📘MERN Stack Journey – 14th Class Notes

Responsive Web Design & Bootstrap Grid System

🩲Introduction to Responsive Web Design

Responsive Web Design (RWD) is a web development approach that ensures websites adapt smoothly to different screen sizes and devices such as mobiles, tablets, laptops, and desktops.

Why Responsive Design is Important?

- 📱 Mobile-first world
- 🖥 One website for all devices
- 💻 Better user experience
- 🔍 Improved SEO rankings

Bootstrap helps us achieve responsive design easily using its **Grid System**.

🧰Bootstrap Grid System

The **Bootstrap Grid System** is a powerful layout system used to create responsive web layouts.

Key Features

- Uses a **12-column layout**
- Layout is divided into **containers**, **rows**, and **columns**
- Automatically adjusts based on screen size

✂️Container

A **container** is the outermost wrapper that holds rows and columns.

Purpose

- Centers the content
- Adds left and right padding

Example

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

🖋️Row

A **row** is used to wrap columns and align them horizontally.

Purpose

- Ensures columns are placed in a single horizontal line

Example

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

🛏️Column

Columns hold the actual content. Columns must always be placed inside a row.

Important Rules

- Bootstrap uses **12 columns per row**
- Column size ranges from **1 to 12**

Example

```
<div class="container">
  <div class="row">
    <div class="col-12">
      I'm your content inside the grid!
    </div>
  </div>
</div>
```

Notes

- `col-12` occupies full width
- `col-6` occupies half width
- `col-*` means how many columns out of 12

🧪 Single Column Layout Example

index.html

```
<!DOCTYPE html>
<html>
```

```
  <head>
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/
bootstrap/4.5.2/css/bootstrap.min.css">
  </head>
  <body>
    <div class="container">
      <div class="row">
        <div class="col-12">
          <h1 class="heading">Taj Mahal</h1>
          <p>
            The Taj Mahal is an ivory-white marble mausoleum on the southern
            bank of the river Yamuna in the Indian city of Agra.
          </p>
        </div>
      </div>
    </div>
  </body>
</html>
```

style.css

```
.heading {
  font-size: 24px;
  font-weight: bold;
}
```

🖋️ Creating Multiple Column Layouts

We can create multiple column layouts by dividing 12 columns.

Example: Two Column Layout

- First column → 8 columns
- Second column → 4 columns

index.html

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/
bootstrap/4.5.2/css/bootstrap.min.css">
  </head>
  <body>
    <div class="container">
      <div class="row">
        <div class="col-8">
```

```html
          <h1 class="heading">Taj Mahal</h1>
          <p>
            The Taj Mahal is an ivory-white marble mausoleum on the southern
            bank of the river Yamuna in the Indian city of Agra.
          </p>
        </div>
        <div class="col-4">
          <h1 class="heading">Mysore Palace</h1>
          <p>
            The Mysore Palace is a historical palace and the royal residence
at
            Mysore in the Indian State of Karnataka.
          </p>
        </div>
      </div>
    </div>
  </body>
</html>
```

style.css

```css
.heading {
  font-size: 24px;
  font-weight: bold;
}
```

Important Concepts to Remember

- Container → wraps everything
- Row → groups columns
- Column → holds content
- Total columns per row must be ≤ **12**
- Bootstrap grid is **mobile responsive by default**

🕐 Interview & Practical Tips

- Always place columns inside rows
- Never exceed 12 columns in a row
- Bootstrap grid is commonly used in React & MERN projects
- Understanding grid helps in building dashboards & layouts

🗜️ What I Learned in 14th Class

🔧 Basics of Responsive Web Design
🔧 Bootstrap Grid System fundamentals
🔧 Containers, Rows, Columns
🔧 One-column & Multi-column layouts
🔧 Real-world layout creation

📌 **Next Class:** Responsive Breakpoints & Advanced Grid Layouts