Lab 5: Database-driven visualization

Sometimes visualizations cannot feasibly show an entire dataset in a meaningful way. In this lab we're going create a database-driven visualization. You'll learn how to connect to a database, and how to integrate interface elements with SQL queries.

You may work together on this project, but your code must be your own and you must submit individually.

There is support code available for this project. The data you will be using deals with forest fires (image below):

id	x	Y	month	day	temp	humidity	wind
	1	6.309813732	4.512422446 mar	fri	8.2	51.0	6.7
	2	6.047158094	4.386385792 oct	tue	18.0	33.0	0.9
	3	7.035954043	4.459339531 oct	sat	14.6	33.0	1.3
	4	7.737249752	5.386428048 mar	fri	8.3	97.0	4.0
	5	7.046100744	6.737435854 mar	sun	11.4	99.0	1.8
	6	8.919142921	6.793629357 aug	sun	22.2	29.0	5.4
	7	7.053397737	5.256608123 aug	mon	24.1	27.0	3.1
	8	7.844135233	6.069006865 aug	mon	8.0	86.0	2.2
	9	7.356892432	5.00421248 sep	tue	13.1	63.0	5.4
	10	7.175825767	4.844435807 sep	sat	22.8	40.0	4.0
	11	6.446995638	5.012376277 sep	sat	17.8	51.0	7.2
	12	7.424553874	4.708070852 sep	sat	19.3	38.0	4.0
	13	5.935986111	5.264111839 aug	fri	17.0	72.0	6.7
	14	5.701273314	5.719931311 sep	mon	21.3	42.0	2.2
	15	6.861479813	4.962728113 sep	wed	26.4	21.0	4.5
	16	5.238456825	5.786193985 sep	fri	22.9	44.0	5.4
	17	5.172823052	5.342252744 mar	sat	15.1	27.0	5.4
	18	8.384357261	4.962766554 oct	mon	16.7	47.0	4.9
	19	6.81116425	3.14939022 mar	wed	15.9	35.0	4.0
	20	5.60744989	3.193951325 apr	sat	9.3	44.0	4.5

Requirements

- Make sure that you can get the support code running. This means that you will need two libraries. One is the ControlP5 library for interface components. The other is the MySQL Database Driver. Both are in correct folder (../code) in the support code.
- Ensure that the code connects to the database. The connection code is provided for you. Also note that the database setup to be "read-only", so you can't modify the content of it.
- Review the support code, looking for TODOs and example statements, e.g. how to execute an SQL query.
- During runtime, your code will need to generate a SQL query based on the state of the sliders in the user interface. Note that the sliders function as "filters", meaning that when nothing is selected, your system is effectively performing a "SELECT * FROM FORESTFIRE". As the user moves more sliders, your query String should include extra parameters in WHERE clause.
- Building a visualization: When you run your support code, you will see a blank canvas. You need to draw a visualization on that canvas based on the result of the SQL query:

- Every query you run will produce a ResultSet instance. You will need to iterate through this ResultSet to get the data for your visualization.
- Once you have the data stored in the formate you need for your visualization, use it to draw your visualization.

Resources

- MySQL syntax
- W3Schools (ugh) for SQL syntax
- Oracle documentation

Turning in the project

Submit your zipped files on myWPI.

Grading

This lab is graded on a 100 point scale. Points will be deducted for missing any of the key requirements (e.g. not redrawing properly after new data is loaded).