

# LAB #3: WEB APPLICATION WITH GENIE

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## I. OBJECTIF

In this lab, we 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 adjustable parameters. You are required to carry out this lab using the REPL as in Figure 1.

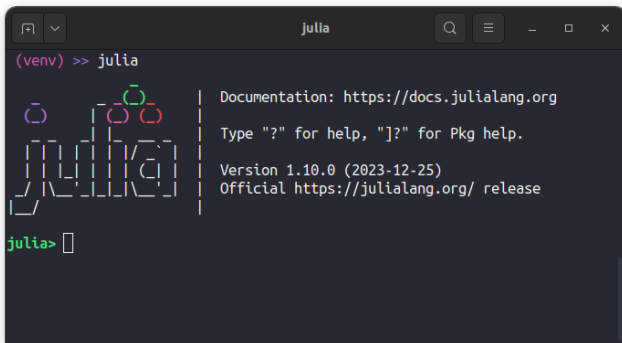


Figure 1: Julia REPL

### 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. **Plotly** is used to plot the corresponding graph. this dashboard allows you to manipulate various parameters of a sine wave and visualize the results. we add some parameters like: PHASE: This slider adjusts the phase of the sine wave. The range is from  $-0.5$  to  $1$ , with steps of  $0.1$ . OFFSET: This slider adjusts the offset of the sine wave. The range is from  $-3.141$  to  $3.141$ , with steps of  $1$ .

```
using GenieFramework
@genietools

@app begin

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

```
@out my_sine = PlotData()
@onchange N, amp, freq, pha, off begin
    x = range(0, 1, length=N)
    y = amp*sin.(2*pi*freq*x)
    y = amp*sin.(2*pi*freq*x .+ pha) .+ off

    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="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="pha"
    :min="-3.14" :max="3.14"
    :step="1" :label="true">
</q-slider>
</div>

<div class="st-col col-12 col-sm st-module">
  <p><b>offset</b></p>
  <q-slider v-model="off"
    :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
```

```

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

```

We can now open the browser and navigate to the link [localhost:8000](http://localhost:8000). We will get the graphical interface as in Figure 2.

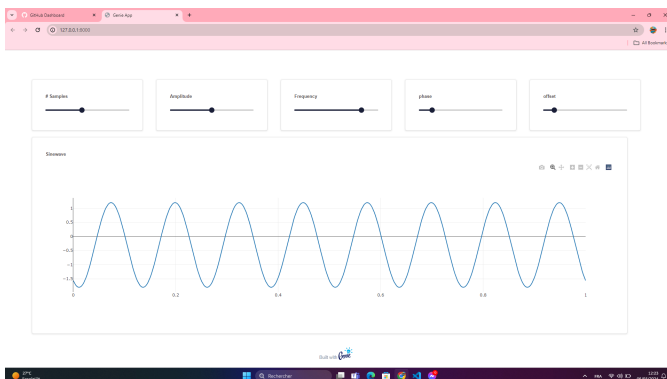


Figure 2: Genie -> Sine Wave



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

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