

# [Lesson 11]

## [ What we learnt last time? ]

- How to create a table with header, footer and content
- How to combine table cells horizontally and vertically
- Background color with gradient
- Difference between radial and linear gradient;
- How to add shadow for a text
- How to add colorful shadow for block elements

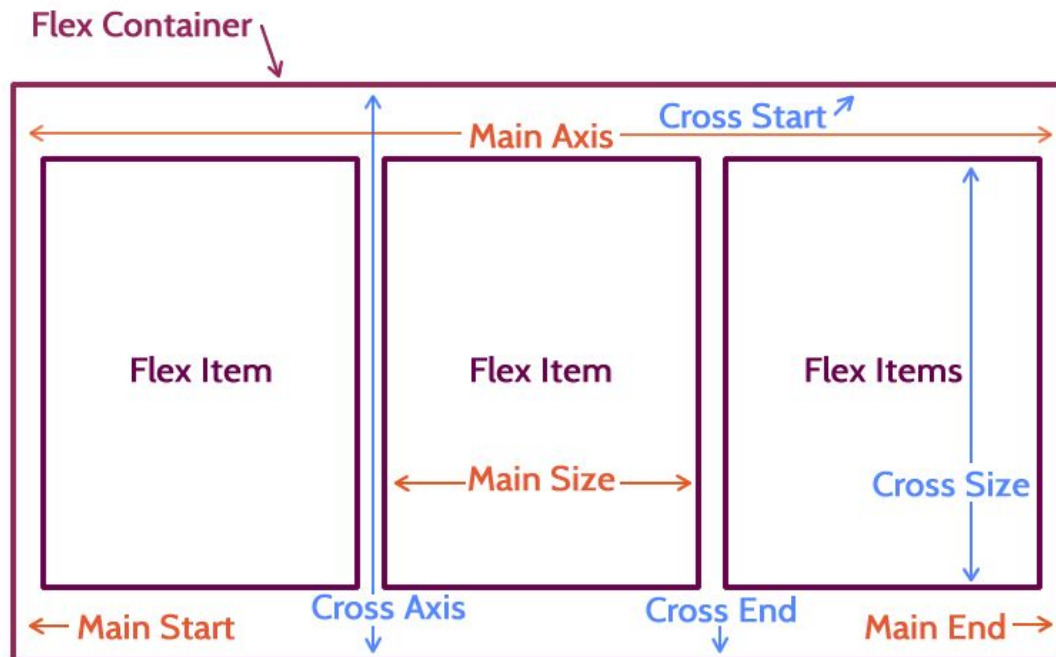
## [ Our targets for today ]

- How to create multi-column design without necessity to clear the flow
- How to create columns of same height
- How to center elements in the parent block horizontally and vertically
- How to make responsive and fixed width columns

# [Flexbox - what is it]

- Enables elements to grow or shrink based on available space
- Allows for shifts in orientation and size based on available space
- Is best used as a component of a larger layout

## Flexbox Requires New Terminology



## [Example - without flexbox]

```
<div>
  <p>“That which yields is not always weak.”
— Jacqueline Carey</p>
  <p>“Agile does not mean laissez-faire, flexibility and freedom are based on the
well-defined principles.”
— Pearl Zhu</p>
  <p>“The measure of intelligence is the ability to change.”
— Albert Einstein</p>
</div>
```

```
p {
  border: 5px solid #000;
  margin: 0;
  box-sizing: border-box;
  font-size: 24px;
  width: 450px;
}
```

“That which yields is not always weak.” —  
Jacqueline Carey

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# [Make Flex Container]

- The default flex-direction is row.

```
div {  
  display: flex;  
}
```

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## [Reverse Row Direction]

- You can invert flex-direction with **flex-direction: row-reverse;**

```
div {  
  display: flex;  
  flex-direction: row-reverse;  
}
```

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# [Establish Vertical Main Axis]

```
div {  
  display: flex;  
  flex-direction: column;  
}
```

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# [Reverse Direction on the Vertical Axis]

```
div {  
  display: flex;  
  flex-direction: column-reverse;  
}
```

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# [Justify Content - horizontal alignment]

```
div {  
  display: flex;  
  width: 900px;  
  border: 3px solid green;  
  padding: 15px 0;  
}  
div { justify-content: start; }
```

1 2 3

```
div {  
  justify-content: end;  
}
```

1 2 3

# [Justify Content - horizontal alignment]

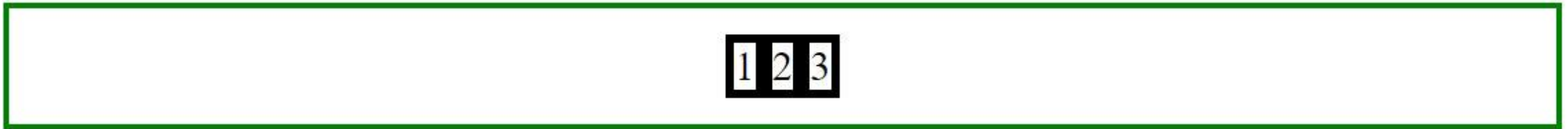
```
p { justify-content: space-around; }
```



```
p { justify-content: space-between; }
```



```
p { justify-content: center; }
```



## [Align Items - vertical alignment]

- align-items - determines vertical position

```
p { align-items: center; }
```



## [Align Items - vertical alignment]

```
p { align-items: flex-end; }
```



## [Align Items - vertical alignment]

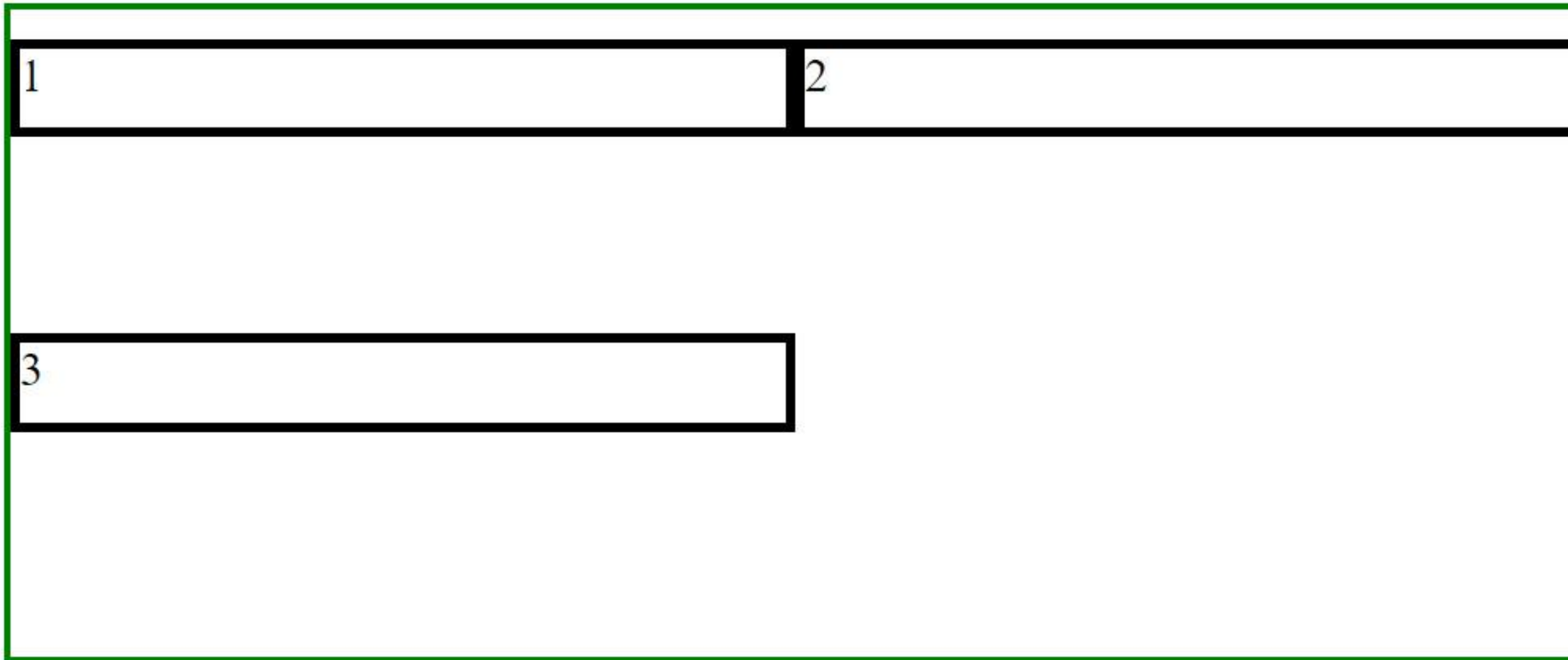
- **flex-start** - default value

```
p { align-items: flex-start; }
```



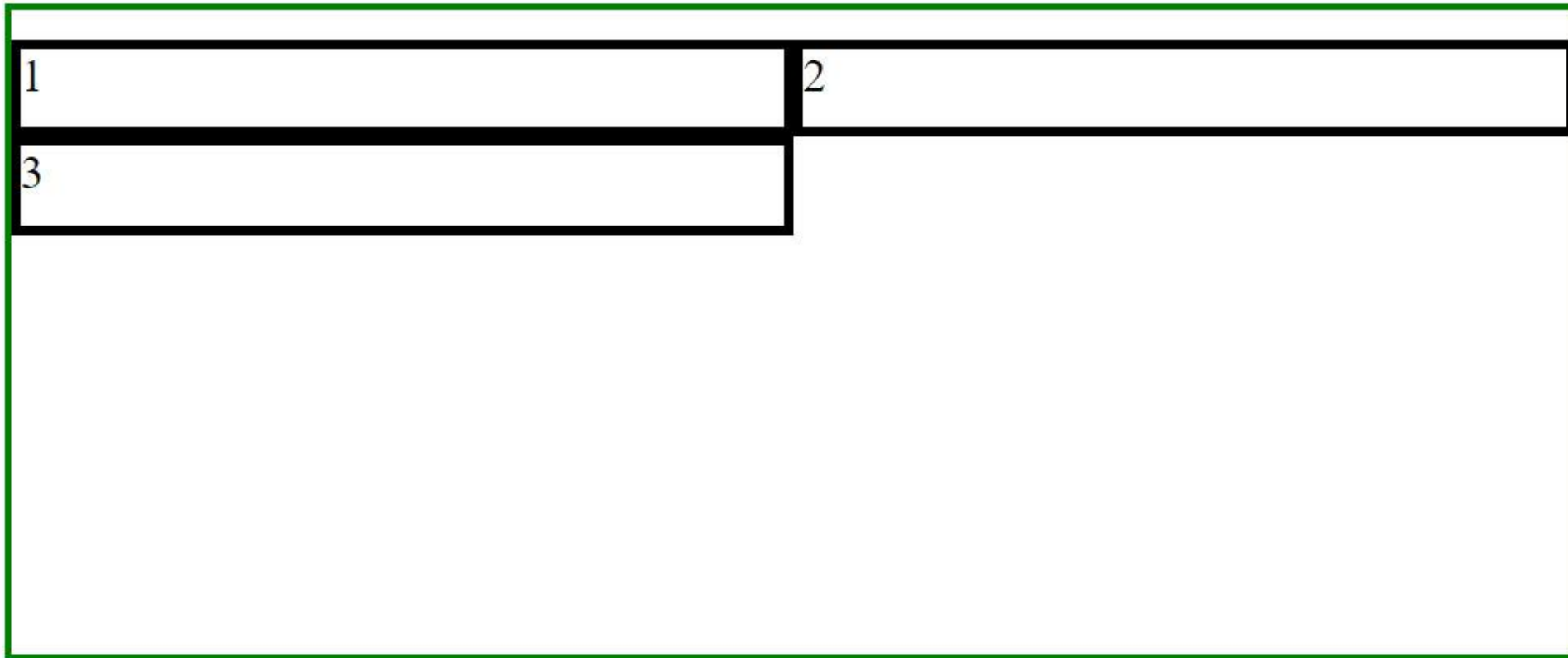
## [Align Content - vertical alignment with Multiple Lines]

- **align-content: flex-start;** - default value



## [Align Content - vertical alignment with Multiple Lines]

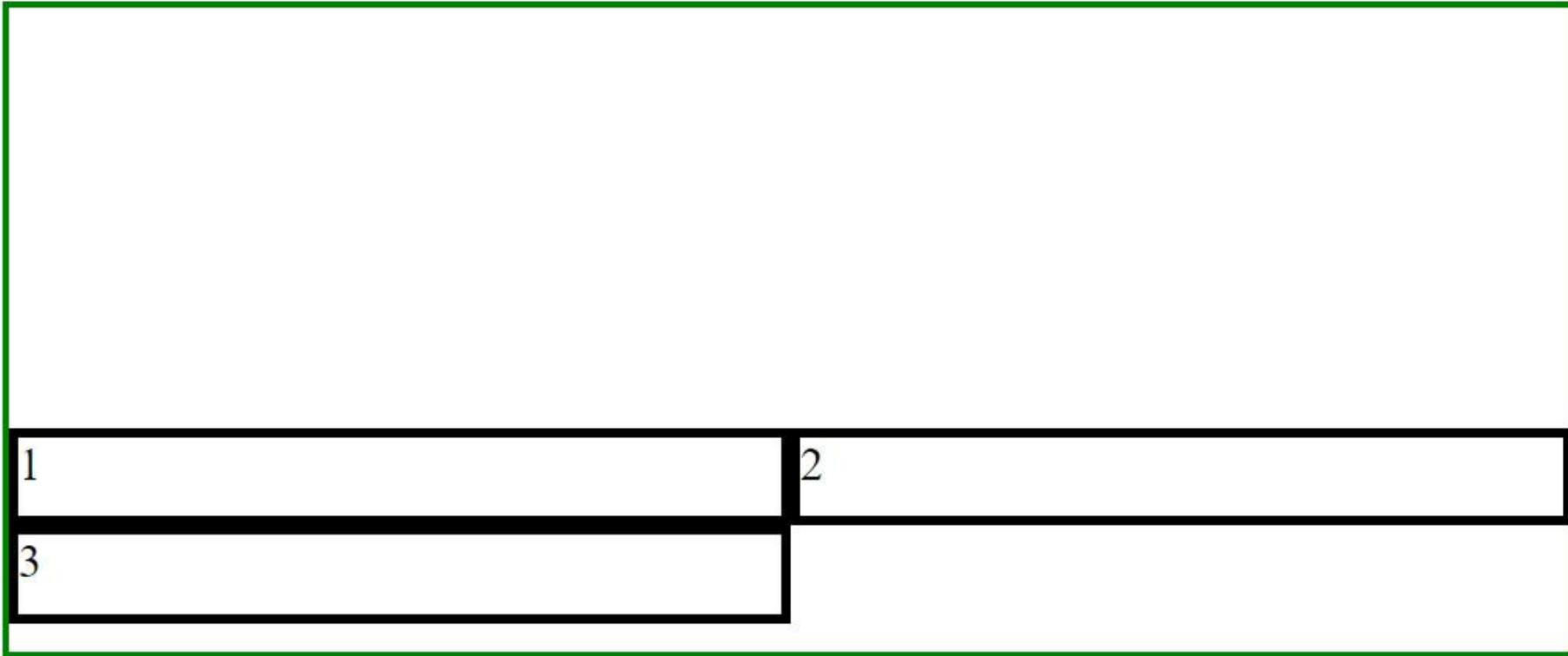
- align-content: flex-start





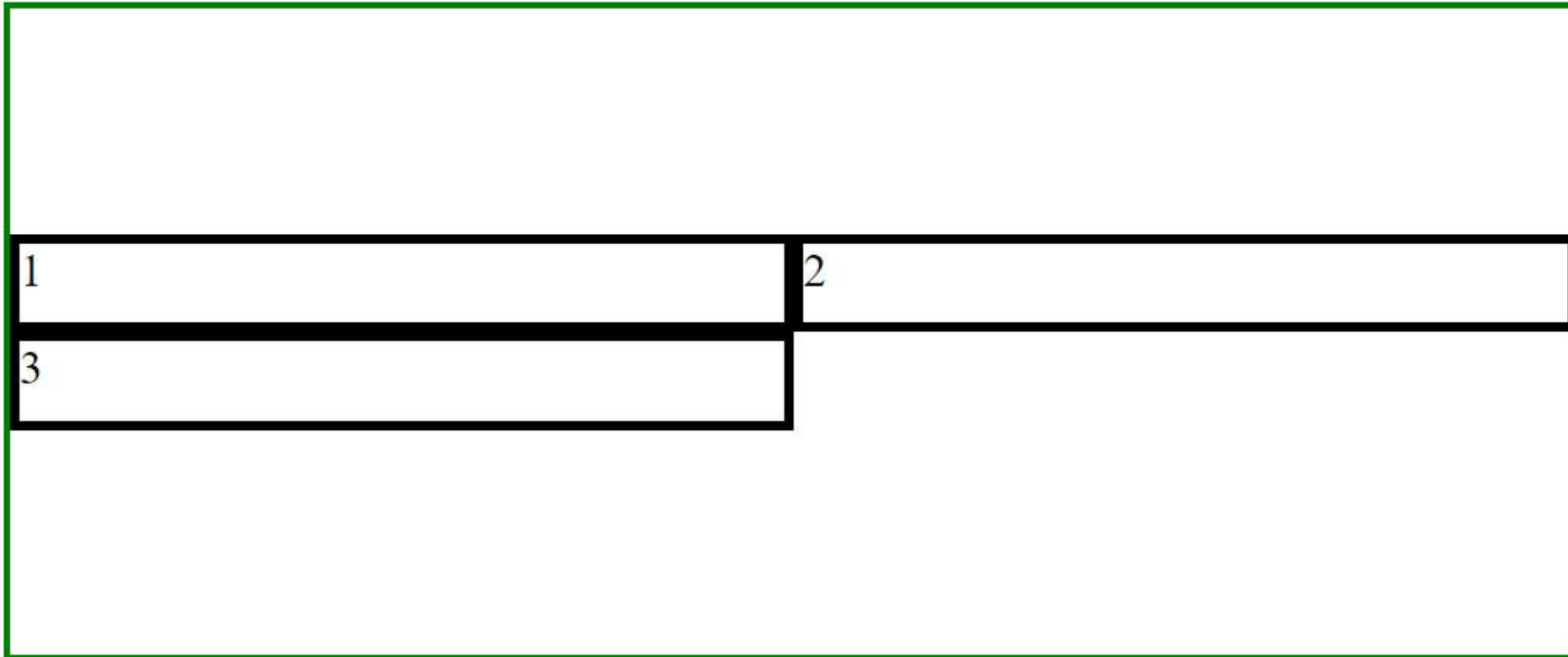
## [Align Content - vertical alignment with Multiple Lines]

- align-content: flex-end



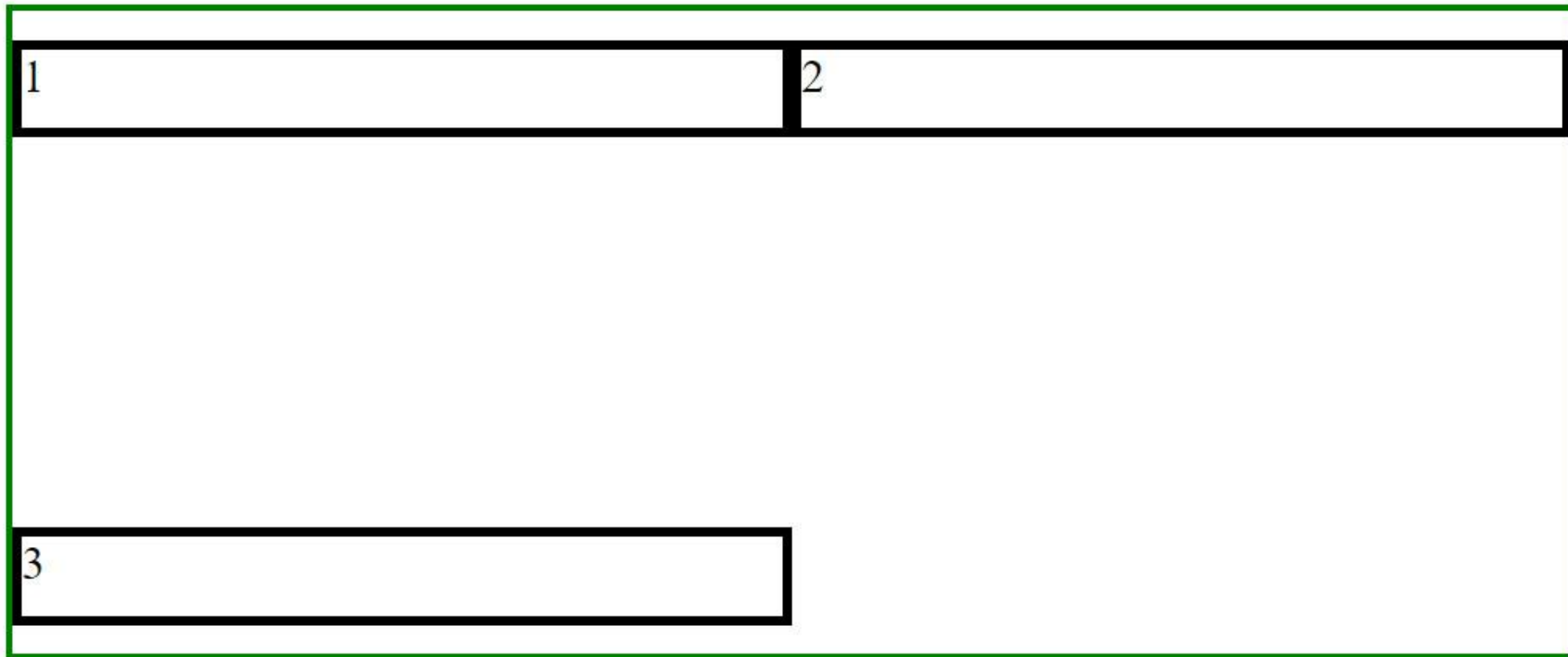
## [Align Content - vertical alignment with Multiple Lines]

- align-content: center



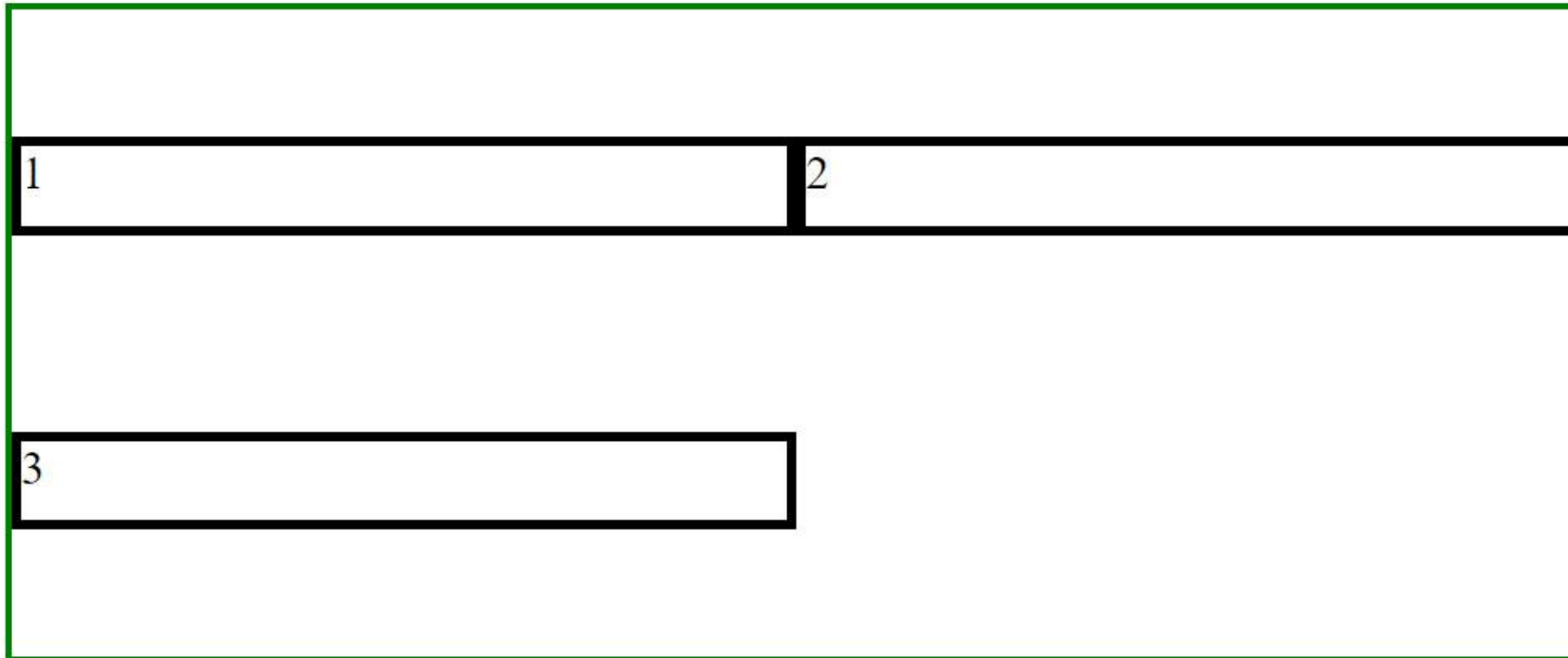
## [Align Content - vertical alignment with Multiple Lines]

- align-content: space-between



## [Align Content - vertical alignment with Multiple Lines]

- align-content: space-around



# [align-self - vertical alignment of one flex-element]

```
div {  
  align-items: flex-end;  
}  
  
p:nth-child(3) {  
  align-self: flex-start;  
}
```



# [Change display order]

```
div {  
  display: flex;  
}  
  
p:first-child {  
  order: 3;  
}  
  
p:nth-child(2) {  
  order: 1;  
}  
  
p:nth-child(3) {  
  order: 2;  
}
```

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## [When row has total width more than 100%]

```
div {  
  display: flex;  
  width: 700px;  
}  
  
p {  
  width: 500px;  
}
```

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## [Multiple Lines when rows have total width more than 100%]

```
div {  
  display: flex;  
  width: 1100px;  
  flex-wrap: wrap;  
}  
  
p {  
  width: 500px;  
}
```

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# [Wrap-reverse]

```
div {  
  display: flex;  
  width: 1100px;  
  flex-wrap: wrap-reverse;  
}  
  
p {  
  width: 500px;  
}
```

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# [Flex Basis]

```
p {  
  flex-basis: 0;  
}
```



```
p {  
  flex-basis: 150px;  
}
```



# [Flex Grow]

```
p {  
  flex-grow: 0;  
  flex-basis: 150px;  
}
```



```
p {  
  flex-grow: 1;  
  flex-basis: 150px;  
}
```



# [Flex Grow]

```
p {  
  flex-basis: 150px;  
}  
  
p:first-child {  
  flex-grow: 1;  
}  
  
p:nth-child(2) {  
  flex-grow: 3;  
}  
  
p:nth-child(3) {  
  flex-grow: 2;  
}
```

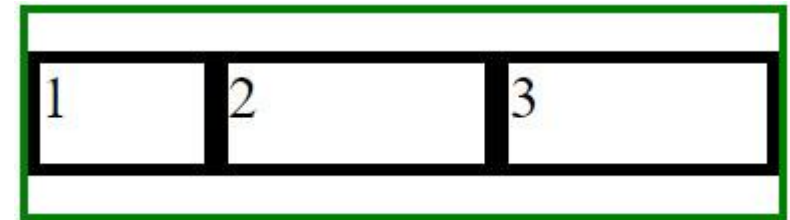


# [Flex Shrink]

```
div {  
  width: 600px;  
}  
  
p {  
  flex-grow: 1;  
  flex-shrink: 1;  
  flex-basis: 150px;  
}  
  
p:first-child { flex-shrink: 2; }
```



```
div {  
  width: 300px;  
}  
  
p {  
  flex-grow: 1;  
  flex-shrink: 1;  
  flex-basis: 150px;  
}  
  
p:first-child { flex-shrink: 2; }
```



## [Flex]

- **flex:** - short format to write flex-grow, flex-shrink and flex-basis properties
- flex: 1; - is the same as 1 1 0
- flex-grow: defaults to 1 when omitted
- flex-shrink: defaults to 1 when omitted
- flex-basis: defaults to 0 when omitted

## [ Control questions ]

- How to place flex-elements in two rows if their total width is greater than their parent width?
- How does “justify-content: space-around” work?
- What is the difference between “align-items” and “align-content”?
- How to place flex-element in the end of row?
- How can you create a flex-element that could increase its width but not decrease?
- How to vertically align only one flex-element out of many?

# [ Materials ]

Core materials:

<https://html5book.ru/css3-flexbox/>

<https://frontender.info/a-guide-to-flexbox/>

Additional materials:

<https://flexboxfroggy.com/>

<http://the-echoplex.net/flexyboxes/>

[https://developer.mozilla.org/ru/docs/Web/CSS/CSS\\_Grid\\_Layout/Basic\\_Concepts\\_of\\_Grid\\_Layout](https://developer.mozilla.org/ru/docs/Web/CSS/CSS_Grid_Layout/Basic_Concepts_of_Grid_Layout)

Video materials:

<https://www.youtube.com/watch?v=38bMnJ2l4bg>

<https://www.youtube.com/watch?v=RNjnRA0QSug>

<https://www.youtube.com/watch?v=-fDqBEjfzGo>