Lab #3: Web Application with Genie

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I. Introduction

In this lab, we will using Genie framework in Julia to control some paramaters of a sine wave, given some adjustble parameters.for that we gonna need to employ julia REPL as in fig1

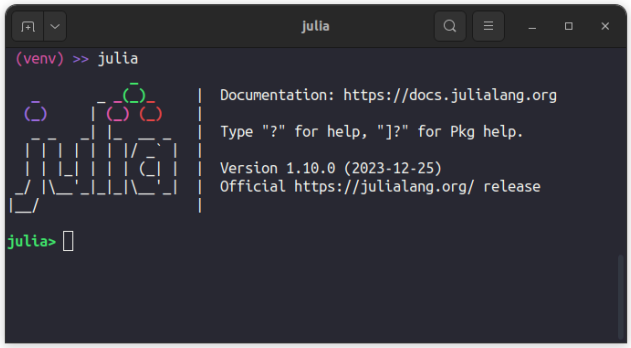

Figure 1: Julia REPL

II. Application

The first programme “app.jl”

```
using GenieFramework
@genietools

@app begin

  @in N::Int32 = 1000
  @in amp::Float32 = 0.25
  @in freq::Int32 = 1
  @in ph::Float32 = 0
  @in off::Float32 = 0
  @out my_sine = PlotData()


  function calculate_sine(n, amplitude, frequency,
phase, offset)
    x = range(0, 1, length=n)
      y = amplitude * sin.(2*pi*frequency*x .+
phase) .+ offset
                return    PlotData(x=x,    y=y,
plot=StipplePlotly.Charts.PLOT_TYPE_LINE)
  end

  @onchange N, amp, freq, ph, off begin
     my_sine = calculate_sine(N, amp, freq, ph,
off)
  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="10" :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="3"
    :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="10"
    :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="freq"
    :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="freq"
 :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>
```

First step:GenieFramework

```
julia --project
```

```
julia> using GenieFramework
julia> Genie.loadapp() # Load app
julia> up() # Start server
```

- Gettin GenieFramework link(http://127.0.0.1:8000)

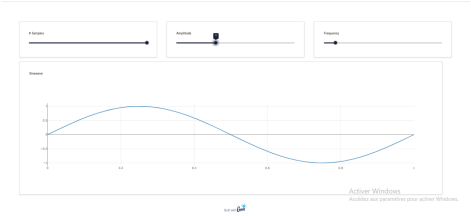

Figure 2: Genie gaphical interface

Second step:Adjust the phase

- adding the phase to “app.jl”

```
using GenieFramework
@genietools

@app begin

  @in N::Int32 = 1000
  @in amp::Float32 = 0.25
  @in freq::Int32 = 1
  @in ph::Float32 = 0
  @in off::Float32 = 0
  @out my_sine = PlotData()


  function calculate_sine(n, amplitude, frequency,
phase, offset)
    x = range(0, 1, length=n)
      y = amplitude * sin.(2*pi*frequency*x .+
phase) .+ offset
                return    PlotData(x=x,    y=y,
plot=StipplePlotly.Charts.PLOT_TYPE_LINE)
  end


  @onchange N, amp, freq, ph, off begin
     my_sine = calculate_sine(N, amp, freq, ph,
off)
  end

end

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

adding phase to “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="10" :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="3"
    :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="10"
    :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="freq"
    :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="freq"
 :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>
```

- the result in genie graphical interface :

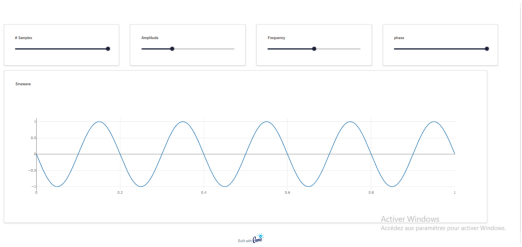

Figure 3: Adding phase parameter

third step:Adjust the offset

- adding the offset to “app.jl”

```
using GenieFramework
@genietools

@app begin

  @in N::Int32 = 1000
  @in amp::Float32 = 0.25
  @in freq::Int32 = 1
  @in ph::Float32 = 0
  @in off::Float32 = 0
  @out my_sine = PlotData()


  function calculate_sine(n, amplitude, frequency,
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    x = range(0, 1, length=n)
      y = amplitude * sin.(2*pi*frequency*x .+
phase) .+ offset
                return    PlotData(x=x,    y=y,
plot=StipplePlotly.Charts.PLOT_TYPE_LINE)
  end


  @onchange N, amp, freq, ph, off begin
     my_sine = calculate_sine(N, amp, freq, ph,
off)
  end

end

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

adding offset to “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="10" :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="3"
    :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="10"
    :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="freq"
    :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="freq"
 :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>
```

- the result in genie graphical interface :

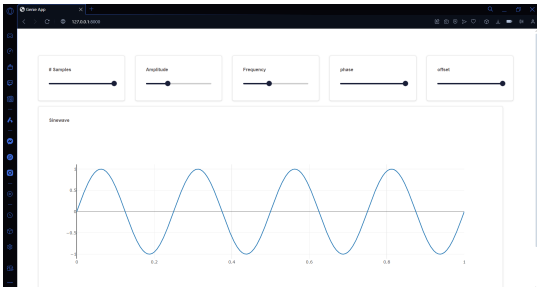

Figure 4: Adding phase parameter