p5.js
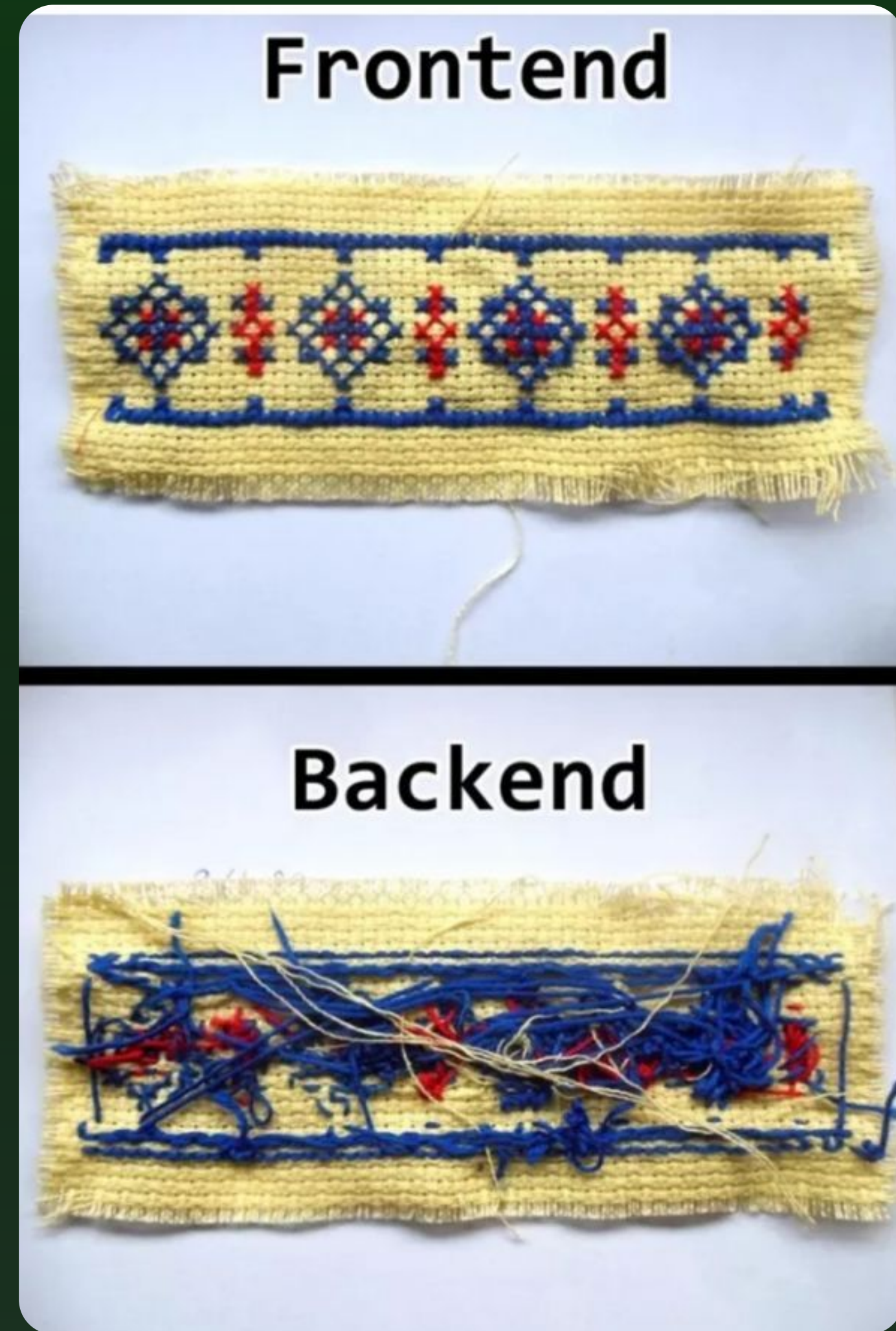
Dive into the world of creative coding
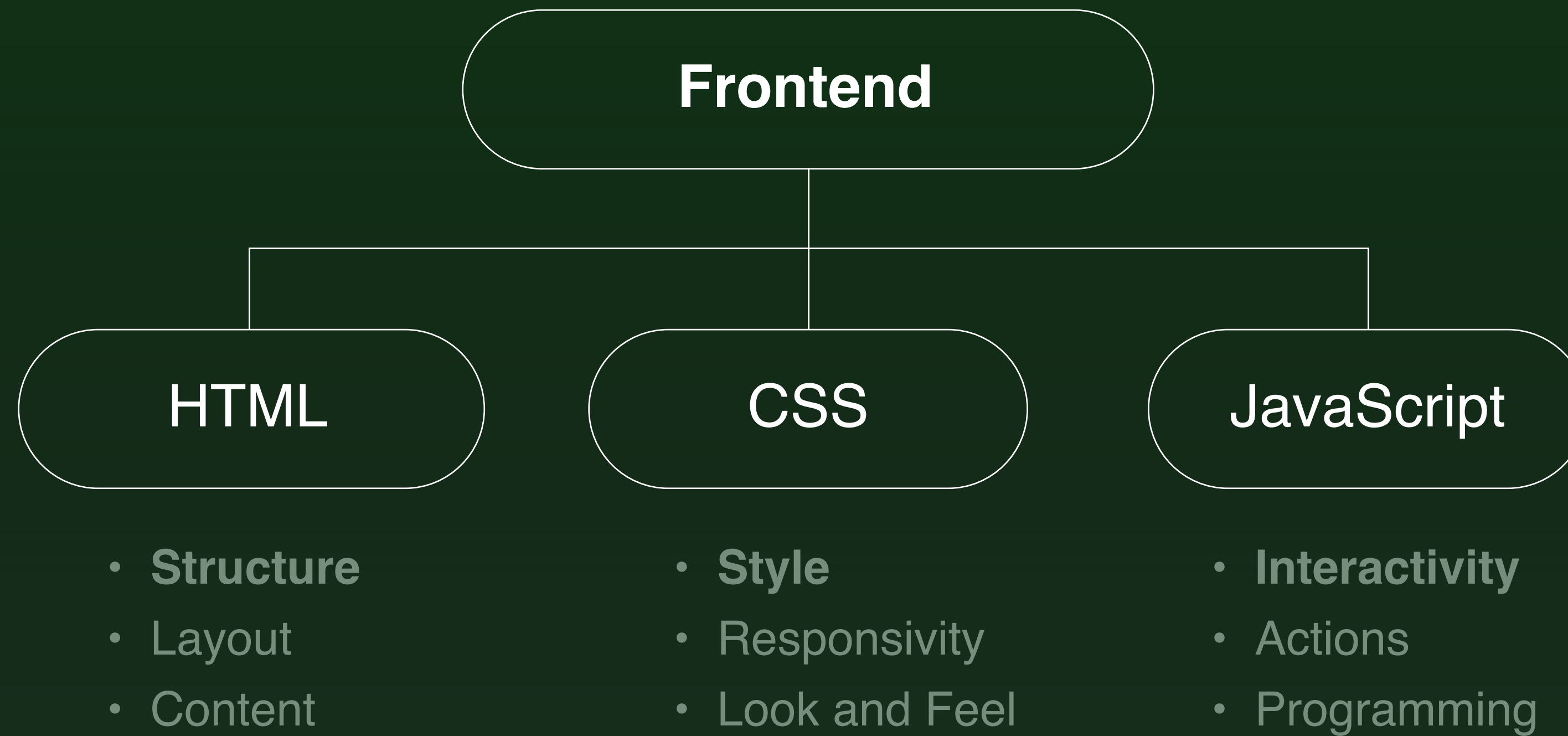
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M.Des (Interaction Design, 2023)
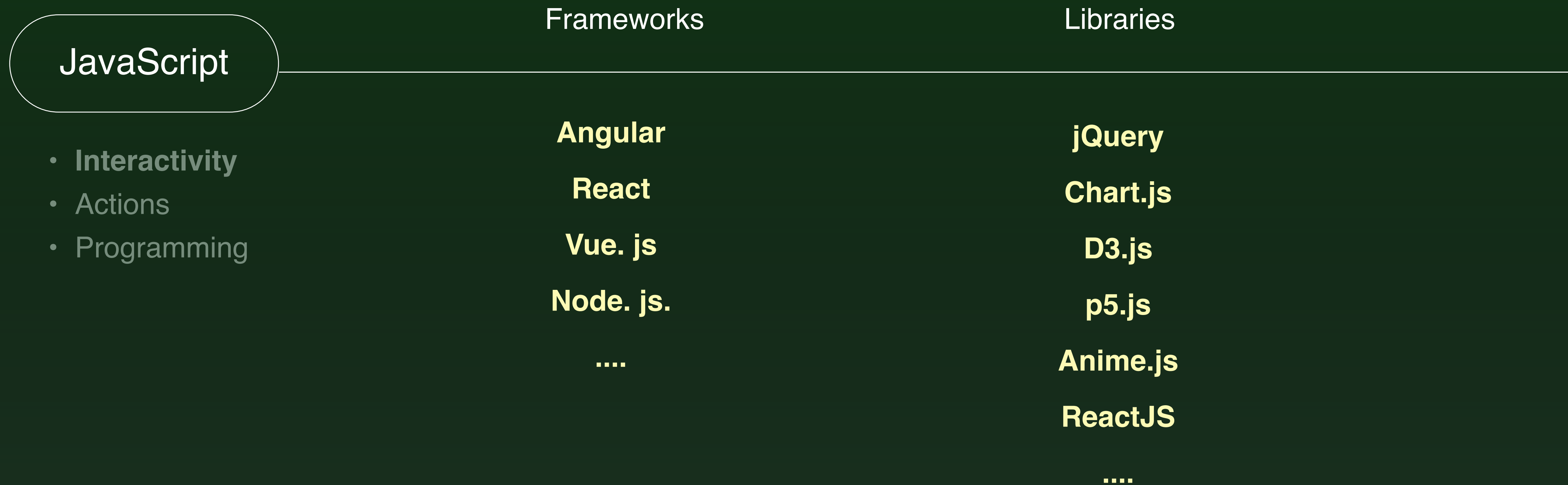
Context

Web Developement

Frontend

Backend

Frontend

Backend

Context

Frontend

HTML	CSS	JavaScript
• **Structure**	• **Style**	• **Interactivity**
• Layout	• Responsivity	• Actions
• Content	• Look and Feel	• Programming

Context

JavaScript

Frameworks

Libraries

- **Interactivity**
- Actions
- Programming

Angular

React

Vue. js

Node. js.

....

jQuery

Chart.js

D3.js

p5.js

Anime.js

ReactJS

....

p5.js

- JS library

- Creative coding

- For artists, designers, educators and anyone else!

- Open-source

ANYTHING YOU CAN IMAGINE.

Think of your whole browser page as your canvas

Features

Some key usage of **p5.js** are...

- Interactive visualizations

- Big data visualizations

- Animations

- Small Interactive games

- Data manipulation

- 2D/3D simulations

- and many more....

Prerequisite :

- HTML/CSS/JS Knowledge

- Basic programming or algorithm knowledge

Code Editor :

- p5.js online code editor ([Link](#))

- Any code editor(VS Code preffered)

Syntax

```
function setup() {
  createCanvas(400, 400);
}

function draw() {
  background(220);
}
```

setup():

It executes once when the program begins. createCanvas must be the first statement, which create the empty area for you to draw your content.

draw():

It is the function where you write your code that will be displayed in the canvas. The statements in the draw() function are executed in sequence.

Other functions

p5.js has a wide range of functions spread across multiple verticles.

3D	Data	IO	Shape
Color	Environment	Image	Structure
Constants	Events	Math	Transform
DOM	Foundation	Rendering	Typography

Other functions

p5.js has a wide range of functions spread across multiple verticles.

3D   Data   IO   Shape

Color   Environment   Image

Constants   Events   Math   **line()**

DOM   Foundation   Rendering   **circle()**

line()

Syntax

```
line(x1, y1, x2, y2)
```

```
line(x1, y1, z1, x2, y2, z2)
```

Parameters

|	
x1	Number: the x-coordinate of the first point
y1	Number: the y-coordinate of the first point
x2	Number: the x-coordinate of the second point
y2	Number: the y-coordinate of the second point
z1	Number: the z-coordinate of the first point
z2	Number: the z-coordinate of the second point

circle()

Syntax

```
circle(x, y, d)
```

Parameters

x	Number: x-coordinate of the center of the circle.
y	Number: y-coordinate of the center of the circle.
d	Number: diameter of the circle.

Demo 1
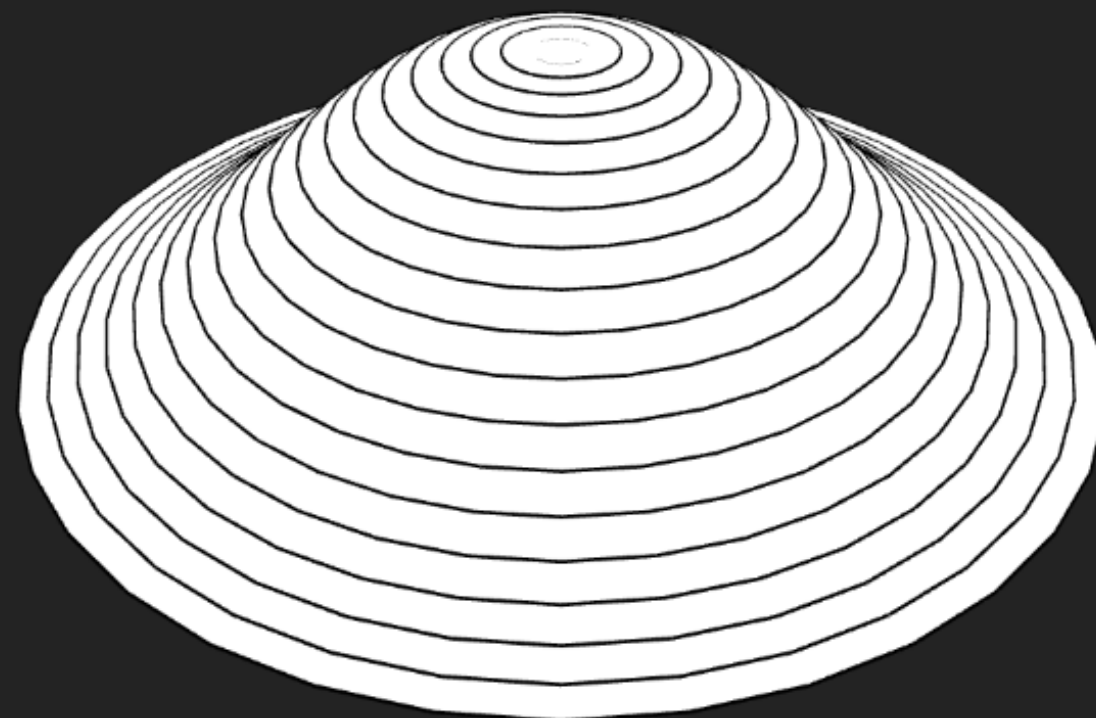

```
1  function setup() {
2      createCanvas(600, 600, WEBGL);
3      angleMode(DEGREES);
4
5  }
6
7  function draw() {
8
9      rotateX(60);
10     background(35);
11
12     for(var i=0; i<20; i++){
13
14         beginShape();
15             for(var j=0; j<360; j +=10){
16             var radius = i*10;
17             var x = radius*cos(j);
18             var y = radius*sin(j);
19             var z = sin(frameCount*1 + i*10)*50;
20
21             vertex(x, y, z);
22             }
23
24         endShape(CLOSE)
25     }
26  }
27
```
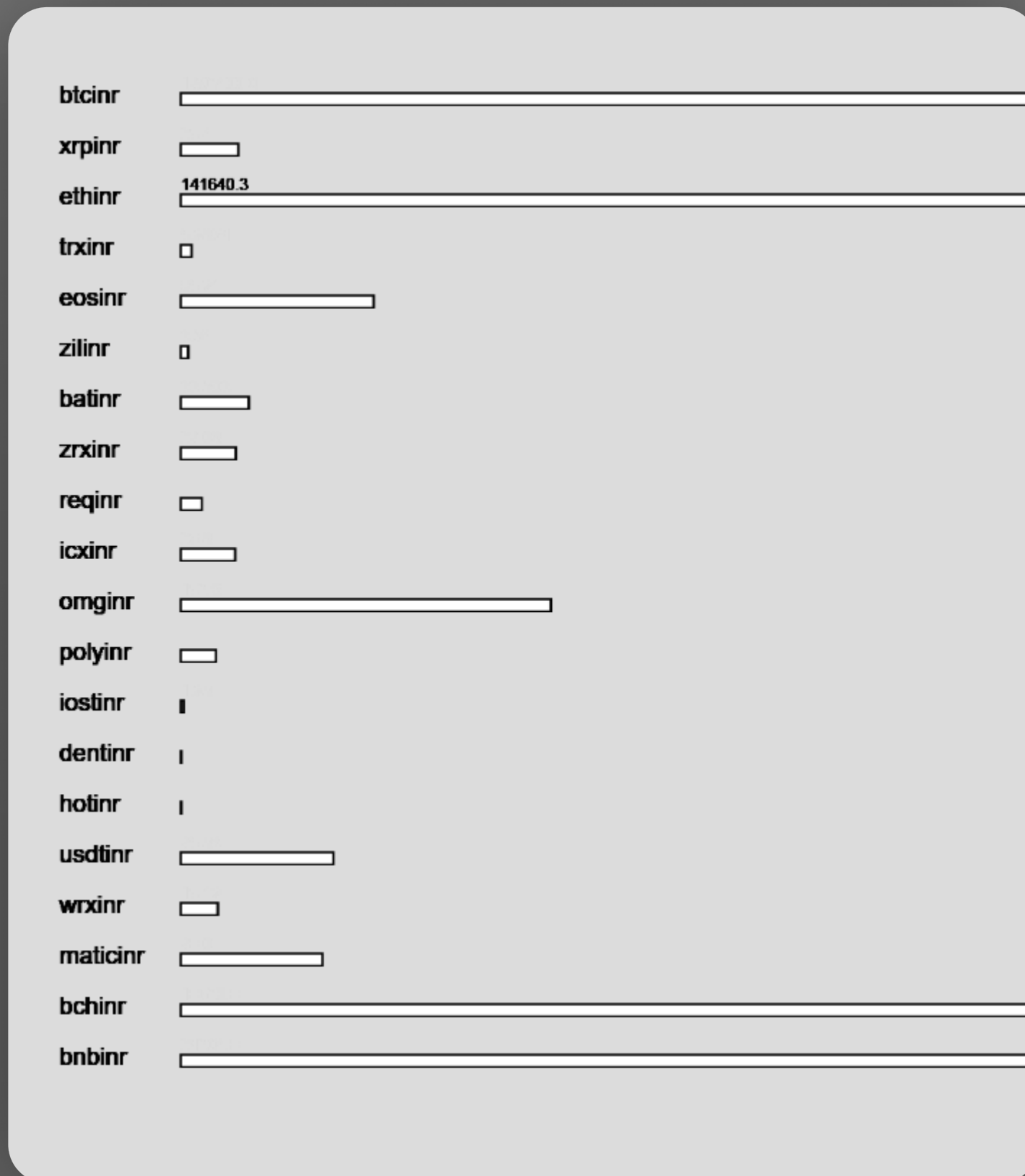
Big data visualization

- p5.js is not specifically built to visualize big data
- But the flexibility that it offers in terms of freedom of creation can be utilised to develop beautiful visualizations
- The process is lengthy as one need to start from scratch

let's see some examples...

Demo 2


```
4▽ function preload(){
5      data = loadJSON("https://api.wazirx.com/sapi/v1/tickers/24hr");
6  }
7▽ function setup() {
8      createCanvas(800, 800);
9      background(220);
10     // print(data);
11     var names;
12     //  for(i=0; i<100; i++){
13     //    names = data[i].symbol+"\n";
14     //    print(data[i].symbol);
15     // }
16  }
17
18
19▽ function draw() {
20▽    for(i=0; i<20; i++){
21       names = data[i].symbol;
22       prices = data[i].lastPrice;
23       textSize(12);
24       fill(0);
25       text(names,40,60+i*25);
26       fill(255);
27       rect(100, 55+i*25, prices, 6 );
28
29       var limit = 100+prices;
30
31▽      if((mouseX>100) && (mouseX<limit) && (mouseY>55+i*25) && (mouseY<61+i*25)){
32         t = 0;}
33▽      else{
34         t = 220;}
35
36       fill(t);
37       textSize(8);
38       text(prices,100, 53+i*25);
39
```

Drawbacks of p5.js

- Not completely data driven

- Coding is a must

- Community support is comparatively less

- Error handling in the online code editor is a bit difficult

```
<end>
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Happy coding !!!  ☺
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</end>
```