



**NXT
WAVE**

WELCOME

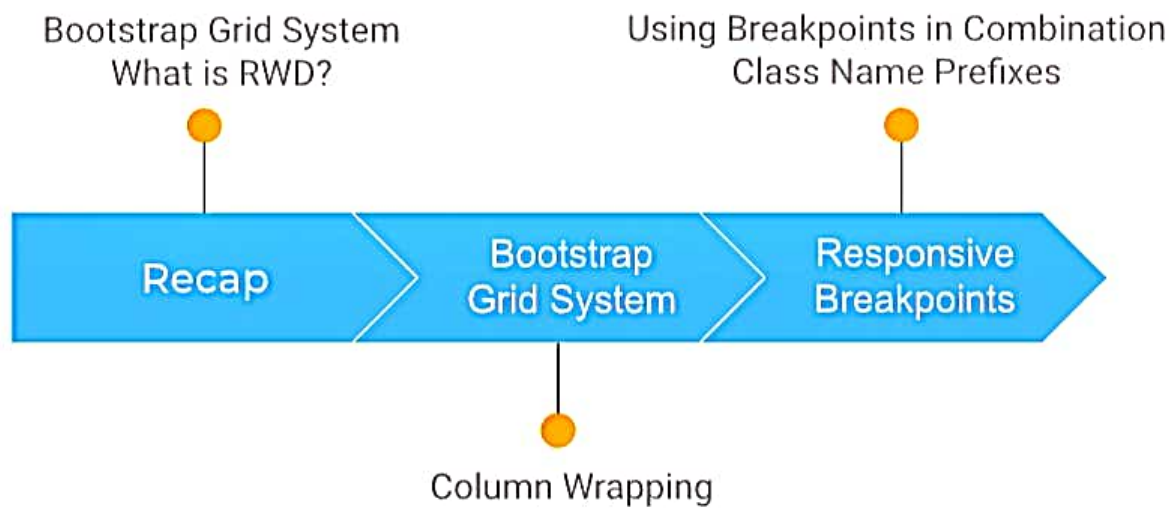




Bootstrap Grid System

Agenda

Bootstrap Grid System



Responsive Web Design

What is Responsive Web Design?

An approach to make web pages give best user experience in all the devices

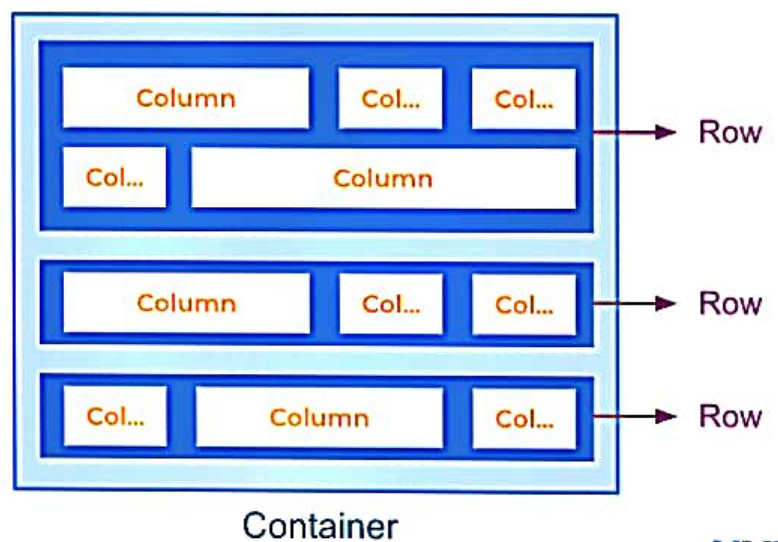


How it works

Bootstrap Grid System

Bootstrap Grid system is made up of 3 things:

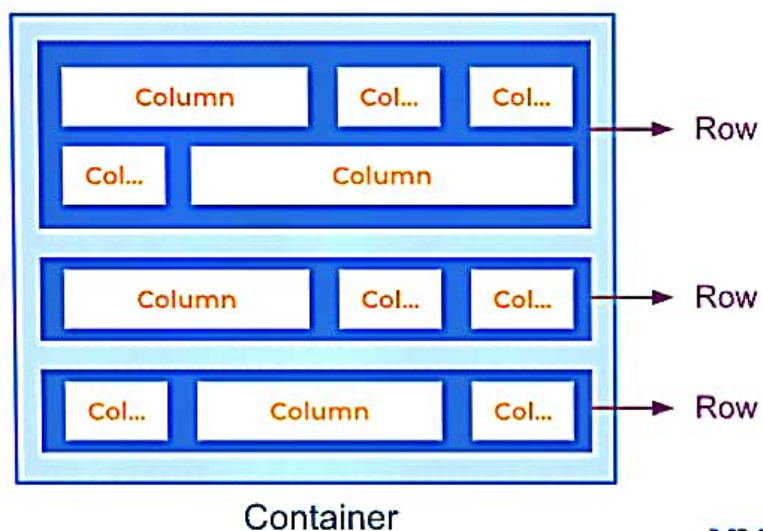
- Container
- Rows
- Columns



How it works

A **Container** consists of Rows and Columns

All the **Content** should be placed inside these Columns



Bootstrap

Five Responsive Tiers

To make websites responsive,
Bootstrap categorizes devices into
Five Responsive Tiers

These are known as **Responsive Breakpoints**

Device	Device Size(width)
Extra small devices	< 576px
Small devices	>= 576px
Medium devices	>= 768px
Large devices	>= 992px
Extra large devices	>= 1200px

Bootstrap

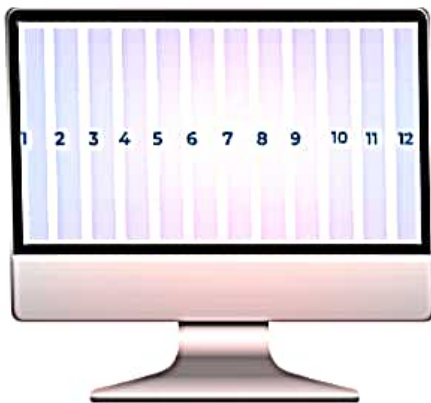
Grid System

Bootstrap Grid System uses
12 column system for layouting
We can create up to **12 columns**
across the page

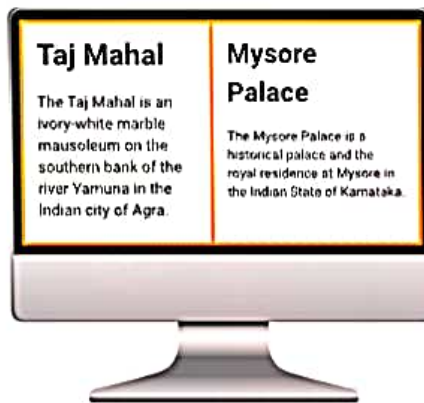


Bootstrap Grid System

12 Column System

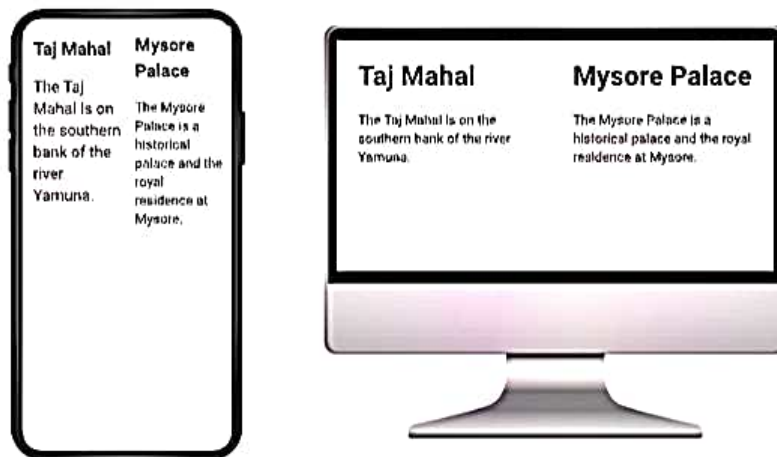


12 Grid Columns



2 Bootstrap
Grid Columns

How to achieve the below layout using Bootstrap Grid System?



Bootstrap Grid System

Adding Container and Row

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

HTML

Adding Bootstrap Grid Columns

HTML

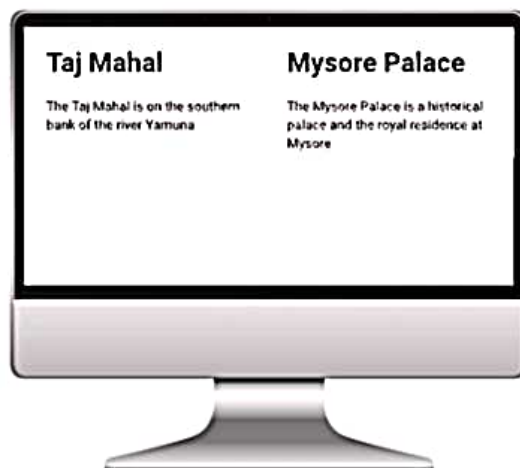
```
<div class="container">
  <div class="row">
    <div class="col-6">
      <h1 class="heading"> Taj Mahal </h1>
      <p> The Taj Mahal is on the ... </p>
    </div>
    <div class="col-6">
      <h1 class="heading"> Mysore Palace </h1>
      <p> The Mysore Palace is a ... </p>
    </div>
  </div>
</div>
```

CSS

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

Bootstrap Grid System

Output





Let's add one more
Bootstrap Grid Column

Bootstrap Grid System

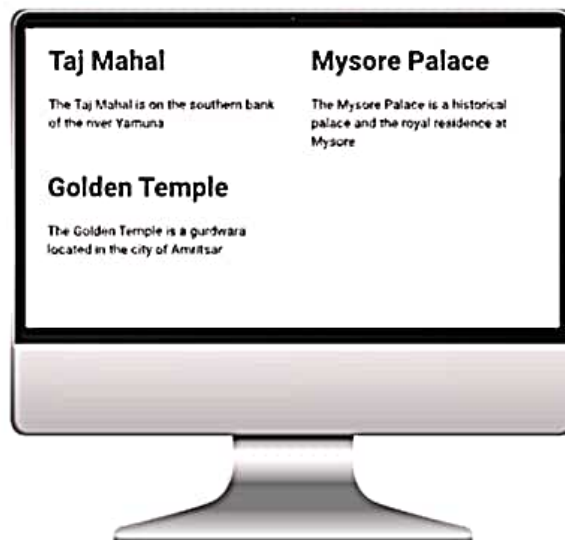
Adding Third Bootstrap Grid Column

HTML

```
<div class="container">
  <div class="row">
    <div class="col-6">...</div>
    <div class="col-6">...</div>
    <div class="col-6">
      <h1 class="heading">Golden Temple</h1>
      <p>
        The Golden Temple is a gurdwara...
      </p>
    </div>
  </div>
</div>
```

Bootstrap Grid System

Output





Why did the
Third Bootstrap Grid Column
come in the next line?

Taj Mahal

The Taj Mahal is on the southern
bank of the river Yamuna

Mysore Palace

The Mysore Palace is a historical
palace and the royal residence at
Mysore

Golden Temple

The Golden Temple is a gurdwara
located in the city of Amritsar

Bootstrap Grid System

Column Wrapping

When more than 12 grid columns are placed in a single row, the extra columns wrap in a new line but in the same row



Bootstrap Grid System

Column Wrapping

HTML

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

$$6+6+6 > 12$$

Column Wrapping

Output

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

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

```
<div class="col-6">...</div>
```

```
<div class="col-6">...</div>
```

```
<div class="col-6">...</div>
```

```
</div>
```

```
</div>
```

HTML

Taj Mahal

The Taj Mahal is on the southern bank of the river Yamuna

Golden Temple

The Golden Temple is a gurdwara located in the city of Amritsar

Mysore Palace

The Mysore Palace is a historical palace and the royal residence at Mysore



Let's add the
Fourth Bootstrap Grid Column

Bootstrap Grid System

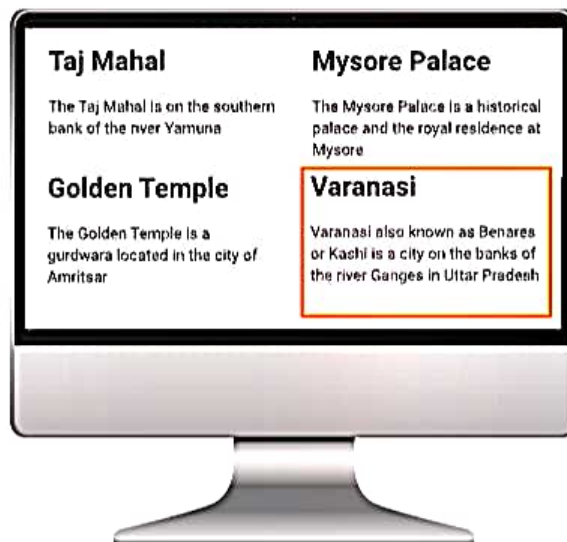
Adding Bootstrap Grid Column

HTML

```
<div class="container">
  <div class="row">
    <div class="col-6">...</div>
    <div class="col-6">...</div>
    <div class="col-6">...</div>
    <div class="col-6">
      <h1 class="heading">Varanasi</h1>
      <p>Varanasi also known as ...</p>
    </div>
  </div>
</div>
```

Bootstrap Grid System

Output

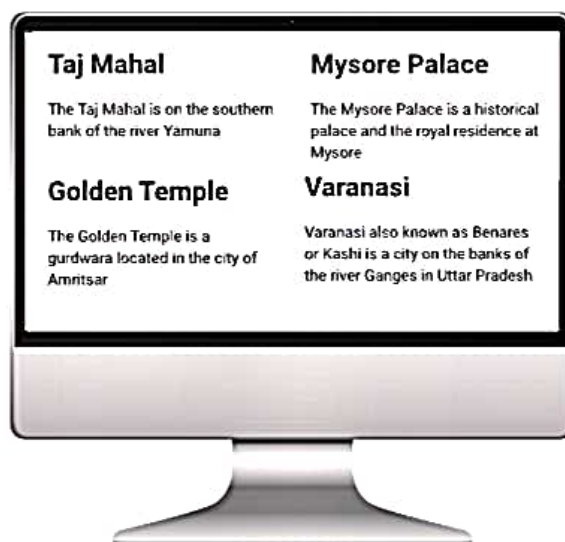


How to Achieve Different Layouts in Different Responsive Breakpoints?



Responsive Breakpoints

Layout in Different Breakpoints



Responsive Breakpoints

Bootstrap provides different column **class name prefixes** for Five Responsive Tiers (Responsive Breakpoints)

Device	Device Size(width)	Class Name Prefix
Extra small devices	< 576px	col-
Small devices	>= 576px	col-sm-
Medium devices	>= 768px	col-md-
Large devices	>= 992px	col-lg-
Extra large devices	>= 1200px	col-xl-

Responsive Breakpoints

Bootstrap provides different column **class name prefixes** for Five Responsive Tiers (Responsive Breakpoints)

Device	Device Size(width)	Class Name Prefix
Extra small devices	< 576px	col-
Small devices	>= 576px	col-sm-
Medium devices	>= 768px	col-md-
Large devices	>= 992px	col-lg-
Extra large devices	>= 1200px	col-xl-

Responsive Breakpoints

If we define the behaviour of the column in a particular device, a similar behaviour is guaranteed in all devices with **larger sizes**

Device	Device Size(width)	Class Name Prefix
Extra small devices	< 576px	col-
Small devices	>= 576px	col-sm-
Medium devices	>= 768px	col-md-
Large devices	>= 992px	col-lg-
Extra large devices	>= 1200px	col-xl-

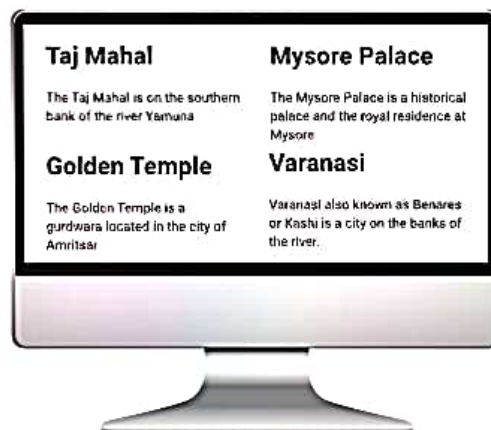
Responsive Breakpoints

A column with class name **col-6** will behave similarly in all the devices with larger sizes

```
<div class="container">  
  <div class="row">  
    <div class="col-6">  
      The Taj Mahal is on the ...  
    </div>  
  </div>  
</div>
```

HTML

Let's achieve this Responsive Layout



Responsive Breakpoints

Using Class Names in Combination

Use a **combination**
of different class names
for Breakpoints

Device	Class Name Prefix
Extra small devices	col-
Small devices	col-sm-
Medium devices	col-md-
Large devices	col-lg-
Extra large devices	col-xl-

Responsive Breakpoints

Extra Small and Larger Devices

```
<div class="container">
  <div class="row">
    <div class="col-12">...</div>
    <div class="col-12">...</div>
    <div class="col-12">...</div>
    <div class="col-12">...</div>
  </div>
</div>
```

HTML

Extra Small and Larger Devices

Output



Responsive Breakpoints

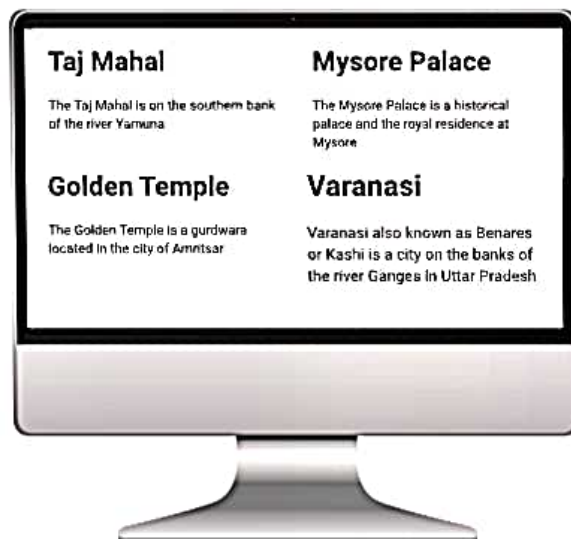
Large and Extra Large Devices

HTML

```
<div class="container">
  <div class="row">
    <div class="col-12 col-lg-6">...</div>
    <div class="col-12 col-lg-6">...</div>
    <div class="col-12 col-lg-6">...</div>
    <div class="col-12 col-lg-6">...</div>
  </div>
</div>
```

Large and Extra Large Devices

Output



Bootstrap

Mobile First Approach

Bootstrap follows

Mobile First Approach

First, design the layout of **mobile version**

This will be adopted by devices with larger sizes



Checking Responsiveness of a Website



Desktop View

Click on the Settings Icon

NXT
WAVE

Home Vinod

HTML CSS JAVASCRIPT

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/boot
5 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-DfKdz2
6 <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js" inte
7 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js" in
8 </head>
9 <body>
10 <div class="container">
11 <div class="row">
12 <div class="col-6">
13 <h1 class="heading">Taj Mahal</h1>
14 <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15 </div>
16 <div class="col-6">
17 <h1 class="heading">Mysore Palace</h1>
18 <p>
19 The Mysore Palace is a historical palace and the royal residence at
20 Mysore.
21 </p>
</div>
</div>
</body>
</html>

Taj Mahal

The Taj Mahal is on the southern bank of the river Yamuna.

Golden Temple

The Golden Temple is a gurdwara located in the city of Amritsar.

Mysore Palace

The Mysore Palace is a historical palace and the royal residence at Mysore.

Varanasi

Varanasi is also known as Benares or Kashi. It is a city located on the bank of the river Ganges in Uttar Pradesh.

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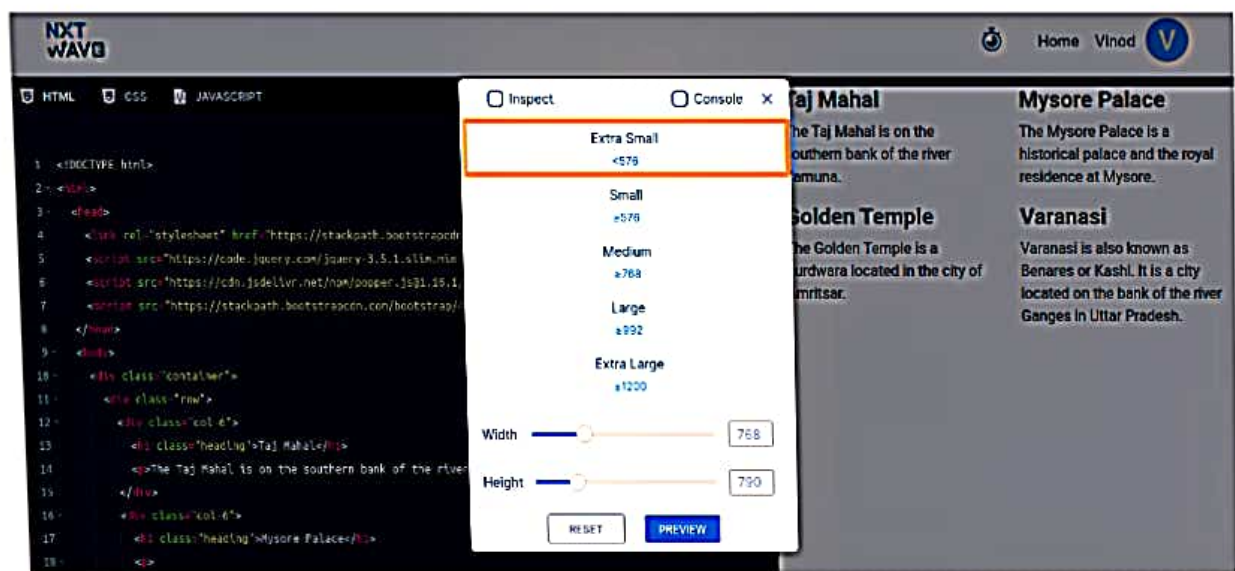
Mobile View

Click on the Settings Icon



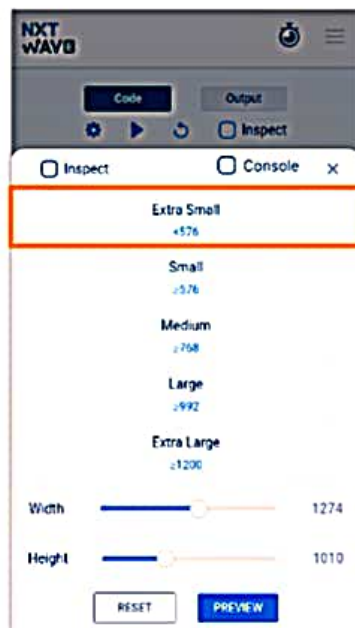
Desktop View

Select Extra Small Breakpoint



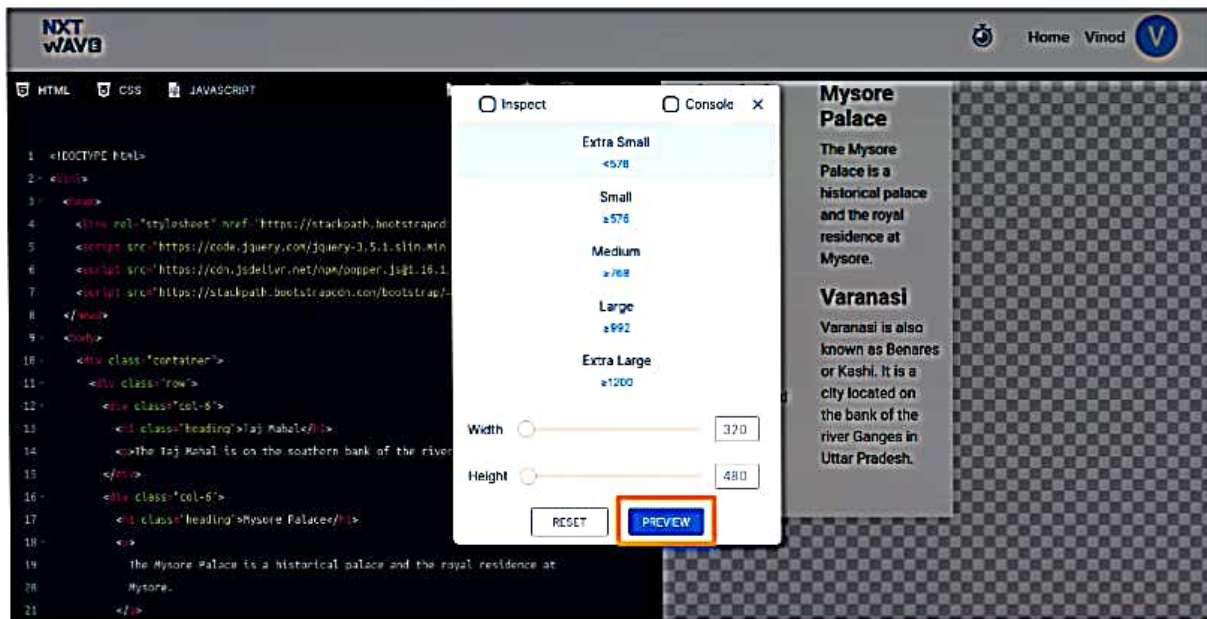
Mobile View

Select Extra Small Breakpoint



Desktop View

Click on Preview Button



Mobile View

Click on Preview Button



Desktop View

Preview For Extra Small Breakpoint

NXT
WAVE

Home Vinod

HTML CSS JAVASCRIPT

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"
5 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-DfXdz2htPH0lsSS55nCTpu
6 <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js" integrity="sha384-9/
7 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js" integrity="sha384-
8 </head>
9 <body>
10 <div class="container">
11 <div class="row">
12 <div class="col-6">
13 <h1 class="heading">Taj Mahal</h1>
14 <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15 </div>
16 <div class="col-6">
17 <h1 class="heading">Mysore Palace</h1>
18 <p>
19 The Mysore Palace is a historical palace and the royal residence at
20 Mysore.

```

Taj Mahal

The Taj Mahal is on the southern bank of the river Yamuna.

Golden Temple

The Golden Temple is a gurdwara located in the city of Amritsar.

Mysore Palace

The Mysore Palace is a historical palace and the royal residence at Mysore.

Varanasi

Varanasi is also known as Benares or Kashi. It is a city located on the bank of the river Ganges in Uttar Pradesh.

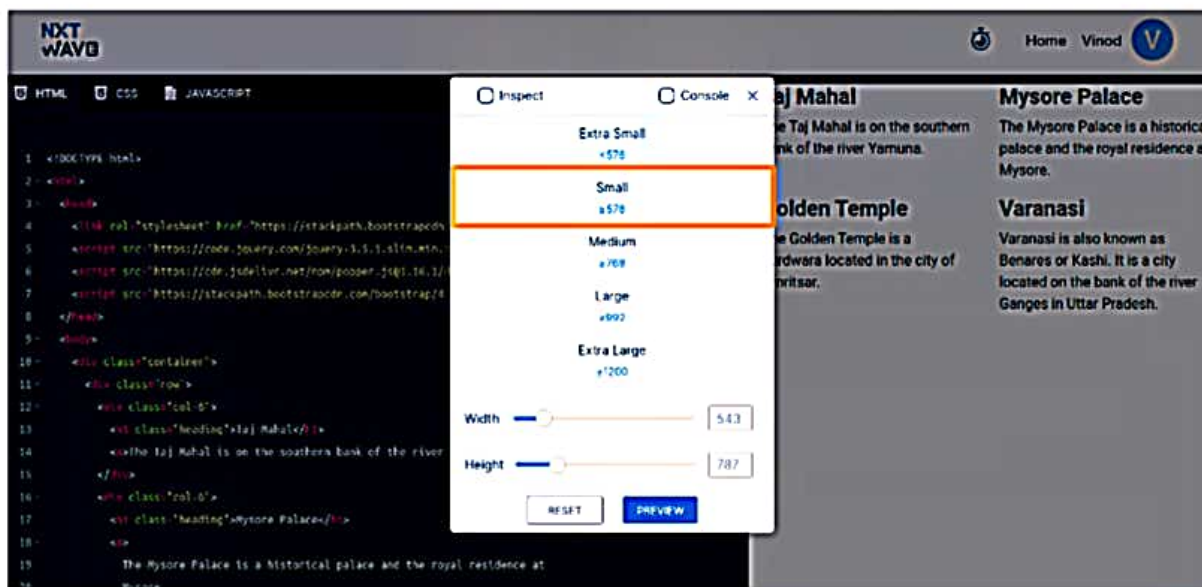
Mobile View

Preview For Extra Small Breakpoint



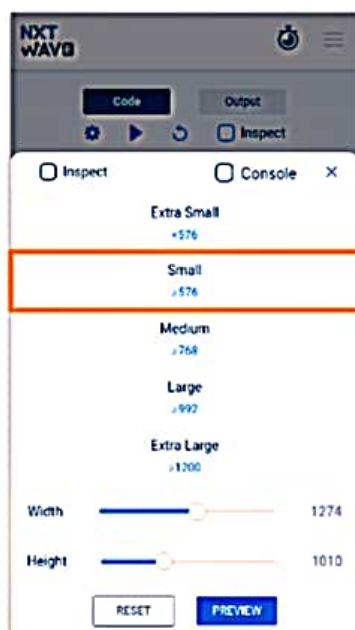
Desktop View

Select Small Breakpoint



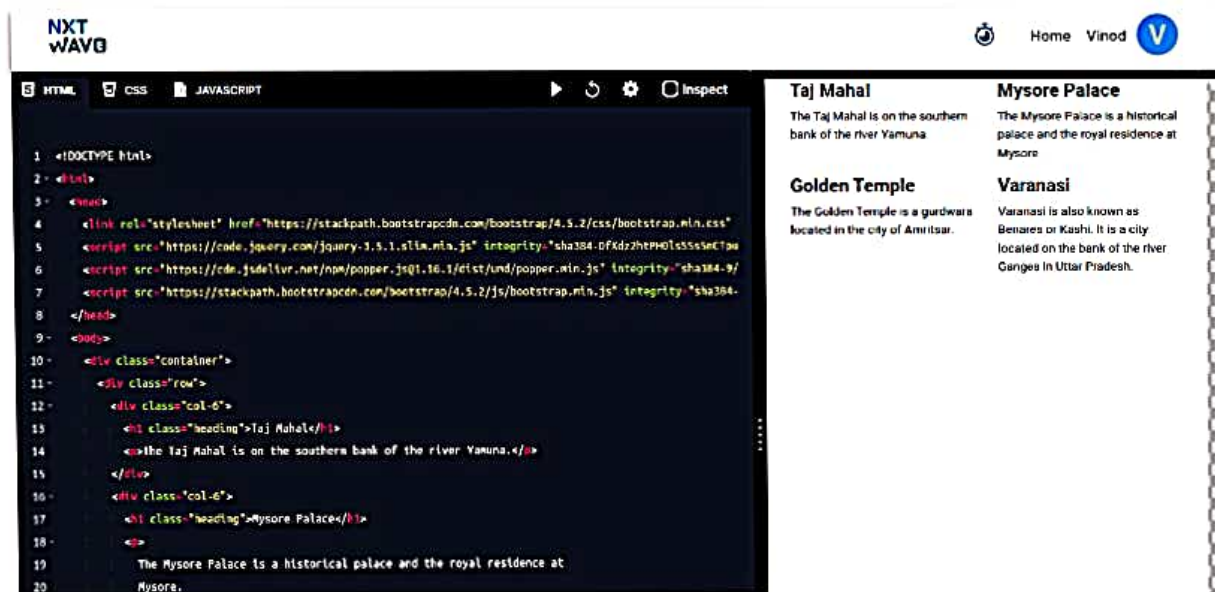
Mobile View

Select Small Breakpoint



Desktop View

Preview For Small Breakpoint



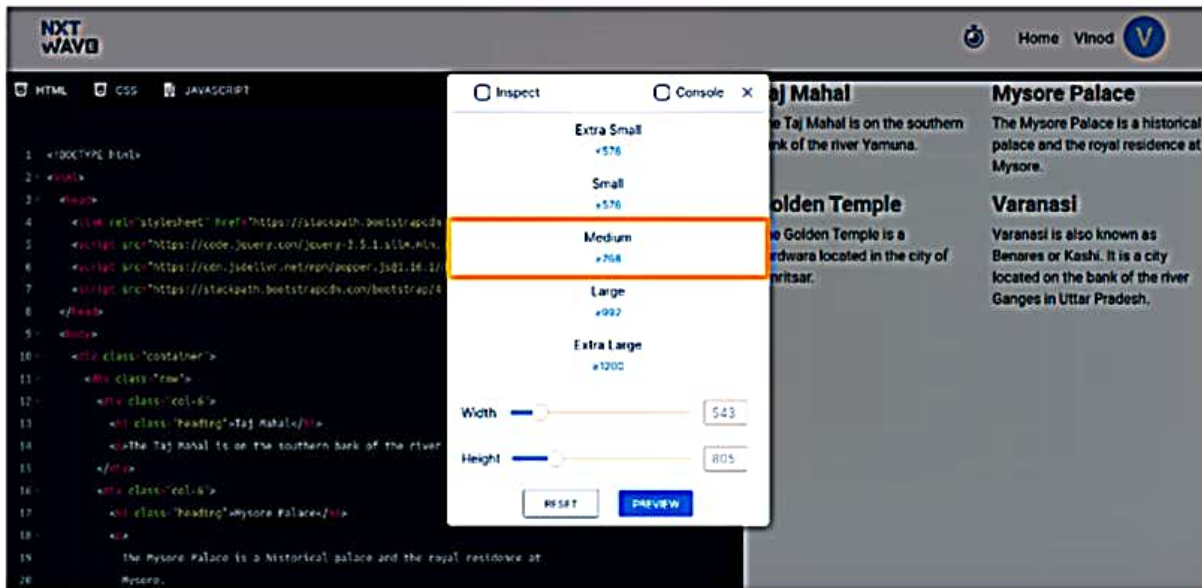
Mobile View

Preview For Small Breakpoint



Desktop View

Select Medium Breakpoint



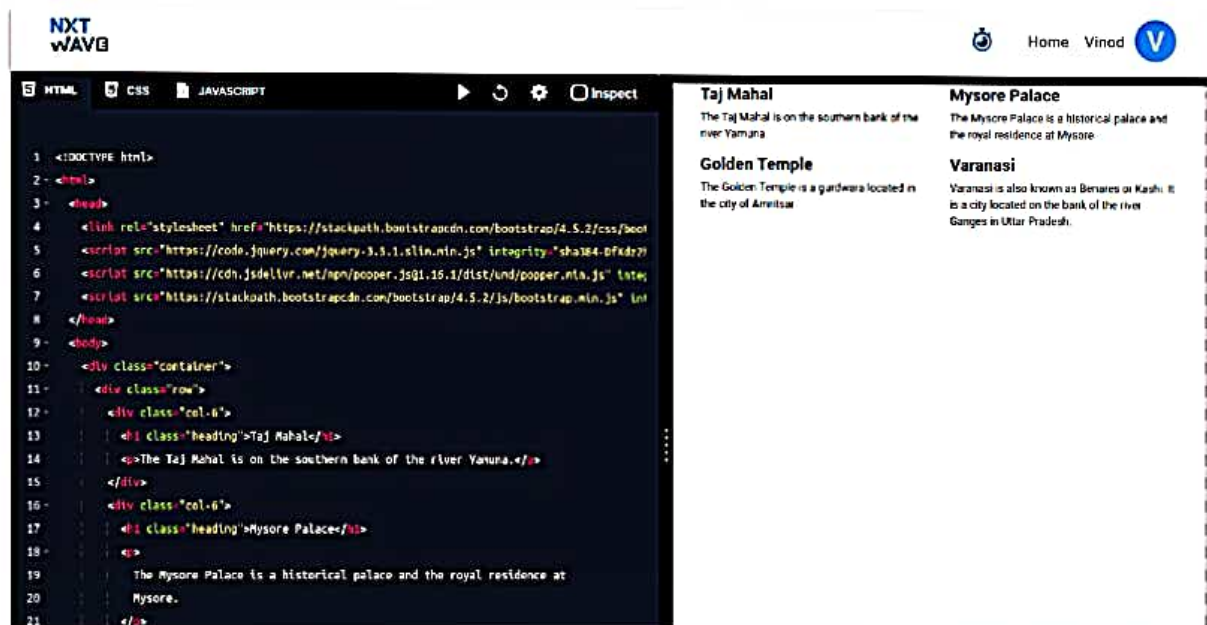
Mobile View

Select Medium Breakpoint



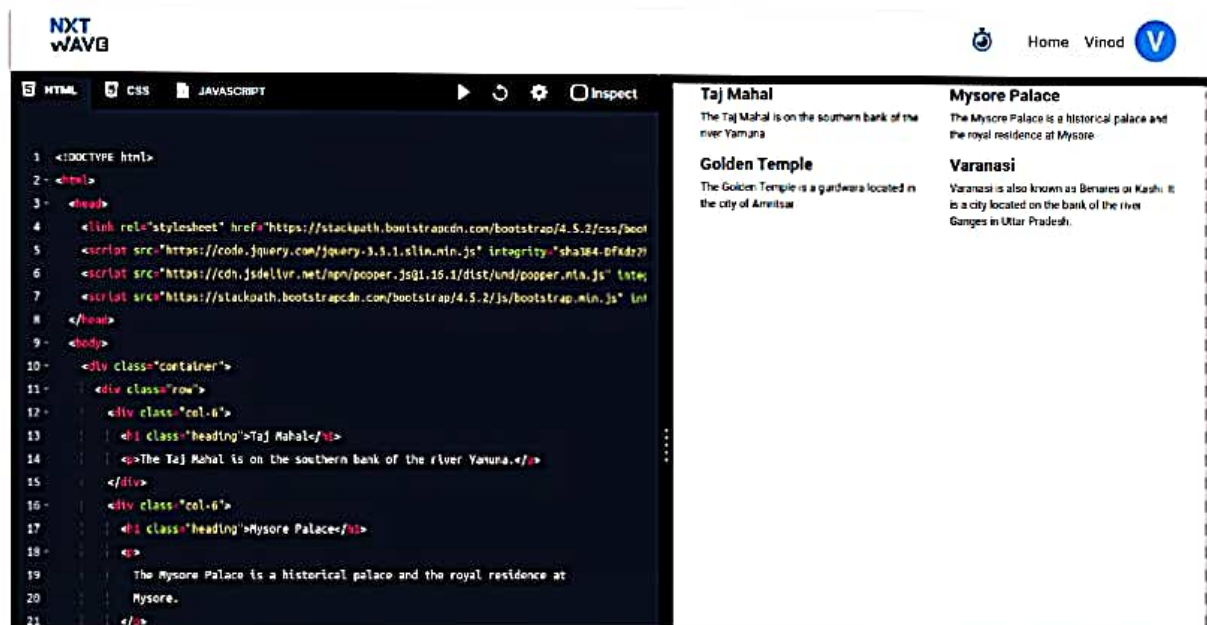
Desktop View

Preview For Medium Breakpoint



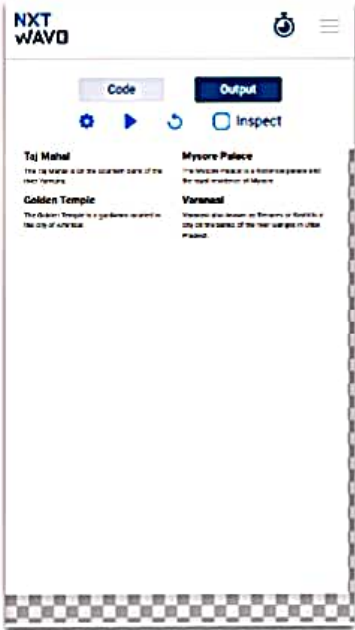
Desktop View

Preview For Medium Breakpoint



Mobile View

Preview For Medium Breakpoint



Desktop View

Select Large Breakpoint

The screenshot shows a web development environment with a code editor on the left and a live preview on the right. The code editor displays HTML code for a page layout using Bootstrap classes. A modal window titled 'Inspect' is open, showing the 'Breakpoint' selector. The 'Large' breakpoint is selected and highlighted with an orange border. The 'Width' slider is set to 638px and the 'Height' slider is set to 805px. The 'PREVIEW' button is visible at the bottom of the modal.

HTML Code:

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css">
5 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
6 <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"></script>
7 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/js/bootstrap.min.js"></script>
8 </head>
9 <body>
10 <div class="container">
11 <div class="row">
12 <div class="col-6">
13 <div class="heading">Taj Mahal</div>
14 <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15 </div>
16 <div class="col-6">
17 <div class="heading">Mysore Palace</div>
18 <p>The Mysore Palace is a historical palace and the royal residence at Mysore.</p>
19 </div>
20 </div>
21 </body>
```

Breakpoint Selector:

- Extra Small: <576
- Small: ≥576
- Medium: ≥768
- Large: ≥992**
- Extra Large: ≥1200

Width: 638px
Height: 805px

Buttons: RESET, PREVIEW

Page Content:

- Taj Mahal**
The Taj Mahal is on the southern bank of the river Yamuna.
- Mysore Palace**
The Mysore Palace is a historical palace and the royal residence at Mysore.

Mobile View

Select Large Breakpoint



Desktop View

Preview For Large Breakpoint

NXT
WAVE

Home Vinod V

HTML CSS JAVASCRIPT

1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/boo
5 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-DfKd22
6 <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js" inte
7 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js" int
8 </head>
9 <body>
10 <div class="container">
11 <div class="row">
12 <div class="col-6">
13 <h3 class="heading">Taj Mahal</h3>
14 <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15 </div>
16 <div class="col-6">
17 <h3 class="heading">Mysore Palace</h3>
18 <p>
19 The Mysore Palace is a historical palace and the royal residence at
20 Mysore.
21 </p>
</div>
</div>
</body>
</html>

Taj Mahal
The Taj Mahal is on the southern bank of the river Yamuna.

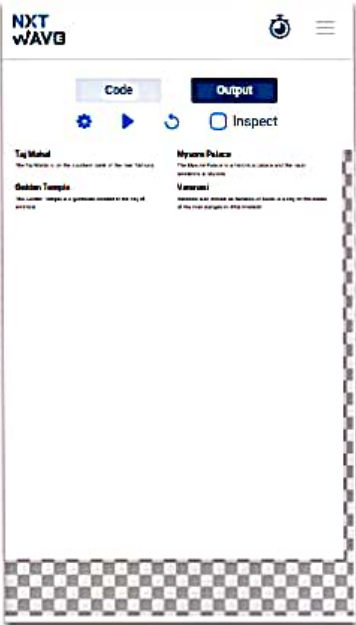
Golden Temple
The Golden Temple is a gurdwara located in the city of
Amritsar.

Mysore Palace
The Mysore Palace is a historical palace and the royal
residence of Mysore.

Varanasi
Varanasi is also known as Benares or Kashi. It is a city located
on the bank of the river Ganges in Uttar Pradesh.

Mobile View

Preview For Large Breakpoint



Desktop View

Select Extra Large Breakpoint

The screenshot shows a web development interface with a code editor on the left and a live preview on the right. The code editor displays HTML code for a page layout. The live preview shows a desktop view of the page with sections for 'Taj Mahal', 'Mysore Palace', and 'Varanasi'. A breakpoint selector overlay is open in the center, showing various breakpoints. The 'Extra Large' breakpoint is highlighted with an orange border. Below the breakpoint list, there are sliders for 'Width' and 'Height' with numerical input fields. The 'Width' is set to 638 and the 'Height' is set to 816. There are 'RESET' and 'PREVIEW' buttons at the bottom of the overlay.

HTML Code:

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.1/css/bootstrap.min.css">
5 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
6 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js"></script>
7 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.1/js/bootstrap.min.js"></script>
8 </head>
9 <body>
10 <div class="container">
11 <div class="row">
12 <div class="col-6">
13 <div class="heading">Taj Mahal</div>
14 <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15 </div>
16 <div class="col-6">
17 <div class="heading">Mysore Palace</div>
18 <p>The Mysore Palace is a historical palace and the royal residence at Mysore.</p>
19 </div>
20 </div>
21 </div>
```

Breakpoint Selector:

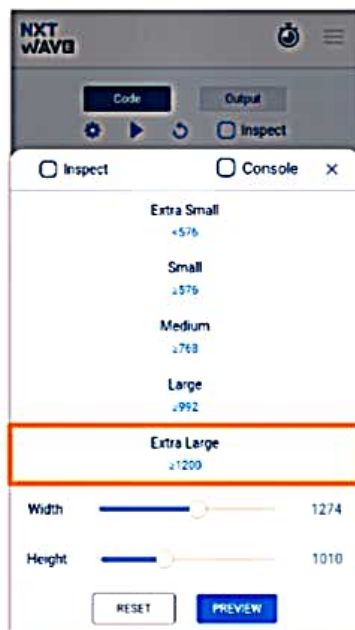
- Extra Small <576
- Small ≥576
- Medium ≥768
- Large ≥992
- Extra Large ≥1200**

Width: 638
Height: 816

Buttons: RESET, PREVIEW

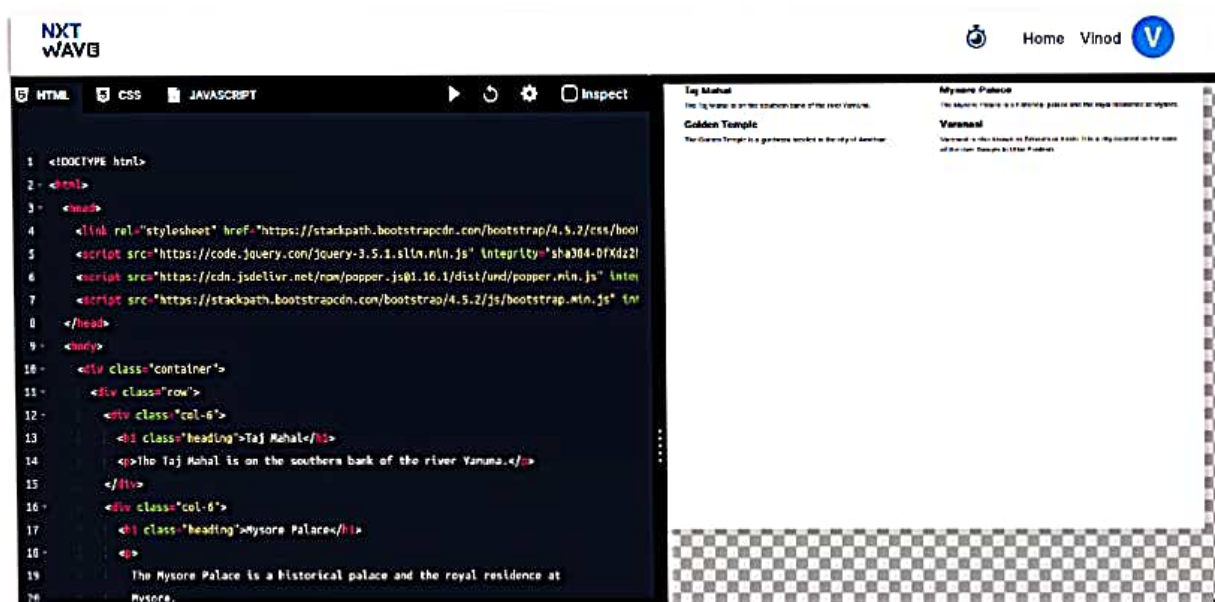
Mobile View

Select Extra Large Breakpoint



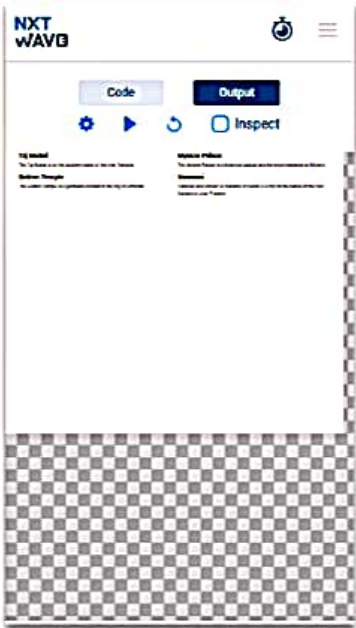
Desktop View

Preview For Extra Large Breakpoint



Mobile View

Preview For Extra Large Breakpoint



Desktop View

Select Reset

The screenshot shows the Next.js Wave IDE interface. On the left, the HTML editor displays the following code:

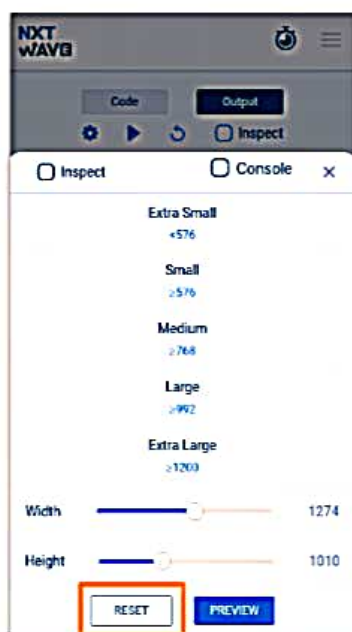
```
1. <!DOCTYPE html>
2. <html>
3. <head>
4.   <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/css/bootstrap.min.css">
5.   <script src="https://code.jquery.com/jquery-3.5.1.min.js"></script>
6.   <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.0/dist/umd/popper.min.js"></script>
7.   <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.0/js/bootstrap.min.js"></script>
8. </head>
9. <body>
10.   <div class="container">
11.     <div class="row">
12.       <div class="col-6">
13.         <h1 class="heading">Taj Mahal</h1>
14.         <p>The Taj Mahal is on the southern bank of the Agra River in Agra, India. It was built by the Mughal emperor Shah Jahan in 1631 to commemorate his wife Mumtaz Mahal, who died during childbirth. The Taj Mahal is a UNESCO World Heritage Site and is considered one of the most beautiful buildings in the world.</p>
15.       </div>
16.       <div class="col-6">
17.         <h1 class="heading">Mysore Palace</h1>
18.         <p>The Mysore Palace is a historical palace and the royal residence of the Wodeyar rulers of the Kingdom of Mysore. It was built by Chikka Wodeyar in 1733 and is known for its intricate carvings and paintings. The palace is a UNESCO World Heritage Site and is considered one of the most beautiful buildings in India.</p>
19.     </div>
20.   </div>
```

In the center, the 'Inspect' tool is open, showing the 'Extra Small' breakpoint selected. The 'Width' is set to 1200 and the 'Height' is set to 992. The 'RESET' button is highlighted with a red box.

On the right, the preview window shows a desktop view of the web application. The header includes the 'NXT WAVE' logo, a 'Home' link, and a user profile 'Vinod' with a blue circular icon containing a white 'V'. The main content area displays the 'Taj Mahal' and 'Mysore Palace' sections, each with a heading and a paragraph of text. The background of the preview area is a dark gray checkered pattern.

Mobile View

Select Reset



Desktop View Preview

NXT
WAVE

Home Vinod

HTML CSS JAVASCRIPT

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css" integrity="sha384-7x4Hw6Tz4n4glb3kss9w1/5T1SZBPl0s15ZhK3VNJdq/gzn" crossorigin="anonymous">
5   <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-J8qa4IcfEYggT74E7QG8bLkdgYR14+fNIXL/um2JK9AlVYD6oS83+PDfF48JG" crossorigin="anonymous"></script>
6   <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js" integrity="sha384-9/re/VGIC+b364oA0A83r48F1YQ66wD2AAHTsZ+st8SA1y48zFVjIq564T97Q" crossorigin="anonymous"></script>
7   <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js" integrity="sha384-9+QrVBfE/41FJ3aE126y748iP404Zy8Yvg94h6rY/Lp600nqy3DlxwQpZ3iL2wY8t68" crossorigin="anonymous"></script>
8 </head>
9 <body>
10   <div class="container">
11     <div class="row">
12       <div class="col-6">
13         <h1 class="heading">Taj Mahal</h1>
14         <p>The Taj Mahal is on the southern bank of the river Yamuna.</p>
15       </div>
16       <div class="col-6">
17         <h1 class="heading">Mysore Palace</h1>
18         <p>The Mysore Palace is a historical palace and the royal residence at Mysore.</p>
19       </div>
20     </div>
21   </div>
```

Taj Mahal

The Taj Mahal is on the southern bank of the river Yamuna.

Golden Temple

The Golden Temple is a gurdwara located in the city of Amritsar.

Mysore Palace

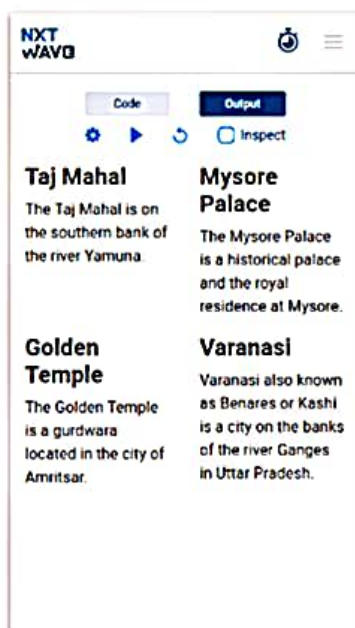
The Mysore Palace is a historical palace and the royal residence at Mysore.

Varanasi

Varanasi is also known as Benares or Kashi. It is a city located on the bank of the river Ganges in Uttar Pradesh.

Mobile View

Preview



Bootstrap Grid System

Spacing Around the Container

NXT
WAVE

Home Vinod

Taj Mahal

The Taj Mahal is on the southern bank of the river Yamuna.

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→ Space

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <link rel="stylesheet" href="..."
5 <script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
6 <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/js/bootstrap.bundle.min.js"></script>
7 </head>
8 <body>
9 <div class="container">
10 <div class="row">
11 <div class="col-6">
12 <div class="heading">Taj
13 </div>
14 <div>The Taj Mahal is on the southern bank of the river Yamuna.
15 </div>
16 </div>
17 <div class="col-6">
18 <div class="heading">Mysore
19 </div>
20 <div>The Mysore Palace is a historical palace and the royal residence at Mysore.
21 </div>
22 </div>
23 </div>
24 </body>
25 </html>
```

Mobile View

Zoom In and Zoom Out



Key Takeaways

- ✓ Column Wrapping
- ✓ Bootstrap Responsive Breakpoints
 - Class name prefixes for different Breakpoints
 - Using class name prefixes in combination





Next Session

Bootstrap Grid System (...Continued)

NXT
wAVE

THANK YOU





NXT
WAVE

ALL THE BEST

