

# CIS 371 Web Application Programming

## Vuetify II



GRAND VALLEY  
STATE UNIVERSITY®

Lecturer: **Dr. Yong Zhuang**

# Grid System

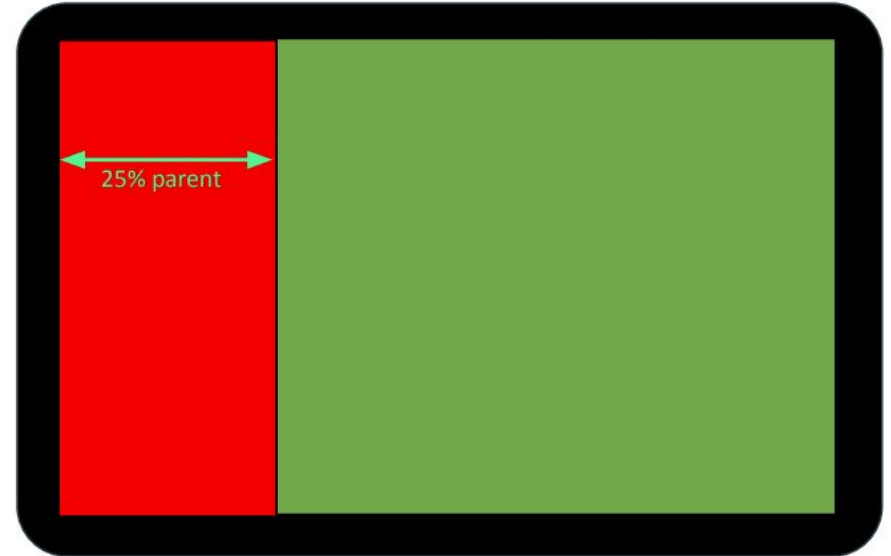
# Vuetify Grid System

- Inspired by Bootstrap grid & CSS Flexbox
- Relevant elements: v-row, v-col,
  - Warning: row/col does not imply “horizontal”/“vertical” grouping of elements
- Vuetify 12-column layout?
  - Why 12? It is a relatively small number with many integer factors: 2, 3, 4, 6
  - It is easy to divide the screen into
    - Full width (100%)
    - 2 halves (each column is 50% of total screen width => 6/12 each)
    - 3 thirds (33% -> 4/12 each)
    - 4 quarters (25% => 3/12 each)

[Online playground](#)

# Vuetify Grid Layout (12-column system)

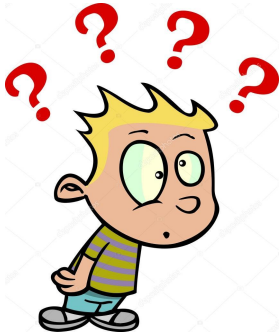
```
<v-container>
  <v-row>
    <v-col cols="3" class="bg-red"> </v-col>
    <v-col class="bg-green"> </v-col>
  </v-row>
</v-container>
```





Users may use your web app on a variety of screen sizes.

- Smartphones, table, desktop, HDTV, Ultra HDTV, ...



**Can't use one-layout-fits-all approach!**

# Responsive Layout

## Traditional Solution: CSS @media query

- @media (max-width: 600px) { visual styles #1 }
- @media (max-width: 1024px) { visual styles #2 }
- @media (max-width: 1880px) { visual styles #3 }

## Vuetify Solution

- Use **relative dimensions** based on 12-column grid
- Use **fluid** container (as opposed to fixed size)
- Size code & media **breakpoints**

# Size Code and Media breakpoints

Symbolic names for sizes based on 12-column grid layout

Code	Description	Media	Size Range
xs	eXtra Small	Small to large phone	up to 600 px
sm	Small	Small to medium tablet	up to 960 px
md	Medium	Large tablet to laptop	up to 1280 px
lg	Large	Laptop to desktop	up to 1920 px
xl	Extra Large	1080p to 1440p desktop	up to 2560 px
xxl	Extra extra Large	4k and ultra-wide	> 2560 px

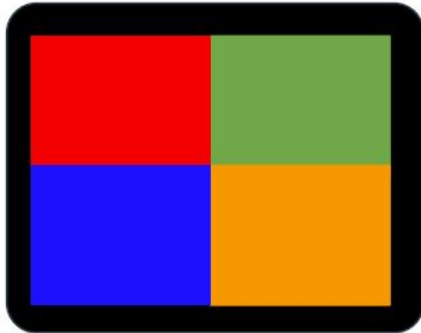
## Examples:

- $xs=3 \Rightarrow 25\%$  (3/12) width on any media
- $sm=6 \Rightarrow 50\%$  (6/12) width on tablets or larger media
- $md=12 \Rightarrow$  full width on desktops
- $lg=9 \Rightarrow 75\%$  (9/12) width on large desktops or above
- $xl=2 \Rightarrow 16\%$  (2/12) width on huge desktops

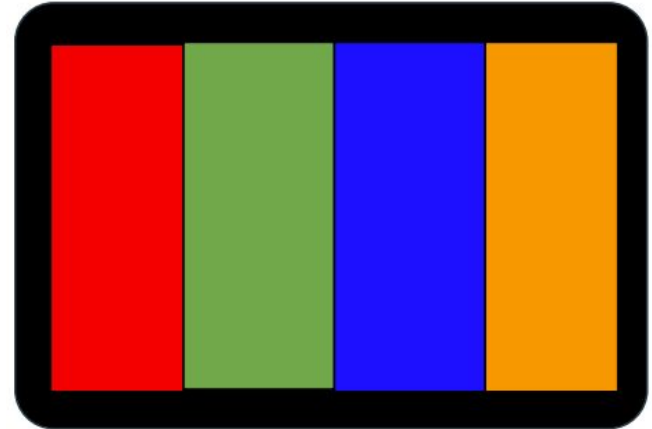
# Medium vs. Small

```
<v-container>
  <v-row>
    <v-col md="3" class="red" sm="6"></v-col>
    <v-col md="3" class="green" sm="6"></v-col>
    <v-col md="3" class="blue" sm="6"></v-col>
    <v-col md="3" class="orange" sm="6"></v-col>
  </v-row>
</v-container>
```

On small screens



On medium screens





# Size Code and Media breakpoints

```
<v-container>
  <v-row>
    <v-col v-for="url in imageURLs" lg="2" md="3" sm="4" xs="6">
      
    </v-col>
  </v-row>
</v-container>
```



Screen Size	Effective Width	# of images per line?
Large	2	
Medium	3	
Small	4	
Extra Small	6	

[Online playground](#)

# Styling via Class Names

Vuetify provides predefined class names for styling the following properties:

- Material Color classes (background and foreground)
- Media size breakpoints
- Space classes (margin & padding)

# Styling Margin/Padding via Class Names

- Vuetify provides predefined classnames (zz-n) as shortcuts for defining margins and paddings
- Regex for these class names:

**[mpg] [tblrseaxyc] - [0-16 | n1-16 | auto]**

margin / padding/gap

top / bottom / left / right / start / end / all  
x (left&right) / y (top&bottom) / column-gap

[Vuetify Docs - Spacing](#)

# Styling Margin/Padding via Class Names

[mpg] [tblrseaxyc] - [0-16 | n1-16 | auto]



Code	Pixels
0	0
1	4px
2	8px
3	12px
4	16px
n1	-4px
n3	-12px

negative number only work for margin.

Vuetify CSS Class	Equivalent CSS Declaration
ma-2	
m1-3	
pt-0	
pb-5	
px-1	
me-n2	

# Spacing Class Names

```
<!-- traditional HTML file --->
<span id="msg">Sample Text</span>

<style>
  #msg {
    margin-left: 24px;
  }
</style>
```

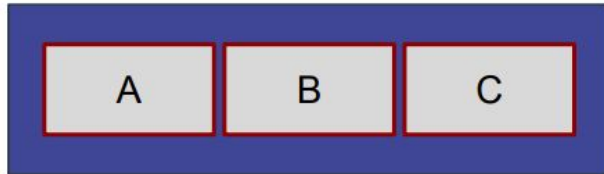
*Traditional way*

```
<span class="ml-4">Sample Text with left margin</span>
<p class="py-2">text with top and bottom padding...</p>
```

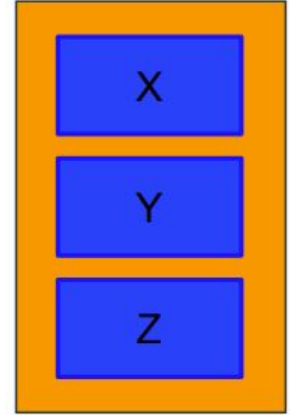
*The vuetify way*

# Row- vs. Column-Oriented Box

```
<v-container>  
  <v-row>  
    <v-col>A</v-col>  
    <v-col>B</v-col>  
    <v-col>C</v-col>  
  </v-row>  
</v-container>
```



```
<v-container>  
  <v-row class="flex-column">  
    <v-col>X</v-col>  
    <v-col>Y</v-col>  
    <v-col>Z</v-col>  
  </v-row>  
</v-container>
```



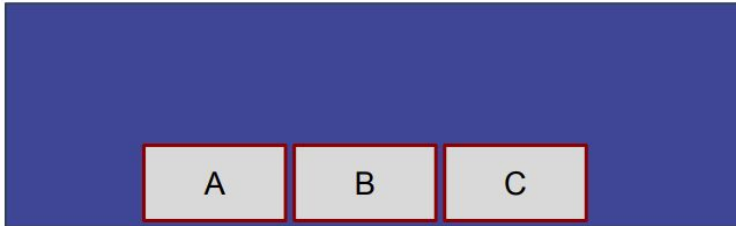
# v-row: justify-\* and align-\*

CSS3 FlexBox	CSS3 Flexbox Properties	Vuetify Attribute
Main-axis <i>justification</i>	<code>justify-content: flex-start;</code> <code>justify-content: flex-end;</code> <code>justify-content: flex-center;</code> <code>justify-content: flex-space-around;</code> <code>justify-content: flex-space-between;</code>	<code>justify="start"</code> <code>justify="end"</code> <code>justify="center"</code> <i>same as above</i>
Cross-axis <u>alignment</u>	<code>align-items: flex-start;</code> <code>align-items: flex-end;</code> <code>align-items: flex-center;</code> <code>align-items: flex-baseline;</code>	<code>align="start"</code> <code>align="end"</code> <i>same as above</i>

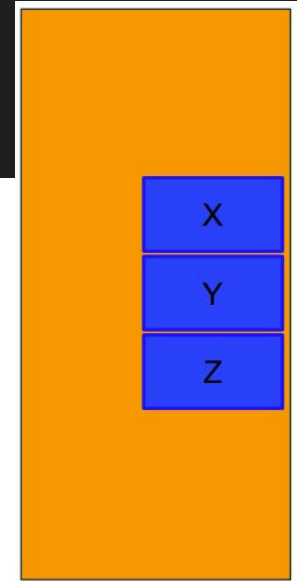
*Vuetify accepts both align or align-content as valid attributes*

# Justification vs. Alignment

```
<v-container>  
  <v-row justify="center" align="end">  
    <v-col>A</v-col>  
    <v-col>B</v-col>  
    <v-col>C</v-col>  
  </v-row>  
</v-container>
```



```
<v-container>  
  <v-row class="flex-column" justify="center" align="end">  
    <v-col>X</v-col>  
    <v-col>Y</v-col>  
    <v-col>Z</v-col>  
  </v-row>  
</v-container>
```





# Components

- Navigation: App Bars, Navigation Drawers, Footer Component, System Bar, Tabs Components, ...
- Containment: Bottom Sheet component, Card Components, Button Component, List Components, Chip Component, Expansion Panel Components, Dialog Component, Toolbar Components, ...
- Form Inputs and controls: Autocomplete Component, Combobox Components, Text Field, Checkbox Components, Radio Button, Number Input Component ...
- Layouts: Grid System
- Selection: Carousel Component, Window Components, Stepper Components, Chip Group, Button Group.
- Data and Display: Confirm Edit Component, Data Iterator Component, Data Table Component, Sparkline Component, ...
- Feedback: Alert Component, Badge Component, Empty State Component, Skeleton loader component, Progress Component, Rating Component, ...
- Images, Icons, Pickers, ...
- ...

[Online Doc](#)

# Containment: Bottom sheet

```
<template>
  <div class="text-center">
    <v-btn size="x-large" text="Click Me" @click="sheet = !sheet"></v-btn>

    <v-bottom-sheet v-model="sheet" inset>
      <v-card class="text-center" height="200">
        <v-card-text>
          <v-btn variant="text" @click="sheet = !sheet"> close </v-btn>
          <div>This is a bottom sheet that is using the inset prop</div>
        </v-card-text>
      </v-card>
    </v-bottom-sheet>
  </div>
</template>

<script lang="ts" setup>
import { ref } from "vue";
const sheet = ref(false);
</script>
```

[Demo](#)

[Vuetify Docs](#)

*With the inset prop, reduce the maximum width of the content area on desktop to 70%.*

```
<template>
  <v-app>
    <v-container>
      <v-bottom-sheet>
        <template v-slot:activator="{ props }">
          <v-btn v-bind="props" text="Click Me"></v-btn>
        </template>
      <v-card>
        title="Bottom Sheet"
        text="Lorem ipsum dolor sit amet consectetur,..."
      </v-card>
    </v-bottom-sheet>
  </v-container>
</v-app>
</template>
```

[Demo](#)

# Containment: Buttons

```
<v-btn icon="mdi-account" size="x-small"></v-btn>
```

The **size** property is used to control the size of the button and scales with density.

```
<v-btn density="default" icon="mdi-open-in-new"></v-btn>
```

The **density** prop is used to control the vertical space that the button takes up.

```
<v-btn append-icon="mdi-account" size="x-small">Tom</v-btn>
```

Props like `prepend-icon` and `append-icon` offer a straightforward approach to incorporate positioned icons,


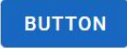




```
<v-btn prepend-icon="mdi-account" size="x-small">Tom</v-btn>
```

```
<v-btn append-icon="mdi-account-circle" prepend-icon="mdi-check-circle">  
  <template v-slot:prepend>  
    <v-icon color="success"></v-icon>  
  </template>  
  Button  
  <template v-slot:append>  
    <v-icon color="warning"></v-icon>  
  </template>  
</v-btn>
```

For the `prepend-icon` and `append-icon`, the corresponding slots are `prepend` and `append`

[Demo](#)

## Variants

Value	Example
elevated	
flat	
tonal	
outlined	
text	
plain	

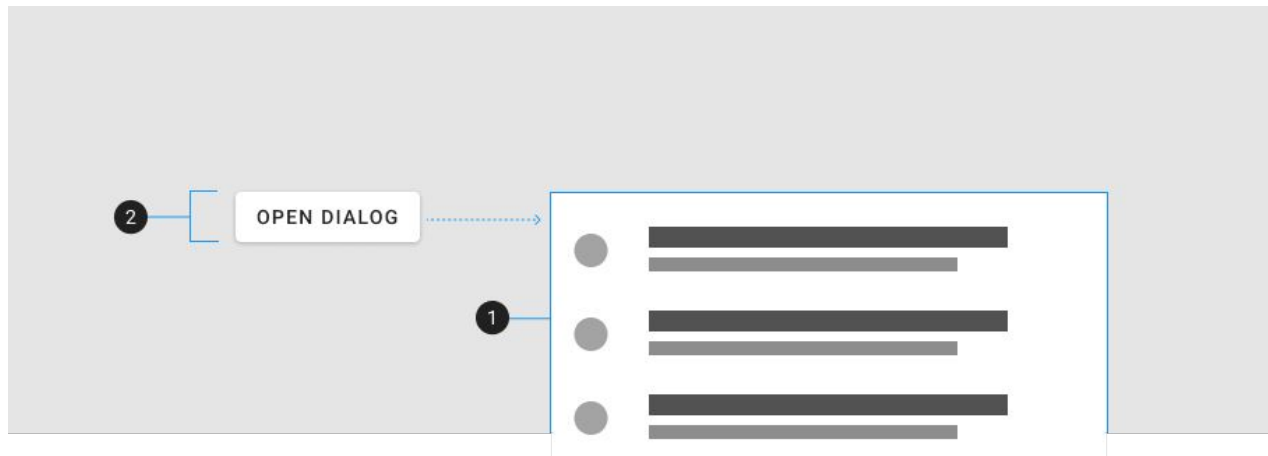
# Containment: Cards



Element / Area	Description
1. Container	The Card container holds all <code>v-card</code> components. Composed of 3 major parts: <code>v-card-item</code> , <code>v-card-text</code> , and <code>v-card-actions</code>
2. Title (optional)	A heading with increased <b>font-size</b>
3. Subtitle (optional)	A subheading with a lower emphasis text color
4. Text (optional)	A content area with a lower emphasis text color
5. Actions (optional)	A content area that typically contains one or more <code>v-btn</code> components

Demo

# Containment: Dialogs



Element / Area	Description
1. Container	The dialog's content that animates from the activator
2. Activator	The element that activates the dialog

## Demo

# <v-data-table>

Title ↑	Author	Genre	Year
1984	George Orwell	Dystopian	1949
Pride and Prejudice	Jane Austen	Romance	1813
The Great Gatsby	F. Scott Fitzgerald	Tragedy	1925
To Kill a Mockingbird	Harper Lee	Southern Gothic	1960

Items per page:  1-4 of 4 |< < > >|

```
<template>
  <v-app>
    <v-container>
      <v-data-table :items="books"></v-data-table>
    </v-container>
  </v-app>
</template>
```

[Demo](#)

# Custom Headers for Vuetify <v-data-table>

```
<v-data-table
  :items="books"
  :headers="[
    { title: 'title', align: 'start', sortable: false, key: 'title' },
    { title: 'author', align: 'end', sortable: true, key: 'author' },
    { title: 'year', align: 'end', sortable: true, key: 'year' },
  ]"
></v-data-table>
```

[Demo](#)

# Adding Selection to Vuetify <v-data-table>

```
<v-data-table
  :items="books"
  show-select
  :headers="[
    { title: 'title', align: 'start', sortable: false, key: 'title' },
    { title: 'author', align: 'end', sortable: true, key: 'author' },
    { title: 'year', align: 'end', sortable: true, key: 'year' },
  ]"
  v-model="selected"
  item-value="title"
></v-data-table>
```

```
import { ref } from "vue";
const selected = ref([]);
```

[Demo](#)



# Adding Search to Vuetify <v-data-table>

```
<v-text-field
  v-model="search"
  append-icon="mdi-magnify"
  label="Search"
  single-line
  hide-details
></v-text-field>
<v-data-table
  :items="books"
  show-select
  :headers="[
    { title: 'title', align: 'start', sortable: false, key: 'title' },
    { title: 'author', align: 'end', sortable: true, key: 'author' },
    { title: 'year', align: 'end', sortable: true, key: 'year' },
  ]"
  v-model="selected"
  item-value="title"
  :search="search"
></v-data-table>
```

```
import { ref } from "vue";
const selected = ref([]);
const search = ref("");
```

[Demo](#)