Container

Container is a parent element which consists of child elements known as **items**.

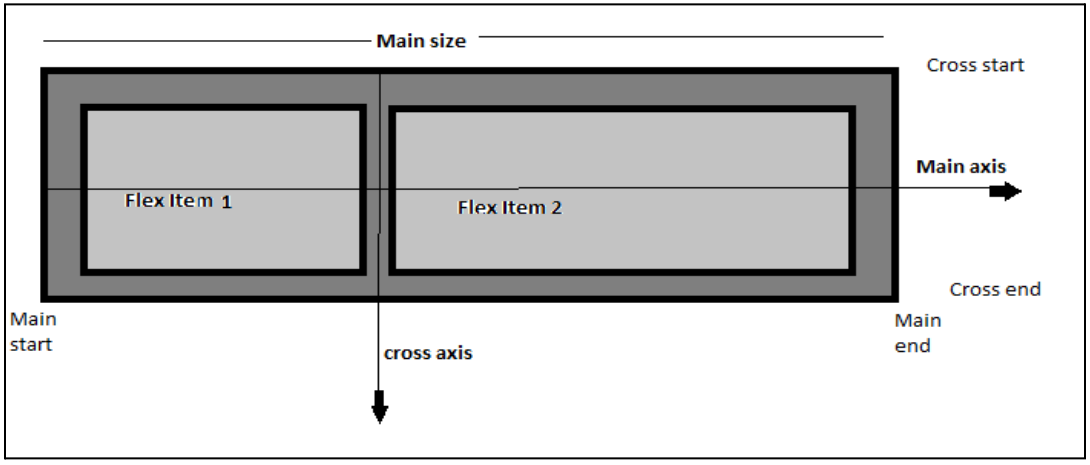
In the code shown, the div having **"class= container**" is a parent element of all the other div having "**class= item**" are items. So the outer div is a container and all the other div's are items of that container.

```
<!DOCTYPE html>
<html>
    <head>
    <title>Flex</title>
    </head>
    <body>
        <div class="container">
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
            <div class="item"></div>
        </div>
    </body>
</html>
```

FLEXBOX LAYOUT

The main focus of Flexbox is to provide a more efficient way to layout, distribute space, and align items in a container irrespective of their sizes. Flexbox gives the ability to alter container items width and height, to best fill the available space.

Flex is a one dimensional layout model. Items will be laid out either toward the main axis (row) or cross axis (column) as shown in the image below.



FlexBox Properties

1. Display
2. Flex Direction
3. Flex Wrap
4. Flex Flow
5. Justify Content
6. Align Items
7. Gap, Row gap, Column gap

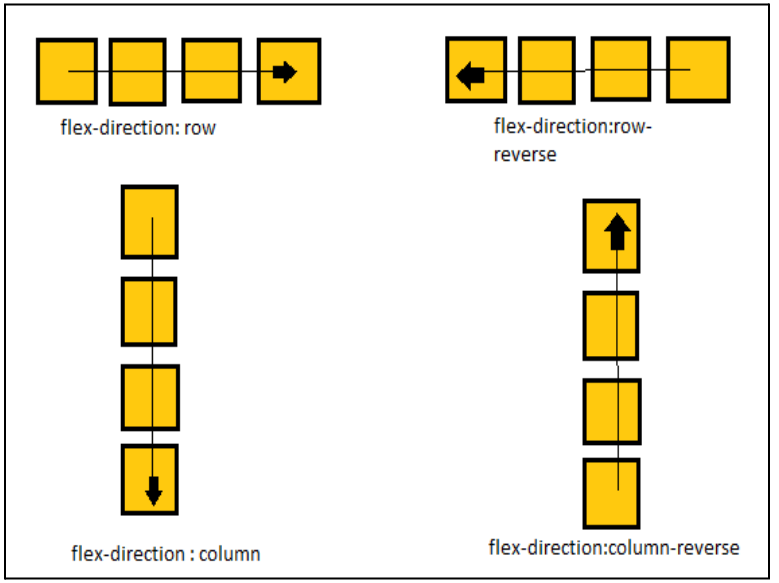
1. **Display:** Display is a property which is used to show items in various ways.
   When **display : flex** is used, the items will be aligned with the main axis by default.

```
.container {
        Display: flex
}
```

2. **Flex Direction:** Defines the direction in which items can flow inside the container
   There are four direction value

   I. **row:** display items from left to right
   II. **row-reverse:** display items from right to left
   III. **column:** display items from top to bottom
   IV. **column-reverse:** display item from bottom to top

```
.container {
        Flex-direction : row | row-reverse | column |
column-reverse
}
```

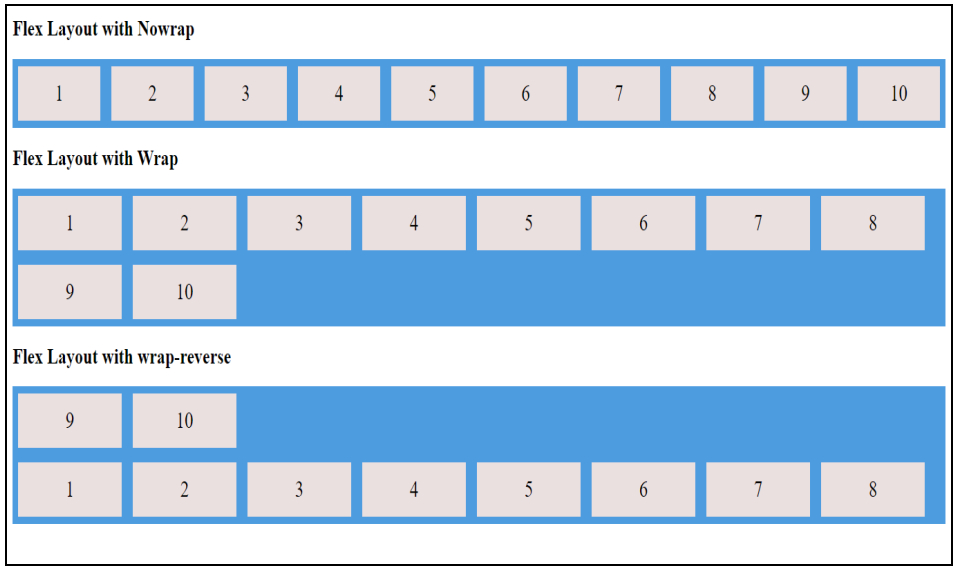


3. Flex wrap: it wraps the items into single or multiple lines.

There are three wrap values

1. **wrap:** items will wrap onto multiple lines from top to bottom
2. **nowrap:** all the items will display on a single line
3. **wrap-reverse:** items will wrap onto multiple lines from bottom to top

```
.container {
        flex-wrap : wrap | nowrap |
wrap-reverse
}
```



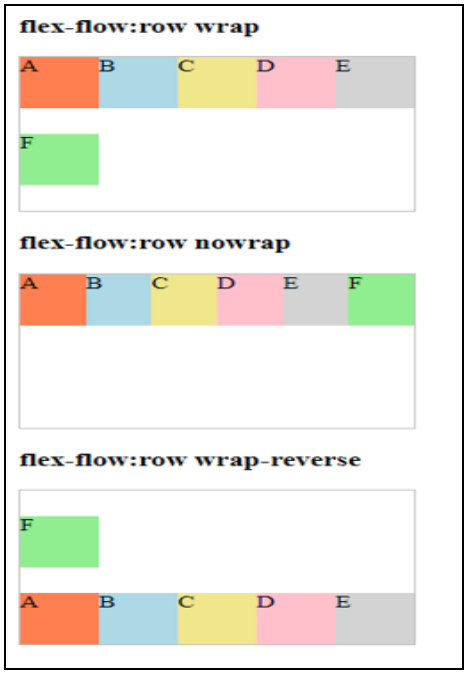

```html
<!DOCTYPE html>
<html>
    <head>
    <link rel="stylesheet" href="Flex.css"/>
    </head>
    <body>
        <h2>Flex Layout </h2>
        <div class="flex-container">
            <div>1</div>
            <div>2</div>
            <div>3</div>
            <div>4</div>
            <div>5</div>
            <div>6</div>
            <div>7</div>
            <div>8</div>
            <div>9</div>
            <div>10</div>
        </div>
    </body>
</html>
```

```css
// Flex.css code
.flex-container {
    display: flex;
/* change flex-wrap value to see other
Outputs*/
    flex-wrap: wrap;
    background-color:rgb(77,156,224);
}
.flex-container  > div {
    background-color: #ebe0e0;
    width: 150px;
    margin: 8px;
    text-align: center;
    line-height: 60px;
    font-size: 25px;
}
```

4. Flex flow: it is used as a shorthand property for flex-direction and flex-wrap, it specifies direction along with a wrapping value. The default value is “row nowrap”

(Experiment with below combinations)

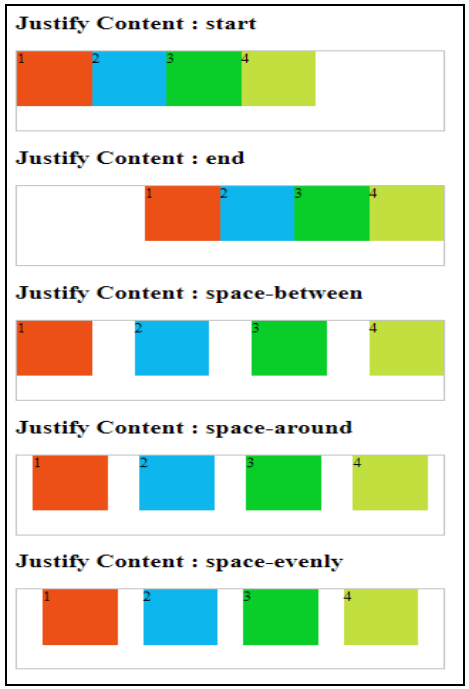
```
.container {
        Flex-flow : row nowrap | row wrap | row wrap-reverse
}
.container {
        Flex-flow : row-reverse nowrap | row-reverse wrap | row-reverse
wrap-reverse
}
.container {
        Flex-flow : column nowrap | column wrap | column wrap-reverse
}
.container {
        Flex-flow : column-reverse nowrap | column-reverse wrap | column-reverse
wrap-reverse
}
```




```
<!DOCTYPE html>
<html>
<head>
    <style>
    #container1 {
    width: 250px;
    height: 150px;
    border: 1px solid #c3c3c3;
    display: flex;
    flex-flow: row wrap;
    }
    #container1 div {
    width: 50px;
    height: 50px;
    }
    </style>
</head>
```

```
<body>
    <h3>flex-flow property</h3>
    <div id="container1">
        <div style="background-color:coral;">A</div>
        <div style="background-color:lightblue;">B</div>
        <div style="background-color:khaki;">C</div>
        <div style="background-color:pink;">D</div>
        <div style="background-color:lightgrey;">E</div>
        <div style="background-color:lightgreen;">F</div>
    </div>
</body>
</html>
```

5. Justify-Content: It aligns flex items along with the main axis and distributes leftover space between items, the default value is flex-start.



There are six values for justify-content

I. **flex-start:** items will be packed towards the start of flex-direction in a container,
II. **flex-end:** items will be packed towards the end of flex-direction in a container
III. **Center:** items are placed in the center of the container.
IV. **Space between:** items will be distributed evenly within a container, the first item will be at the start and the last item will be at the end of the container.
V. **Space around:** it distributes space around the items in a container
VI. **Space evenly:** items are distributed in such a way that space between any two items is equal

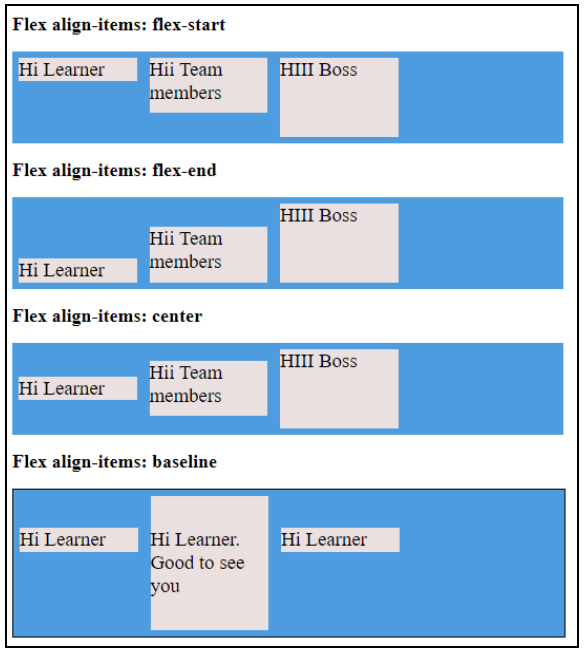
```
.container {
        Justify-content : flex-start | flex-end | center | space-between |
space-around | space-evenly
}
```

```
<!DOCTYPE html>
<html>
    <head>
        <style>
        #main {
            width: 400px;
            height: 100px;
            border: 1px solid #c3c3c3;
            display: flex;
            justify-content: flex-start;
        }
        #main div {
            width: 70px;
            height: 70px;
        }
        </style>
    </head>
    <body>
        <h2>Justify Content</h2>
        <div id="main">
        <div style="background-color:rgb(236, 80, 22);">1</div>
        <div style="background-color:rgb(14, 182, 238);">2</div>
        <div style="background-color:rgb(9, 206, 42);">3</div>
        <div style="background-color:rgb(193, 223, 63);">4</div>
        </div>
        <h2>Justify Content : end</h2>
    </body>
</html>
```

6. Align item: It aligns the flex items along the cross axis, the default value is stretch

1. **Flex-start:** items will be placed at the start of the cross-axis in the container.
2. **Flex-end:** items will be placed at the end of the cross-axis in the container
3. **center:** items will be placed at the center of cross-axis
4. **Stretch:** items are stretched throughout the cross axis to fill the container.
5. **baseline:** items are aligned such as their text baseline aligns.

```
. container {
        Align-item : flex-start | flex-end | center | stretch | baseline
}
```




```
<!DOCTYPE html>
<html>
    <head>
    <style>
        .flex-container {
            display: flex;
            align-items: flex-start;
            background-color:rgb(77, 156, 224);
        }
        .flex-container  > div {
            background-color: #ebe0e0;
            width: 150px;
            margin: 8px;
            line-height: 60px;
            font-size: 25px;
        }
        </style>
    </head>
```

```
<body>
        <h2>Flex Layout </h2>
        <div class="flex-container">
            <div style="min-height: 30px;">Hi Learner</div>
            <div style="min-height: 70px;">Hii Team members</div>
            <div style="min-height: 100px;">HIII Boss</div>
        </div>

    </body>
</html>
```

7. Gap: It provides a gap between rows and columns, it is used as a shorthand for row-gap and column-gap

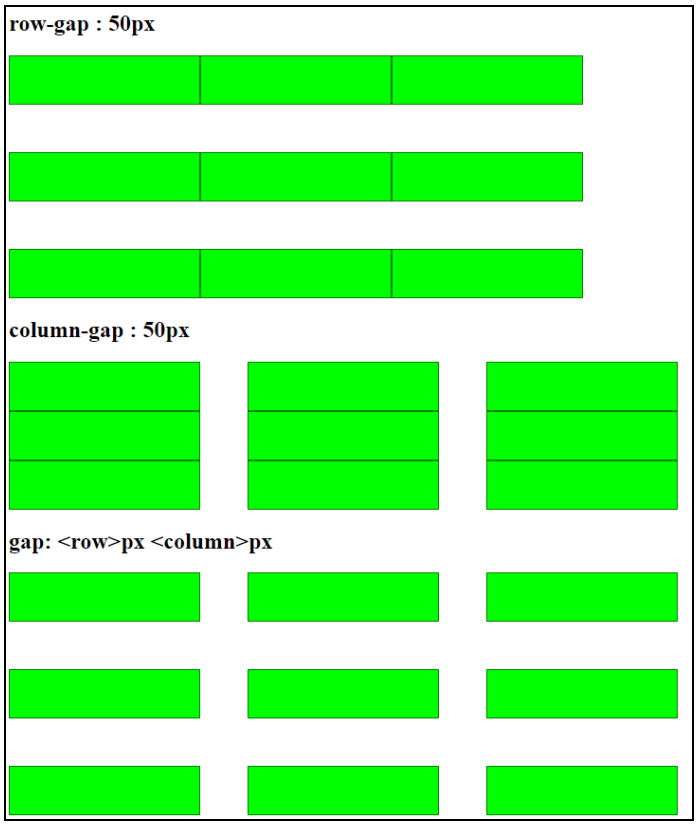
```
.container {
        Gap : 10px ;          // provides gap for both row and column
        Row-gap : 20 px ;     // provides gap only for row
        Column-gap : 20px;  // provides gap only for column
}
```

```
<!DOCTYPE html>
<html>
    <head>
    <style>
       #flexbox {
          display: flex;
          flex-wrap: wrap;
          width: 720px;
          row-gap: 50px;
        }

        #flexbox > div {
          border: 1px solid green;
          background-color: lime;
          width: 200px;
          height: 50px;
        }

    </style>
    </head>
```

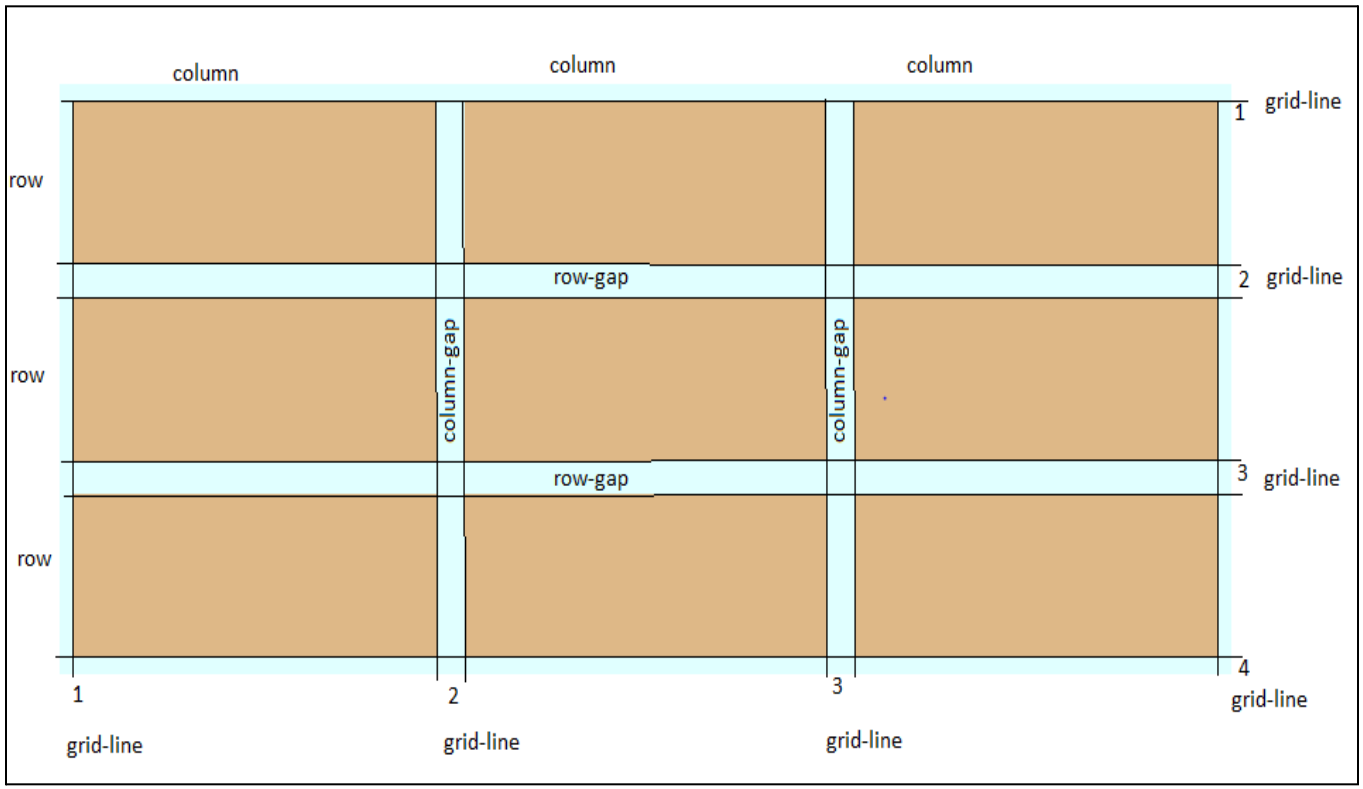
```
    <body>
      <div id="flexbox">
        <div></div>
        <div></div>
        <div></div>
        <div></div>
        <div></div>
        <div></div>
        <div></div>
        <div></div>
        <div></div>
      </div>
    </body>
</html>
```



GRID LAYOUT

CSS grid is a two-dimensional layout, it provides a grid-based layout system with rows and columns to make web pages designing easier.

A grid layout has a parent having one or more children. parents are known as containers and all children are items.



Grid Properties:

1.Display

2.Grid-template-column

3.Grid-template-row

4.Gird-gap (grid-column-gap ,grid-row-gap)

5.Positioning property

i)grid-row-start

ii)grid-row-end

iii)grid-column-start

iv)grid-column-end

v) grid-row

vi) grid-column

vii) grid-area

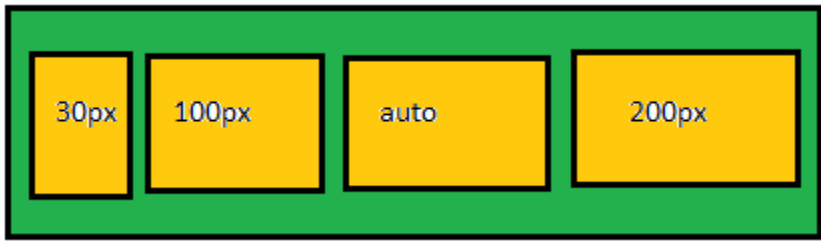
1.Display : it display the items in grid form inside a container

```
.container {
        display:grid
}
```

2. grid-template-column : it defines the size of the column and no of columns needed to display.

```
.container {
        display:grid;
        Grid-template-column: 30px 100px auto 200px;
}
```

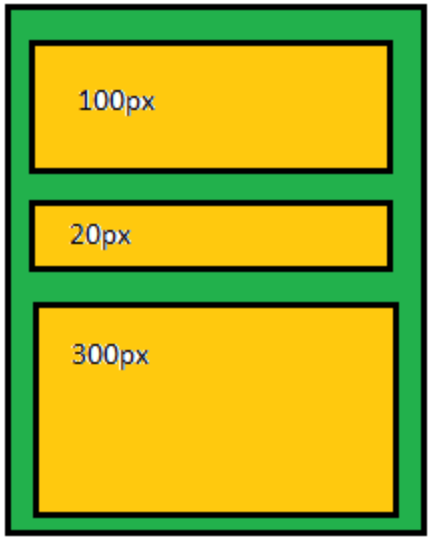
There will be four columns of size 30 , 100 ,auto , 200 px



For " auto value" size of the column is determined based on the size of the container and the size of content present in an item.

3. grid-template-row: it defines the number of rows in a container.

```
.container {
        display:grid;
        Grid-template-row: 100px 20px 300px;;
}
```



There will be three rows of size 100,20,300 px.

Other values which can be assigned to grid-template-columns and grid-template-row are :

1. **max-content:** sets the size of each column and row to the size of the largest item.
2. **min-content:** sets the size of each column and row to the size of the smallest item.
3. **inherit** display items based on the size of the container.
4. **initial**: sets all the items to the default value.

4. Grid-gap: it provides a gap between rows and columns, it is a shorthand for grid-column-gap and grid-row-gap.

```
.container {
        grid-gap: 20px 20px;
}
```

The first value is for the row and the second one is for the column.

5. Positioning property: it deals with the position of items inside the container.
These property will be assigns to **items of container** directly

i) **grid-row-start :** it defines on which row-line item will start .
ii) **grid-row-end :** it defines on which row-line item will end.
iii) **grid-column-start :** itdefines on which column-line item will start
iv) **grid-column-end :** it defines on which column line item will end.

Consider the below items which are in order of 1 to 9, we will change the position of item1 and item9 with each other using the above positioning properties.

```
<!DOCTYPE html>
<html>
    <head>
    <title>Page Title</title>
    <style>
      .container {
        display: grid;
        grid-template-columns: 200px 200px 200px;
        grid-template-rows: 100px 100px 100px;
        margin-top: 10px 10px 10px 10px;
        padding: 10px;
        width: 60%;
        grid-gap: 20px 20px;
      }
      .item1{
        background-color: red;
        grid-row-start: 3;
        grid-row-end:4;
        grid-column-start: 3;
        grid-column-end: 4;
      }
      .item2{background-color: green;}
      .item3{background-color: yellow;}
      .item4{background-color: blue;}
      .item5{background-color: blueviolet;}
      .item6{background-color: brown;}
      .item7{background-color:orange;}
      .item8{background-color: pink;}
      .item9{background-color: cyan;
             grid-area: 1/1/2/2;
/* grid-area: grid-row-start, grid-column-start,
grid-row-end, grid-column-end */
      }
    </style>
    </head>
    <body>
      <div class="container">
        <div class="item1">One</div>
        <div class="item2">Two</div>
        <div class="item3">Three</div>
        <div class="item4">Four</div>
        <div class="item5">Five</div>
        <div class="item6">Six</div>
        <div class="item7">Seven</div>
        <div class="item8">Eight</div>
        <div class="item9">Nine</div>
      </div>
    </body>
</html>
```

v) **grid-row :** it is shorthand for grid-row-start and grid-row-end

Grid-row: 2 / 3 (2 : start row position , 3 : end row position)

vi) **grid-column :** it is shorthand for grid-column-start and grid-column-end

Grid-column : 3 / 4 (3 : start column position , 4: end column position)

vii) **grid-area:** it is shorthand for row and column, with grid area we can give row and column values at a time.

Grid-area : row-start/column-start/row-end/column-end

Grid-area: 1/1/2/2