

# CSP586

## Project Instructions

### General Instructions:

1. Identify the topic of your interest and team up with **FOUR** of your classmates to formulate a team of **FIVE**. The team will then select a team **LEADER** who will communicate with the TA ( Sarath Kumar Prabhakaran, [sprabha7@hawk.iit.edu](mailto:sprabha7@hawk.iit.edu) ) all issues regarding the presentations.
2. **Team leader** is required to email the TA (Sarath Kumar Prabhakaran, [sprabha7@hawk.iit.edu](mailto:sprabha7@hawk.iit.edu) ) regarding the topic the team will work on, team members' names, and the date the team will present the presentations during class time, 5-10 minutes the length of your presentation.
3. **The deadline to notify the TA** through email about the topic that you selected, team members, and the date that you will present your project is set to be **2/6/17 by 9:00am**.
4. **There are THREE PHASES and deliverables for your project**
  - 1) **Phase 1**: Presentation of your project feature list, requirements, use cases and usecase diagram. Select any Saturday from this list: 2/25, 3/4, 3/11. Though please note that everyone is interested to present the LAST day (3/11) and we need to balance the load on the different dates.
  - 2) **Phase 2**: Presentation of your project domain model, design model, Sequence diagrams, and design patterns utilized, 5-minutes video recording of your project run. Select any Saturday from this list: 3/25, 4/1, 4/8, 4/15, 4/22, 4/29. Again, please note that everyone is interested to present the LAST day (4/29) and we need to balance the load on the different dates. In this phase it is expected that at least 25% of your requirements/use-cases are being implemented for the demo.

3) **Phase 3:** Final delivery of your project is a SINGLE WinZIP file on Blackboard (4/29/17 by 11:59 pm)

5. Communicate with the TA ( Sarath Kumar Prabhakaran, [sprabha7@hawk.iit.edu](mailto:sprabha7@hawk.iit.edu) ) regarding the topic you will work on, and the dates you will present the project during class time, 5-10 minutes the length of your presentation.
6. The deadline to notify the TA ( Sarath Kumar Prabhakaran, [sprabha7@hawk.iit.edu](mailto:sprabha7@hawk.iit.edu) ) about the topic that you selected, and the two presentation dates that you will present re allowed to your project is set to be **2/6/17** by 9:00am.
7. Budget your presentation for 5 to 10 slides

## **Project Technical Requirements:**

For your final project, you will model, design, and implement an object-oriented charting Dashboard for data analytics and visualization for datasets in a specific industry segment. Here are the categories/industry segments you need to choose one from:

1. finance
2. public safety
3. infrastructure
4. environment
5. demographics
6. transportation
7. economy
8. health
9. education
10. housing & development
11. social services
12. politics
13. recreation

**Please note that no more than two teams can work on the same project topic; topics will be allocated based on FCFS.**

Your Object-Oriented Dashboard will be modeled and designed using UML, and implemented using Javascript/Java, use of Freeware Charting libraries, and must be tested on Firefox and Chrome platforms.

It is a requirement to use platforms that are compliant with ECMAScript 2015 scripting 2015, (ES6):

- <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Classes>

List of browsers/platforms that support ES6 can be found under **modern browsers** link on this URL:

- <https://developer.mozilla.org/en-US/docs/Web/JavaScript>

You are allowed to use any FREEWARE charting library to model, design, and implement your object-oriented Dashboard library. Here is a link that has a number of libraries that are freeware (please note that you are NOT allowed to use ANY commercial library):

- <https://thenextweb.com/dd/2015/06/12/20-best-javascript-chart-libraries/>

As a starting point to your project, consider the following libraries:

- As for a **Chart** object, use the charting library:
  - <http://www.chartjs.org/docs/#getting-started>
- As for a **DataFrame** object, use the following library for filtering/slicing/dicing the datasets:
  - <https://gmousse.github.io/dataframe-js/>

Your **Dashboard** GUI must provide the following capabilities:

1. The ability to select a Dataset from a list of datasets in certain category; at least 5 datasets must be present for selection and testing in your final submission
2. Datasets to be read from a data file in CSV or JSON format
3. The selected dataset must be displayed as a table in the browser (Firefox or Chrome)
4. The User must be able to graph/plot the data on the Dashboard in one/many of the following chart types: Line, Bar, Pie, Stacked, Pivot
5. The user must be able select/deselect Columns for inclusion/exclusion of data from the dataset for Charting the selected data
6. The user must be able select/deselect **Columns** for inclusion/exclusion of selected data from the dataset for charting
7. The user must be able to filter **Rows** for inclusion/exclusion of the data from the dataset for charting
8. The user must be able to plot/chart basic stat data, for example, min, max, average, count, standard deviation, etc.
9. The user must be able to create and plot/chart complex analytical queries based on the column names and values for a given data set. For example, for the following Building Violations dataset from the CityOfChicago website, a user is interested to plot/chart the data for the number of violations issued on every day for the month January for every violation code.

FileEditViewHistoryBookmarksToolsHelp

Building Violations | City ...

https://data.cityofchicago.org/Buildings/Building-Violations/22u3-xenr

90%

Search

City of ChicagoData Portal

HomeAboutHelpStatus BlogDevelopersTerms of UseCity of ChicagoSign UpSign In

Building Violations

Violations issued by the Department of Buildings from 2006 to the present. Lenders and title companies, please note: These

ManageMore ViewsFilterVisualizeExportDiscussEmbedAbout

	IT MODIFIED DATE	VIOLATION DATE	VIOLATION CODE	VIOLATION STATUS	VIOLATION STATUS DATE	VIOLATION DESCRIP
1		01/27/2017	CN104015	OPEN		REPLCE WINDOW P
2		01/27/2017	NC2011	OPEN		PLANS & PERMITS F
3		01/27/2017	NC2022	OPEN		BLANK-TEXT MUST
4		01/27/2017	RF301051	OPEN		ARRANGE FOR RE-I
5		01/27/2017	CN133016	OPEN		CARPETING
6		01/27/2017	CN105015	OPEN		REPAIR DOOR, INT.
7		01/27/2017	CN065014	OPEN		REPAIR LINTELS
8		01/27/2017	CN132046	OPEN		SAFE WORKING COI
9		01/27/2017	CN196029	OPEN		POST OWNER/MAN/
10		01/27/2017	VT1010	OPEN		ARRANGE COMPLE
11		01/27/2017	CN046013	OPEN		UNAPPROVED HEAT
12		01/27/2017	CN061014	OPEN		REPAIR EXTERIOR V
13		01/27/2017	CN132016	OPEN		HEAT UNIT ADEQUA
14		01/27/2017	CN062024	OPEN		PARAPET
15		01/27/2017	CN070024	OPEN		REPAIR PORCH SYS
16		01/27/2017	NC2010	OPEN		PLANS & PERMITS F
17		01/27/2017	CN015012	OPEN		NO KEY TO USE EXI
18		01/27/2017	CN196019	OPEN		NO POSTED ADDRE
Totals						

Visualize

Calendar

Map

Chart

Visualization Type

ColumnStacked ColumnBarStacked BarPieDonutLineAreaTimelineBubbleTree Map

APIPrivacy PolicyWeb StandardsSite Map

## **Project Deliverables:**

You are required to submit a SINGLE WinZip file that has the following deliverables are:

1. Requirements and Design document has the following
  - 1) Brief project overview statement.
  - 2) Requirements/Features List (All Requirements and Features must be numbered)
  - 3) Use Cases and Use Case Diagram
  - 4) Activity Diagrams
  - 5) Sequence Diagrams
  - 6) Domain Model Class Diagram
  - 7) Design Model Class Diagram
  - 8) Documentation and class diagrams for Design Patterns used.
2. Source Code
3. Output report that has ALL captured screen-shots of your project run saved in OUTPUT.pdf
4. Video recording of 10 minutes as a demo for the run of your project using <https://screencast-o-matic.com/>

ONLY the Team leader will post the final project as a SINGLE WIN-ZIP that has the PDF file and source code along with the out report on Blackboard on 4/29/17 by 11:59pm.

Please post your project under the name "CSP586 Project - Lastname, FirstName". On the very first page write your names and email address.

Dr. Atef Bader