Lab 1 : 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

Exo 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.
samples : We also added a slider to change the number of samples used to draw the figure. .The range is from 100 to 1000 / with steps : 1
amplitude : We added a slider to change the amplitude max and min of sine wave .The range is from 0 to 8 / with steps : 0.5
frequency : The latter setting permits to grasp the influence of sampling frequency on the look of our chart .The range is from 0 to 100 / with steps : 1
phase : this slider adjusts the phaseof the sine wave. the range is from −3.14 to 3.14 / with steps : 0.314
offset : this slider adjusts the offset of sine wave.The range is from −0.5 to 1 / with steps : 1

Exo 2: phase

Phase ranging between −3.14 and 3.14, changes by a step of 0.314

```
@in pha::Float32 = 1
---
@onchange N, amp, freq , pha  begin
        x = range(0, 1, length=N)
        y = amp*sin.(2*π*freq*x .+pha)
```

Julia

```
<div class="st-col col-12 col-sm st-module">
        <p><b>phase</b></p>
  <q-slider v-model="pha"
    :min="-3.14" :max="3.14"
    :step="0.314" :label="true">
  </q-slider>
    </div>
```

html

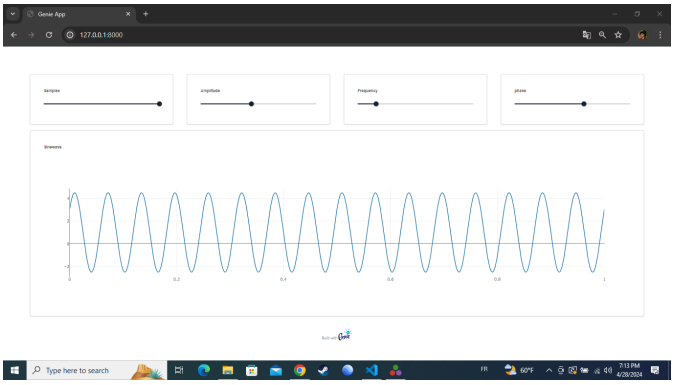

Figure 2: add phase

Exo 3: offset

Offset varies from −0.5 to 1, by a step of 0.1

```
@in ofs::Float32 = 1
---
@onchange N, amp, freq , pha , ofs begin
        x = range(0, 1, length=N)
```

```
        y = amp*sin.(2*π*freq*x .+pha).+ofs
*Julia*
```

```
<div class="st-col col-12 col-sm st-module">
        <p><b>offset</b></p>
  <q-slider v-model="ofs"
    :min="-0.5" :max="1"
    :step="0.1" :label="true">
  </q-slider>
    </div>
```

html

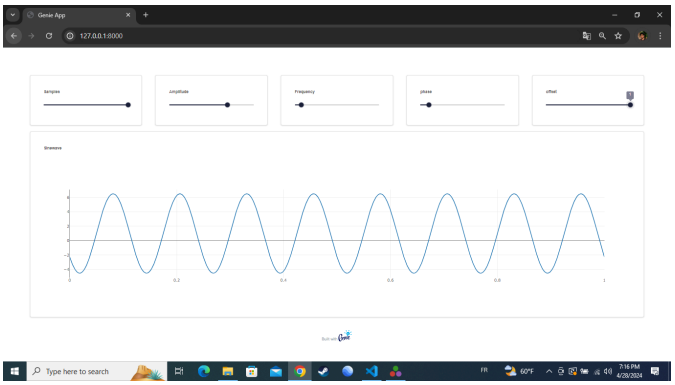

Figure 3: add offset

```
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```

```
using GenieFramework
@genietools

@app begin

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

    @out my_sine = PlotData()

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

        my_sine = PlotData(x=x,
                           y=y,

plot=StipplePlotly.Charts.PLOT_TYPE_LINE)
    end

end
```

```
@page("/", "app.jl.html")
```

```
<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">
        <p><b>Samples</b></p>
        <q-slider v-model="N"
    :min="100" :max="1000"
    :step="10" :label="true">
  </q-slider>
    </div>

    <div class="st-col col-12 col-sm st-module">
        <p><b>Amplitude</b></p>
        <q-slider v-model="amp"
    :min="0" :max="8"
    :step=".5" :label="true">
  </q-slider>
    </div>

    <div class="st-col col-12 col-sm st-module">
        <p><b>Frequency</b></p>
  <q-slider v-model="freq"
    :min="0" :max="100"
    :step="1" :label="true">
  </q-slider>
    </div>
    <div class="st-col col-12 col-sm st-module">
        <p><b>phase</b></p>
  <q-slider v-model="pha"
    :min="-3.14" :max="3.14"
    :step="0.314" :label="true">
  </q-slider>
    </div>
    <div class="st-col col-12 col-sm st-module">
        <p><b>offset</b></p>
  <q-slider v-model="ofs"
    :min="-0.5" :max="1"
    :step="0.1" :label="true">
  </q-slider>
    </div>
</div>

<div class="row">
    <div class="st-col col-12 col-sm st-module">
  <p><b>Sinewave</b></p>
        <plotly :data="my_sine"> </plotly>
    </div>
</div>
```

```
julia -- project
```

```
cd("(location of the folder)/infodev-main/Codes/
web-app")
julia> using GenieFramework
julia> Genie.loadapp() # Load app
julia> up() # Start the server
```

We can now open the browser and navigate to the link http://127.0.0.1/:8000. We will get the graphical interface as in Figure 4.

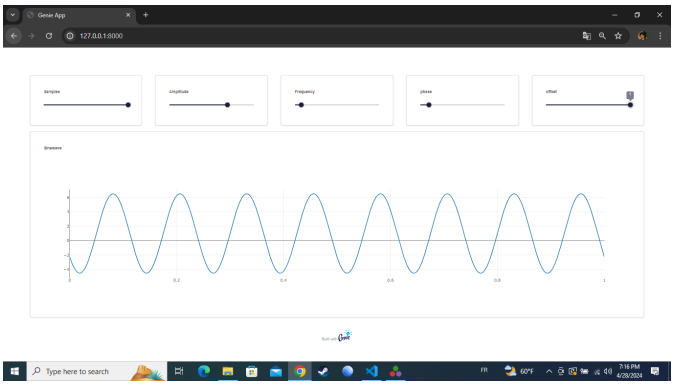

Figure 4: Genie -> Sine Wave