

AI Security-Research-Template

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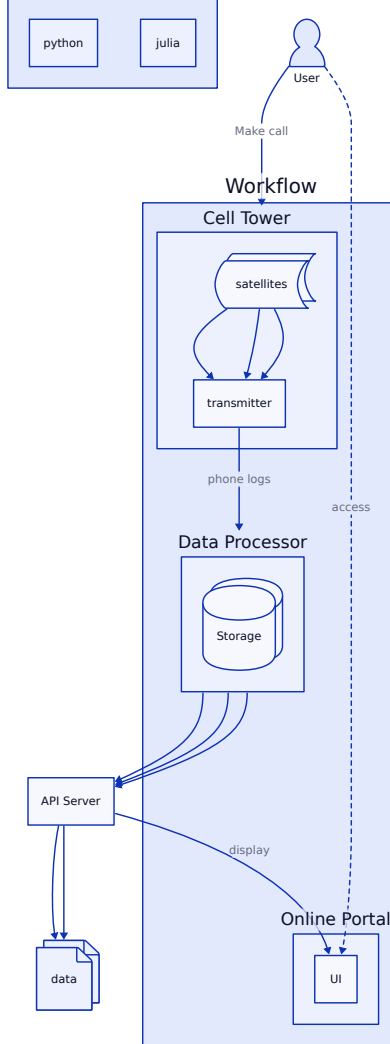
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1. Getting Started

```
from IPython.core.display import SVG  
  
SVG(filename='flow.svg')
```

Programming Languages



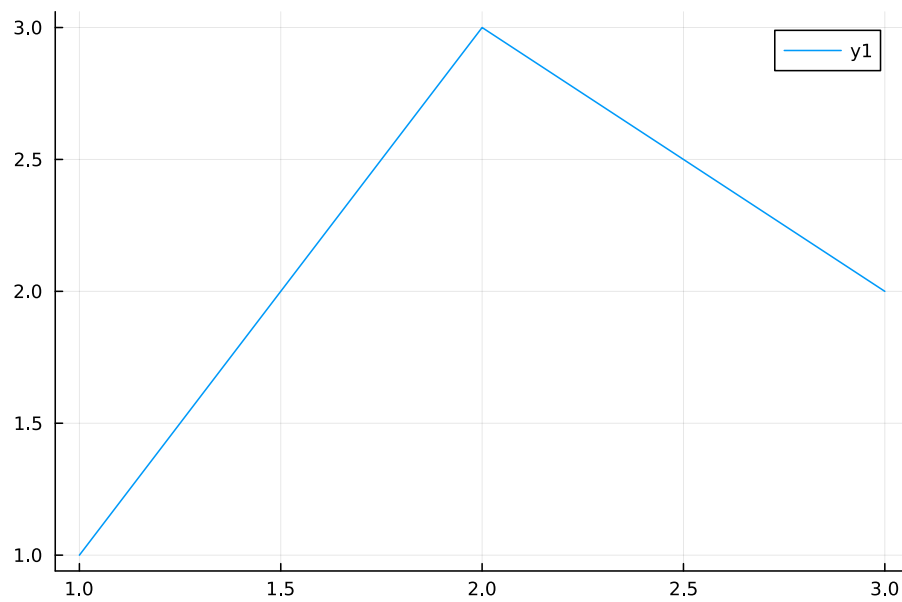
2. Julia

Part I.

Julia Plots Test

```
using Plots
```

```
display(plot([1,3,2]))
```



```
using GLMakie # All functionality is defined in Makie and every backend re-exports
```

```
Base.@kwdef mutable struct Lorenz
```

```
    dt::Float64 = 0.01
```

```
    ::Float64 = 10
```

```
    ::Float64 = 28
```

```
    ::Float64 = 8/3
```

```
    x::Float64 = 1
```

```
    y::Float64 = 1
```

```

    z::Float64 = 1
end

function step!(l::Lorenz)
    dx = l.x * (l.y - l.x)
    dy = l.x * (l.z - l.y) - l.y
    dz = l.x * l.y - l.x * l.z
    l.x += l.dt * dx
    l.y += l.dt * dy
    l.z += l.dt * dz
    Point3f(l.x, l.y, l.z)
end

attractor = Lorenz()

points = Observable(Point3f[]) # Signal that can be used to update plots efficiently
colors = Observable{Int}[]

set_theme!(theme_black())

fig, ax, l = lines(points, color = colors,
    colormap = :inferno, transparency = true,
    axis = (; type = Axis3, protrusions = (0, 0, 0, 0),
        viewmode = :fit, limits = (-30, 30, -30, 30, 0, 50)))

record(fig, "lorenz.mp4", 1:120) do frame
    for i in 1:50
        # update arrays inplace
        push!(points[], step!(attractor))
        push!(colors[], frame)
    end
    ax.azimuth[] = 1.7pi + 0.3 * sin(2pi * frame / 120) # set the view angle of the

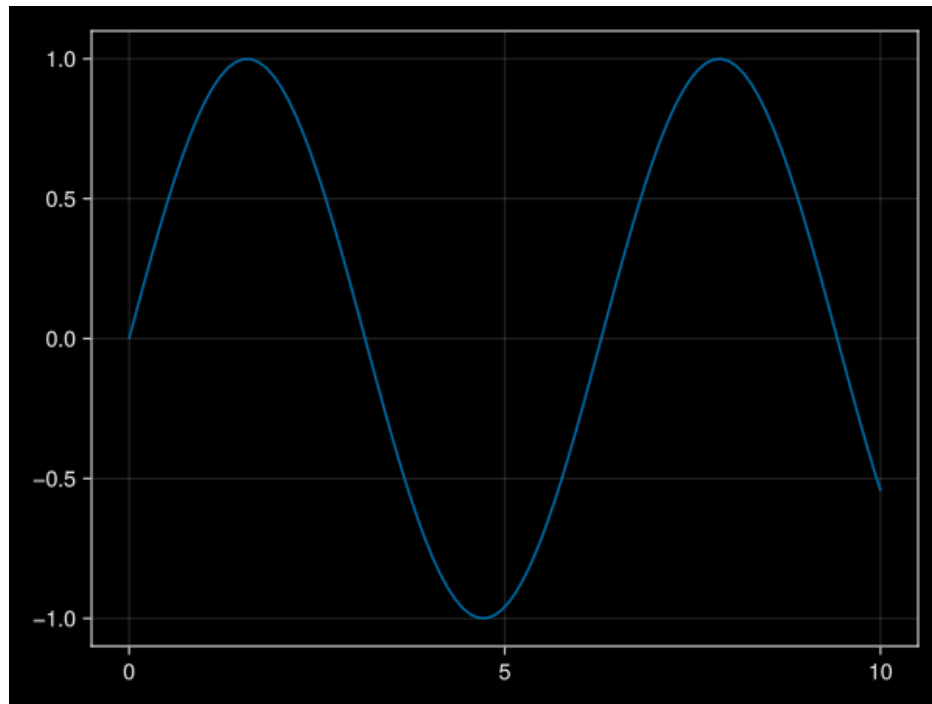
```



```
    notify(points); notify(colors) # tell points and colors that their value has b
    l.colorrange = (0, frame) # update plot attribute directly
end
```

"lorenz.mp4"

```
f = Figure()
ax = Axis(f[1, 1])
x = range(0, 10, length=100)
y = sin.(x)
lines!(ax, x, y)
f
```



```
using Base64
```

```
function display_mp4(filename)
    display("text/html", string("""<video autoplay controls><source src="data:video/mp4;base64:'""
    Base64.base64encode(open(read,filename)), "" type="video/mp4"></video>"""))
end
```

display_mp4 (generic function with 1 method)

```
display_mp4("lorenz.mp4")
```

Unable to display output for mime type(s): text/html

3. Python

Part II.

OpenAI Py Test

```

from scipy.special import comb

com = comb(5, 2, exact = False, repetition=True)

com

```

15.0

```

import os
from openai import OpenAI

client = OpenAI(api_key = os.getenv("OPENAI_API_KEY"))

completion = client.chat.completions.create(
    model="gpt-4",
    messages=[
        {"role": "system", "content": "You are a Security Enginner"},
    ]
)

completion.choices[0].message

```

ChatCompletionMessage(content='As a Security Engineer, my primary responsibility is