



material didático

**Bootstrap**  
**Prof. Fábio Colombini**



# Introdução



- **O Bootstrap é um framework de Frontend para Web**, e para Mobile também, que agiliza o desenvolvimento de sites e aplicações web.
- Ele foi criado na sede do Twitter em 2010 por Mark Otto e Jacob Thornton. Era para ser, apenas, uma ferramenta interna do pessoal do Twitter, e era chamado de *Twitter Blueprint*, antes de ser publicado como *open-source*.
- No Bootstrap você pode utilizar vários códigos HTML e CSS padronizados, que definem a tipografia, os formulários, botões, tabelas, layouts, navegação, elementos de interface de usuário entre outros.
  - O Bootstrap é um framework para criar interfaces de usuário para Web (e Mobile Web)
  - O Bootstrap define estilos CSS, Componentes reutilizáveis
  - É um dos frameworks de frontend muito populares

# Aplicar Bootstrap em páginas HTML;

- <http://getbootstrap.com/>
- download
- package manager
  - npm i bootstrap@5.3.3
- CDN

# Usando CDN

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>Site com Bootstrap ( Tecnologias Web) </title>
```

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
<!-- Bootstrap -->
```

```
<link
```

```
href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-T3c6CoIi6uLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN" crossorigin="anonymous">
```

Css



```
</head>
```

```
<body>
```

```
<h1>Tecnologias Web</h1>
```

```
<script
```

```
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-C6RzsynM9kWDrmNeT87bh950GNyZPhcTNXj1NW7RuBCsyN/o0jlpcV8Qyq46cDfL" crossorigin="anonymous"></script>
```

JavaScript



```
</body>
```

```
</html>
```

# Quatro princípios do Design Gráfico

C ontrast | A lignment | R epetition | P roximity



# Quatro princípios do Design Gráfico



# Quatro princípios do Design Gráfico

## Contrast

**CARP AND CARP CULTURE**

**Fish culture**

Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries.

The early foreign writers always alluded to fisheries as the agriculture of waters, apparently considering seas, lakes, rivers, streams, and ponds inexhaustible sources of food which could never be impoverished by the wants or desires of man. As a comparatively remote epoch, however, the more observing and enlightened minds discovered that fisheries were but harvestings, and that in order to secure repeated satisfactory crops, some system of sowing must be resorted to.


**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue in all parts of the civilized world, and even among half-civilized people. Many of the Northern and Middle States have practically adopted this method, by the introduction of the much-prized black bass into their waters. This valuable variety of food

infected with pike, catfish, and other predatory varieties. It is, therefore, not only feasible, but desirable, to continue under such conditions the ancient methods. This method, however, is not regarded as scientific fish culture in its modern and restricted sense.

**Yang-Tse-Kiang**

The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascended the river of Kiang-si, and into the ditches which convey water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both the eggs and the young fish are the source of considerable income to the riparian proprietors. One of the French Jesuits, who at an early day traversed several of the Chinese provinces, in a published account of his travels, referred to the fish-cultural industry as follows: "In the great river Yang-tse-Kiang, not far from the city of Kowking-fu, in the province of Kiang-si, at certain times of the year, are assembled a prodigious number of boats for the purpose of purchasing the eggs of fish. Toward the month of May, the country people bar the river in various places with mats and hurdles for a length of about nine or ten leagues, leaving only sufficient space for the passage of the boats. The eggs of the fish are stopped by these hurdles. They can distinguish them by the eggs, where other persons can



## Alignment

**CARP AND CARP CULTURE**

**Fish culture**

Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries.

The early foreign writers always alluded to fisheries as the agriculture of waters, apparently considering seas, lakes, rivers, streams, and ponds inexhaustible sources of food which could never be impoverished by the wants or desires of man. As a comparatively remote epoch, however, the more observing and enlightened minds discovered that fisheries were but harvestings, and that in order to secure repeated satisfactory crops, some system of sowing must be resorted to.

**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue in some

infected with pike, catfish, and other predatory varieties. It is, therefore, not only feasible, but desirable, to continue under such conditions the ancient methods. This method, however, is not regarded as scientific fish culture in its modern and restricted sense.

**Yang-Tse-Kiang**

The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascended the river of Kiang-si, and into the ditches which convey water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both the eggs and the young fish are the source of considerable income to the riparian proprietors. One of the French Jesuits, who at an early day traversed several of the Chinese provinces, in a published account of his travels, referred to the fish-cultural industry as follows: "In the great river Yang-tse-Kiang, not far from the city of Kowking-fu, in the province of Kiang-si, at certain times of the year, are assembled a prodigious number of boats for the purpose of purchasing the eggs of fish. Toward the month of May, the country people bar the river in various places with mats and hurdles for a length of about nine or ten leagues, leaving only sufficient space for the passage of the boats. The eggs of the fish are stopped by these hurdles. They can distinguish them by the eggs, where other persons can



## Repetition

**CARP & CARP CULTURE**

**Fish culture**




Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries. The early foreign writers always alluded to fisheries as the agriculture of waters, apparently considering seas, lakes, rivers, streams, and ponds inexhaustible sources of food which could never be impoverished by the wants or desires of man. As a comparatively remote epoch, however, the more observing and enlightened minds discovered that fisheries were but harvestings, and that in order to secure repeated satisfactory crops, some system of sowing must be resorted to.

**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue in all parts of the civilized world, and even among half-civilized people. Many of the Northern and Middle States have practically adopted this method, by the introduction of the much-prized black bass into their waters.

**Yang-Tse-Kiang**

The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascended the river of Kiang-si, and into the ditches which convey water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both these very simple methods of replenishing their inland waters, the Chinese are said to have imitated others, which seem to have been very imperfectly understood and indicated by these travelers.

## Proximity

**CARP and CARP CULTURE**

**Fish Culture**



Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries. The early foreign writers always alluded to fisheries as the agriculture of waters, apparently considering seas, lakes, rivers, streams, and ponds inexhaustible sources of food which could never be impoverished by the wants or desires of man. As a comparatively remote epoch, however, the more observing and enlightened minds discovered that fisheries were but harvestings, and that in order to secure repeated satisfactory crops, some system of sowing must be resorted to.

**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue in all parts of the civilized world, and even among half-civilized people. Many of the Northern and Middle States have practically adopted this method, by the introduction of the much-prized black bass into their waters.

**Yang-Tse-Kiang**

The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascended the river of Kiang-si, and into the ditches which convey water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both these very simple methods of replenishing their inland waters, the Chinese are said to have imitated others, which seem to have been very imperfectly understood and indicated by these travelers.


**Facens**  
AQUÍ TEM ENGENHARIA

material didático



# Contraste

- O contraste envolve a diferença deliberada entre elementos, como cores, tamanhos, formas ou tipografia, para criar destaque e ênfase.
- O contraste é fundamental para direcionar a atenção do espectador para os elementos mais importantes de uma composição.
- Um bom uso do contraste pode tornar um design mais impactante e legível.

## Contrast

### CARP AND CARP CULTURE

**Fish culture**

Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries.

The early foreign writers always alluded to fisheries as the agriculture of waters, apparently confining seas, lakes, rivers, streams, and ponds to insatiable preserves of food which could never be impoverished by the wants or desires of man. At a comparatively remote epoch, however, the more observing and enlightened men discovered that fisheries were but harvestings, and that in order to secure repeated satisfactory crops, some system of rearing must be resorted to.

**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue to some extent in all parts of the civilized world, and even among half civilized people. Many of the Northern and Middle States have practically adopted this method, by the introduction of the much-prized black bass into their waters. This valuable variety of food

infected with pike, gill, catfish, and other predatory varieties. It is, therefore, not only feasible, but desirable, to continue under such conditions the ancient method. This method, however, is not regarded as scientific fish culture in its modern and restricted sense.

**Yang-Tse-Kiang**

The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascend the rivers of Kiang-si, and into the ditches which carry water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both the eggs and the young fish are the source of considerable income to the riparian proprietors. One of the French Jesuits, who at an early day traversed several of the Chinese provinces, in a published account of his travels, referred to the fish-culture industry as follows: "In the great river Yang-tse-Kiang, not far from the city of Kioanking-fou, in the province of Kiang-si, at certain times of the year,





**Facens**  
AQUÍ TEM ENGENHARIA

material didático

# Alinhamento

- O alinhamento envolve a organização precisa dos elementos em relação a uma linha horizontal ou vertical imaginária.
- O alinhamento ajuda a criar uma sensação de ordem e coesão em uma composição.
- Elementos alinhados criam uma conexão visual e facilitam a leitura e a compreensão do design.

## Alignment

**CARP AND CARP CULTURE**

**Fish culture**

Fish culture being barely a quarter of a century in existence in this country, it will be proper to commence this paper with a brief summary of its rise and progress in foreign countries.

The early foreign writers always alluded to fisheries as the agriculture of rivers, apparently considering seas, lakes, rivers, streams, and ponds inaccessible grounds of food which could never be improved by the weirs or dikes of man. At a comparatively remote epoch, however, the more observing and enlightened mind discovered that fisheries were but horticulture, and that in order to secure repeated satisfactory crops, some system of sowing must be resorted to.

**Ancient Romans**

This discovery, however, was evidently not made until mankind began to forsake their nomadic habits, and became settled in permanent locations. The first attempts at fish culture of which we have any history, were made by Chinese and ancient Romans. The methods adopted by the people of those nations were simply the collection of young fish into natural and artificial reservoirs, sometimes supplying them with artificial food, but generally permitting them to prey upon each other. This method is still in vogue in some

infected with pickered, pike, catfish, and other predatory varieties. It is, therefore, not only feasible, but desirable, to continue under such conditions the ancient methods. This method, however, is not regarded as scientific fish culture in its modern and restricted sense.

**Yang-Tze-Kiang**

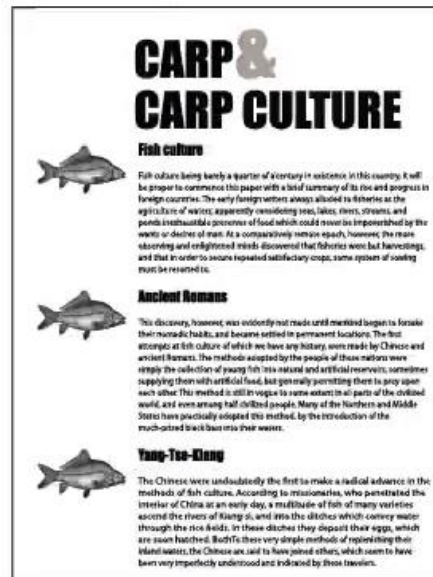
The Chinese were undoubtedly the first to make a radical advance in the methods of fish culture. According to missionaries, who penetrated the interior of China at an early day, a multitude of fish of many varieties ascend the rivers of Kiang si, and into the ditches which convey water through the rice fields. In these ditches they deposit their eggs, which are soon hatched. Both the eggs and the young fish are the source of considerable income to the riparian proprietors. One of the French Jesuits, who at an early day traversed several of the Chinese provinces, in a published account of his travels, referred to the fish-cultural industry as follows: "In the great river Yang-tze-Kiang, not far from the city of Kowking-fou, in the province of Kiang-si, at certain times of the year, are assembled a prodigious number of boats for the purchase there of the eggs of fish. Toward the month of May, the country people bar the river in various places with mats and hurdles for a length of about nine or ten leagues, leaving only sufficient space for the passage of the boats. The eggs of the fish are trapped by these hurdles. They can distinguish them by the eye, where other persons can



# Repetição e Padrão

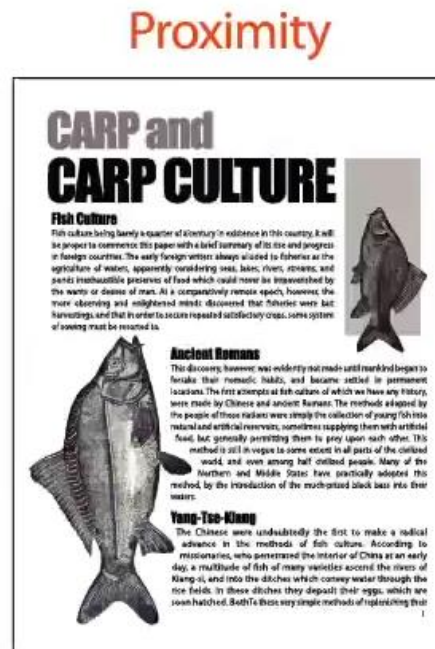
- A repetição envolve o uso consistente de elementos de design, como cores, formas ou estilos, ao longo de uma composição ou projeto. Isso ajuda a criar consistência e coesão visual.
- A criação de padrões repetitivos pode ser usada para transmitir uma sensação de unidade e identidade visual

## Repetition



# Proximidade

- Princípio que se relaciona mais com a organização espacial de elementos em uma composição.
- Ele sugere que elementos visualmente relacionados devem ser agrupados próximos uns dos outros para criar uma relação entre eles.
- Isso ajuda a organizar o conteúdo de maneira lógica e a facilitar a compreensão.



# Background colors

# Cores de Fundo



```
<div class="myDiv bg-danger"></div>  
.....  
<div class="myDiv bg-primary"></div>  
.....  
<div class="myDiv bg-secondary"></div>
```

# Containers

# Containers e Rows

Container



Container-fluid





# SISTEMA DE GRID

# Containers e Rows



```
<section class="container mt-3">
  <div class="row">
    <div class="col-6 bg-primary py-3"></div>
    <div class="col-3 bg-secondary py-3"></div>
    <div class="col-3 bg-success py-3"></div>
  </div>
  <div class="row">
    <div class="col-4 bg-danger py-3"></div>
    <div class="col-2 bg-warning py-3"></div>
    <div class="col-6 bg-dark py-3"></div>
  </div>
</section>
```

# Row

- As rows (linhas), no Bootstrap, definem as divisões horizontais do seu layout.
- Essas rows devem ficar dentro do container, e podem ser aplicadas a qualquer tag que defina estrutura, como div, header e footer.

```
<div class="container">  
  <div class="row">  
    ...  
  </div>  
</div>
```

```
<div class="container">  
  <div class="row">  
    ...  
  </div>  
  <div class="row">  
    ...  
  </div>  
</div>
```

- OBS: as linhas sempre ficarão uma embaixo da outra.

# Column

- As columns (colunas), no Bootstrap, definem as divisões verticais das rows (linhas) do seu layout.
- Columns devem estar sempre dentro das rows, e elas definem espaços na row para que você coloque os itens visuais ou conteúdos que foram projetados.
- Para criar uma *column* você pode criar uma *div* com os prefixos pré-definidos pelo Bootstrap, como no exemplo:

```
<div class="container">  
  <div class="row">  
    <div class="col-6"> </div>  
    <div class="col-6"> </div>  
  </div>  
</div>
```

- Neste exemplo, temos uma linha (.row) com duas colunas (.col-6).

# Bootstrap – Construção (Column)

No exemplo, nos tínhamos a seguinte soma:

```
<div class="row"> <!-- 6 + 6 = 12 -->  
  <div class="col-6"> </div>  
  <div class="col-6"> </div>  
</div>
```

Mas, você pode fazer qualquer combinação:

```
<div class="row"> <!-- 4 + 8 = 12 -->  
  <div class="col-4"> </div>  
  <div class="col-8"> </div>
```

```
</div><div class="row"> <!-- 3 + 6 + 3 = 12 -->  
  <div class="col-3"> </div>  
  <div class="col-6"> </div>  
  <div class="col-3"> </div>
```

```
</div><div class="row"> <!-- 10 + 2 = 12 -->  
  <div class="col-10"> </div>  
  <div class="col-2"> </div>  
</div>
```

# Grid System

span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1	span 1
span 4				span 4				span 4			
span 4				span 8							
span 6						span 6					
span 12											

# Grid System

1			
1	2		
1	2	3	
1	2	3	4

```
<section class="myDiv container">
  <div class="row">
    <div class="col bg-primary">1</div>
  </div>
  <div class="row">
    <div class="col bg-primary">1</div>
    <div class="col bg-secondary">2</div>
  </div>
  <div class="row">
    <div class="col bg-primary">1</div>
    <div class="col bg-secondary">2</div>
    <div class="col bg-warning">3</div>
  </div>
  <div class="row">
    <div class="col bg-primary">1</div>
    <div class="col bg-secondary">2</div>
    <div class="col bg-warning">3</div>
    <div class="col bg-dark text-info">4</div>
  </div>
</section>
```

# Breakpoint



# Breakpoints

min-width: 1200px - XL

min-width: 992px - LG

min-width: 768px - MD

min-width: 576px - SM

max-width: 575.98px - xtra-SM

- |                          |         |
|--------------------------|---------|
| •**Extra small (xs)      | < 576   |
| •Small (sm)              | ≥576px  |
| •Medium (md)             | ≥768px  |
| •Large (lg)              | ≥992px  |
| •Extra large (xl)        | ≥1200px |
| •Extra extra large (xxl) | ≥1400px |



# TESTANDO BOORSTRAP



## Exemplo de Tabela com Bootstrap

#	Nome	Email	Cidade
1	João Silva	joao.silva@example.com	São Paulo
2	Maria Oliveira	maria.oliveira@example.com	Rio de Janeiro

Fabio Colombini@2024

# Breakpoints

```
<div class="row">  
  <div class="col-4 col-sm-3 col-md-1 bg-primary      py-5"></div>  
  <div class="col-4 col-sm-3 col-md-1 bg-secondary    py-5"></div>  
  <div class="col-4 col-sm-3 col-md-1 bg-success      py-5 offset-3"></div>  
</div>
```

# TABELA COM BOOTSTRAP

# Tabela com Bootstrap

```
<div class="container mt-5">
  <h2 class="mb-4">Exemplo de Tabela com Bootstrap</h2>

  <table class="table table-striped table-bordered">
    <thead class="thead-dark">
      <tr>
        <th>#</th>
        <th>Nome</th>
        <th>Email</th>
        <th>Cidade</th>
      </tr>
    </thead>

    <tbody>
      <tr>
        <th>1</th>
        <td>João Silva</td>
        <td>joao.silva@example.com</td>
        <td>São Paulo</td>
      </tr>
    </tbody>
  </table>
</div>
```

# Tabela com Bootstrap

Pode colocar toda table dentro de uma div com `class="table-responsive"`

```
<div class="table-responsive">  
</div>
```

# Alinhamento e Offset (Flex Box)

# Alinhamento e Offset

Classes:

- d-flex
- flex-column
- justify-content-center
- align-items-center
- etc



# Alinhamento e Offset

- justify-content-start (row)
- justify-content-center
- justify-content-end
- justify-content-around (row)
- justify-content-between

# Alinhamento e Offset

- Offset-1 a 11



```
<div class="row">
  <div class="col-4 col-sm-3 col-md-1 bg-primary      py-5"></div>
  <div class="col-4 col-sm-3 col-md-1 bg-secondary   py-5"></div>
  <div class="col-4 col-sm-3 col-md-1 bg-success      py-5 offset-3"></div>
</div>
<div class="row">
  <div class="col-3 bg-danger      py-5 " ></div>
  <div class="col-2 bg-warning      py-5 offset-1"></div>
  <div class="col-6 bg-dark         py-5"></div>
</div>
```

# Padding e Margin

# Padding e Margin

- Margin (m) de 1 a 5
  - mt-5 - top
  - mb-3 - bottom
  - ms-1 - start
  - me-2 - end
  - mx-1 - eixo X
  - my-2 - eixo Y
  - m-5 - X e Y
- Padding (p)
  - pt-5

# Typography

# Typography

- text-lowercase ou uppercase
- text-capitalize
- display-1 to 4



# Buttons

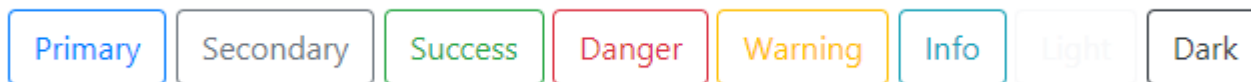
# Button

- Button colors



- `.btn`
- `.btn-default`
- `.btn-primary`
- `.btn-success`
- `.btn-info`
- `.btn-warning`
- `.btn-danger`
- `.btn-link`

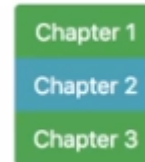
- Outline Buttons





# Button

- Button Groups
  - btn-group
  - btn-group-vertical



# Componentes

# Alert

```
<div id="liveAlertPlaceholder"></div>
  <button type="button" class="btn btn-primary" id="liveAlertBtn">Show live alert</button>
```

```
const alertPlaceholder = document.getElementById('liveAlertPlaceholder')
const appendAlert = (message, type) => {
  const wrapper = document.createElement('div')
  wrapper.innerHTML = [
    `<div class="alert alert-${type} alert-dismissible" role="alert">`,
    `  <div>${message}</div>`,
    `  <button type="button" class="btn-close" data-bs-dismiss="alert" aria-label="Close"></button>`,
    `</div>`
  ].join('')

  alertPlaceholder.append(wrapper)
}

const alertTrigger = document.getElementById('liveAlertBtn')
if (alertTrigger) {
  alertTrigger.addEventListener('click', () => {
    appendAlert('Nice, you triggered this alert message!', 'success')
  })
}
```

# Fomulário

```
<form>
  <div class="mb-3">
    <label for="exampleInputEmail1" class="form-label">Email address</label>
    <input type="email" class="form-control" id="exampleInputEmail1" aria-describedby="emailHelp">
    <div id="emailHelp" class="form-text">We'll never share your email with anyone else.</div>
  </div>
  <div class="mb-3">
    <label for="exampleInputPassword1" class="form-label">Password</label>
    <input type="password" class="form-control" id="exampleInputPassword1">
  </div>
  <div class="mb-3 form-check">
    <input type="checkbox" class="form-check-input" id="exampleCheck1">
    <label class="form-check-label" for="exampleCheck1">Check me out</label>
  </div>
  <button type="submit" class="btn btn-primary">Submit</button>
</form>
```

# Select

```
<select class="form-select w-25 mb-2">  
  <option selected>Open this select menu</option>  
  <option value="1">One</option>  
  <option value="2">Two</option>  
  <option value="3">Three</option>  
</select>
```

# Principais Componentes

- Accordion
- Card
- Carrousel
- Navbar
- Toast
  
- Icones