LAB #3: WEB APPLICATION WITH GENIE

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I. Exercise

In this lab, you will create a basic web application using **Genie** framework in Julia. The application will allow us to control the behaviour of a sine wave, given some adjustble parameters. You are required to carry out this lab using the REPL as in Figure 1.

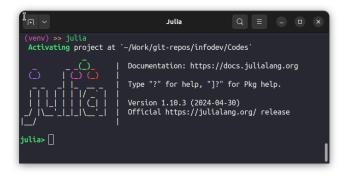


Figure 1: Julia REPL

Task 1: Sine Wave Control

We provide the Julia and HTML codes to build and run a web app that allows us to control the amplitude and frequency of a sine wave. **Plotly** is used to plot the corresponding graph. We also added a slider to change the number of samples used to draw the figure. The latter setting permits to grasp the influence of sampling frequency on the look of our chart.

```
using GenieFramework
@genietools

@app begin

@in N::Int32 = 1000
@in amp::Float32 = 0.25
@in freq::Int32 = 1

@out my_sine = PlotData()

@onchange N, amp, freq begin
    x = range(0, 1, length=N)
    y = amp*sin.(2*π*freq*x)
```

```
<header class="st-header q-pa-sm">
   <h1 class="st-header title text-h3" Sinewave
Dashboard </h1>
</header>
<div class="row">
   <div class="st-col col-12 col-sm st-module">
       <b># Samples</b>
       <q-slider v-model="N"
   :min="10" :max="1000"
    :step="10" :label="true">
 </q-slider>
   </div>
   <div class="st-col col-12 col-sm st-module">
       <b>Amplitude</b>
       <q-slider v-model="amp"
   :min="0" :max="3"
    :step=".5" :label="true">
 </q-slider>
   </div>
   <div class="st-col col-12 col-sm st-module">
       <b>Frequency</b>
 <q-slider v-model="freq"
   :min="0" :max="10"
    :step="1" :label="true">
  </q-slider>
   </div>
</div>
<div class="row">
   <div class="st-col col-12 col-sm st-module">
  <b>Sinewave</b>
```

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We can now open the browser and navigate to the link localhost:8000. We will get the graphical interface as in Figure 2.

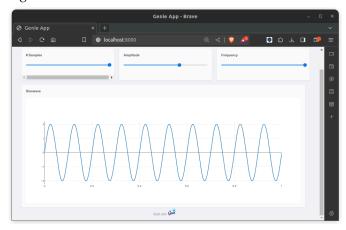


Figure 2: Genie -> Sine Wave

You are asked to add two extra sliders that modify the behaviour of the sine wave graph:

- 1. Phase ranging between $-\pi$ and π , changes by a step of $\frac{\pi}{100}$
- 2. Offset varies from -0.5 to 1, by a step of 0.1.

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