



Paul Carleton • Sep 3



Fork of Do it Live! with ObservableHQ

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# Hago en directo! con ObservableHQ

*presentación por Paul Carleton de Stripe para EventLoop en la Ciudad de México, 4/9/2019*

English version

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## Hago en directo con ObservableHQ

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Slides: [pcarleton.com/eventloop](http://pcarleton.com/eventloop)





# Meta

SLIDES: [PCARLETON.COM/EVENTLOOP](https://pcarleton.com/eventloop)

Hecho en Observable!

Hay un experimento con la participación más adelante!



# Feedback Loops



## EDITOR & SCRIPT

1. Abro mi editor de texto
2. Escribo cualquier código ( $x = 5$ ,  $y = 6$ ,  $x + 5 = \dots$ )
3. Guardo mi script.
4. Cambio a mi terminal
5. Ejecuto mi script
6. Miro el resultado

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## Utilizas el REPL?



### Utilizas el REPL?

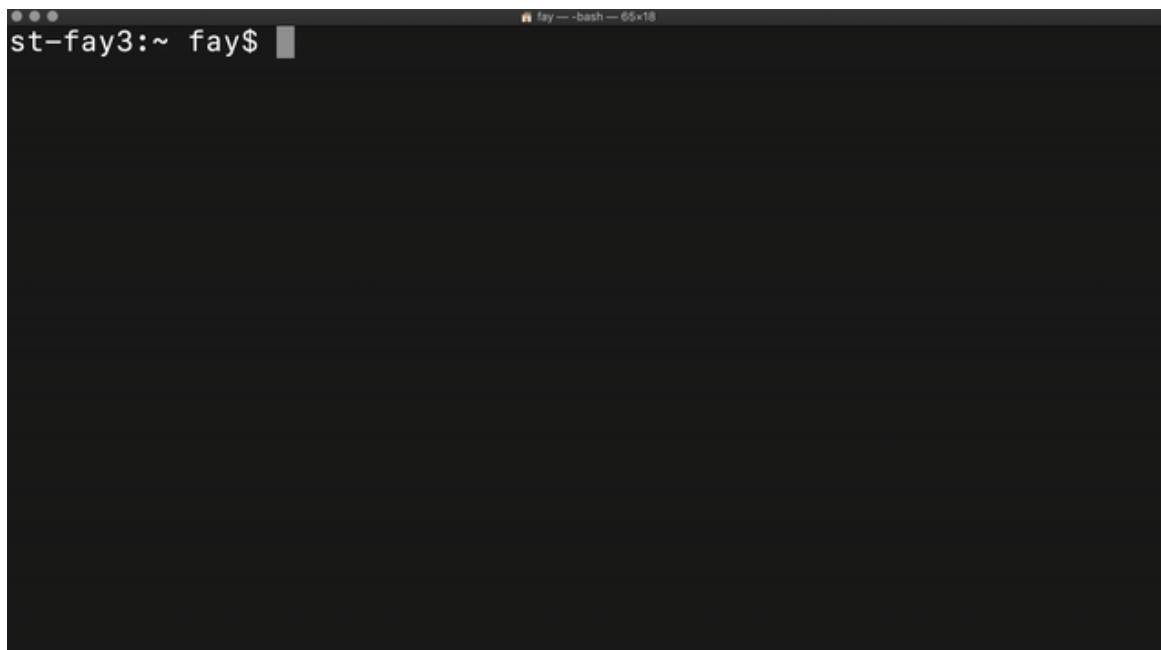
Nunca  A veces  Todos los días!

*Selecciona tu respuesta*

► Response `{}`

?

# REPL: Read Eval Print Loop



# Utilizas Jupyter?

IP[y]: Notebook spectrogram Last Checkpoint: a few seconds ago (autosaved) Python (Python 3)

File Edit View Insert Cell Kernel Help

Code Cell Toolbar: None

### Simple spectral analysis

An illustration of the [Discrete Fourier Transform](#) using windowing, to reveal the frequency content of a sound signal.

$$X_k = \sum_{n=0}^{N-1} x_n e^{-\frac{2\pi i}{N}kn} \quad k = 0, \dots, N-1$$

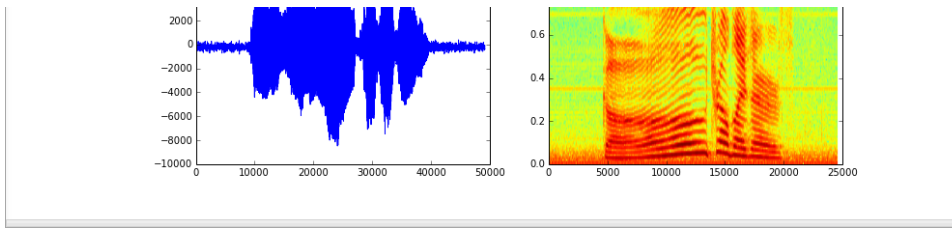
We begin by loading a datafile using SciPy's audio file support:

```
In [1]: from scipy.io import wavfile
rate, x = wavfile.read('test_mono.wav')
```

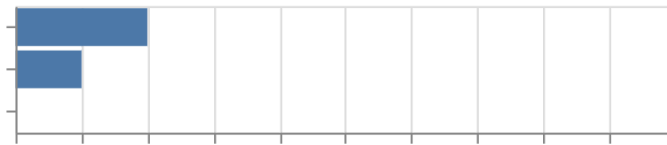
And we can easily view its spectral structure using matplotlib's builtin specgram routine:

```
In [2]: %matplotlib inline
from matplotlib import pyplot as plt
fig, (ax1, ax2) = plt.subplots(1, 2, figsize=(12, 4))
ax1.plot(x); ax1.set_title('Raw audio signal')
ax2.specgram(x); ax2.set_title('Spectrogram');
```

 Two plots are shown side-by-side. The left plot, titled 'Raw audio signal', shows a blue waveform with amplitude on the y-axis (ranging from 4000 to 8000) and time on the x-axis. The right plot, titled 'Spectrogram', shows a heatmap of frequency content with frequency on the y-axis (ranging from 0.8 to 1.0) and time on the x-axis.

# Utilizas Jupyter?



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## Utilizas Jupiter?

- Nunca
- A veces
- Todos los días!

*Selecciona tu respuesta*

► Response {}



# Jupyter Notebook

[Click para notebook de Python nuevo](#)

The screenshot shows a Google Sheet interface. At the top, there is a title bar with a green spreadsheet icon, the text "Dependenc...y", a star icon, a refresh icon, and a "Share" button next to a user profile picture. Below this is a menu bar with "File", "Edit", "View", "Insert", "Format", "Data", and "Tools". A toolbar contains icons for undo, redo, print, and zoom, along with a "100%" zoom level, currency symbols (\$, %), and a number "123". A formula bar shows "fx X". The spreadsheet has columns labeled A, B, and C, and rows labeled 1, 2, 3, and 4. Cell A1 contains "X", B1 contains "Y", and C1 contains "X+Y". Cell A2 contains "10" and B2 contains "4". At the bottom, there is a panel with an "Add" button, a "1000" input field, and the text "more rows at bottom." The bottom status bar shows "Sheet1" and a help icon.

# Observable

## NOTEBOOK + RASTREAR DEPENDENCIAS



### Para que lo usamos?

- Explorar data y compartir resultados
- Redacciones interactivos
- Hacer un prototipo de cliente
- Construir visualizaciones

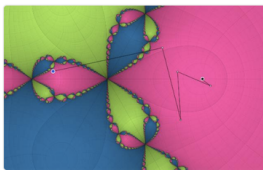
### Para que no lo usamos?

- Componente de servidor
- Correr en producción
- Usar con cosas confidenciales\*

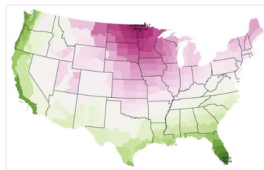
# Ejemplos padres

Arte | Ciencia | Sonidos | Astronomía

POPULAR THE WEEK OF AUG 18 - AUG 25



**01 Finding Roots in the Complex Plane**  
Ricky Reusser Aug 27



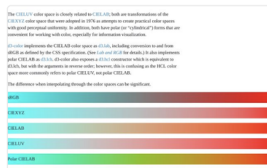
**02 Where The Seasons Are**  
Mike Bostock Aug 25



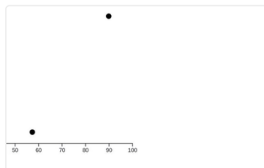
**03 Turbo**  
Mike Bostock Aug 21



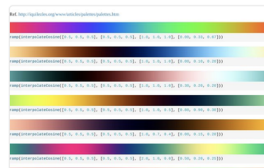
**04 Pieces of a Map**  
Jeshurun Hembd Aug 31



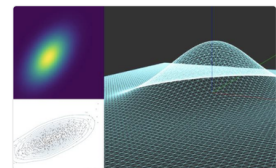
**05 Luv and HCL**  
Mike Bostock Aug 20



**06 Marks and Channels in D3**  
John Alexis Guerra Gómez Aug 21



**07 Cosine Color Schemes**  
Mike Bostock Aug 21



**08 Multivariate Normal Distribution**  
sw1227 Aug 25



# Dibujar un Rectángulo

Empecemos con algo simple: hacer un rectángulo. Vamos a usar el Canvas (mira [Mozilla](#) para mas detalles).





## Las Dependencias

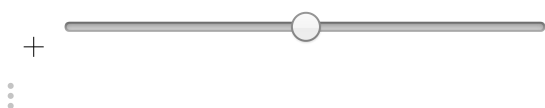
Observable está rastreando las dependencias. Eso significa que podemos poner el ancho en su propio valor en otro cell. Intente cambiar el valor y mira que el rectángulo cambia inmediatamente.

```
+ rectWidth = 100  
⋮
```



# Deslizadores

Un valor en su propio cell es padre, pero podemos mejorar con un deslizador!



205



```

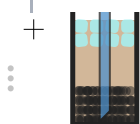
{
  const context = DOM.context2d(
    width /* special ObservableHQ value for width of page */,
    150 /* height of canvas */
  );

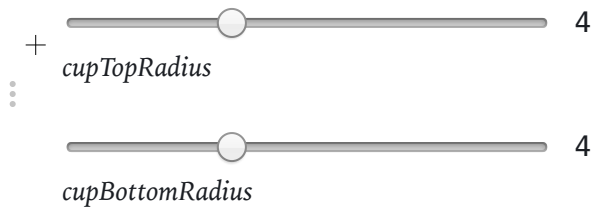
  const rectWidth = 150;
  const rectHeight = 100;

  context.fillStyle = "#424770"
  context.fillRect(
    10 /* top left x */,
    10 /* top left y */,
    rectWidth,
    rectHeight
  );

  return context.canvas
}

```





A code editor snippet is shown with a plus sign and three vertical dots to its left. The code is `rectWidth = 100 /* Cambiáme! */`.

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## Conclusión

- Observable = Notebook interactivo con los poderes de spreadsheet
- Es fantástico para explorar, visualizar, y aprender



```
viewof rectWidth2 = html`<input type=range min=10 max=400>`
```

```
rectWidth2 /* Este cell reporta el valor */
```

## PREGUNTAS?

Y QUE VAS A CONSTRUIR?



### Utilizas el REPL?

- Arte
- Gráficos
- Investigaciones
- Prototipos

Selecciona tu respuesta

► Response {}



```
drawBubbleTea(new BubbleTea({
  cup: new Cup({
    topRadius: cupTopRadius,
    bottomRadius: cupBottomRadius
  }))).node();
```

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## + ⋮ Appendix

```
import {slider} from @jashkenas/inputs
```

```
<style>
```





```
fetch(`https://bolder-condorraptor.glitch.me/vote/3/${r3}/${my_id}`)
```



```
spacer = f(height)
```

```
$ = f(selector, context)
```

```
slide = f()
```

```
spacer(800)
```



```
slide_style = html`<style>
.slide {
  width: calc(100% + 28px);
  margin: 0 -14px;
  padding: 10%;
  box-sizing: border-box;
  background: #424770;
  color: #CED7DF;
  min-height: 65vw;
  font-size: 3vw;
  font-family: "HelveticaNeue-Light", "Helvetica Neue Light", "Helvetica Neue",
Helvetica, Arial, "Lucida Grande", sans-serif;
  font-weight: 300;
  line-height: 1.15;
  display: flex;
  align-items: center;
}

.slide a {
  color: #68D4F8;
}

.slide p,
.slide pre,
.slide img {
  max-width: 100%;
  color: #CED7DF;
  font-size: 2.8vw;
}

.slide h1 {
  color: #FFFFFF;
}

.slide h2 {
  color: #FFFFFF;
  text-transform: uppercase;
  font-size: 3vw;
}
```



```

}

.slide h3 {
  color: #FFFFFF;
  text-transform: uppercase;
  font-size: 2.5vw;
}

.slide strong {
  color: #FCD669;
}

.slide em {
  color: #FFC7EE;
}

.slide--img {
  max-width: none;
  padding: 0;
}

.slide ul {
  font-size: 3vw;
}

.slide table {
  font-size: 3vw;
}

.slide > * {
  width: 100%;
}

</style>`

```

- Analyse data for science, journalism, education, etc

```

spacer = function(height) {
  const context = this ? this.getContext("2d") : DOM.context2d(
    width /* special ObservableHQ value for width of page */,
    height /* height of canvas */
  );

  return context.canvas
}

```

```

slide = {
  function slide() {
    const container = document.createElement("div");
    container.className = "slide";
    container.appendChild(md.apply(this, arguments));
    return container;
  }
  slide.img = function(strings) {
    const img = new Image;
    let string = strings[0] + "", i = 0, n = arguments.length;
    while (++i < n) string += arguments[i] + "" + strings[i];
    img.src = string.trim();
    img.className = "slide slide--img";
    return img;
  };
  slide.cell = function() {
    const container = document.createElement("div");
    container.className = "slide2";
    container.style.paddingTop = "20px";
    container.appendChild(md.apply(this, arguments));
    return container;
  }
  return slide;
}

{
  let slide_cells = $(".slide, .slide2")
  // let slide_cells = $(".observablehq")

  //let all_cells = slide_cells.concat(document.getElementsByClassName("slide2"));
  //document.cells = all_cells;
  return document.cells = slide_cells;
}

{
  document.current=0;
  document.onkeyup = function(e) {
    if (e.which === 39 || e.which === 37) {
      if (e.which === 39){
        document.current+=1;

```

```
document.current -= 1,  
if (document.current < 0) { document.current = 0; }  
}  
if (e.which === 37){  
    document.current -= 1;  
    if (document.current >= document.cells.length) { document.current =  
document.cells.length - 1; }  
}  
var elmnt = document.cells[document.current]  
elmnt.scrollIntoView();  
}  
}  
}
```

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questionGraph = f(qlabel)

+

⋮



```
vegalite = f(spec)
```

```
choices = ▶ Object {1: Array(3), 2: Array(3), 3: Array(4)}
```



```
big_o = html`<svg viewBox="0 0 25 28" width="250" height="300" aria-  
label="Observable" fill="currentColor" ><path d="M12.5 22.6667C11.3458 22.6667  
10.3458 22.4153 9.5 21.9127C8.65721 21.412 7.98339 20.7027 7.55521 19.8654C7.09997  
18.9942 6.76672 18.0729 6.56354 17.1239C6.34796 16.0947 6.24294 15.0483 6.25  
14C6.25 13.1699 6.30417 12.3764 6.41354 11.6176C6.52188 10.8598 6.72292 10.0894  
7.01563 9.30748C7.30833 8.52555 7.68542 7.84763 8.14479 7.27274C8.62304 6.68378  
9.24141 6.20438 9.95208 5.87163C10.6979 5.51244 11.5458 5.33333 12.5  
5.33333C13.6542 5.33333 14.6542 5.58467 15.5 6.08733C16.3428 6.588 17.0166 7.29733
```

```

17.4448 8.13459C17.8969 8.99644 18.2271 9.9103 18.4365 10.8761C18.6448 11.841
18.75 12.883 18.75 14C18.75 14.8301 18.6958 15.6236 18.5865 16.3824C18.4699
17.1702 18.2639 17.9446 17.9719 18.6925C17.6698 19.4744 17.2948 20.1524 16.8427
20.7273C16.3906 21.3021 15.7927 21.7692 15.0479 22.1284C14.3031 22.4876 13.4542
22.6667 12.5 22.6667ZM14.7063 16.2945C15.304 15.6944 15.6365 14.864 15.625
14C15.625 13.1073 15.326 12.3425 14.7292 11.7055C14.1313 11.0685 13.3885 10.75
12.5 10.75C11.6115 10.75 10.8688 11.0685 10.2708 11.7055C9.68532 12.3123 9.36198
13.1405 9.375 14C9.375 14.8927 9.67396 15.6575 10.2708 16.2945C10.8688 16.9315
11.6115 17.25 12.5 17.25C13.3885 17.25 14.124 16.9315 14.7063 16.2945ZM12.5
27C19.4031 27 25 21.1792 25 14C25 6.82075 19.4031 1 12.5 1C5.59687 1 0 6.82075 0
14C0 21.1792 5.59687 27 12.5 27Z" fill="currentColor"></path></svg>`

```

+

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⋮

+

⋮

```
io = require('https://bundle.run/socket.io-client@2.2.0')
```

+

⋮

```

msgs = Generators.observe(notify => {
  const msgs = [];

  let socket = io('ws://bolder-condorraptor.glitch.me/');
  socket.on('chat message', function(msg){
    console.log(msg);
    msgs.push(msg);
    notify(msgs);
  });
  return () => socket.close();
})

```

+

⋮

```

questionGraph = function(qlabel) {

  const deduped = new Map();
  msgs.filter((msg) => (msg.q == qlabel)).map((msg) => {
    deduped.set(msg.id, {choice: choices[qlabel][parseInt(msg.c)], ...msg});
  });

  const vals = Array.from(deduped.values());

  return vegalite({

```

?

```

"width": (width* 0.6),
  "config": {"axis":{"labelColor": "white", "titleColor": "white"}},
  "mark": "bar",
  "encoding":
  {
    "x": {
      "aggregate": "distinct",
      "field": "id",
      "type": "quantitative",
      "axis": {title: "personas"},
      "scale": {"domain":[0, Math.max(10, vals.length*1.2)]}
    },
    "y": {"field": "choice", "type": "nominal",
      "axis": {title: "selección"},
      "scale": {"domain": choices[qlabel]}
    }
  },
  // "height": 100,
  // "padding": {"top": 30, "left": 20, "right": 20, "bottom": 50},
  // "autosize": "none",
  "data": {"values": vals},
})
}

+
+
vegallite = require("@observablehq/vega-lite@0.1")

+
+
choices = {
  return {
    "1": ["Nunca", "A veces", "Todos los días!"],
    "2": ["Nunca", "A veces", "Todos los días!"],
    "3": ["🌈", "🇮🇹", "🔍", "✍️"],
  }
};

```