Team 16:
COVID-19 Vaccine Data Analysis & Visualization Framework

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Domain & Plugins

Domain definition:
COVID-19 vaccine data analysis & data-visualization in order to present important insights on issues such as total vaccinated people in each state, vaccinated population growth per day, and etc.

Possible Data Plugins:

- CSVDataPlugin
- HTMLDataPlugin
- JSONFileDataPlugin
- JSONAPIDataPlugin
- XMLDataPlugin
- YAMLDataPlugin
- ExcelDataPlugin
- etc.

Possible Display Plugins:

- TotalVaccinedPerDayLineChart
- TotalVeccinedPerStateBarChart
- VaccinedRatePerStateBarChart
- VaccineTypePieChart
- etc.

Data Structures & Transformation

Original Data:

timelineVaccineData:

- List<VaccineDataRow>

lastHourVaccineData:

- List<VaccineDataRow>

population:

- Map<String, Integer>

VaccineDataRow:

- provinceState: String
- date: Time
- vaccineType: String
- dosesAlloc: int
- dosesShipped: int
- dosesAdmin: int
- stageOneDoses: int
- stagetTwoDoses: int

Transformation:

vaccinedRatePerState:

- Map<String, Double>

totalDoses: Long

totalStageOneDoses: Long

totalStageTwoDoses: Long

...

Generality & Specificity

Key abstractions:

- Standard data input format: TimelineVaccineData, LastHourVaccineData, PopulationData
- One or two data inputs can be empty
- A set of common data transformations needed in our domain
- Common interfaces for data plugins and display plugins

Reusable functionality of framework:

- Storage for timeline data, last hour data & population data
- Relevant data transformations
- GUI

Potential flexibility of plugins:

Data plugin

- load data from different sources: csv, excel, web page, web API, etc.
- Flexibility to choose which kind of data to provide: timeline data only, last hour data + population data, etc

Display plugin

- Different kinds of chart to display: bar chart, line chart, pie chart, even choropleth
- Different combinations of data to display: total vaccinated number vs. dates, vaccination rate vs. states, etc

Plugin Interfaces

Data plugin:

- parseTimelineVaccineData(): List<VaccineDataRow>
- parseLastHourVaccineData(): List<VaccineDataRow>
- parsePopulationData(): Map<String, Integer>

Display plugin:

- setChartTimeInterval(start: Time, end: Time)
- setChartTitle(title: String)

Data structures exchanged:

- From raw data to USTimelineData
- From raw data to LastHourVaccineData
- From raw data to PopulationData

Preliminary UML Object Model