

## Unit 6

**Q 1) Answer the following in brief.**

**I) How do you make images responsive?**

**II) What are the advantages of bootstrap?**

**Ans.)** I) To make images responsive, you can use CSS techniques such as setting the `max-width` property to 100% and the `height` property to auto. This ensures that the image will scale proportionally and fit within its container as the screen size changes. Additionally, you can use CSS media queries to apply different styles or adjust the image size for different screen sizes.

II) Bootstrap is a popular front-end framework that offers several advantages:

1. **Responsive design:** Bootstrap provides a grid system and pre-built responsive CSS classes that make it easy to create responsive layouts that adapt to different screen sizes and devices.
2. **Time-saving:** Bootstrap comes with a comprehensive set of ready-to-use components, such as navigation bars, forms, buttons, and modals. These pre-built components save development time and effort.
3. **Consistency:** Bootstrap provides a consistent and visually appealing look and feel across different browsers and devices. It ensures that your website or application has a professional and polished appearance.
4. **Cross-browser compatibility:** Bootstrap takes care of handling browser inconsistencies and ensures that your website looks and functions consistently across various browsers.
5. **Customization:** Bootstrap allows customization through its extensive list of CSS classes and Sass variables. You can easily modify the default styles to match your branding or design requirements.
6. **Community and documentation:** Bootstrap has a large and active community, which means you can find plenty of resources, tutorials, and community support. The official Bootstrap documentation is well-documented and provides comprehensive guidance on using the framework effectively.

**Q 2) Answer the following in detail.**

**I) What is the difference between Bootstrap 4 and Bootstrap 5?**

**II) How can we create an alert in Bootstrap? Explain with example.**

**III) Explain the properties of flexbox.**

## **Ans.)I) Difference between Bootstrap 4 and Bootstrap 5:**

Bootstrap 4 and Bootstrap 5 are both popular versions of the Bootstrap framework, but there are some notable differences between them:

1. **Size:** Bootstrap 5 is smaller in file size compared to Bootstrap 4. This is because Bootstrap 5 dropped support for older browsers and removed some redundant code, resulting in a more streamlined and lightweight framework.
2. **jQuery Dependency:** Bootstrap 4 heavily relied on jQuery for its JavaScript components. However, Bootstrap 5 has reduced the dependence on jQuery and introduced native JavaScript for most of its components. This change improves performance and reduces the overall file size.
3. **Grid System:** The grid system in Bootstrap 5 has undergone some changes. In Bootstrap 4, the grid system used classes like ``col-xs``, ``col-sm``, ``col-md``, and ``col-lg`` to define column sizes. In Bootstrap 5, these classes have been simplified to ``col-xx`` (where ``xx`` represents a number from 1 to 12) for all screen sizes, making it more intuitive and easier to use.
4. **Customization:** Bootstrap 5 introduced a new feature called "CSS Custom Properties" (also known as CSS variables), which allows for easier customization of Bootstrap's default styles. It provides a set of predefined CSS variables that you can override to customize various aspects of the framework.
5. **Component Updates:** Some Bootstrap components have been updated or redesigned in Bootstrap 5. For example, the navigation component now includes a new off-canvas feature, and the dropdown component has been enhanced with improved accessibility features.
6. **Utility Classes:** Bootstrap 5 introduced a set of new utility classes that offer more flexibility and control over the layout and styling of elements. These utility classes enable you to make quick adjustments to margins, paddings, alignments, and more, without the need for writing custom CSS.

## **II) Creating an alert in Bootstrap:**

In Bootstrap, you can create alerts to display important messages or notifications to the users. Alerts can have different styles, such as success, info, warning, or danger. Here's an example of how you can create an alert using Bootstrap's classes:

```
```html
<div class="alert alert-success" role="alert">
  This is a success alert!
```

```
</div>
...

```

You can also add additional elements or customize the alert further. For example, you can include a close button to allow the user to dismiss the alert:

```
```html
<div class="alert alert-info alert-dismissible fade show" role="alert">
  This is an info alert!
  <button type="button" class="btn-close" data-bs-dismiss="alert"
  aria-label="Close"></button>
</div>
...

```

### III) Properties of Flexbox:

Flexbox is a powerful CSS layout module that provides a flexible way to arrange and align elements within a container. It offers several properties to control the behavior of flex containers and flex items:

1. `display`: This property defines the element as a flex container. It can have the value `flex` to create a block-level flex container or `inline-flex` to create an inline-level flex container.
2. `flex-direction`: This property specifies the direction of the main axis along which flex items are laid out within the flex container. It can take values like `row` (left to right), `column` (top to bottom), `row-reverse`, or `column-reverse`.
3. `flex-wrap`: This property controls whether flex items are forced onto a single line or can wrap onto multiple lines. It can have values like `nowrap` (all flex items are in one line), `wrap` (flex items wrap onto multiple lines), or `wrap-reverse` (flex items wrap onto multiple lines in reverse order).
4. `justify-content`: This property aligns flex items along the main axis. It can take values like `flex-start` (items are packed at the start of the container), `center` (items are centered within the container), `flex-end` (items are packed at the end of the container), and more.
5. `align-items`: This property aligns flex items along the cross axis (perpendicular to the main axis). It can have values like `stretch` (items are stretched to fill the container), `center` (items are centered vertically within the container), `flex-start`, `flex-end`, and more.

6. ``align-content``: This property is similar to ``align-items``, but it controls the alignment of flex lines when there is extra space in the cross axis. It can take values like ``flex-start``, ``center``, ``flex-end``, ``stretch``, and ``space-between``.

7. ``flex-grow``, ``flex-shrink``, and ``flex-basis``: These properties control how flex items grow, shrink, and behave in relation to each other. ``flex-grow`` specifies the ability of an item to grow, ``flex-shrink`` specifies the ability to shrink, and ``flex-basis`` specifies the initial size before free space is distributed.

**Q 3) Answer the following in brief.**

**I) Explain `.img-rounded` class with an example.**

**II) Enlist Bootstrap layout components.**

**Ans.)** I) The `.img-rounded`` class in Bootstrap was used in earlier versions (Bootstrap 3 and earlier) to give images a rounded border. However, this class has been deprecated in Bootstrap 4 and removed in Bootstrap 5. In the latest versions of Bootstrap, you can achieve the same effect using CSS properties or by defining custom classes.

Example:

```
```html
<!-- Bootstrap 3 -->


<!-- Deprecated in Bootstrap 4 and removed in Bootstrap 5 -->
```
```

II) Bootstrap provides several layout components to create responsive and well-structured web layouts. Some of the commonly used layout components in Bootstrap are:

1. Grid System: The grid system is one of the core components of Bootstrap. It allows you to create responsive layouts by dividing the page into 12 columns. You can use classes like ``col-`` to specify the width of columns and create responsive grids.

2. Containers: Bootstrap offers container classes (``container`` and ``container-fluid``) to wrap your content and provide a responsive fixed or full-width container.

3. Navbar: The navbar component provides a responsive navigation bar with various styling options. It can include a logo, links, dropdown menus, and other navigation elements.

4. Cards: Cards are flexible and lightweight containers used to display content. They can be used to showcase various types of information, such as images, text, buttons, and more.

5. Jumbotron: The jumbotron component is a large callout or hero section that grabs attention. It can be used to highlight key information or provide an introductory message.

6. Modal: Modals are dialog boxes that overlay the page content to display additional information or prompt user actions. Bootstrap provides a modal component that can be easily customized and triggered using JavaScript.

7. Carousel: The carousel component allows you to create image sliders or carousels to showcase multiple images or content in a rotating manner.

8. Tabs and Pills: Bootstrap offers tab and pill components to create tabbed navigation or content sections. These components allow users to switch between different sections of content.

**Q 4) Answer the following in detail.**

**I) Write a code to display responsive images and video gallery. II) Enlist and explain various classes use to create panel in Bootstrap.**

**III) Create following form using Bootstrap.**

**Email:**

  
**Password:**

☐ Remember me

**Ans.) I) Code to display responsive images and video gallery:**

To display responsive images in Bootstrap, you can use the `img-fluid` class, which automatically scales the image to fit its parent container. For a video gallery, you can use the Bootstrap Carousel component to create a carousel of videos. Here's an example code:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Responsive Images and Video Gallery</title>
```

```

<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

<div class="container">

  <!-- Responsive Image -->
  <div class="row">
    <div class="col-md-6">
      
    </div>
  </div>

  <!-- Video Gallery -->
  <div class="row mt-5">
    <div class="col-md-8 offset-md-2">
      <div id="videoCarousel" class="carousel slide" data-ride="carousel">
        <ol class="carousel-indicators">
          <li data-target="#videoCarousel" data-slide-to="0" class="active"></li>
          <li data-target="#videoCarousel" data-slide-to="1"></li>
          <li data-target="#videoCarousel" data-slide-to="2"></li>
        </ol>
        <div class="carousel-inner">
          <div class="carousel-item active">
            <iframe src="https://www.youtube.com/embed/video1"
allowfullscreen></iframe>
          </div>
          <div class="carousel-item">
            <iframe src="https://www.youtube.com/embed/video2"
allowfullscreen></iframe>
          </div>
          <div class="carousel-item">
            <iframe src="https://www.youtube.com/embed/video3"
allowfullscreen></iframe>
          </div>
        </div>
        <a class="carousel-control-prev" href="#videoCarousel" role="button"
data-slide="prev">
          <span class="carousel-control-prev-icon" aria-hidden="true"></span>
          <span class="sr-only">Previous</span>
        </a>
        <a class="carousel-control-next" href="#videoCarousel" role="button"
data-slide="next">

```

```

        <span class="carousel-control-next-icon" aria-hidden="true"></span>
        <span class="sr-only">Next</span>
    </a>
</div>
</div>
</div>

</div>

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
...

```

## II) Classes used to create panels in Bootstrap:

In Bootstrap, the panel component was available in earlier versions (Bootstrap 3 and earlier). However, it has been deprecated in Bootstrap 4 and removed in Bootstrap 5. The recommended alternative for creating panels in Bootstrap 4 and 5 is to use cards.

Cards provide a flexible and responsive way to display content, and they offer several classes and options for customization. Here are some important classes used with cards:

### 1. `.card``:

The base class for a card component.

### 2. `.card-header``: Used to add a header section to the card.

### 3. `.card-body``: Used to wrap the main content of the card.

### 4. `.card-footer``: Used to add a footer section to the card.

### 5. `.card-title``: Specifies the title of the card.

### 6. `.card-text``: Used to add textual content within the card.

7. `.card-img-top`: Specifies an image placed at the top of the card.
8. `.card-img-bottom`: Specifies an image placed at the bottom of the card.
9. `.card-link`: Adds a link or button within the card.

Here's an example code snippet demonstrating the usage of these classes to create a card panel:

```
```html
<div class="card">
  <div class="card-header">
    Card Header
  </div>
  <div class="card-body">
    <h5 class="card-title">Card Title</h5>
    <p class="card-text">Some quick example text to build on the card.</p>
    <a href="#" class="card-link">Card Link</a>
    <a href="#" class="card-link">Another Link</a>
  </div>
  <div class="card-footer">
    Card Footer
  </div>
</div>
```
```

### III) Creating a form using Bootstrap:

Here's an example of creating a form using Bootstrap:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Bootstrap Form Example</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <div class="container">
    <form>
      <div class="form-group">
        <label for="name">Name:</label>
```



```

        <input type="text" class="form-control" id="name" placeholder="Enter your
name">
    </div>
    <div class="form-group">
        <label for="email">Email:</label>
        <input type="email" class="form-control" id="email" placeholder="Enter your
email">
    </div>
    <div class="form-group">
        <label for="message">Message:</label>
        <textarea class="form-control" id="message" rows="3" placeholder="Enter your
message"></textarea>
    </div>
    <button type="submit" class="btn btn-primary">Submit</button>
</form>
</div>

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
...

```

**Q 5) Answer the following in brief.**

**I) What is Bootstrap? Write down the usage of Bootstrap.**

**II) Write usage of following elements in Bootstrap with an example. <small><mark>**

**Ans.)** I) Bootstrap is a popular open-source framework for building responsive and mobile-first websites and web applications. It provides a collection of CSS and JavaScript components and utilities that make it easier to design consistent and visually appealing user interfaces.

Usage of Bootstrap:

- Responsive Layout: Bootstrap helps in creating responsive layouts that adapt to different screen sizes and devices, providing a seamless user experience across desktops, tablets, and mobile devices.
- Pre-styled Components: Bootstrap offers a wide range of pre-styled components such as buttons, forms, navigation bars, cards, modals, and more. These components can be easily customized and integrated into your web project.

- Grid System: Bootstrap's grid system allows you to create responsive and flexible layouts by dividing the page into a 12-column grid. This enables you to arrange content in a structured manner and achieve consistent alignment.
- Typography: Bootstrap provides a set of typography styles and classes for headings, paragraphs, lists, and other text elements. This ensures consistent and visually appealing typography throughout the website.
- CSS Customization: Bootstrap can be customized to match your project's specific design requirements. You can override default styles, modify variables, and create custom CSS classes to achieve the desired look and feel.
- JavaScript Components: Bootstrap includes a set of JavaScript plugins that enhance the functionality of your website. These plugins cover areas such as carousels, modals, dropdowns, tooltips, and more, providing interactive and dynamic features.

II) Usage of ``<small>`` and ``<mark>`` elements in Bootstrap:

1. ``<small>`` element: The ``<small>`` element in HTML is used to represent smaller, secondary text within a document. In Bootstrap, the ``<small>`` element can be used in combination with classes to style the text. For example:

```
```html
<p>This is some normal text. <small class="text-muted">This is smaller and muted text.</small></p>
```
```

2. ``<mark>`` element: The ``<mark>`` element in HTML is used to highlight or mark a section of text. In Bootstrap, the ``<mark>`` element can be used to highlight text with a background color. For example:

```
```html
<p>This is some normal text. <mark>This text is highlighted.</mark></p>
```
```

**Q 6) Answer the following in detail.**

**I) Explain typography in Bootstrap.**

**II) Write a program to show image gallery using thumbnail class. III) Create a navigation bar with Bootstrap.**

**Ans.) I) Typography in Bootstrap:**

Typography plays a crucial role in the design and readability of a website. Bootstrap provides a comprehensive set of typography classes and styles that allow you to create consistent and visually appealing text elements. Here are some key features of typography in Bootstrap:

1. Headings: Bootstrap offers six levels of headings (`<h1>` to `<h6>`) with predefined styles. These headings have different font sizes and line heights, providing a clear visual hierarchy.
2. Body text: The `.lead` class can be added to a `

` element to create a larger and more prominent text style for introductory or highlighted content.
3. Text colors: Bootstrap provides text color classes, such as `.text-primary`, `.text-success`, `.text-danger`, and more. These classes can be applied to any text element to change its color.
4. Text alignment: Bootstrap offers classes for aligning text. The classes `.text-left`, `.text-center`, `.text-right`, and `.text-justify` can be used to align text to the left, center, right, or justified within its container.
5. Text transformation: Bootstrap provides classes for transforming text. The classes `.text-lowercase`, `.text-uppercase`, and `.text-capitalize` can be used to convert text to lowercase, uppercase, or capitalize the first letter of each word.
6. Font weight and italics: Bootstrap offers classes to control the font weight and style of text. The classes `.font-weight-bold` and `.font-weight-normal` can be used to make text bold or normal, and the class `.font-italic` can be used to apply italics to text.
7. Abbreviations and blockquotes: Bootstrap provides classes for styling abbreviations (`<abbr>`) and blockquotes (`<blockquote>`). The classes `.initialism` and `.blockquote` can be applied to these elements, respectively, to style them appropriately.

II) Program to show image gallery using the thumbnail class:

Here's an example program that demonstrates how to create an image gallery using the `.thumbnail` class in Bootstrap:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Image Gallery with Bootstrap</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>
```

```

<div class="container">
  <h2>Image Gallery</h2>
  <div class="row">
    <div class="col-md-4">
      <a href="image1.jpg" class="thumbnail">
        
      </a>
    </div>
    <div class="col-md-4">
      <a href="image2.jpg" class="thumbnail">
        
      </a>
    </div>
    <div class="col-md-4">
      <a href="image3.jpg" class="thumbnail">
        
      </a>
    </div>
  </div>
</div>

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
...

```

### III) Creating a navigation bar with Bootstrap:

To create a navigation bar with Bootstrap, you can utilize the `.navbar` class along with various supporting classes. Here's an example of creating a basic navigation bar using Bootstrap:

```

...html
<!DOCTYPE html>
<html>
<head>
  <title>Bootstrap Navigation Bar</title>

```

```

<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

<nav class="navbar navbar-expand-lg navbar-dark bg-dark">
  <a class="navbar-brand" href="#">Logo</a>
  <button class="navbar-toggler" type="button" data-toggle="collapse"
data-target="#navbarNav"
  aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">
    <span class="navbar-toggler-icon"></span>
  </button>
  <div class="collapse navbar-collapse" id="navbarNav">
    <ul class="navbar-nav">
      <li class="nav-item active">
        <a class="nav-link" href="#">Home</a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="#">About</a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="#">Services</a>
      </li>
      <li class="nav-item">
        <a class="nav-link" href="#">Contact</a>
      </li>
    </ul>
  </div>
</nav>

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
'''

```

**Q 7) Answer the following in brief.**

**1) Enlist and explain ways to include Bootstrap in website.**

## II) Write a difference between table class and table-bordered class with an example.

**Ans.)** I) Ways to include Bootstrap in a website:

1. Download and host locally: You can download the Bootstrap CSS and JavaScript files from the official Bootstrap website (<https://getbootstrap.com>) and host them on your web server. Then, include the downloaded files in your HTML code using ``<link>`` and ``<script>`` tags.

2. CDN (Content Delivery Network): Bootstrap is available through popular CDNs, such as MaxCDN and Cloudflare. You can include the Bootstrap files directly from the CDN by adding the appropriate URLs in your HTML code. For example:

```
```html
<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>
```
```

3. Package Managers: If you are using a package manager like npm or yarn for your web project, you can install Bootstrap as a package and include it in your project's build process. This allows for better control and version management of Bootstrap.

4. Online Bootstrap Builders: There are online tools available that allow you to customize and generate a customized version of Bootstrap. These tools provide a user-friendly interface to select the desired components, styles, and options, and then provide you with the necessary CSS and JavaScript files to include in your website.

II) Difference between `.table` class and `.table-bordered` class in Bootstrap:

1. `.table` class: The `.table` class is used to create a basic, unstyled table in Bootstrap. It provides a structured layout for tabular data. By default, the table has no borders or additional styling, and it adapts to the width of the content within it. Here's an example:

```
```html
<table class="table">
  <thead>
```

```

<tr>
  <th>Name</th>
  <th>Email</th>
  <th>Phone</th>
</tr>
</thead>
<tbody>
  <tr>
    <td>John Doe</td>
    <td>john@example.com</td>
    <td>1234567890</td>
  </tr>
  <tr>
    <td>Jane Smith</td>
    <td>jane@example.com</td>
    <td>9876543210</td>
  </tr>
</tbody>
</table>
...

```

2. `.table-bordered` class: The `.table-bordered` class, when added along with the `.table` class, adds borders to the table and its cells. It creates a visually distinct separation between the cells and the table itself. Here's an example:

```

<<html
<table class="table table-bordered">
  <!-- Table content goes here -->
</table>
...

```

**Q 8) Answer the following in detail.**

**I) Enlist different button size classes and show all button size with an example.**

**II) Enlist and explain container classes in Bootstrap.**

**III) Explain hover row and condensed table with an example.**

**Ans.)I) Different button size classes in Bootstrap:**

Bootstrap provides several button size classes that allow you to customize the size of buttons according to your design needs. Here are the different button size classes in Bootstrap:

1. `.btn-sm`: This class is used to create a small-sized button.

2. `.btn`: This is the default button size class, representing a medium-sized button.

3. `.btn-lg`: This class is used to create a large-sized button.

To demonstrate the different button sizes, here's an example:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Button Sizes in Bootstrap</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <button type="button" class="btn btn-sm btn-primary">Small Button</button>
  <button type="button" class="btn btn-primary">Medium Button</button>
  <button type="button" class="btn btn-lg btn-primary">Large Button</button>

  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
  <script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
  <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
```

## II) Container classes in Bootstrap:

Container classes in Bootstrap are used to wrap and contain the content within a fixed-width container. They provide a consistent and responsive layout for the content on different screen sizes. Here are the container classes available in Bootstrap:

1. `.container`: The `.container` class creates a fixed-width container that is centered horizontally on the page. It adjusts its width based on the screen size.

2. `.container-fluid`: The `.container-fluid` class creates a full-width container that spans the entire width of the viewport. It is not constrained by any specific width and expands to fill the available space.

To use container classes, you can wrap your content inside a `<div>` element with the appropriate class. Here's an example:



```

```html
<!DOCTYPE html>
<html>
<head>
  <title>Container Classes in Bootstrap</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <div class="container">
    <!-- Content goes here -->
  </div>

  <div class="container-fluid">
    <!-- Content goes here -->
  </div>

  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
  <script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
  <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
```

```

### III) Hover row and condensed table in Bootstrap:

#### 1. Hover row: Bootstrap provides a class called `.table`

`-hover`` that enables the hover effect on table rows. When applied to a `<table>` element, this class adds a highlight effect to the table rows when the user hovers over them. Here's an example:

```

```html
<table class="table table-hover">
  <thead>
    <tr>
      <th>Employee ID</th>
      <th>Name</th>
      <th>Email</th>

```

```

</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>John Doe</td>
<td>john@example.com</td>
</tr>
<tr>
<td>2</td>
<td>Jane Smith</td>
<td>jane@example.com</td>
</tr>
</tbody>
</table>
...

```

2. Condensed table: Bootstrap provides a class called `.table-condensed` that reduces the height and padding of the table cells, resulting in a more compact table layout. Here's an example:

```

<<<html
<table class="table table-condensed">
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop</td>
<td>$999</td>
</tr>
<tr>
<td>Smartphone</td>
<td>$599</td>
</tr>
</tbody>
</table>
...

```

**Q 9) Answer the following in brief.**

- I) What is Bootstrap CDN? Write advantage of using Bootstrap CDN.**
- II) Explain any four classes used in typography.**

**Ans.)**I) Bootstrap CDN (Content Delivery Network) is a service that allows you to include Bootstrap files (CSS and JavaScript) in your website directly from the CDN servers. Instead of hosting the Bootstrap files on your own server, you can link to the CDN-hosted files, which are distributed across multiple servers worldwide.

Advantages of using Bootstrap CDN:

1. Improved performance: CDN servers are strategically located around the world, which reduces the distance between the user and the server, resulting in faster loading times for the Bootstrap files.
2. Caching: CDN servers cache the Bootstrap files, so if a user has already visited a website that uses Bootstrap from the same CDN, their browser will already have the files cached. This further improves loading speed for subsequent visits.
3. Reduced server load: By using a CDN, you offload the delivery of Bootstrap files to the CDN servers, reducing the load on your own server. This can be particularly beneficial for high-traffic websites.
4. Version management: Bootstrap CDN hosts multiple versions of Bootstrap. This allows you to easily switch between different versions by simply changing the version number in the URL, without the need to host and manage the files yourself.

II) Four classes used in typography in Bootstrap:

1. `.h1`, `.h2`, `.h3`, ...: These classes are used to create headings of different sizes. For example, `.h1` represents the largest heading size, while `.h6` represents the smallest heading size. These classes can be applied to `<h1>` through `<h6>` elements.
2. `.lead`: The `.lead` class is used to style a paragraph of text as a lead paragraph. It increases the font size and adds extra margin to make the paragraph stand out and grab the reader's attention.
3. `.text-muted`: The `.text-muted` class is used to style text as muted or faded. It sets the text color to a lighter shade, indicating that the text is less important or has a lower emphasis.
4. `.text-uppercase` and `.text-lowercase`: These classes are used to transform the case of the text. `.text-uppercase` makes the text uppercase, while `.text-lowercase` makes the text lowercase. These classes can be applied to any HTML element containing text.

**Q 10) Answer the following in detail.**

**I) Enlist and explain Bootstrap image shapes with an example.**

**II) Write a program for making button active, disabled and block.**

**III) Explain grid use in Bootstrap. Enlist Bootstrap grid classes.**

**Ans.) I) Bootstrap image shapes:**

Bootstrap provides classes to create different shapes for images. These classes can be applied to `` elements or parent `

` elements containing images. Here are the image shape classes available in Bootstrap:

1. `.rounded`: The `.rounded` class adds rounded corners to the image, creating a soft and rounded shape.

2. `.rounded-circle`: The `.rounded-circle` class creates a circular shape for the image. It crops the image into a circle, making it suitable for displaying user avatars or profile pictures.

3. `.img-thumbnail`: The `.img-thumbnail` class adds a border and padding to the image, creating a thumbnail-like appearance. It provides a visual distinction to the image and can be useful when displaying a gallery or grid of images.

Here's an example that demonstrates the usage of image shape classes:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Bootstrap Image Shapes</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <h3>Rounded Image</h3>
  

  <h3>Rounded Circle Image</h3>
  

  <h3>Thumbnail Image</h3>
  

  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>

```

```

<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
...

```

## II) Program for making buttons active, disabled, and block:

To make buttons active, disabled, or block level in Bootstrap, you can use the following classes:

1. `.active`: The `.active` class is used to indicate an active or selected state for a button. It adds a visual highlight to the button to indicate that it is currently active. Here's an example:

```

...html
<button type="button" class="btn btn-primary active">Active Button</button>
...

```

In the above example, the `.active` class is added to the button, making it visually active.

2. `.disabled`: The `.disabled` attribute can be added to a button element or the `.disabled` class can be applied to disable a button. This prevents the button from being clicked or interacted with. Here's an example:

```

...html
<button type="button" class="btn btn-primary" disabled>Disabled Button</button>
...

```

In the above example, the `.disabled` attribute is added to the button, disabling it.

3. `.btn-block`: The `.btn-block` class is used to create a block-level button that spans the full width of its parent container. This can be useful when you want the button to take up the entire width of a container or to create a button that stacks vertically. Here's an example:

```

...html
<button type="button" class="btn btn-primary btn-block">Block Button</button>
...

```

In the above example, the

`.btn-block` class is added to the button, making it a block-level button.

### III) Grid use in Bootstrap:

The grid system is a fundamental feature of Bootstrap that allows you to create responsive and flexible layouts. It is based on a 12-column grid, which can be divided into rows and columns to structure and align content on a web page. The grid system in Bootstrap consists of the following core components:

1. `.container`: The `.container` class is used to create a fixed-width container that wraps and contains the grid layout. It provides padding on the sides and ensures proper alignment of the grid columns.
2. `.row`: The `.row` class is used to create a row within the container. Rows act as horizontal groups that hold the grid columns.
3. `.col`: The `.col` class is used to create columns within a row. Columns define the width and behavior of the content within the row. You can specify the column size using classes like `.col-`, `.col-sm-`, `.col-md-`, `.col-lg-`, `.col-xl-`, followed by the number of columns (e.g., `.col-6` for a half-width column).

Here's an example that demonstrates the usage of the Bootstrap grid system:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Bootstrap Grid System</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <div class="container">
    <div class="row">
      <div class="col-sm-6 col-md-4">
        <p>Content 1</p>
      </div>
      <div class="col-sm-6 col-md-4">
        <p>Content 2</p>
      </div>
      <div class="col-sm-12 col-md-4">
```

```

        <p>Content 3</p>
    </div>
</div>
</div>

<script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
...

```

**Q 11) Answer the following in brief.**

**I) Which are the benefits of using Bootstrap.**

**II) Write usage of following elements in Bootstrap with an example. <dl> <pre>**

**Ans.)** I) Benefits of using Bootstrap:

1. Responsive Design: Bootstrap is built with a responsive grid system, making it easy to create websites that adapt to different screen sizes and devices. This helps ensure a consistent and user-friendly experience across desktops, tablets, and mobile devices.

2. Time-Saving: Bootstrap provides a wide range of pre-built components, such as buttons, forms, navigation bars, and more. These ready-to-use components save development time by eliminating the need to build them from scratch.

3. Consistency: Bootstrap enforces a consistent design and styling throughout the website. It provides a unified set of styles, classes, and components that give your site a professional and polished look.

4. Cross-Browser Compatibility: Bootstrap is designed to be compatible with all modern web browsers. It takes care of the inconsistencies and quirks of different browsers, ensuring that your website looks and functions correctly across multiple platforms.

5. Customizable: Bootstrap offers a wide range of customization options. You can easily modify colors, typography, spacing, and other design elements to match your branding or specific project requirements.

II) Usage of `<dl>` and `<pre>` elements in Bootstrap:

1. ``<dl>`` element: The ``<dl>`` element is used to create a description list in HTML. It consists of a series of term-value pairs. In Bootstrap, you can use the ``<dl>`` element to create a definition list and apply Bootstrap classes to style its appearance. Here's an example:

```
```html
<dl>
  <dt>Term 1</dt>
  <dd>Description 1</dd>
  <dt>Term 2</dt>
  <dd>Description 2</dd>
</dl>
```
```

2. ``<pre>`` element: The ``<pre>`` element is used to preserve spaces and line breaks within its content. It is typically used to display preformatted text, such as code snippets or ASCII art. In Bootstrap, you can use the ``<pre>`` element to display code blocks or other formatted content. Here's an example:

```
```html
<pre>
  <code>
    function sayHello() {
      console.log("Hello, world!");
    }
  </code>
</pre>
```
```

**Q 12) Answer the following in detail.**

**I) Explain responsive image with an example.**

**II) Explain typography list with an example.**

**III) Explain classes that are used to create navigation bar.**

**Ans.) I) Responsive image in Bootstrap:**

In Bootstrap, you can make images responsive by using the ``.img-fluid` class. The `.img-fluid` class ensures that the image scales appropriately and maintains its aspect ratio as the viewport size changes. This allows the image to adapt to different screen sizes and devices.`

Here's an example of a responsive image in Bootstrap:

```
```html

```
```



## II) Typography list in Bootstrap:

Bootstrap provides classes to style typography lists, such as unordered lists (`<ul>`) and ordered lists (`<ol>`). These classes help to enhance the appearance and readability of lists on your website.

Here's an example of a typography list in Bootstrap:

```
```html
<ul class="list-unstyled">
  <li>List item 1</li>
  <li>List item 2</li>
  <li>List item 3</li>
</ul>
```
```

## III) Classes used to create a navigation bar in Bootstrap:

To create a navigation bar in Bootstrap, you can use the following classes:

1. `.navbar`: The `.navbar` class is used to create a responsive navigation bar. It serves as a container for the navigation elements.
2. `.navbar-expand`: The `.navbar-expand` class expands the navigation bar to occupy the full width of the viewport on small screens.
3. `.navbar-light` or `.navbar-dark`: These classes are used to define the color scheme of the navigation bar. `.navbar-light` sets the navigation bar to a light background color, while `.navbar-dark` sets it to a dark background color.
4. `.navbar-brand`: The `.navbar-brand` class is used to create a branding element within the navigation bar, typically containing a logo or website name.
5. `.navbar-toggler`: The `.navbar-toggler` class is used to create a toggle button that collapses or expands the navigation menu on small screens.
6. `.collapse`: The `.collapse` class is used to create a collapsible container that holds the navigation links. It is typically combined with the `.navbar-collapse` class to create a collapsible navigation menu.

Here's an example of a basic navigation bar in Bootstrap:

```
```html
<nav class="navbar navbar-expand-lg navbar-light bg-light">
  <a class="navbar-brand" href="#">Logo</a>
```
```

```

<button class="navbar-toggler" type="button" data-toggle="collapse"
data-target="#navbarNav" aria-controls="navbarNav" aria-expanded="false"
aria-label="Toggle navigation">
  <span class="navbar-toggler-icon"></span>
</button>
<div class="collapse navbar-collapse" id="navbarNav">
  <ul class="navbar-nav">
    <li class="nav-item">
      <a class="nav-link" href="#">Home</a>
    </li>
    <li class="nav-item">
      <a
class="nav-link" href="#">About</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Services</a>
    </li>
    <li class="nav-item">
      <a class="nav-link" href="#">Contact</a>
    </li>
  </ul>
</div>
</nav>
...

```

**Q 13) Answer the following in brief.**

**I) Explain .btn-group class with an example.**

**II) Using grid system of Bootstrap, write a program to divide a screen in three equal columns.**

**Ans.) I) Explanation of `.btn-group` class:**

The `.btn-group` class in Bootstrap is used to group buttons together. It allows you to create a cohesive group of buttons that are visually connected and can be manipulated as a single entity.

Here's an example of using the `.btn-group` class:

```

```html
<div class="btn-group">
  <button type="button" class="btn btn-primary">Button 1</button>
  <button type="button" class="btn btn-primary">Button 2</button>
  <button type="button" class="btn btn-primary">Button 3</button>
</div>
...

```

II) Program to divide a screen into three equal columns using Bootstrap's grid system:

To divide a screen into three equal columns using Bootstrap's grid system, you can use the `.col` class and assign the appropriate width classes.

Here's an example program:

```
```html
<!DOCTYPE html>
<html>
<head>
  <title>Three Equal Columns</title>
  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css">
</head>
<body>

  <div class="container">
    <div class="row">
      <div class="col-sm-4">
        <p>Column 1</p>
      </div>
      <div class="col-sm-4">
        <p>Column 2</p>
      </div>
      <div class="col-sm-4">
        <p>Column 3</p>
      </div>
    </div>
  </div>

  <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
  <script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></s
cript>
  <script
src="https://maxcdn.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"></script>

</body>
</html>
```
```

**Q 14) Answer the following in detail.**

**I) Explain contextual classes and responsive table with an example.**

**II) Enlist different button style classes and show all button style with an example.**

**III) Enlist and explain different classes which are used to create a dropdown menu.**

**Ans.)I) Explanation of contextual classes and responsive table:**

1. Contextual Classes: Bootstrap provides contextual classes that allow you to apply different styles to elements based on the context or purpose. These classes can be applied to various HTML elements, such as text, buttons, and tables, to convey different meanings or visual cues.

```
```html
<p class="text-primary">This is a primary text.</p>
<button class="btn btn-success">Success Button</button>
<div class="alert alert-warning">Warning Message</div>
```
```

2. Responsive Table: Bootstrap provides a class called `.table-responsive` that makes tables responsive, especially on smaller screens. When applied to a `<div>` container that wraps a table, it enables horizontal scrolling and ensures that the table remains readable and usable even when the viewport size is limited.

Here's an example:

```
```html
<div class="table-responsive">
  <table class="table">
    <thead>
      <tr>
        <th>Name</th>
        <th>Email</th>
        <th>Role</th>
      </tr>
    </thead>
    <tbody>
      <tr>
        <td>John Doe</td>
        <td>johndoe@example.com</td>
        <td>Admin</td>
      </tr>
      <tr>
        <td>Jane Smith</td>
        <td>janesmith@example.com</td>
        <td>User</td>
      </tr>
    </tbody>
  </table>
</div>
```
```

```

        </tr>
    </tbody>
</table>
</div>
...

```

## II) Different button style classes in Bootstrap:

Bootstrap provides various button styles to match different design requirements. Some of the commonly used button style classes are:

1. `.btn-primary`: It represents the primary action button, typically used for the main action on a page.
2. `.btn-secondary`: It represents a secondary or alternative action button.
3. `.btn-success`: It indicates a successful action or completion.
4. `.btn-danger`: It represents a dangerous or critical action.
5. `.btn-warning`: It indicates a warning or cautionary action.
6. `.btn-info`: It represents an informative or general-purpose action.
7. `.btn-light`: It represents a light-colored button, suitable for secondary or less important actions.
8. `.btn-dark`: It represents a dark-colored button, often used for contrasting or prominent actions.

Here's an example of using different button style classes:

```

<<html
<button class="btn btn-primary">Primary Button</button>
<button class="btn btn-secondary">Secondary Button</button>
<button class="btn btn-success">Success Button</button>
<button class="btn btn-danger">Danger Button</button>
<button class="btn btn-warning">Warning Button</button>
<button class="btn btn-info">Info Button</button>
<button class="btn btn-light">Light Button</button>
<button class="btn
    btn-dark">Dark Button</button>
...

```

### III) Classes used to create dropdown menus in Bootstrap:

Bootstrap provides several classes to create dropdown menus:

1. `.dropdown`: This class is applied to a parent element that wraps the dropdown menu.
2. `.dropdown-toggle`: This class is applied to the trigger element, such as a button or a link, which, when clicked, activates the dropdown menu.
3. `.dropdown-menu`: This class is applied to the element that contains the dropdown menu items.
4. `.dropdown-item`: This class is applied to each individual item within the dropdown menu.

Here's an example of creating a basic dropdown menu in Bootstrap:

```
```html
<div class="dropdown">
  <button class="btn btn-primary dropdown-toggle" type="button"
  id="dropdownMenuButton" data-toggle="dropdown" aria-haspopup="true"
  aria-expanded="false">
    Dropdown
  </button>
  <div class="dropdown-menu" aria-labelledby="dropdownMenuButton">
    <a class="dropdown-item" href="#">Item 1</a>
    <a class="dropdown-item" href="#">Item 2</a>
    <a class="dropdown-item" href="#">Item 3</a>
  </div>
</div>
```
```