FLEXBOX in CSS

1. Describe the main differences between the CSS Flexbox layout model and the CSS Grid layout model. When would you choose to use one over the other?

CSS Flexbox Layout	**CSS Grid Layout**
FlexBox is primarily a One-Dimensional layout system. It’s Designed to layout items either in ROW or a COLUMN.	Grid is a Two Dimensional layout system. It allows you to simultaneously control the layout of items in both ROW and COLUMN.
Flexbox is often described as”content-out”. You define how a set of items(Flex-items) should behave within a container(Flex-Container), and the container adjusts to fit the content.	Grid is more of a ”Container-out”. You define the grid structure on the container, and then place items into those predefined grid cells.
USECASE: ● Distributing Space among items in a single row or column. ● Align items vertically or horizontally within a container. ● Creating navigation bars, individual components, or small-scale alignment within a larger layout. ● When the number of items or their sizes are unknown, flexbox can dynamically adjust.	**USECASE:** ● Building entire page layouts (header, footer, aside, main content areas). ● Creating Complex, Overlapping layouts. ● When you need precise control over the positioning of items in both rows and columns. ● When you have a fixed number of rows and columns, or when the structure of the layout is more important than the content within it.

TERMINOLOGIES: ● Flex-direction ● Justify-content ● Align-items ● Flex-shrink ● Flex-basis ● Flex-grow	**TERMINOLOGIES:** ● Grid-template-column ● Grid-template-row ● Grid-gap ● Grid-column-start ● Grid-column-end ● Grid-row-start ● Grid-row-end ● grid-area

Choose Flexbox when:

- You need to arrange items in a single row or column.
- You want to distribute space evenly among items.
- You need to align items along a single axis (horizontally or vertically).
- You're building components that need to be flexible and adapt to different content lengths.
- You're dealing with a dynamic number of items whose exact dimensions are not known beforehand.
- You want to reorder elements visually without changing their order in the HTML source.

Choose Grid when:

- You need to create a complex, two-dimensional page layout with rows and columns.
- You want to define explicit areas for different parts of your design (e.g., header, sidebar, main content).
- You need to overlap elements or position them precisely within a grid structure.
- You're designing for a fixed-size layout or when the overall structure is more important than the individual content.
- You want a semantic way to define your page's layout using `grid-areas`.

2. Explain the role of the following key properties in the Flexbox layout mode

i) justify-content:

- It controls the alignment and distribution of flex items along the main axis.
- items are spaced horizontally (row) or vertically (column). It deals with the primary flow direction.
- Flex-start, flex-end, center, space-between, space-around, space-evenly.

ii) align-item:

- Controls the alignment of flex-items along the cross-axis. Cross-axis is always perpendicular to the main-axis.
- items are aligned vertically (row) or horizontally (column). It deals with the perpendicular flow.
- Flex-start, flex-end, center, baseline, stretch.

iii) gap:

- Creates empty space between flex-items. It effectively adds spacing without using margins on the items themselves.
- The clean, explicit space between your boxes, whether they are in a row or wrapped onto multiple lines.
- Examples: Gap:10px; , Gap:1 rem 2 rem;

iv) flex-direction:

- Defines the main-axis and direction in which flex-items are placed.
- The fundamental choice of whether your items lay out in a row or a column.
- Examples: Row (default), row-reverse, column, column-reverse.

v) flex-wrap:

- Determines whether flex-items are forced into a single line (nowrap) or allowed to wrap into multiple lines(wrap, wrap-reverse) when there is not enough space along the main axis.
- Whether your item will squeeze into one line , potentially overflowing, or neatly flows on to the next line when space runs out.
- Example: Nowrap(default), wrap, wrap-reverse.

---

3. Write the code to center a div using CSS Flexbox.

HTML:

```html
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <title>FlexBox</title>
        <link rel="stylesheet" href="style.css">
    </head>
    <body>
        <div class="box-container">
            <div class="box-item">
                Center the div
            </div>
        </div>
    </body>
</html>
```

CSS:

```
body{

    margin:0px;

    display:flex;

    justify-content: center;

    align-items:center;

    min-height:100vh;

}

.box-container{

    background-color: rgb(0, 253, 55);

    width:200px;

    height:200px;

}

.box-item{

    color:rgb(0, 253, 55);

}
```

OUTPUT: Preview

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4. A client of yours wants to add a pricing section on their website to showcase their newly introduced premium plans.

HTML:

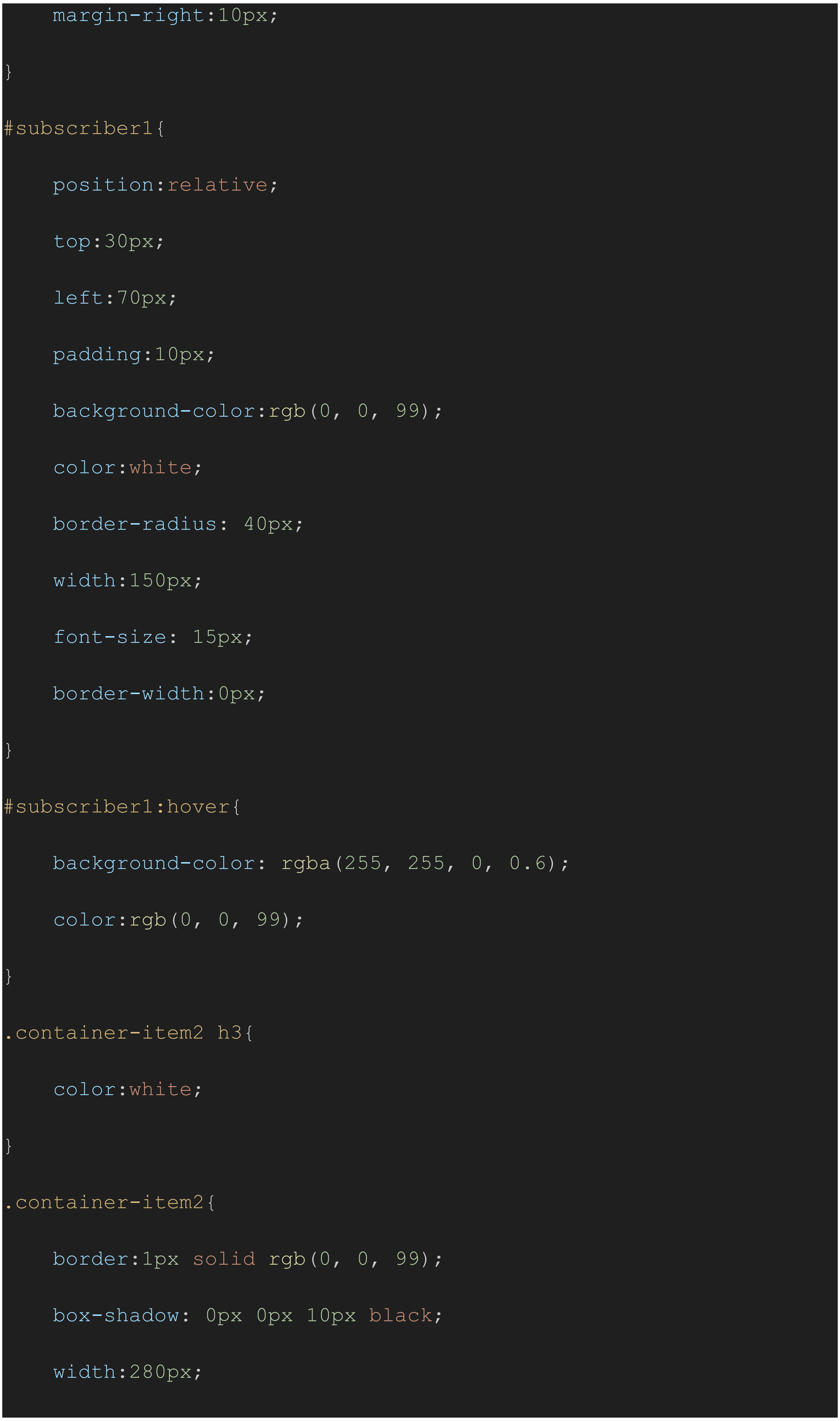
```
<!DOCTYPE html>
```

```html
<html lang="en">
    <head>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width,
initial-scale=1">
        <title>Simple Header</title>
        <link rel="stylesheet" href="style.css">
    </head>
    <body>
        <nav>
            <div class="button-container">
                <a href="index.html" id="button">Home</a>
                <a href="about.html" id="button">About</a>
                <a href="blog.html" id="button">Blog</a>
                <a href="contact.html" id="button">Contact</a>
            </div>
        </nav>
        <div class="container-box">
            <div class="container-item1">
                <h3>Free Plan</h3>
                <p class="head1">For Personal</p>
                <p class="sub-head1">$ 0</p>
                <ul class="list-items1">
                    <li class="items-1">1 users</li>
                    <li class="items-1">4 Web mails</li>
                    <li class="items-1">Responsive website</li>
                    <li class="items-1">Free SSL</li>
                </ul>
                <button type="submit" name="subscriber"
id="subscriber1">Subscribe Now</button>
            </div>
            <div class="container-item2">
                <h3>Basic Plan</h3>
                <p class="head2">For small business</p>
                <p class="sub-head2">$ 29</p>
                <ul class="list-items2">
                    <li class="items-2">4 users</li>
                    <li class="items-2">10 Web mails</li>
                    <li class="items-2">Responsive Website</li>
                    <li class="items-2">Free SSL</li>
                </ul>
                <button type="submit" name="subscriber"
id="subscriber2">Subscribe Now</button>
            </div>
            <div class="container-item3">
                <h3>Pro Plan</h3>
                <p class="head3">For Enterprise</p>
                <p class="sub-head3">$ 49</p>
                <ul class="list-items3">
                    <li class="items-3">Unlimited users</li>
                    <li class="items-3">Unlimited Web mails</li>
                    <li class="items-3">Responsive Website</li>

                    <li class="items-3">Free SSL + SEO</li>

                </ul>

                <button type="submit" name="subscriber"
id="subscriber3">Subscribe Now</button>

            </div>

        </div>

    </body>

</html>
```

CSS:

```
.container-box{

    border:1px solid black;

    width:1015px;

    height:500px;

    display: flex;

    position:relative;

    top:100px;

    left:0px;

    background-color: #8000801c;

}

.container-item1{

    border:1px solid white;

    box-shadow: 0px 0px 10px black;

    width:280px;
    height:400px;

    position: relative;

    top:45px;

    left:30px;

    background-color: white;

    border-radius: 10px;

    padding:5px;

}

h3{

    position:relative;

    top:0px;

    left:40px;

    font-family: sans-serif;

    font-size: 30px;

    color:rgb(0, 0, 99);

}

.head1{

    font-size: 15px;

    color:rgb(0, 0, 99);

    position:absolute;

    top:65px;

    left:53px;

}

.sub-head1{

    font-size: 30px;
```

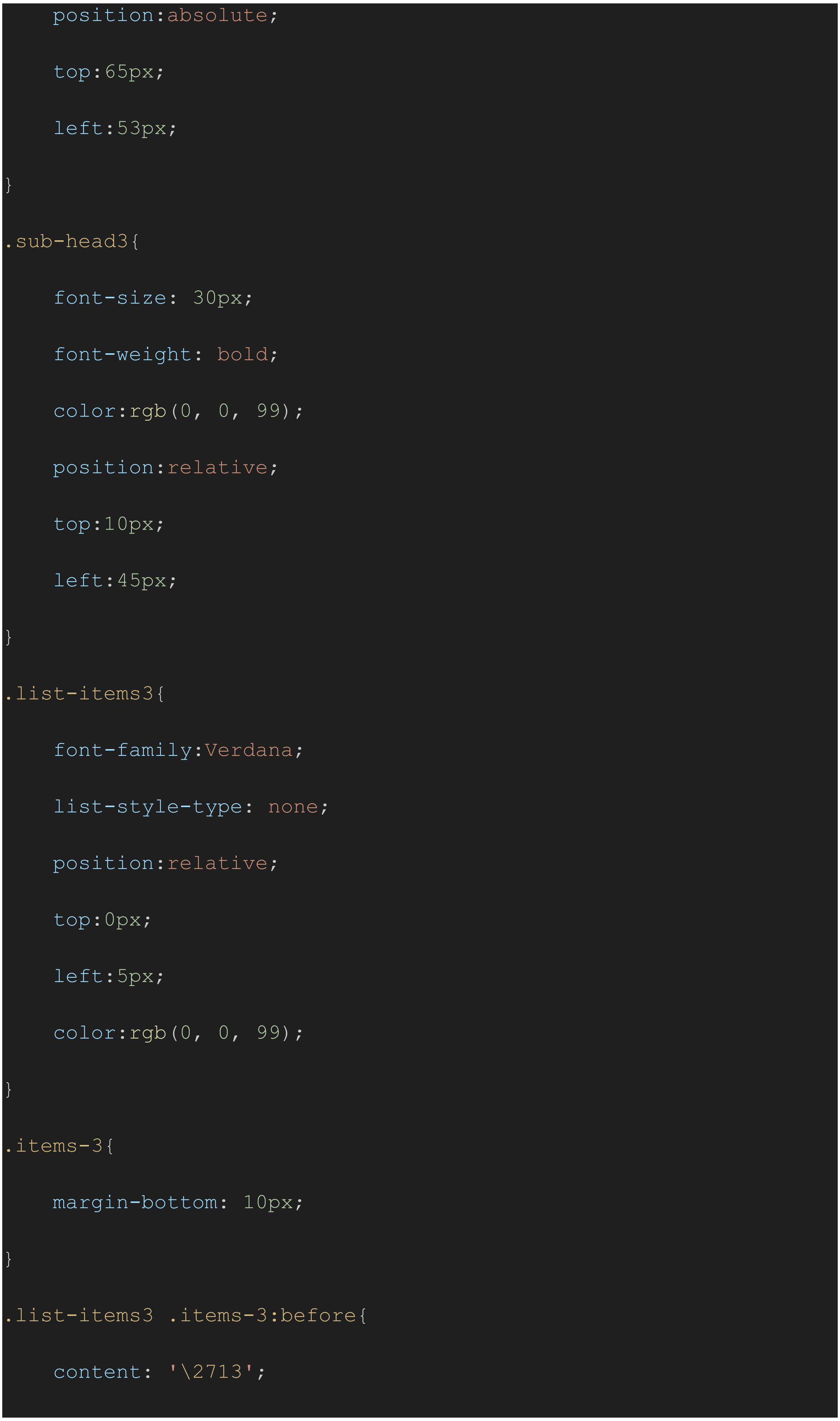
```css
    font-weight: bold;
    color:rgb(0, 0, 99);
    position:relative;
    top:10px;
    left:45px;
}
.list-items1{
    font-family:Verdana;
    list-style-type: none;
    position:relative;
    top:0px;
    left:5px;
    color:rgb(0, 0, 99);
}
.items-1{
    margin-bottom: 10px;
}
.list-items1 .items-1::before{
    content: '\2713';
    font-weight: bolder;
    background-color:rgb(0, 0, 99);
    color:white;
    border:0px solid rgb(0, 0, 99);
    border-radius:50px;
    padding:1px;
```



```
    margin-right:10px;
}
#subscriber1{
    position:relative;
    top:30px;
    left:70px;
    padding:10px;
    background-color:rgb(0, 0, 99);
    color:white;
    border-radius: 40px;
    width:150px;
    font-size: 15px;
    border-width:0px;
}
#subscriber1:hover{
    background-color: rgba(255, 255, 0, 0.6);
    color:rgb(0, 0, 99);
}
.container-item2 h3{
    color:white;
}
.container-item2{
    border:1px solid rgb(0, 0, 99);
    box-shadow: 0px 0px 10px black;
    width:280px;
```

```css
    height:400px;
    position: relative;
    top:45px;
    left:70px;
    background-color:rgb(0, 0, 99);
    border-radius: 10px;
    padding: 5px;
}
.head2{
    font-size: 15px;
    color:white;
    position:absolute;
    top:65px;
    left:53px;
}
.sub-head2{
    font-size: 30px;
    font-weight: bold;
    color:white;
    position:relative;
    top:10px;
    left:45px;
}
.list-items2{
    font-family:Verdana;
    list-style-type: none;
    position:relative;
    top:0px;
    left:5px;
    color:white;
}
.items-2{
    margin-bottom: 10px;
}
.list-items2 .items-2::before{
    content: '\2713';
    font-weight:bolder;
    background-color:white;
    color:rgb(0, 0, 99);
    border:0px solid rgb(0, 0, 99);
    border-radius:50px;
    padding:1px;
    margin-right:10px;
}
#subscriber2{
    position:relative;
    top:30px;
    left:70px;
    padding:10px;
    background-color:white;
```

```css
    color:rgb(0, 0, 99);
    border-radius: 40px;
    width:150px;
    font-size: 15px;
    border-width:0px;
}
#subscriber2:hover{
     background-color: rgba(255, 255, 0, 0.8);
    color:white;
}
.container-item3{
    border:1px solid white;
    box-shadow: 0px 0px 10px black;
    width:280px;
    height:400px;
    position: relative;
    top:45px;
    left:110px;
    background-color: white;
    border-radius: 10px;
    padding: 5px;
}
.head3{
    font-size: 15px;
    color:rgb(0, 0, 99);
```



```css
    position:absolute;
    top:65px;
    left:53px;
}
.sub-head3{
    font-size: 30px;
    font-weight: bold;
    color:rgb(0, 0, 99);
    position:relative;
    top:10px;
    left:45px;
}
.list-items3{
    font-family:Verdana;
    list-style-type: none;
    position:relative;
    top:0px;
    left:5px;
    color:rgb(0, 0, 99);
}
.items-3{
    margin-bottom: 10px;
}
.list-items3 .items-3:before{
    content: '\2713';
    font-weight: bolder;

    background-color:rgb(0, 0, 99);

    color:white;

    border:0px solid rgb(0, 0, 99);

    border-radius:50px;

    padding:1px;

    margin-right:10px;

}

#subscriber3{

    position:relative;

    top:30px;

    left:70px;

    padding:10px;

    background-color:rgb(0, 0, 99);

    color:white;

    border-radius: 40px;

    width:150px;

    font-size: 15px;

    border-width:0px;

}

#subscriber3:hover{

    background-color: rgba(255, 255, 0, 0.6);

    color:rgb(0, 0, 99);

}
```

OUTPUT: Preview

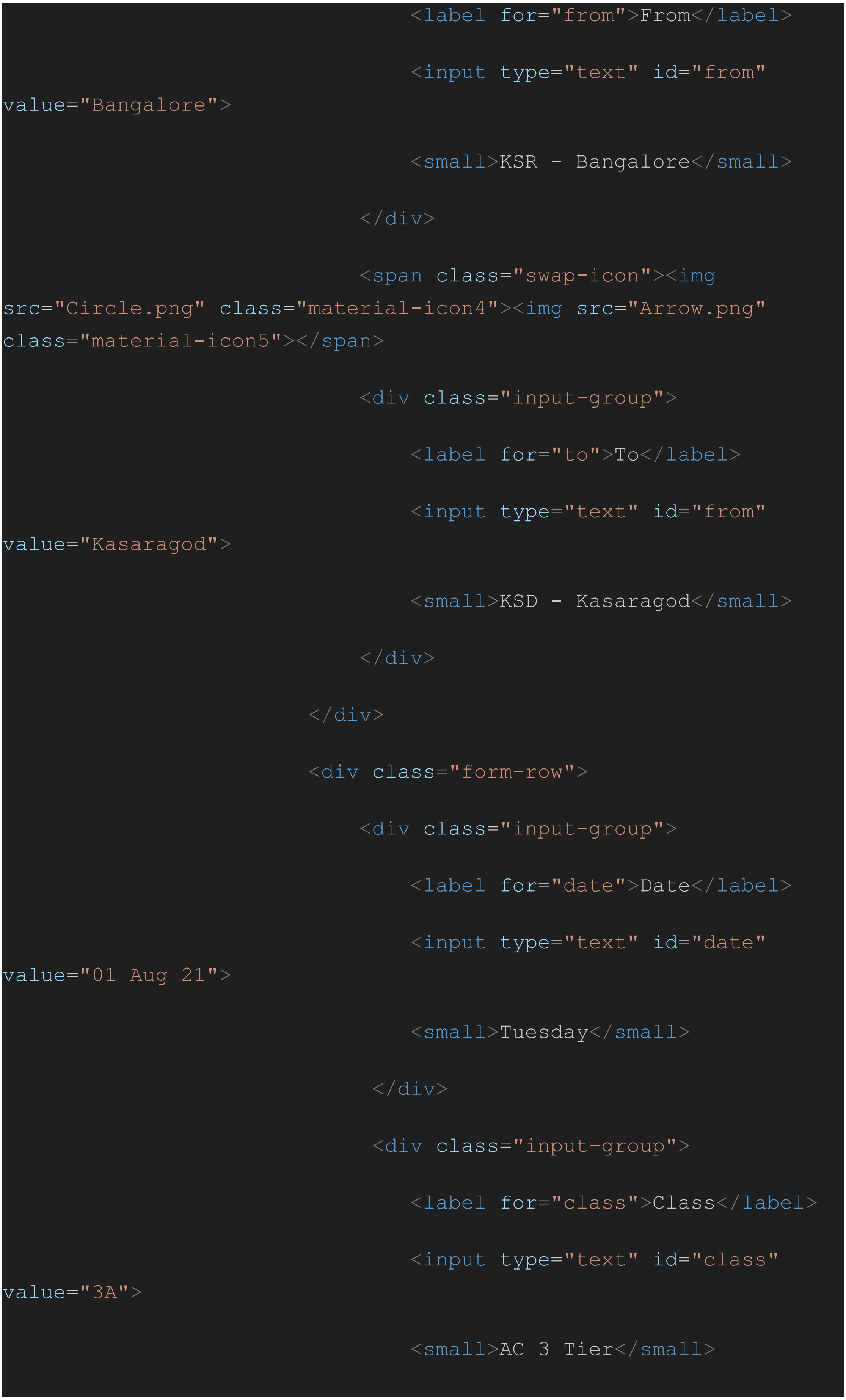
---

5. build a clone of the IRCTC Ticket booking page.

HTML:

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="UTF-8">
        <meta name="variable", content="width=device-width, initial-scale=1.0">
        <title>IRCTC Login</title>
        <link href="login.css" rel="stylesheet">
    </head>
    <body>
        <div class="container">
            <div class="left-panel">
                <header class="header">
                    <div class="irctc-logo">
                        <img src="Logo.png" alt="IRCTC Logo">
                        <span>IRCTC</span>
                    </div>
                    <nav class="top-nav">
                        <ul>
```

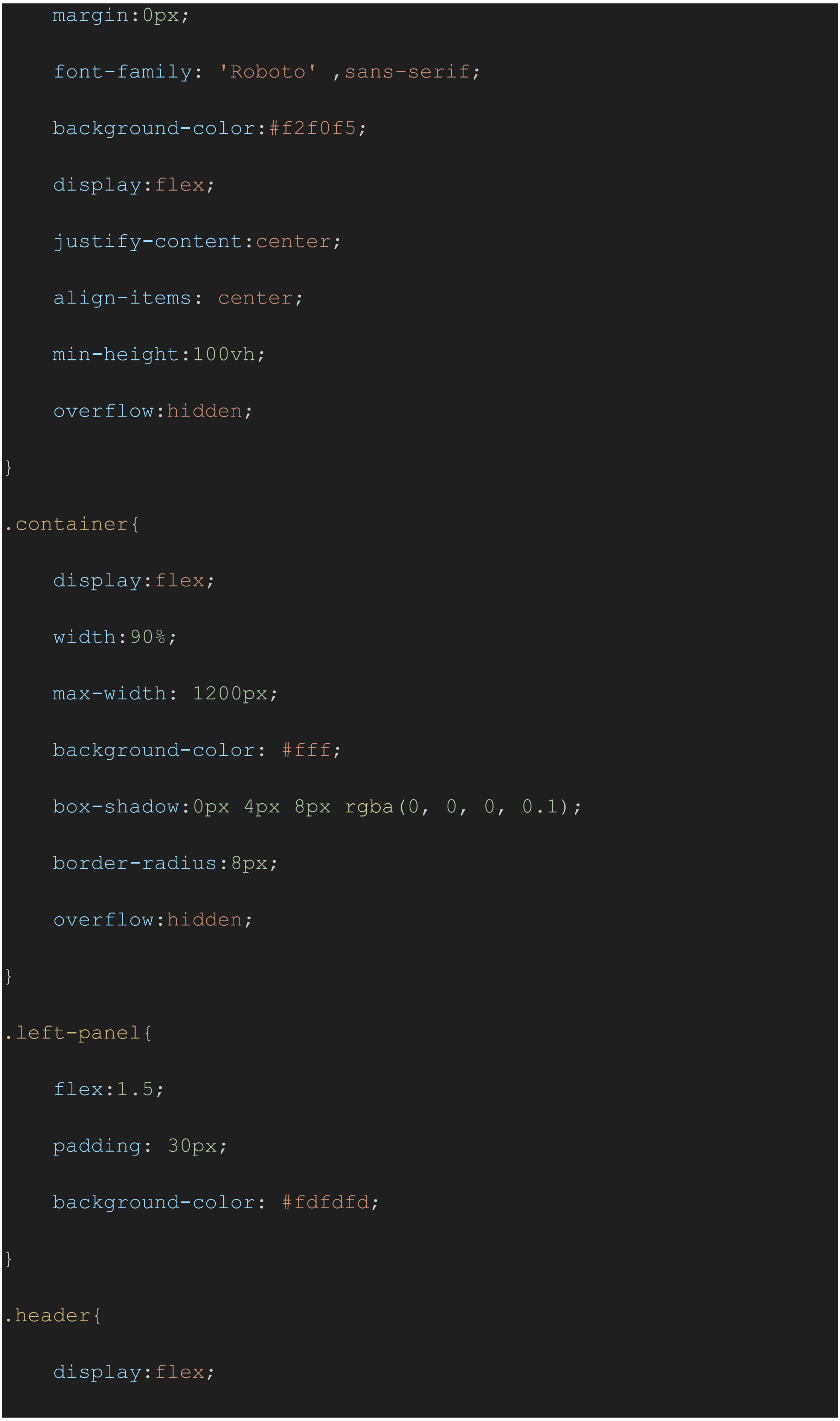
```
                            <li><a href="#">Ask Disha</a></li>
                            <li><a href="#">Contact us</a></li>
                            <li><a href="#">Alerts</a></li>
                            <li><button class="nav-button
login">Login</button></li>
                            <li><button class="nav-button
register">Register</button></li>
                            <li><button class="nav-button
agent-login">Agent Login</button></li>
                        </ul>
                    </nav>
                </header>
                <section class="main-content">
                    <h1>Indian Railways</h1>
                    <h2><span class="green-text">Safety</span>
<span class="orange-text">Security</span> <span
class="blue-text">Punctuality</span></h2>
                    <div class="tabs">
                        <button class="tab-button active"><img
src="Ticket.svg" class="material-icon1"> BOOK Ticket</button>
                        <button class="tab-button active"><img
src="pnr.png" class="material-icon2"> PNR Status</button>
                        <button class="tab-button active"><img
src="Vector.png" class="material-icon3"> Charts /
Vacancy</button>
                    </div>
                    <div class="ticket-booking-form">
                        <div class="form-row">
                            <div class="input-group">
```



```
                                <label for="from">From</label>
                                <input type="text" id="from"
value="Bangalore">
                                <small>KSR - Bangalore</small>
                            </div>
                            <span class="swap-icon"><img
src="Circle.png" class="material-icon4"><img src="Arrow.png"
class="material-icon5"></span>
                            <div class="input-group">
                                <label for="to">To</label>
                                <input type="text" id="from"
value="Kasaragod">
                                <small>KSD - Kasaragod</small>
                            </div>
                        </div>
                        <div class="form-row">
                            <div class="input-group">
                                <label for="date">Date</label>
                                <input type="text" id="date"
value="01 Aug 21">
                                <small>Tuesday</small>
                             </div>
                             <div class="input-group">
                                <label for="class">Class</label>
                                <input type="text" id="class"
value="3A">
                                <small>AC 3 Tier</small>
                             </div>

                             <div class="input-group">

                                <label for="seat-type">Seat
Type</label>

                                <input type="text" id="seat-type"
value="TATKAL">

                                <small>AC 3 Tier</small>

                             </div>

                        </div>

                        <button
class="search-train-button">Search Train <img
src="arrow1.png"></button>

                    </div>

                </section>

            </div>

            <div class="right-panel">

                <img src="image .png">

            </div>

        </div>

    </body>

</html>
```

CSS:

```
@import
url('https://fonts.googleapis.com/css2?family=Roboto:wght@300;400
;500;700&display=swap');

body{
```



```css
    margin:0px;

    font-family: 'Roboto' ,sans-serif;

    background-color:#f2f0f5;

    display:flex;

    justify-content:center;

    align-items: center;

    min-height:100vh;

    overflow:hidden;

}

.container{

    display:flex;

    width:90%;

    max-width: 1200px;

    background-color: #fff;

    box-shadow:0px 4px 8px rgba(0, 0, 0, 0.1);

    border-radius:8px;

    overflow:hidden;

}

.left-panel{

    flex:1.5;

    padding: 30px;

    background-color: #fdfdfd;

}

.header{

    display:flex;
    justify-content: space-between;
    align-items: center;
    margin-bottom: 50px;
}
.irctc-logo{
    display: flex;
    align-items:center;
    font-weight:500;
    font-size:1.2em;
    color:#333;
}
.irctc-logo img{
    height:40px;
    margin-right:10px;
}
.top-nav ul{
    list-style: none;
    display:flex;
    align-items:center;
    position: relative;
    top:5px;
    left:100px;
}
.top-nav li{
    margin-left:20px;
```

```css
}
.top-nav a{
    text-decoration:none;
    color:#555;
    font-size:0.9em;
    transition:color 0.3s ease;
}
.top-nav a:hover{
    color:#007bff;
}
.nav-button{
    position:relative;
    top:50px;
    left:-200px;
    background:none;
    border:1px solid #ccc;
    padding:8px 15px;
    border-radius:5px;
    cursor:pointer;
    font-size:0.9em;
    transition: 'background-color' 0.3s ease, color 0.3 ease;
}
.nav-button.login:hover,
 .nav-button.register:hover,
  .nav-button.agent-login:hover{
    background-color: #e67e22;
    color:white;
}
.main-content h1{
    font-size:2.2em;
    margin-bottom:5px;
    color:#333;
}
.main-content h2{
    font-size:1.5em;
    margin-top: 0px;
    margin-bottom:30px;
    font-weight:400;
}
.green-text{
    color:green;
}
.orange-text{
    color:orange;
}
.blue-text{
    color:blue;
}
.tabs{
    display:flex;
    gap:10px;

    margin-bottom:30px;

}

.tab-button{

    background-color: #eee;

    border:none;

    padding:20px 10px;

    cursor:pointer;

    color:#555;

    font-size:1em;

    display:flex;

    align-items:center;

    gap:8px;

    transition: 'background-color' 0.3s ease, color 0.3s ease;

}

.tab-button.active{

    background-color: white;

    color:blue;

    border:1px solid #555;

}

.tab-button.active:hover{

    background-color:blue;

    color:white;

    transition:'background-color' 0.3s ease, color 0.3s ease;

}
```

```css
.ticket-booking-form{
    background-color:#f5f5f5;
    border:1px solid #e0e0e0;
    border-radius:8px;
    padding:25px;
    width:550px;
    height: 200px;
    margin-top: 50px;
}
.form-row{
    display:flex;
    align-items:flex-end;
    margin-bottom:25px;
    gap:20px;
}
.input-group{
    flex:1;
    display: flex;
    flex-direction: column;
}
.input-group label{
    font-size:0.9em;
    color:#777;
    margin-bottom:5px;
}
```

```
.input-group input[type="text"]{
    border:1px solid #ccc;
    padding:10px;
    border-radius:5px;
    font-size:1em;
    color:#333;
    outline:none;
    transition:'border-color' 0.3s ease;
    width:150px;
}
.input-group input[type="text"]:focus{
    color:#007bff;
}
.input-group small{
    font-size:0.8em;
    color:#999;
    margin-top:3px;
}
.swap-icon{
    align-self: center;
}
.swap-icon .material-icon4{
    position: relative;
    top:0px;
    left:-10px;
```

```css
}
.swap-icon .material-icon5{
    position: relative;
    top:-13px;
    left:-46px;
}
.search-train-button{
    background-color:green;
    color:white;
    padding:15px 20px;
    border:none;
    border-radius: 5px;
    font-size:1.1em;
    cursor:pointer;
    width: 100%;
    display: flex;
    justify-content: center;
    align-items: center;
    gap:20px;
    transition: 'background-color' 0.3s ease;
    position:relative;
    top:100px;
    left:0px;
}
.search-train-button:hover{
    background-color: #218838;
}
.right-panel img {
    width: 540px;
    height: 900px;
    position:relative;
    top:0px;
    left:-50px;
}
```

OUTPUT: Preview