Computer Science 3

Bootstrap

Lesson Objectives

Apply Bootstrap to various pages to make them responsive

Demonstrate the various uses of new CSS classes to easily make modern pages

Test pages on a variety of devices using the device emulator

Create web pages suitable for the client's needs and adhere to standards

What is Bootstrap?

It is a popular front-end open-source toolkit with a responsive grid system, prebuilt components, and JavaScript plugins.

It helps you design mobile-first websites with pre-set values for fonts, colors, and layouts. All you need to do is call the right class name.

The latest version is 5 but we will be mostly using 4.

For more details you can visit W3Schools or Get Bootstrap.

Important

As it is open-source, there can be plenty of helpful examples online. Please make sure that the example you are looking at matches your version of Bootstrap.

https://www.w3schools.com/bootstrap4/bootstrap_get_started.asp

HTML   CSS   JAVASCRIPT   SQL   PYTHON   PHP   BOOTSTRAP   HOW TO   W3.CSS   JAVA   JQUERY   C++   C#   R

Bootstrap 4 Tutorial

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Two Basic Bootstrap 4 Pages

The following example shows the code for a basic Bootstrap 4 page (with a responsive fixed width container):

Container Example

```html
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap 4 Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
  <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
</head>
<body>

<div class="container">
  <h1>My First Bootstrap Page</h1>
  <p>This is some text.</p>
</div>


</body>
</html>
```

Getting started

A starter template is available through this link and is used in the subsequent slides.

Starter Template, explained

```
1   <!DOCTYPE html>
2   <html lang="en">
3   <head>
4     <title>Bootstrap 4 Example</title>
5     <meta charset="utf-8">
6     <meta name="viewport" content="width=device-width, initial-scale=1">
7     <link rel="stylesheet"
    href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8     <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9     <script
    src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10    <script
    src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11  </head>
12  <body>

13  </body>
14  </html>
```

Lines 1 and 5

Bootstrap was made for HTML5.

Make sure to include the correct DOCTYPE and the right character set.

Starter Template, explained

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <title>Bootstrap 4 Example</title>
5    <meta charset="utf-8">
6    <meta name="viewport" content="width=device-width, initial-scale=1">
7    <link rel="stylesheet"
   href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9    <script
   src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10   <script
   src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11 </head>
12 <body>

13 </body>
14 </html>
```

Line 6

Bootstrap uses a mobile-first approach. Make sure to have the following line to use the correct zoom for any device.

Viewport simply refers to the browser window.

The "width" property inside tells the browser to use the actual device width.

The "initial-scale" property sets the initial zoom level to 100%, so it isn't zoomed out.

Starter Template, explained

```
1   <!DOCTYPE html>
2   <html lang="en">
3   <head>
4     <title>Bootstrap 4 Example</title>
5     <meta charset="utf-8">
6     <meta name="viewport" content="width=device-width, initial-scale=1">
7     <link rel="stylesheet"
    href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8     <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9     <script
    src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10    <script
    src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11  </head>
12  <body>

13  </body>
14  </html>
```

Line 7

This line adds the "minified" version of the Bootstrap CSS library to your page.

It is pointing to a CDN (Content Delivery Network) which uses the file on the server that is closest to the device opening your page.

This means that the CSS file used is being treated "externally". This also means that you can override some of the defaults set by Bootstrap like fonts and colors with your own set.

Starter Template, explained

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <title>Bootstrap 4 Example</title>
5    <meta charset="utf-8">
6    <meta name="viewport" content="width=device-width, initial-scale=1">
7    <link rel="stylesheet"
   href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9    <script
   src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10   <script
   src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11 </head>
12 <body>

13 </body>
14 </html>
```

Lines 8, 9, and 10

These lines add the supporting JavaScript libraries to make some interesting Bootstrap features work.

These features include dismissible alerts, pop-ups, and other advanced features.

Starter Template, explained

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4    <title>Bootstrap 4 Example</title>
5    <meta charset="utf-8">
6    <meta name="viewport" content="width=device-width, initial-scale=1">
7    <link rel="stylesheet"
   href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8    <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9    <script
   src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10   <script
   src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11 </head>
12 <body>

13 </body>
14 </html>
```

Want to copy this template?

Due care was done in displaying the text, but some hidden formatting and paragraph symbols might get copied along the way.

You can choose to copy from this link on W3Schools instead.

Checkpoint

At this point, you should already have your page with the Bootstrap lines added. The following topics & examples will depend on it.

Remember, if a word starts with a period, it's a class name like `.container`

Bootstrap Containers

Balutin mo ako sa liwanang ng iyong pagmamahal
Hayaang matakpan ang kinang na di magtatagal

Containers

Containers in Bootstrap help wrap site contents. There are 2 kinds. You can also use more than one kind of container in a page but you can't nest them.

.container

.container-fluid

```
<div class="container">Your content here</div>

<div class="container-fluid">Your content here</div>
```
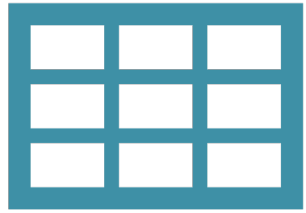
Containers

.container

The "regular" container adds whitespaces on the sides for widescreen devices that disappear or shrink when viewed on a narrower screen.
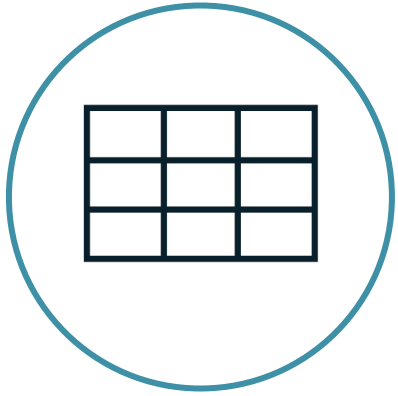
.container-fluid

The "fluid" container fills up the whole viewport with content. Both help the content conform to a responsive layout.

The Bootstrap Grid

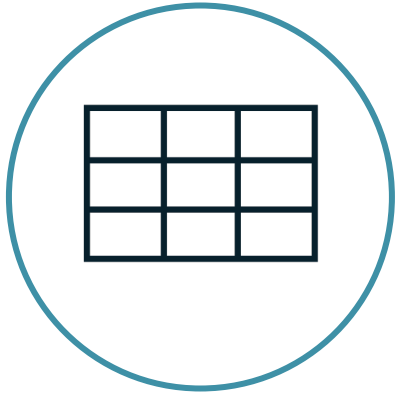On the 12th Day of Christmas, Sir JM gave to me – 12 easy Bootstrap columns…

The Grid

The Bootstrap Grid is composed of rows and exactly 12 columns.

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

Image from W3Schools / Bootstrap 4 / Grid Basic

The Grid

You can choose how many columns you want to put and how much size to use as long as the sizes sum up to 12. The following classes create columns:

- `.col-#`
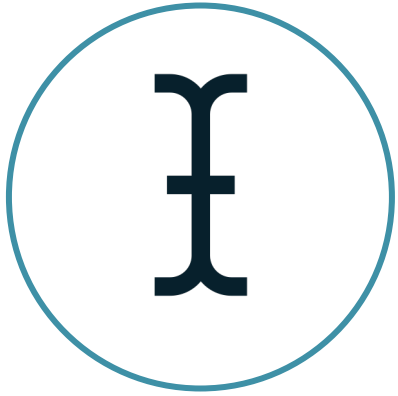- `.col-sm-#`
- `.col-md-#`
- `.col-lg-#`
- `.col-xl-#`

Where # represents the set of all integers inclusively between 1 and 12.
In practice, I just use `.col-sm-#` and let the browser handle everything.
Just make sure to put them inside rows like this example:

```html
<div class="row">
    <div class="col-sm-6">My first column</div>
    <div class="col-sm-6">My second column</div>
</div>
```

Contents in Bootstrap

Remember, contents are intended to fill their containers.

Text

Text in Bootstrap behave the same way they do in standard HTML. The major thing you'll notice is that Bootstrap comes with a modern default font face. Headings and paragraphs can be used as usual or they can be given extra classes to give extra formatting.

You can also import fonts from Google Fonts into your document the same way we did it as before. Use standard CSS to include your custom font.

Want to style a certain set of text? Use the <span> tag:

```
<p>I am a <span class="text-uppercase">special</span> paragraph</p>
```

With so many possible classes and examples, check out the page on Bootstrap Typography.

Colors

Bootstrap has a default set of colors namely, primary (blue), success (green), info (teal), warning (yellow), danger (red), secondary (gray), text-white (white), text-dark (dark gray), text-body (black), and text-light (light gray).

See the following code:
```
<p>Losing him was <span class="text-primary">blue</span> like I'd never known</p>
```

These colors can be used for text or as background colors. See more in the Bootstrap Colors page.

While these may be the default ones, you can still specify your own color palette using CSS.

Images

Images, by default, are not responsive in Bootstrap. In many cases, we want our images to fit inside our containers. To make it so, add the .img-fluid class

```
<img src="vase.jpg" class="img-fluid img-thumbnail">
```

Notice how we no longer needed to set the width and height of the image in the attributes nor in the style tag for CSS. And yes, you can put more than one class.

Bootstrap also comes with some minor styling classes like rounded corners (.rounded), thumbnail (.img-thumbnail), and circle (.rounded-circle). For more details, see Bootstrap Images.
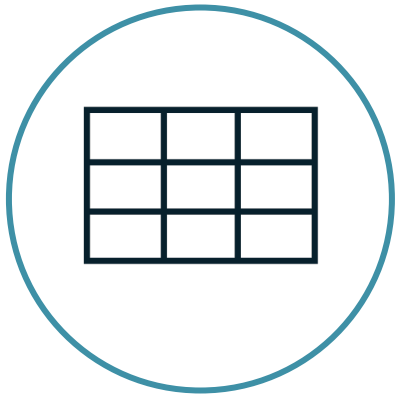
Tables

Tables can be formatted in a variety of ways in Bootstrap. The table class (.table) needs to be added to the table tag when the table is created.

```
<table class="table">
...
</table>
```

The image on the right shows a basic example of adding the table class. You can also have banded rows, mouse-over effects, and dark tables as you see fit. To see their classes and examples, head over to Bootstrap Tables.

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com

Some advanced features

The more you know. These are just 3 of many. The rest is up to you to explore.
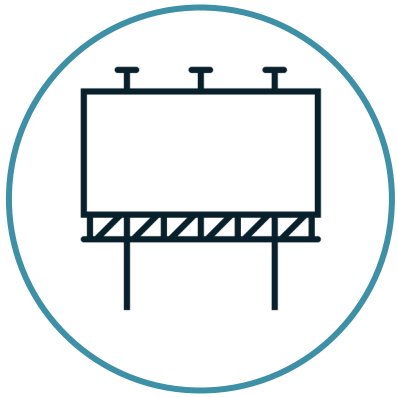
Jumbotron

The Jumbotron is like an in-your-face kind of header which takes a huge portion of the page just to display some text. This is great for homepages or page titles. [Read more](…)…

```html
<div class="container">
  <div class="jumbotron">
    <h1>Bootstrap Tutorial</h1>
    <p>Bootstrap is the most popular HTML, CSS, and
    JS framework for developing responsive, mobile-
    first projects on the web.</p>
  </div>
  <p>This is some text.</p>
  <p>This is another text.</p>
</div>
```

Bootstrap Tutorial

Bootstrap is the most popular HTML, CSS, and JS framework for developing responsive, mobile-first projects on the web.

This is some text.

This is another text.

Card

The Card can be used to surround some text with a border to separate it from what the page generally contains. It can have a header, body, and footer but uses a number of helper classes.

```html
<div class="card">
  <div class="card-header">Header</div>
  <div class="card-body">Content</div>
  <div class="card-footer">Footer</div>
</div>
```

Header
Content
Footer

An example of this can be used to show who wrote an article with an image appearing as the header. For more examples of cards, visit the Bootstrap Cards page.

Utilities

Want to add borders or spaces without dropping a single line of CSS? There's a class for that.

SPACING – {m or p} {side | t, b, l, r, x, y, null} – {size | 0 $\leq$ size $\leq$ 5 or auto}

m for margin
p for padding

t for top
b for bottom
l for left
r for right
x for left and right
y for top and bottom
blank for all sides

EXAMPLES
mx-auto
pt-1
mb-2
p-3

Size's numbers have specific values that correspond to various values.

Spacing is the most useful for me but there are a lot more by visiting Bootstrap Utilities.

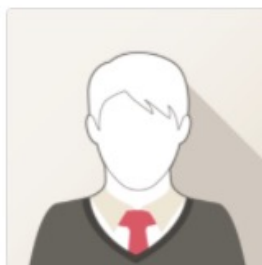# Everything together

Throwing all these examples together in a document.

Bootstrap Demo

Bootstrap is the most popular HTML, CSS...

Juan Dela Cruz

Juan Dela Cruz is the author of this page. He is currently doing nothing.

See Profile

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer placerat, arcu in consequat condimentum, orci enim placerat nulla, ac viverra ante ipsum a nisl. Nulla eu scelerisque lorem, nec auctor est. Donec eget justo et ante vehicula scelerisque quis a felis. Nulla facilisi. Maecenas et placerat ligula. Ut non augue viverra turpis sodales efficitur

In eu gravida ex, a ullamcorper metus. Curabitur eu ante felis. Suspendisse ac blandit leo. Nulla sit amet ante rutrum, tempor lectus ut, venenatis lorem. Proin eget commodo nisi. Nullam interdum blandit eros, pulvinar sagittis metus pharetra nec. Duis pharetra varius rhoncus. Suspendisse egestas pulvinar efficitur. Vestibulum rutrum viverra dictum. Vestibulum ante ipsum primis in faucibus orci luctus et ultrices posuere cubilia curae;

Nulla tempus risus sit amet mauris aliquam, a feugiat lorem efficitur. Nam lectus ipsum, tempus in placerat nec, aliquam ut sapien. Curabitur eu ex mauris. Nunc tincidunt ex ac urna iaculis euismod. Donec tempus, erat id ultricies tempor, eros quam mattis nunc, a auctor nulla odio id justo. Proin ullamcorper ante vel orci blandit, sit amet malesuada metus bibendum. In a scelerisque arcu, a congue risus. Vivamus rutrum, diam nec sagittis auctor, mauris nisi blandit est, quis lacinia sem enim sed felis. Morbi vel laoreet risus. Curabitur elit massa, blandit nec vestibulum sed, sodales a enim. In et justo eu sapien eleifend sollicitudin sagittis id ante.

```
1   <!DOCTYPE html>
2   <html lang="en">
3     <head>
4       <meta charset="utf-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1">
6       <title>Bootstrap Demo</title>
7       <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8       <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9       <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10      <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11      <style>
12        .btn-outline-primary{
13          color: goldenrod;
14          border-color: goldenrod;
15        }
16        .btn-outline-primary:hover{
17          background-color: goldenrod;
18          border-color: goldenrod;
19        }
20        btn-outline-primary:active{
21          background-color: goldenrod;
22          border-color: goldenrod;
23        }
24      </style>
25    </head>
26    <body>
27      <div class="jumbotron jumbotron-fluid">
28        <div class="container">
29          <h1 class="display-4">Bootstrap Demo</h1>
30          <p>Bootstrap is the most popular HTML, CSS...</p>
31        </div>
32      </div>
```

Lines 1 to 10

These lines come with the starter template to help you create your page.

```
1   <!DOCTYPE html>
2   <html lang="en">
3     <head>
4       <meta charset="utf-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1">
6       <title>Bootstrap Demo</title>
7       <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8       <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9       <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10      <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11      <style>
12        .btn-outline-primary{
13          color: goldenrod;
14          border-color: goldenrod;
15        }
16        .btn-outline-primary:hover{
17          background-color: goldenrod;
18          border-color: goldenrod;
19        }
20        btn-outline-primary:active{
21          background-color: goldenrod;
22          border-color: goldenrod;
23        }
24      </style>
25    </head>
26    <body>
27      <div class="jumbotron jumbotron-fluid">
28        <div class="container">
29          <h1 class="display-4">Bootstrap Demo</h1>
30          <p>Bootstrap is the most popular HTML, CSS...</p>
31        </div>
32      </div>
```

Lines 11 to 24

This example overrides the default "primary" color by changing it to "goldenrod" using internal CSS.

Remember, you can override the Bootstrap default design values using your own CSS code.

Using your own external CSS? Put your link tag after the Bootstrap lines.

```
1   <!DOCTYPE html>
2   <html lang="en">
3     <head>
4       <meta charset="utf-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1">
6       <title>Bootstrap Demo</title>
7       <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
8       <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>
9       <script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.16.0/umd/popper.min.js"></script>
10      <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
11      <style>
12        .btn-outline-primary{
13          color: goldenrod;
14          border-color: goldenrod;
15        }
16        .btn-outline-primary:hover{
17          background-color: goldenrod;
18          border-color: goldenrod;
19        }
20        btn-outline-primary:active{
21          background-color: goldenrod;
22          border-color: goldenrod;
23        }
24      </style>
25    </head>
26    <body>
27      <div class="jumbotron jumbotron-fluid">
28        <div class="container">
29          <h1 class="display-4">Bootstrap Demo</h1>
30          <p>Bootstrap is the most popular HTML, CSS...</p>
31        </div>
32      </div>
```

Lines 27 to 32

This example uses a fluid jumbotron which spans the whole width of the screen.

The Heading 1 element uses the special "display-4" class to make the text appear larger and thinner.

```
33    <div class="container">
34      <div class="row">
35        <div class="col-sm-2">
36          <div class="card">
37            <img src="https://www.w3schools.com/bootstrap4/img_avatar1.png" class="card-img-top">
38            <div class="card-body">
39              <h4 class="card-title">Juan Dela Cruz</h4>
40              <p class="card-text">Juan Dela Cruz is the author of this page. He is currently doing nothing.</p>
41              <a href="#" class="btn btn-outline-primary">See Profile</a>
42            </div>
43          </div>
44        </div>
45        <div class="col-sm-5">
46          <img src="https://www.history.com/goldengatebridge.jpg" class="img-fluid img-thumbnail mb-3">
47          <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. <span class="text-info">Integer</span></p>
48          <p>Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.</p>
49        </div>
50        <div class="col-sm-5">
51          <p>In eu gravida ex, a ullamcorper metus. Curabitur eu ante felis. Suspendisse ac blandit</p>
52          <p>Nulla tempus risus sit amet mauris aliquam, a feugiat lorem efficitur. Nam lectus ipsum, </p>
53          <p>Vivamus lectus dui, congue nec laoreet quis, pharetra ac augue. Etiam fermentum quis enim</p>
54        </div>
55      </div>
56    </div>
57  </body>
58 </html>
```

Line 33

This uses the regular container which adds spaces to the sides for wide screens.

```
33    <div class="container">
34        <div class="row">
35            <div class="col-sm-2">
36                <div class="card">
37                    <img src="https://www.w3schools.com/bootstrap4/img_avatar1.png" class="card-img-top">
38                    <div class="card-body">
39                        <h4 class="card-title">Juan Dela Cruz</h4>
40                        <p class="card-text">Juan Dela Cruz is the author of this page. He is currently doing nothing.</p>
41                        <a href="#" class="btn btn-outline-primary">See Profile</a>
42                    </div>
43                </div>
44            </div>
45            <div class="col-sm-5">
46                <img src="https://www.history.com/goldengatebridge.jpg" class="img-fluid img-thumbnail mb-3">
47                <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. <span class="text-info">Integer</span></p>
48                <p>Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.</p>
49            </div>
50            <div class="col-sm-5">
51                <p>In eu gravida ex, a ullamcorper metus. Curabitur eu ante felis. Suspendisse ac blandit</p>
52                <p>Nulla tempus risus sit amet mauris aliquam, a feugiat lorem efficitur. Nam lectus ipsum, </p>
53                <p>Vivamus lectus dui, congue nec laoreet quis, pharetra ac augue. Etiam fermentum quis enim</p>
54            </div>
55        </div>
56    </div>
57 </body>
58 </html>
```

Line 34

This marks the start of the grid layout. The page uses 2-5-5 which totals 12. The first column displays a card showing the author. The next 2 columns shows the content of the page.

```
33    <div class="container">
34      <div class="row">
35        <div class="col-sm-2">
36          <div class="card">
37            <img src="https://www.w3schools.com/bootstrap4/img_avatar1.png" class="card-img-top">
38            <div class="card-body">
39              <h4 class="card-title">Juan Dela Cruz</h4>
40              <p class="card-text">Juan Dela Cruz is the author of this page. He is currently doing nothing.</p>
41              <a href="#" class="btn btn-outline-primary">See Profile</a>
42            </div>
43          </div>
44        </div>
45        <div class="col-sm-5">
46          <img src="https://www.history.com/goldengatebridge.jpg" class="img-fluid img-thumbnail mb-3">
47          <p>Lorem ipsum dolor sit amet, consectetur adipiscing elit. <span class="text-info">Integer</span></p>
48          <p>Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.</p>
49        </div>
50        <div class="col-sm-5">
51          <p>In eu gravida ex, a ullamcorper metus. Curabitur eu ante felis. Suspendisse ac blandit</p>
52          <p>Nulla tempus risus sit amet mauris aliquam, a feugiat lorem efficitur. Nam lectus ipsum, </p>
53          <p>Vivamus lectus dui, congue nec laoreet quis, pharetra ac augue. Etiam fermentum quis enim</p>
54        </div>
55      </div>
56    </div>
57  </body>
58  </html>
```
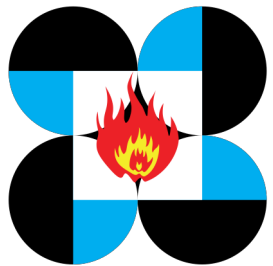
Line 45 to 53

This shows an example of a paragraph with an image made to fit its container. A spacing class of mb-3 was added to keep the image from running to close to the paragraph.

Line 47 contains a span of text that's been given a teal color.

Note that all the text in these lines have been truncated to fit.

Computer Science 3

Bootstrap