

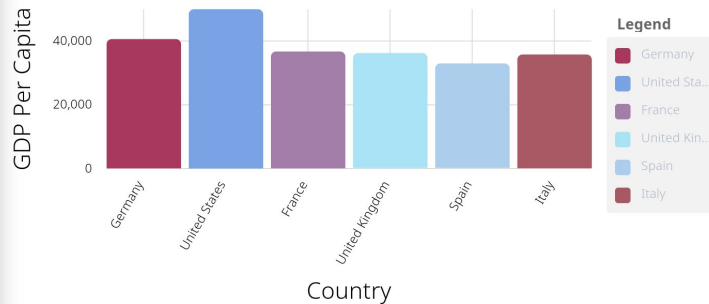
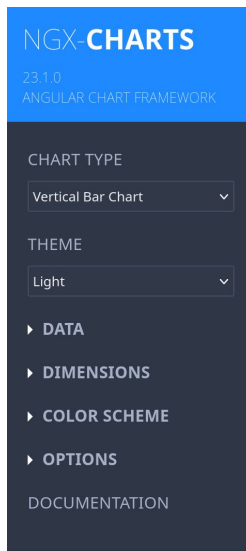


Refatoração smells Angular

Refatoração do projeto - ngx-charts, framework de gráficos declarativos

Sobre ngx-charts

É um framework de gráficos que combina o poder do Angular (para desenhar e animar) com a matemática do D3, permitindo visualizações bonitas, leves e totalmente customizáveis via CSS.





Contagem de smells

Smell	antes	depois
DOM	39	39
IIC	25	25
LC	45	35
ANY	62	52
TMI	47	37
LF	33	23
EPC	0	0

Smell LC

- Coesão
- Legibilidade

```
41 export class BarComponent implements OnChanges {
101   updatePathEl(): void {
104     if (this.animations) {
105       node.transition().duration(500).attr('d', path);
106     } else {
107       node.attr('d', path);
108     }
109   }
110
111 > getGradient(): Gradient[] { ...
128   }
129
130 > getStartingPath(): string { ...
155   }
156
157 > getPath(): string { ...
174   }
175   ⚡
176 > getRadius(): number { ...
184   }
185
186 > getStartOpacity(): number { ...
192   }
193
194 > get edges(): boolean[] { ...
212   }
```

Exemplo de correção do LC

```
1 > import { BarOrientation } from '../common/types/bar-orientation.enum';--
4
5 > export function getBarRadius(roundEdges: boolean, height: number, width: number): number {--
11 }
12
13 > export function getBarEdges(roundEdges: boolean, orientation: BarOrientation, value: number): boolean[] {--
31 }
32
33 > export function getBarPath(--
52 }
53
54 > export function getBarStartingPath(--
71 }
72
73 > export function getBarGradient(fill: string, stops: Gradient[], startOpacity: number): Gradient[] {--
90 }
91
92 > export function shouldHideBar(--
103 }
104
```

```
109 updatePathEl(): void {
110   const node = select(this.element).select('.bar');
111   const path = getBarPath(
112     this.x,
113     this.y,
114     this.width,
115     this.height,
116     getBarRadius(this.roundEdges, this.height, this.width),
117     this.roundEdges,
118     this.orientation,
119     getBarEdges(this.roundEdges, this.orientation, this.data.value)
120   );
121   if (this.animations) {
122     node.transition().duration(500).attr('d', path);
123   } else {
124     node.attr('d', path);
125   }
126 }
127 @HostListener('mouseenter')
128 onMouseEnter(): void {
129   this.activate.emit(this.data);
130 }
131
132 @HostListener('mouseleave')
133 onMouseLeave(): void {
134   this.deactivate.emit(this.data);
135 }
136 }
137
```



Smell TMI

- Legibilidade e poluição
- Acoplamento
- coesão

```
100 export class BarVerticalComponent extends BaseChartComponent {
101     @Input() legend = false;
102     @Input() legendTitle: string = 'Legend';
103     @Input() legendPosition: LegendPosition = LegendPosition.Right;
104     @Input() xAxis;
105     @Input() yAxis;
106     @Input() showXAxisLabel: boolean;
107     @Input() showYAxisLabel: boolean;
108     @Input() xAxisLabel: string;
109     @Input() yAxisLabel: string;
110     @Input() tooltipDisabled: boolean = false;
111     @Input() gradient: boolean;
112     @Input() referenceLines: any[];
113     @Input() showRefLines;
114     @Input() showRefLabels;
115     @Input() showGridLines: boolean = true;
116     @Input() activeEntries: any[] = [];
117     @Input() declare schemeType: ScaleType;
118     @Input() trimXAxisTicks: boolean = true;
119     @Input() trimYAxisTicks: boolean = true;
120     @Input() rotateXAxisTicks: boolean = true;
121     @Input() maxXAxisTickLength: number = 16;
122     @Input() maxYAxisTickLength: number = 16;
123     @Input() xAxisTickFormatting: any;
124     @Input() yAxisTickFormatting: any;
125     @Input() xAxisTicks: any[];
126     @Input() yAxisTicks: any[];
127     @Input() barPadding = 8;
128     @Input() roundDomains: boolean = false;
129     @Input() roundEdges: boolean = true;
130     @Input() yScaleMax: number;
131     @Input() yScaleMin: number;
132     @Input() showDataLabel: boolean = false;
133     @Input() dataLabelFormatting: any;
134     @Input() noBarWhenZero: boolean = true;
135     @Input() wrapTicks = false;
```



Exemplo de correção TMI

```
69 export class BarVerticalComponent extends BaseChartComponent {  
70   @Input() config: BarChartConfig;  
71 }
```

```
23 export interface BarChartConfig {  
24   legend: boolean;  
25   legendTitle: string;  
26   legendPosition: LegendPosition;  
27   xAxis: boolean;  
28   yAxis: boolean;  
29   showXAxisLabel: boolean;  
30   showYAxisLabel: boolean;  
31   xAxisLabel: string;  
32   yAxisLabel: string;  
33   tooltipDisabled: boolean;  
34   gradient: boolean;  
35   referenceLines: any[];  
36   showRefLines: boolean;  
37   showRefLabels: boolean;  
38   showGridLines: boolean;  
39   activeEntries: any[];  
40   schemeType: ScaleType;  
41   trimXAxisTicks: boolean;  
42   trimYAxisTicks: boolean;  
43   rotateXAxisTicks: boolean;  
44   maxXAxisTickLength: number;  
45   maxYAxisTickLength: number;  
46   xAxisTickFormatting: any;  
47   yAxisTickFormatting: any;  
48   xAxisTicks: any[];  
49   yAxisTicks: any[];  
50   barPadding: number;  
51   roundDomains: boolean;  
52   roundEdges: boolean;  
53   yScaleMax: number;  
54   yScaleMin: number;  
55   showDataLabel: boolean;  
56   dataLabelFormatting: any;  
57   noBarWhenZero: boolean;  
58   wrapTicks: boolean;  
59 }
```



Smell Any Overusing

O uso de any desliga a verificação de tipos do TypeScript, permitindo que qualquer valor seja atribuído ou acessado, o que esconde bugs e dificulta o uso do IntelliSense

```
✓ export class TreeMapCellSeriesComponent implements OnChanges {  
    @Input() data: any; // type this  
    @Input() dims: ViewDimensions;  
    @Input() colors: ColorHelper;  
    @Input() valueFormatting: any;  
    @Input() labelFormatting: any;  
    @Input() gradient: boolean; false
```

Exemplo Correção Any Overusing

```
@Input() maxYAxisTickLength: number = 16;  
- @Input() xAxisTickFormatting: any;  
- @Input() yAxisTickFormatting: any;  
+ @Input() xAxisTickFormatting: (val: any) => string;  
+ @Input() yAxisTickFormatting: (val: number) => string;  
@Input() xAxisTicks: any[];
```

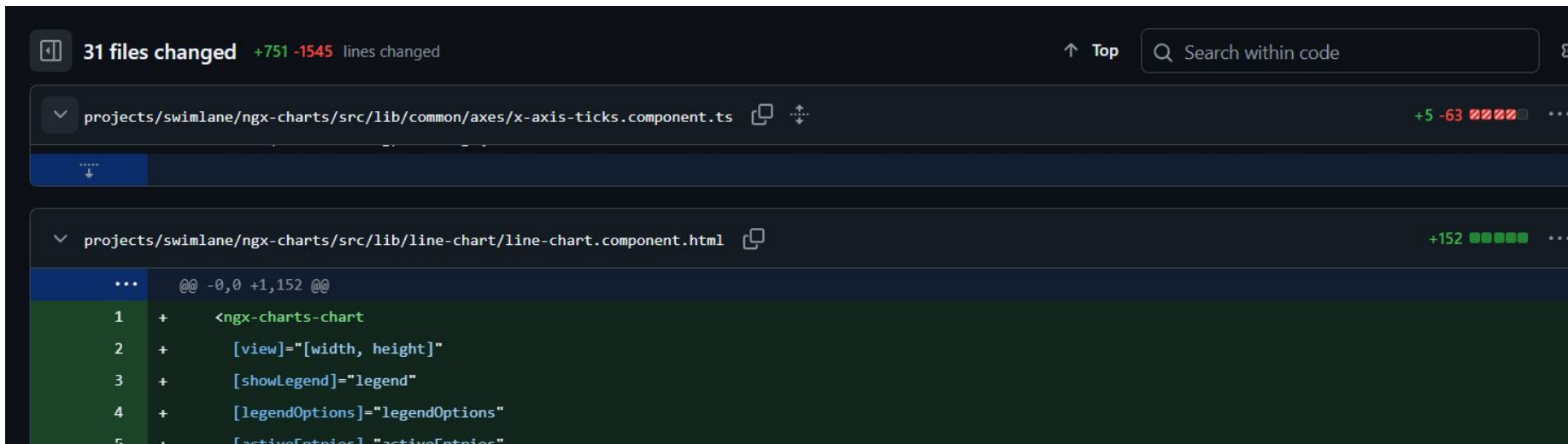


Smell Large File

Ocorre quando um único arquivo de código cresce excessivamente em número de linhas.

Exemplo de correção Large File

remoção de 152 linhas de html do arquivo do line-chart.component.ts e criação do arquivo line-chart.component.html



The screenshot shows a code editor interface with a dark theme. At the top, a status bar indicates "31 files changed" with a green "+751" and a red "-1545" for lines changed. To the right of this is a "Top" button and a search bar labeled "Search within code". Below the status bar, a file explorer on the left shows a tree structure with the following paths: "projects/swimlane/ngx-charts/src/lib/common/axes/x-axis-ticks.component.ts" and "projects/swimlane/ngx-charts/src/lib/line-chart/line-chart.component.html". The "line-chart.component.html" file is selected, and its diff view is shown on the right. The diff view shows a large deletion of 152 lines, indicated by a red "-152" and a series of red squares. The code content is visible in a dark green background with white text. The first line of the code is "

```
@@ -0,0 +1,152 @@
1 + <ngx-charts-chart
2 +   [view]="[width, height]"
3 +   [showLegend]="legend"
4 +   [legendOptions]="legendOptions"
5 +   [activeEntries]="activeEntries"
```



Conclusão

Dificuldades:

Paulo Victor:

1. Pouca experiência com o angular
2. dificuldade em trabalhar em um projeto antigo

Tiago:

1. Pouca experiência com frameworks frontend javascript
2. Conciliar essa entrega com as das outras cadeiras