
renderDataset(3)
Los Angeles food inspection dataset rendered into tabular format
selectRowFilter()
selectRowFilter()
applyfilterCondition()
Displays filtered Dataset
Displays filtered Dataset

3. Plot Stacked Chart on Seattle food inspection dataset



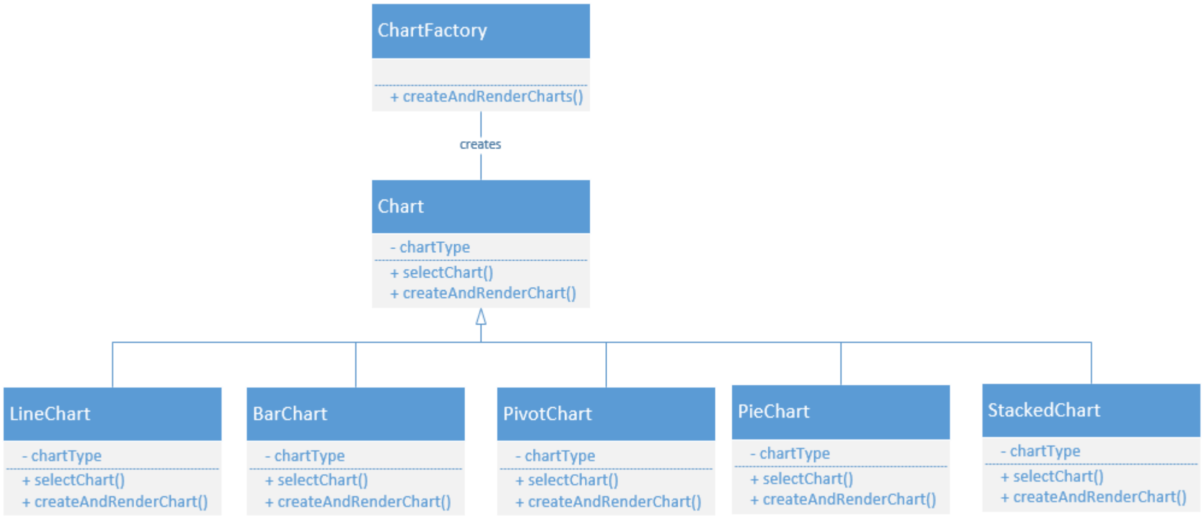
4. Export Seattle food inspection dataset in JSON Format


User
:Dashboard Window
selectDataset(4)
selectDataset(4)
Seattle food inspection dataset selected
renderDataset(4)
renderDataset(4)
Seattle food inspection dataset rendered into tabular format
exportDataset(json)
exportDataset(json)
Download seattle food inspection dataset

Design Pattern

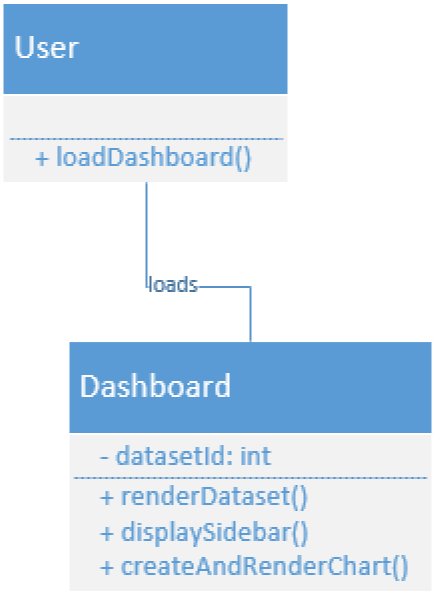
Factory Method Design Pattern

- Factory Method Design Pattern is creational pattern which defines an interface for creating object but allow the sub class to instantiate
- In our system, we have used Factory method design pattern in chartfactory module where chartFactory class has the factory method which indeed calls charts class which is an abstract class and the concrete class such as LineChart. BarChart, PieChart, PivotChart, StackedChart implements the method of chart class



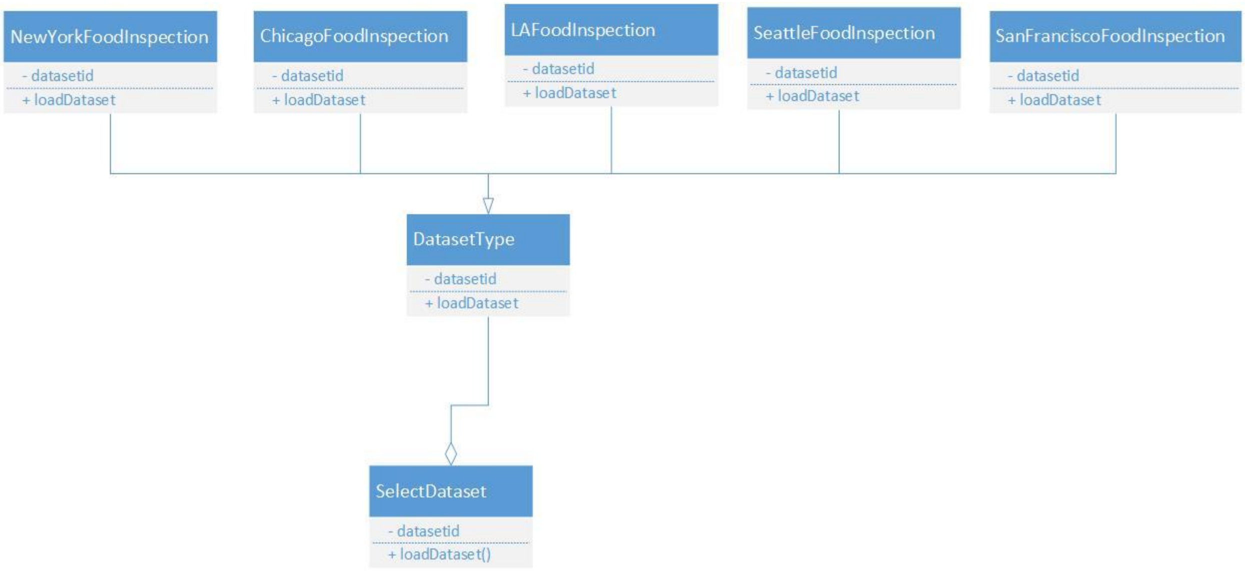
Singleton Design Patten

- Singleton Design Pattern restrict class instantiation and ensures that only a single instance of the class is created at any given point of time and it is accessible globally
- In our system, we have implemented singleton design pattern at Dashboard class module. Object of this class is created only once and it is accessible globally using its object.



Facade Design Pattern

- Facade Design Pattern Simplifies the interface of the complex system and provides a simplified view of the system to the user
- In our system, we have used Facade design pattern in dataset module wherein we can select different dataset and the user can change the dataset easily.


NewYorkFoodInspection
- datasetid
+ loadDataset
ChicagoFoodInspection
- datasetid
+ loadDataset
LAFoodInspection
- datasetid
+ loadDataset
SeattleFoodInspection
- datasetid
+ loadDataset
SanFranciscoFoodInspection
- datasetid
+ loadDataset
DatasetType
- datasetid
+ loadDataset
SelectDataset
- datasetid
+ loadDataset()