Observable

Explore, visualize, and analyze data.

Collaborate with the community.

Learn and be inspired.

Share insights with the world.

Anurag Kumar Singh, 206330009

M.Des IxD 2020-22, IDC IIT Bombay

What is the tool about?

Brings code, data, context and teams together

Live and interactive canvas gives real-time feedback.

Share, collaborate and iterate, right in the browser.

Data, dashboards, and context all together

Who is it for

1. Interaction designers
2. Programmers
3. Data scientists
4. Anyone who wishes to visualize data.

Note:

We need not master the entire tool. Just learn how much you can make use of it. Later cater to your needs.

What is required?

Beginner ●●●●○ Expert   Desire to learn

Beginner ●●○○○ Expert   Programming (HTML, Markdown, Javascript)

Beginner ●●●○○ Expert   Logical (algorithmic) understanding

Beginner ●●●●○ Expert   Exploration mindset
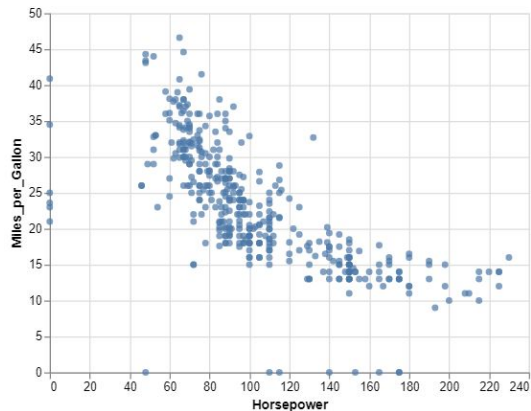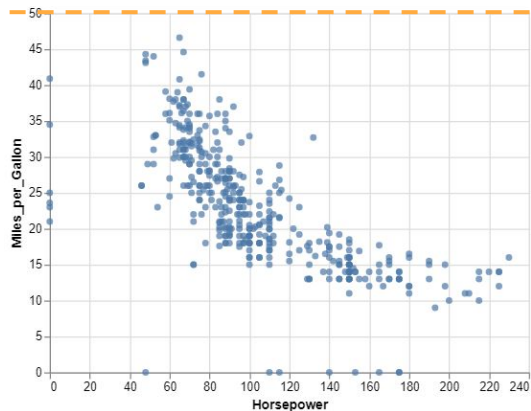
Observable

Anurag Kumar

You   Edited Aug 3   3 files

Tryout

And now to make our first chart:

Structure

Its a web based application.

Each project is in the form of a *notebook*.

Each notebook contains *cells* which can be moved up or down based on the convenience.

On the left you see *Attachments* and *Snippets*.

Similar to:

| Medium | Excel | Notion | Git |

How it works

We've charted some car model data! Specifically, we're looking at how horsepower and gas mileage correlate: as horsepower goes up, miles per gallon tends to go down. You can hover over or tap on different points to see the corresponding car model name.

Let's step through the pieces making up this chart definition.

markCircle()

This is the type of chart we're trying to make. For this example, we chose a scatter plot using circles at each point. Vega-Lite has several other mark types to represent line and bar charts, maps, tables, etc.

> **Try it yourself:**
> – Pass an option of `{ size: 200 }` to `markCircle()`.
> – Try `markSquare` instead of `markCircle`.
> – Try `markPoint({ shape: 'diamond' })`.

data()

We pass our data to Vega-Lite with the `data()` method as an array. You can also pass a URL as a string and Vega-Lite will fetch it for you and parse it.

Our data in this case is an array of objects. Each object has the same set of key/value fields:

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Quick Basics

What is:

Markdown

HTML

Non linear

Library

CSV, JSON

How it works

Expand to find the code.

Pin the code to always see the code.

Run the code to see the effect in the block above.

Add another cell

Share the notebook to show or get review to others.

Tryout

And now to make our first chart:

```
md`And now to make our first chart:`
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Live demo

Lets do it together!

It will require a little effort.

But ***Trust*** me it will be worth it.

🔴

LIVE

Setup

Click this link:
https://observablehq.com/@anurag27k/my-first-notebook

Signup using google account

Add a random username (eg. anur1234)

Download this CSV:
https://drive.google.com/drive/u/0/folders/1U3nHXDVAUN_kPFGHy4mbk-O5PmWcJTm8

Fork (create your version) the notebook

Live demo
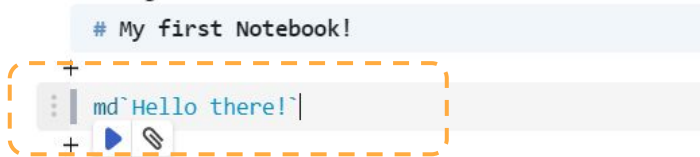
Task 1:

Stretch your arms and be relaxed

Live demo

My first Notebook!

> # My first Notebook!

+

md`Hello there!`

▶ 📎

+

My first Notebook!

> # My first Notebook!

+
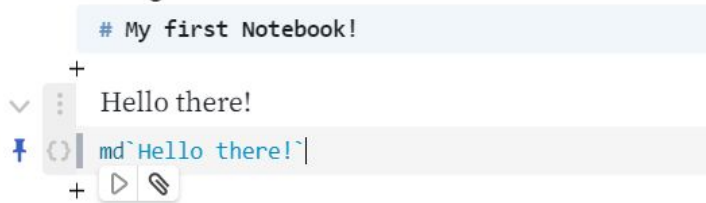
Hello there!

md`Hello there!`

+ ▷ 📎

Add a line of text to the file

"Hello there!"

Live demo

```
a = 2
a = 2
sum = 5
sum = a + b
b = 3
b = 3
```

Task 3:

Sum of 2 variables:

- *Add 2 variables*
- *Sum of two variables*

Live demo

```
import { vl } from "@vega/vega-lite-api"
```

```
cars = FileAttachment("cars.csv").csv()
```

```
vl.markCircle()                         // Make a scatter
chart

  .data(cars)                           // Using the cars data
(below)

  .encode(

    vl.x().fieldQ("Horsepower"),        // For x, use the
Horsepower field

    vl.y().fieldQ("Miles_per_Gallon"),  // For y, use the
Miles_per_Gallon field

    vl.tooltip().fieldN("Name")         // For tooltips, show
the Name field

  )

  .render()
```

Create your first graph

- *Add file*
- *Import library*
- *Write code*

Live demo

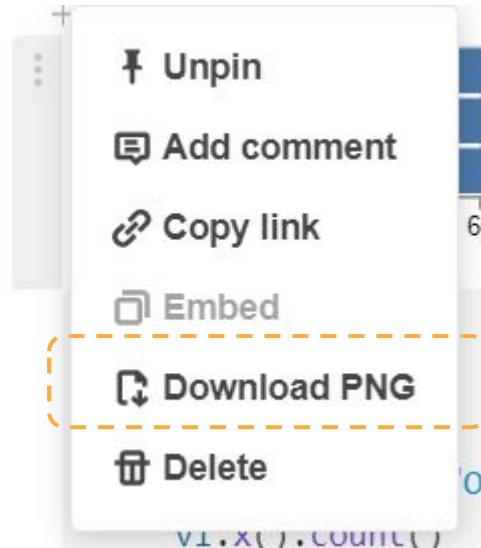*Create a bar graph*

- *Write the function*
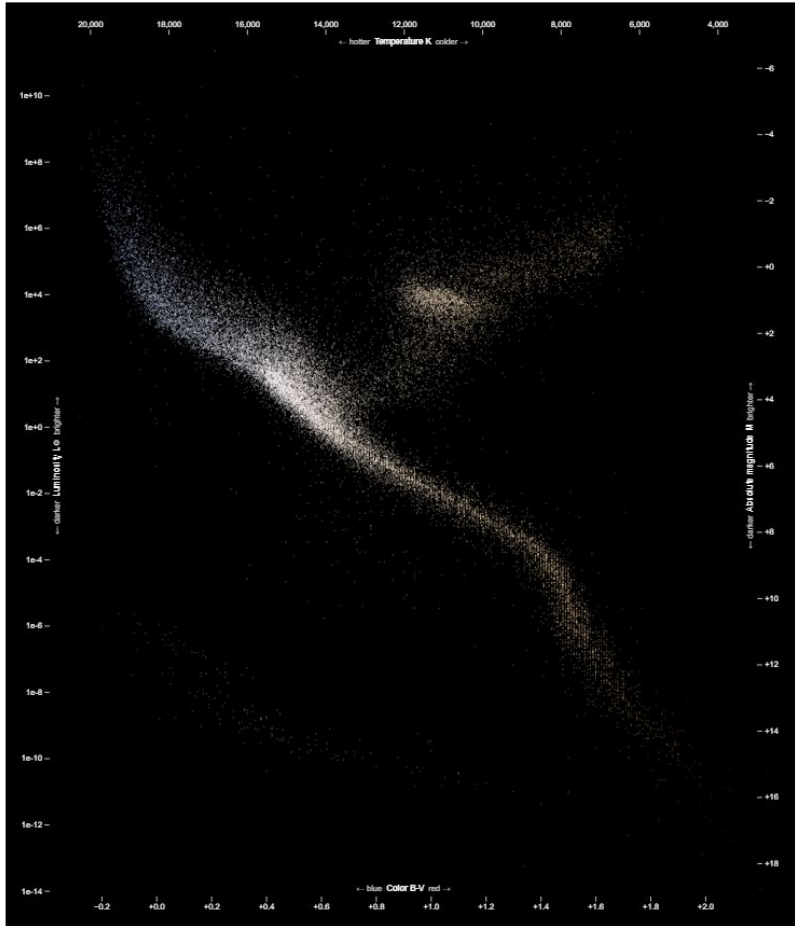
```
vl.markBar()                 // Make a bar chart

  .data(cars)                // With the cars data again

  .encode(

    vl.y().fieldN("Origin"), // y can come before x:
different orders won't break anything

    vl.x().count()           // For x, count the number of
records

  )

  .render()                  // Draw the chart
```
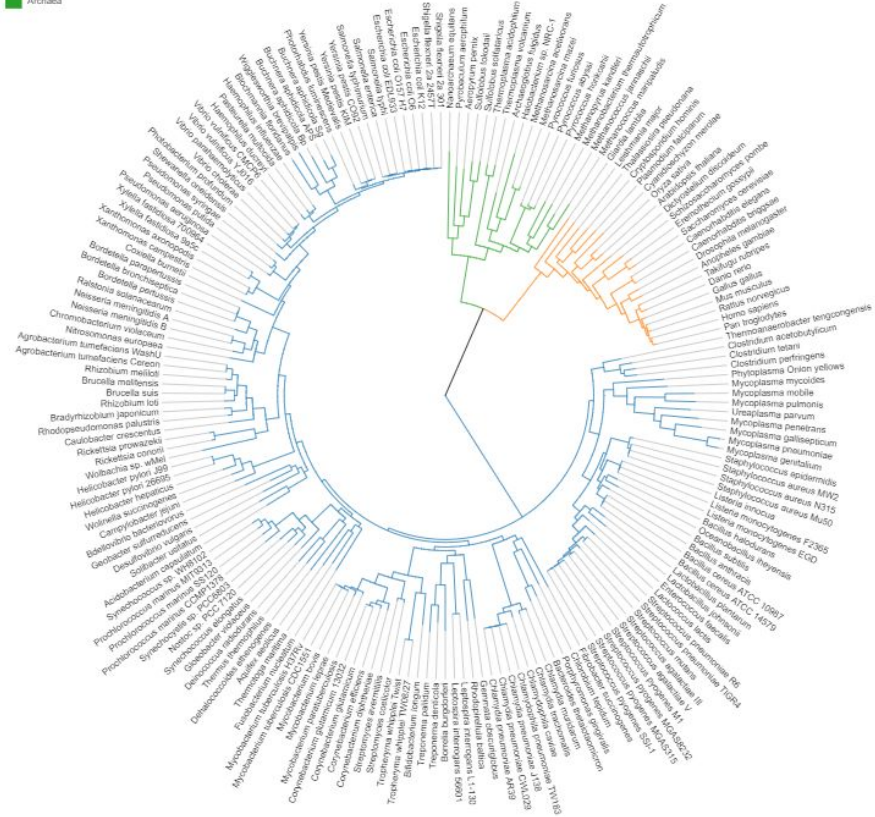
Live demo

Download the graph as a PNG

What can you do more?

An HR diagram plots the relationship between stars' absolute magnitudes (brighter going up) and temperatures (warmer going left).

https://observablehq.com/@mbostock/hertzsprung-russell-diagram?collection=@observablehq/visualization

A phylogenetic tree inspired by a figure from Nature and Jason Davies.

https://observablehq.com/@mbostock/tree-of-life?collection=@observablehq/visualization

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Other features it offers

Select presets (Snippets) from left panel

Publish the notebook or share it to specific people

Choose from several libraries from the community.

Easy addition of file attachments.

Non linear flow.

Instant automation updation.

When to use

When you need to have lots of visualizations to show

When you wish to work with huge data

When you want fast processing

When you want to tinker the visualization

When you want to share/publish quickly to others

When not to use

When you are in hurry and have no coding experience

When you want default templates to work with

When you don't wish to explore a lot of libraries

Links

Observable Tool:

https://observablehq.com/

Tutorials:

https://observablehq.com/tutorials

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