



PROGRAMMAZIONE WEB

IL FRAMEWORK BOOTSTRAP

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Cos'è Bootstrap



Un framework open-source per la realizzazione di siti Web responsive, nativamente pensati anche per far fronte alla diffusione dei dispositivi mobili, usato da circa l'1% dei siti pubblicati in rete
(fonte Twitter/X, Luglio 2023)

Nasce nell'Agosto 2011 da un'idea di Mark Otto e Jacob Thornton (all'epoca sviluppatori nel team di Twitter), attualmente è attiva la versione 5.3.x

Nasce dalla necessità di standardizzare il set di widgets e aspetti di stile nello sviluppo di applicazioni Web in seno alla compagnia

Nato per essere interamente CSS-based, il progetto è evoluto includendo molti plug-in Javascript ed è altamente personalizzabile



Bootstrap – Getting Started



Per iniziare a lavorare con il framework, basta scaricare il pacchetto predefinito di file CSS e Javascript e includerlo all'interno del proprio progetto (<https://getbootstrap.com/docs/5.3/getting-started/download/>)

Sono richieste anche le librerie Javascript **jQuery.js**, e **Popper.js**, non incluse nella distribuzione

```
<script src="https://code.jquery.com/jquery-3.6.0.slim.min.js"></script>  
<script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.5.3/dist/umd/popper.min.js"></script>
```



Bootstrap – Elementi principali



CSS – Configurazioni CSS di base, definizione dello stile dei principali elementi HTML, definizione della griglia utile per impostare il layout della pagina

Componenti – Un set di widget riutilizzabili per includere nella pagina Web iconografie, menù a tendina, barre di navigazione, finestre alert, popover, paginazioni, breadcrumb, progress bar e molto altro

Javascript – Un set di plugin jQuery utili per animare i componenti Bootstrap - Impareremo ad usarli quando sapremo di più su Javascript



<https://getbootstrap.com/docs/5.3/getting-started/introduction/>

Una predilezione per il mobile



Bootstrap è stato concepito avendo di fronte l'enorme diffusione dei dispositivi mobili (diversi tipi di schermo, diverse risoluzioni)

Per assicurare un rendering appropriato su qualsiasi dispositivo, va aggiunto all'inizio della pagina Web il **viewport** meta-tag

Per disabilitare lo zoom sui dispositivi mobili va aggiunto l'attributo **user-scalable=no**

```
<meta name="viewport" content="width=device-width, initial-scale=1.0,  
      user-scalable=no">
```



Page template



HTML5

Fogli di stile

Script Javascript

```
<!DOCTYPE html>
<html>
  <head>
    <title>Biblios :: My online Library</title>
    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0,
      user-scalable=no">

    <!-- Fogli di stile -->
    <link rel="stylesheet" href="css/bootstrap.min.css">
    <link href="css/style.css" rel="stylesheet">

    <!-- jQuery e plugin JavaScript -->
    <script src="http://code.jquery.com/jquery.js"></script>
    <script src="https://code.jquery.com/jquery-3.6.0.slim.min.js"></script>
    <script src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.5.3/dist/umd/popper.min.js"></script>
    <script src="js/bootstrap.min.js"></script>
  </head>
  <body>
```

HTML responsive



Bootstrap include un potente meccanismo di definizione della griglia di layout che riscalda il posizionamento dei contenuti della pagina su una griglia fino ad un massimo di 12 colonne per ottimizzare la resa di presentazione dei contenuti
(getbootstrap.com/docs/5.3/layout/grid)

Altri elementi (come le immagini e le tabelle) vanno resi *responsive* aggiungendo classi ad-hoc (come **img-responsive** o **table-responsive**)

Per esempio, la classe **img-responsive** imposta automaticamente **width:100%** e **height:auto**, permettendo di scalare gradualmente le dimensioni delle immagini adattandosi ai dispositivi usati per visualizzare la pagina Web



Grid System



La griglia è costruita a partire da una serie di **div** annidati, dove le classi di stile principali sono:

- ✓ **.container**, che imposta margini a destra e a sinistra della griglia e ne adatta la larghezza alla dimensione del dispositivo utilizzato per visualizzarla
- ✓ **.row**, che rappresenta un'intera riga
- ✓ **.col-XX-N** per ciascuna cella all'interno di una riga, per definire il numero di colonne **N** della griglia su cui si espande la cella (fino ad un massimo di 12) e la tipologia **XX** di dispositivo a cui si applica (tra **xs** = "extra small", **sm** = "small", **md** = "medium", **lg** = "large")

```
<div class="row">
  <div class="col-xs-12 col-sm-3">
    <div ...8 lines />
  </div>
  <div class="col-xs-12 col-sm-3">
    <div ...6 lines />
  </div>
  <div class="col-xs-12 col-sm-3">
    <div ...6 lines />
  </div>
  <div class="col-xs-12 col-sm-3">
    <div ...6 lines />
  </div>
</div>
```


Bootstrap – Gli altri elementi




Altre classi di stile definite nei file CSS riguardano:

- ✓ Aspetti tipografici (getbootstrap.com/docs/5.3/content/typography/)
 - ✓ Tabelle (getbootstrap.com/docs/5.3/content/tables/)
 - ✓ Forms (getbootstrap.com/docs/5.3/forms/overview/)
 - ✓ Immagini (getbootstrap.com/docs/5.3/content/images/)
- ... e tanto altro (getbootstrap.com/docs/5.3/getting-started/)

Running example (I)




[Home](#) [My Library](#) ▼

Home


My online Library

A very simple example of a website created during the Web Programming and Digital Services course. The site lists the books I am currently reading or have read, along with the list of authors who have populated my readings and imagination. The website will continue to grow during this semester, completing itself gradually thanks to the implementation of web technologies that will be introduced in the course. Enjoy!



Sow an act, and you reap a habit; sow a habit, and you reap a character; sow a character, and you reap a destiny.

[Indian proverb]

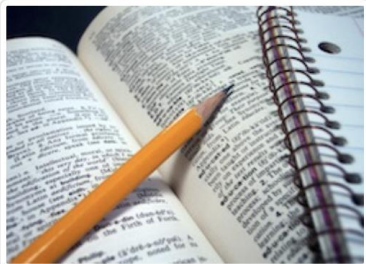
[Home](#) [My Library](#) ▼

[Books List](#)
[Authors List](#)

Home


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A very simple example of a website created during the Web Programming and Digital Services course. The site lists the books I am currently reading or have read, along with the list of authors who have populated my readings and imagination. The website will continue to grow during this semester, completing itself gradually thanks to the implementation of web technologies that will be introduced in the course. Enjoy!



Running example (II)



 Home My Library ▾

Home / Library / Books


My Books List

Create new book


Title	Author		
A sapiente vel est.	Towne	Edit	Delete
Ab perferendis.	Schroeder	Edit	Delete

Running example (II)



 Home My Library ▾

[Home](#) / [Library](#) / [Books](#)

 Home My Library ▾

[Home](#) / [Library](#) / [Books](#) / Add book

Insert new book

Title

Author

Running example (II)



Home My Library ▾

[Home](#) / [Library](#) / [Books](#)

Home My Library ▾

[Home](#) / [Library](#) / [Books](#) / Add book

Home My Library ▾

[Home](#) / [Library](#) / [Books](#) / Delete book

Delete book from the list

Deleting book. Confirm?

Revert	Confirm
The book will not be removed from the data base	The book will be permanently removed from the data base
<input type="button" value="↩ Cancel"/>	<input type="button" value="🗑 Delete"/>

Controllare il menu con navbar



<https://getbootstrap.com/docs/5.3/components/navbar/>

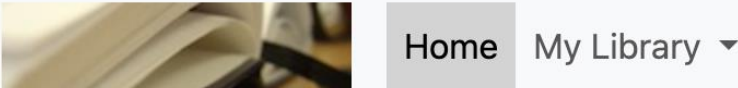
```
<nav class="navbar navbar-expand-lg bg-body-tertiary">
  <div class="container-fluid">
    <a class="navbar-brand" href="#">Biblios</a>
    <button class="navbar-toggler" type="button" data-bs-target="#navbarSupportedContent" data-bs-toggle="collapse">
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarSupportedContent">
      <ul class="navbar-nav me-auto mb-2 mb-lg-0">
        <li class="nav-item">
          <a class="nav-link" aria-current="page" href=" ../index.html">Home</a>
        </li>
        <li class="nav-item dropdown">
          <a class="nav-link dropdown-toggle active" href="#" role="button" data-bs-toggle="dropdown" aria-expanded=
            My Library
          </a>
          <ul class="dropdown-menu">
            <li><a class="dropdown-item" href=" ../books/books.html">Books List</a></li>
            <li><a class="dropdown-item" href=" ../authors/authors.html">Authors List</a></li>
          </ul>
        </li>
      </ul>
    </div>
  </div>
</nav>
```

Controllare il menu con navbar



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        </li>
        <li class="nav-item dropdown">
          <a class="nav-link dropdown-toggle active" href="#" role="button" data-bs-toggle="dropdown" aria-expanded=
            My Library
          </a>
          <ul class="dropdown-menu">
            <li><a class="dropdown-item" href=" ../books/books.html">Books List</a></li>
            <li><a class="dropdown-item" href=" ../authors/authors.html">Authors List</a></li>
          </ul>
        </li>
      </ul>
    </div>
  </div>
</nav>
```

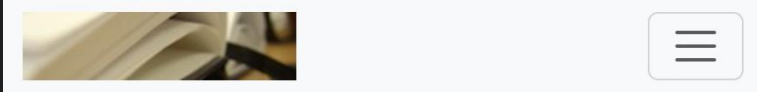


Controllare il menu con navbar



<https://getbootstrap.com/docs/5.3/components/navbar/>

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      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarSupportedContent">
      <ul class="navbar-nav me-auto mb-2 mb-lg-0">
        <li class="nav-item">
          <a class="nav-link" aria-current="page" href=".." index.html">Home</a>
        </li>
        <li class="nav-item dropdown">
          <a class="nav-link dropdown-toggle active" href="#" role="button" data-bs-toggle="dropdown" aria-expanded=
            My Library
          </a>
          <ul class="dropdown-menu">
            <li><a class="dropdown-item" href=".." books/books.html">Books List</a></li>
            <li><a class="dropdown-item" href=".." authors/authors.html">Authors List</a></li>
          </ul>
        </li>
      </ul>
    </div>
  </div>
</nav>
```



Inserire un breadcrumb



<https://getbootstrap.com/docs/5.3/components/breadcrumb/>

```
<div class="container-fluid d-flex justify-content-end">
  <nav aria-label="breadcrumb">
    <ol class="breadcrumb">
      <li class="breadcrumb-item" aria-current="page"><a href="../index.html">Home</a></li>
      <li class="breadcrumb-item active" aria-current="page">Library</li>
      <li class="breadcrumb-item active" aria-current="page">Books</li>
    </ol>
  </nav>
</div>
```



Inserire icone standardizzate



<https://icons.getbootstrap.com>

```
<!-- Bootstrap Icons -->  
<link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.11.3/font/bootstrap-icons.min.css">  
</head>
```

Icons

Start typing to filter...



```
<a class="btn btn-success"  
  href="insertBook.html">  
  <i class="bi bi-database-add"></i>  
  Create new book</a>
```

Create new book

Assegnare uno stile alle form



<https://getbootstrap.com/docs/5.3/forms/overview/>

```
<div class="container-fluid">
  <div class="row">
    <div class="col-md-12">
      <form name="book" method="get" action="books.html">
        <div class="form-group row mb-3">
          <div class="col-md-2">
            <label for="title">Title</label>
          </div>
          <div class="col-md-10">
            <input class="form-control" type="text" name="title"/>
          </div>
        </div>
        <div class="form-group row mb-3">
          <div class="col-md-2">
            <label for="author_id">Author</label>
          </div>
```

Assegnare uno stile alle form



<https://getbootstrap.com/docs/5.3/forms/overview/>

```
<div class="container-fluid">
  <div class="row">
    <div class="col-md-12">
      <form name="book" method="get" action="books.html">
        <div class="form-group row mb-3">
          <div class="col-md-2">
            <label for="title">Title</label>
          </div>
          <div class="col-md-10">
            <input class="form-control" type="text" name="title"/>
          </div>
        </div>
      </form>
    </div>
  </div>
</div>
```

Insert new book

Title

Author

Create

Cancel



Utilizzare le card



<https://getbootstrap.com/docs/5.3/components/card/>

```
<div class="container-fluid text-center">
  <div class="row">
    <div class="col-md-6 order-md-2">
      <div class="card border-secondary">
        <div class="card-header">
          Confirm
        </div>
        <div class="card-body">
          <p>
            The book <strong>will be permanently removed</strong> from the data base
          </p>
          <a class="btn btn-danger" href="books.html"><i class="bi bi-trash"></i> Delete</a>
        </div>
      </div>
    </div>
  </div>
</div>
```

Utilizzare le card



<https://getbootstrap.com/docs/5.3/components/card/>

```
<div class="container-fluid text-center">
  <div class="row">
    <div class="col-md-6 order-md-2">
      <div class="card border-secondary">
        <div class="card-header">
          Confirm
        </div>
        <div class="card-body">
          <p>
            The book <strong>will be permanently removed</strong> from the data base
          </p>
          <a class="btn btn-danger" href="books.html"><i class="bi bi-trash"></i> Delete</a>
        </div>
      </div>
    </div>
  </div>
</div>
```

Confirm

The book **will be permanently removed** from the data base

 Delete

Alcuni link utili ...



- ✓ Elementi di Bootstrap 5.3
(getbootstrap.com/docs/5.3/getting-started/)
- ✓ Esempi di Bootstrap 5.3
(getbootstrap.com/docs/5.3/examples)
- ✓ Un set di icone pronte all'uso (icons.getbootstrap.com)
- ✓ Una Community molto attiva (blog.getbootstrap.com)



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