CSS Flex

## Topics Covered:
1. What is Flexbox?
2. Uses of Flexbox.
3. Important terminologies.
4. Flex properties.
   a. Flex container properties.
   b. Flex item properties.

Topics in Detail:

Flexbox:
- Flexbox is a one-dimensional layout model, where flex means flexible length on flexible items.
- The flexbox layout must have a **parent element(container)** with the **display** property "**flex**". So that the child elements of the container automatically become **flex items**.
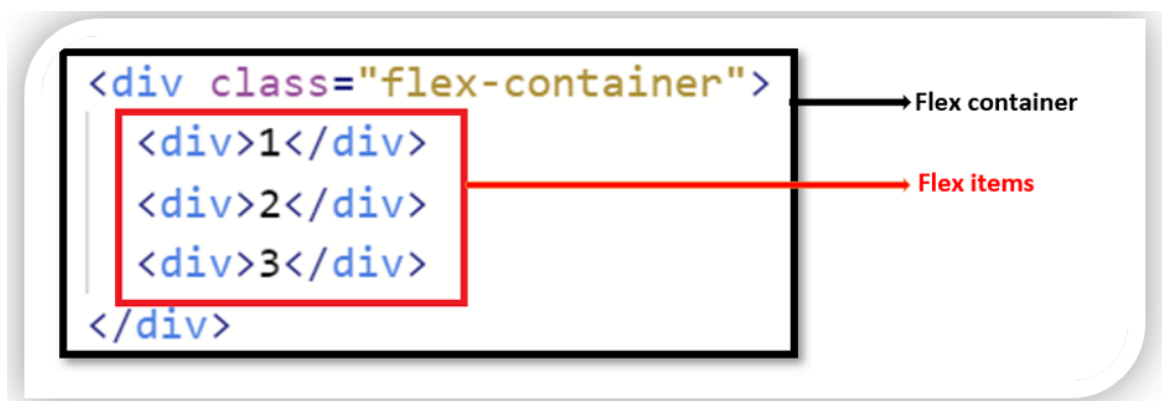
- Flexbox provides an easy way to arrange items within a container.
- Flexbox **aligns and distributes space** among the items in the container even when the size of the items is unknown or dynamic.
- Flexbox expands/shrinks to fill available space/prevent overflow and distributes space among the items.
- Flexbox is used for creating small-scale layouts.
- Flexbox aligns the items vertically and horizontally using rows and columns.

Flexbox uses:
- The flexbox makes the website/web app behave in a similar manner even when they are viewed on different devices that have different screen sizes.
- To create responsive and mobile-friendly websites/web apps flexbox can be used.

Important terminologies:

- The two main components of flexbox are flex container and flex item.
  - **Flex container**: Property of parent element that is declared with display property flex.

```
.flex-container {
  display: flex;
}
```

  - **Flex item**: Properties of child elements. There may be one or many flex items.
- Flex layout is based on **flex-flow directions**, which are used in displaying the flex items. Flexbox has two axes.
  - **Main axis**: The primary axis along with the flex items are laid out.
  - **Cross axis**: The axis perpendicular to main axis is called cross axis.
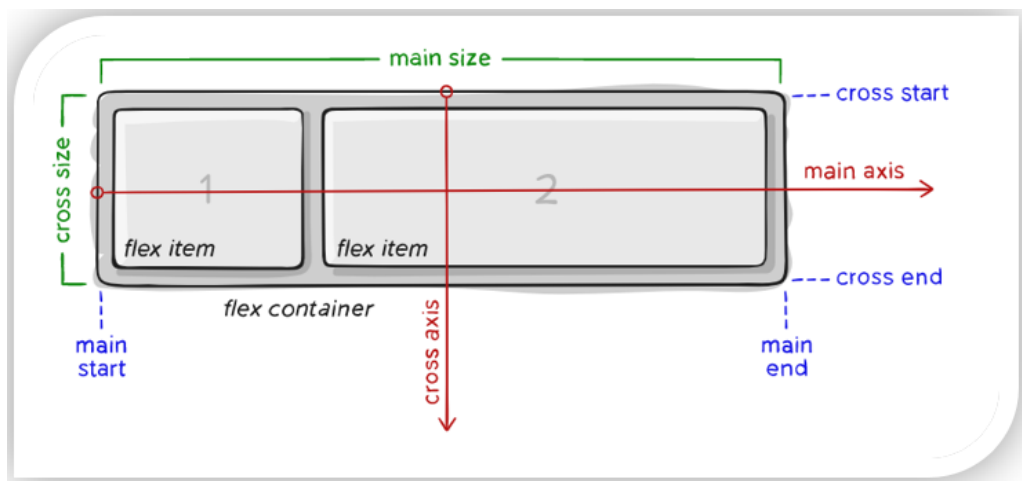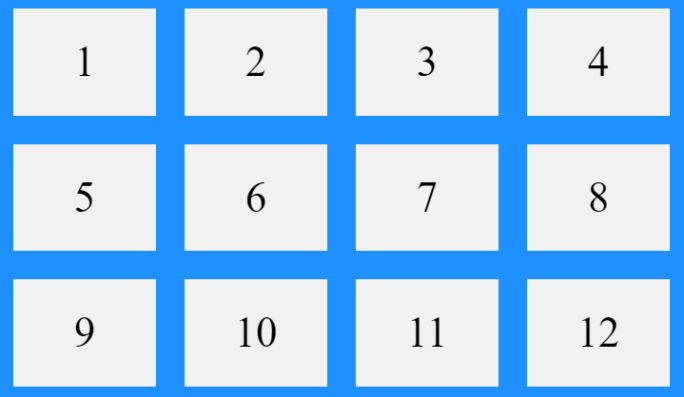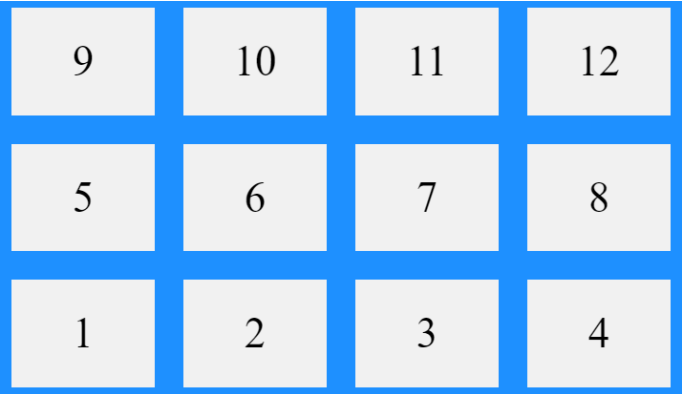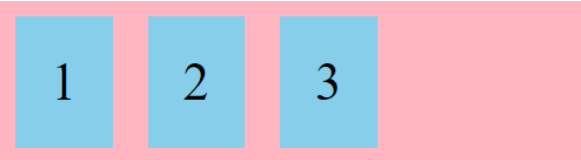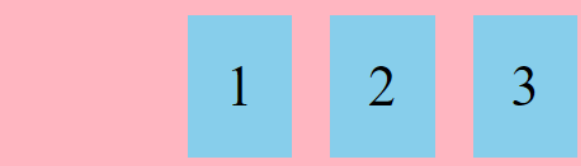

NOTE: It is not necessary that the main axis should always be horizontal, it depends on the **flex-direction** property. The main axis and cross axis are perpendicular to each other.
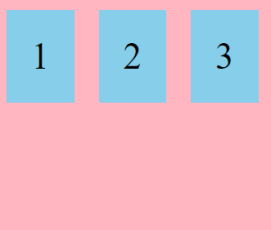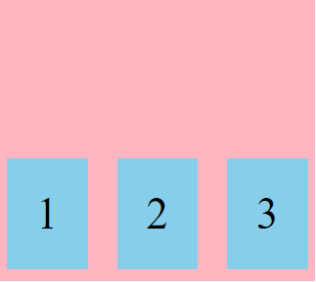
Flex properties:
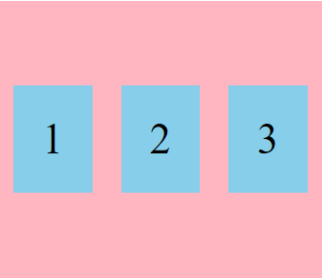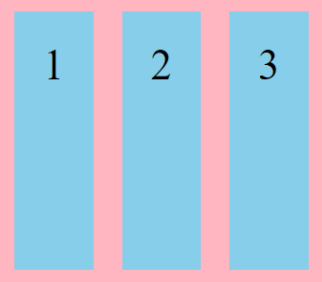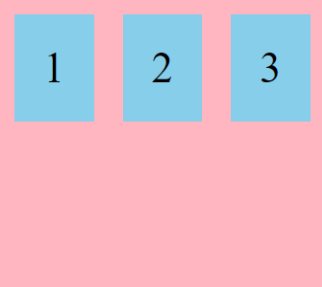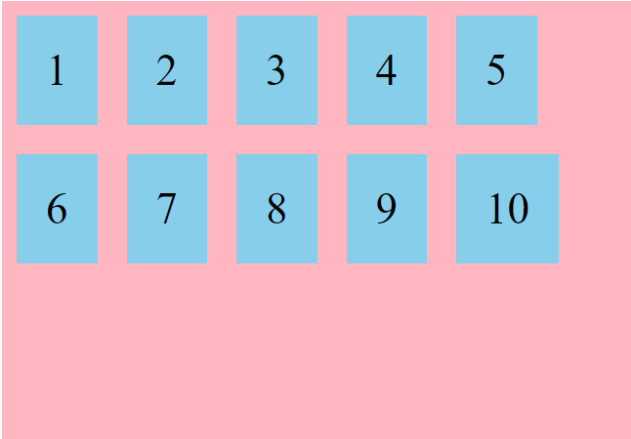
Flex container properties:
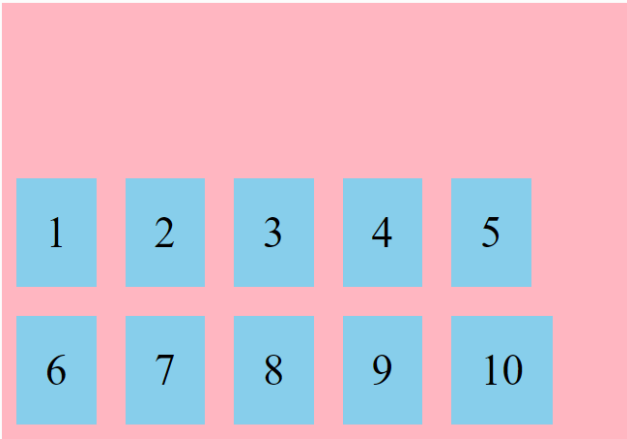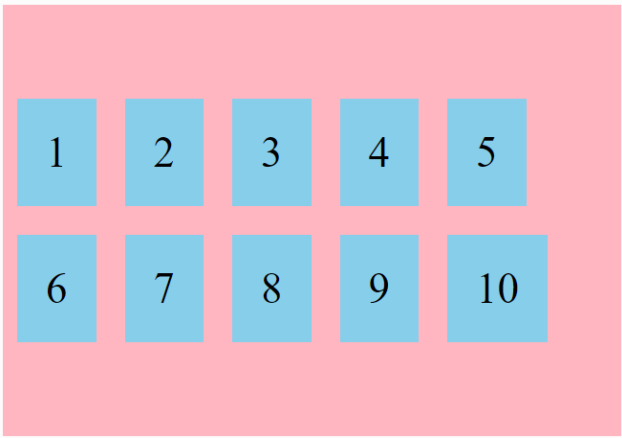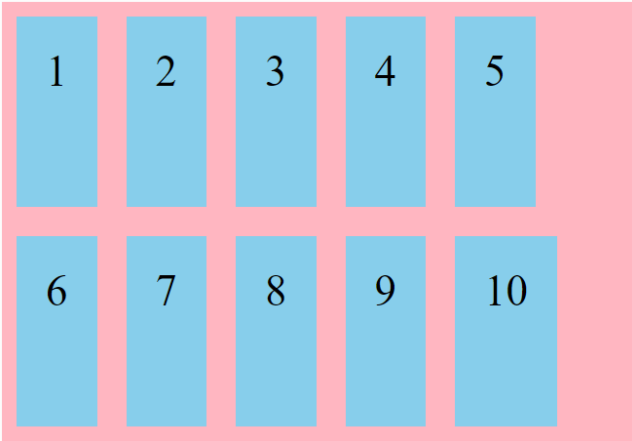
Property	Value and Description	
display	flex	Enables flex context to all direct children of the container. `display: flex;`
flex-direction	Specifies the direction of flex items in the main axis.	
flex-direction	row	Default value, left to right. **Flex items**
flex-direction	row-reverse	Right to left. **Flex items**
flex-direction	column	Top to bottom. **Flex items**
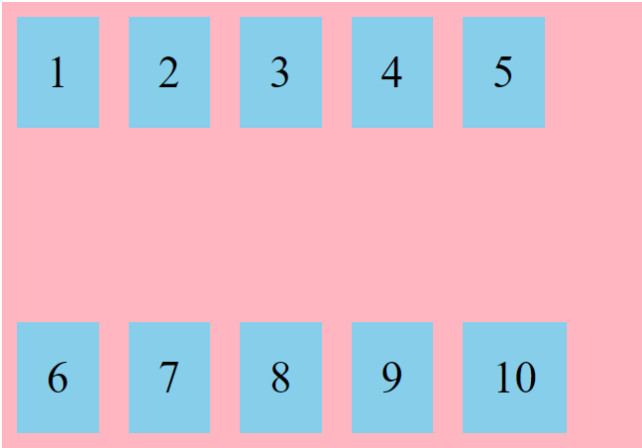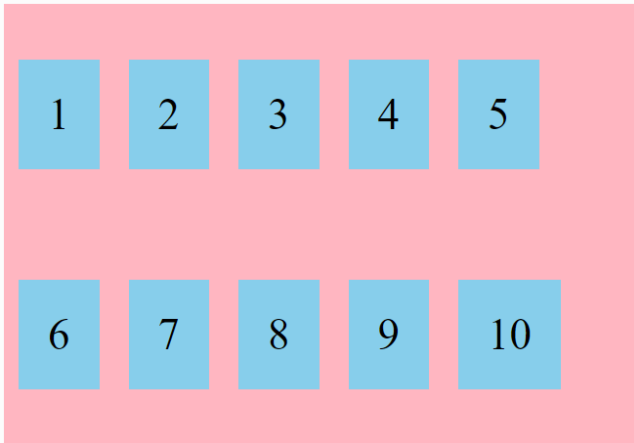
Property	Value and Description	
flex-direction	column-reverse	Bottom to top. **Flex items** (diagram showing items 3, 2, 1 stacked with an upward arrow)
flex-wrap	Specifies whether the flex items should wrap or not when there is no enough space in a line.	
flex-wrap	nowrap	Wrapping will not happen, all flex items will be in one line. 1 2 3 4 5 6 7 8 9 10 11 12
flex-wrap	wrap	Flex items will be wrapped in multiple lines depending on the number of items from top to bottom. 1 2 3 4 5 6 7 8 9 10 11 12
flex-wrap	wrap-reverse	Flex items will be wrapped in multiple lines depending on the number of items from bottom to top.

Property	Value and Description	
flex-flow	Shorthand property for flex-direction and flex-wrap.	
justify-content	To align flex items on the main axis.	
justify-content	flex-start	Default value. Flex items will be packed towards the start of the flex-direction.
justify-content	flex-end	Flex items will be packed towards the end of the flex-direction.
justify-content	center	Flex items will be centered along the container line.
justify-content	space-between	Flex items will be evenly distributed along the container line.
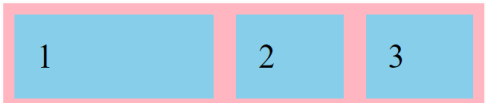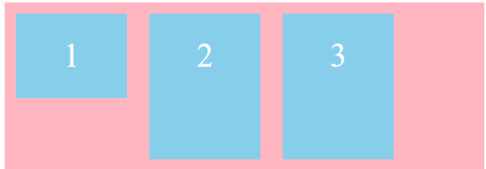
justify-content	space-around	Flex items will be evenly distributed along the container line with equal space around them.
Property	**Value and Description**	
justify-content	space-evenly	Flex items will be evenly distributed along the container line. The space between all the items and items to edges are even.
align-items	To align the flex items on the cross axis.	
align-items	flex-start	Flex items will be placed in the start of the cross axis.
align-items	flex-end	Flex items will be placed at the end of the cross axis.
align-items	center	Flex items will be placed in the center of the cross axis.

Property	Value and Description	
align-items	stretch	All flex items will be aligned in the same space in cross axis by stretching the container.

Property	Value and Description	
align-items	baseline	Baseline of the flex items will be aligned.
align-content	To align the flex lines. It will be effective only on multi-line flex containers where the flex-wrap property is either wrap or wrap-reverse. Similar to align-items but here the flex lines are aligned.	
align-content	flex-start	

Property	Value and Description	
align-content	flex-end	
Property	**Value and Description**	
align-content	center	
align-content	stretch	

align-content	space-between	

Property	Value and Description	
align-content	space-around	
gap	To control space between flex items.	

Flex item properties:

Property	Value	Description

order	Value must be a number. Default value is 0.
	
	`<div style="order: 2"> to</div>`
	`<div style="order: 3">CSS Flex</div>`
	`<div style="order: 1">Welcome</div>`
		Specifies the order of flex items.
		
		Welcome • to • CSS Flex

flex-grow	Value must be a number. Default value is 0.
	
	`<div style="flex-grow: 3">1</div>`
	`<div style="flex-grow: 1">2</div>`
	`<div style="flex-grow: 1">3</div>`
		To make the flex item grow with respect to given value.
		
		1 • 2 • 3

flex-shrink	Value must be a number. Default value is 1. If the value is given as 0, it won't let the flex item shrink.
	
	`<div style="flex-shrink: 8">1</div>`
	`<div style="flex-grow: 1">2</div>`
	`<div style="flex-grow: 1">3</div>`
		To make the flex item shrink with respect to given value.
		
		1 • 2 • 3

Property	**Value**	**Description**

flex-basis	Length (px, %, rem, etc…)
	
	`<div style="flex-basis: 200px">1</div>`
	`<div>2</div>`
	`<div>3</div>`
		The value will be assigned as the default size of the flex item and the remaining space will be distributed.
		
		1 • 2 • 3

flex	Shorthand property for flex-grow, flex-shrink, flex-basis.
	
	`<div>1</div>`
	`<div style="flex: 0 8 0px">2</div>`
	`<div>3</div>`	

align-self	Specifies the alignment for selected flex items inside the container.	

align-self	flex-start
	
	`<div style="align-self: flex-start">1</div>`
	`<div>2</div>`
	`<div>3</div>`
		1 • 2 • 3

align-self	flex-end	

	`<div style="align-self: flex-end">1</div>`
	`<div>2</div>`
	`<div>3</div>`	

align-self	center	

	`<div style="align-self: center">1</div>`
	`<div>2</div>`
	`<div>3</div>`	

align-self	baseline	

	`<div style="align-self: baseline">1</div>`
	`<div>2</div>`
	`<div>3</div>`	

align-self	stretch	

	`<div style="align-self: stretch">1</div>`
	`<div>2</div>`
	`<div>3</div>`	