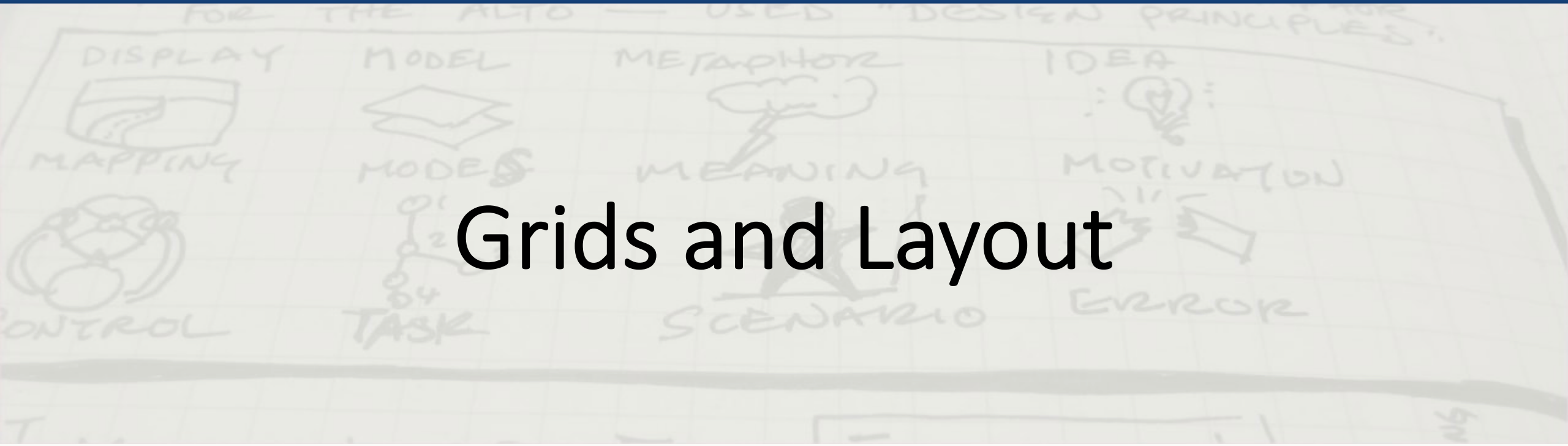
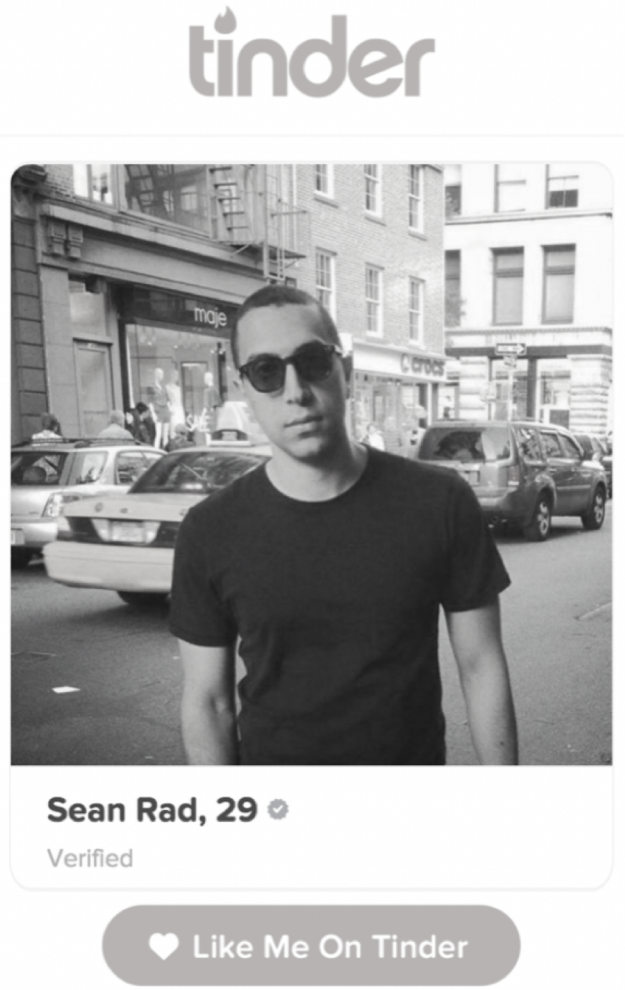



# Grids and Layout

Prof. Lydia Chilton
COMS 4170
24 January 2022

# Homework due 11:59pm




- This problem was meant to be hard.
- There are things that we don't explicitly teach.
- We expect that from the concepts we do teach, you can figure how to teach yourself (by googling it).
- That's what real programming is like. You'll never know it all – you'll always have to look things up.
- Ask for help! Watch how the staff google stuff!

# 25 Amazing TAs!!!

# Luiza

- Junior @ Barnard
- Majoring in Computer Science and Minoring in Dance
- From São Paulo, Brazil
- Interested in:
  - Animals (especially dogs)
  - Eating
  - Traveling
  - Photography

# Grace

- Senior @ Barnard
- From New Hampshire
- Double Major in Computer Science & English
- Former TA for NLP
- Building tools for science communication w/ Prof. Chilton
- Working on argument mining and generation w/ Prof. Muresan
- Talk to me about:
  - Photography (film + digital)
  - Contemporary fiction + poetry books (+ zines <3)
  - Rock Climbing (bouldering + sport climbing)

# Amelia

- Senior in SEAS from Chicago
- CS major (Applications)
- Former TA for Intro to Java, Data Structures, and Intro to Databases
- Ask me about…
  - Working in big tech
  - Best Columbia CS classes
  - What I’m reading/listening to
  - My dog, Franklin

# Kaitlyn

- Senior @ Barnard from Massachusetts
- Majoring in CS on the Applications track
- Pursuing a 4+1 master’s at SEAS in ML
- Talk to me about
  - Internships in SWE
  - Visual Art (painting, drawing, museums)
  - Hiking (especially White Mountains in NH)
  - CS classes and schedule planning
  - Notion!!

# Esteban

- Visiting student from Colombia - EIA University
- I believe that good design is a superpower in tech teams
- Former product manager
- I love startups
- Interested in:
  - Reading
  - Running
  - Building products

# Ben

- Senior in CC
- Majoring in CS and Financial Economics
- I think people are capable of doing amazing things, and human-centered design is the key to unlocking our creative potential :)
- Some things I love
  - Music
  - Art & Visual Design
  - Creative Writing

# Janie

- First-year MS CS student
- CS graduate from Columbia for undergraduate studies (CC ‘23)
- Previously pursued visual arts before transitioning to CS
- Feel free to ask me about:
  - Painting and drawing
  - Life at Columbia for both undergraduate and graduate (master’s) studies
  - Recommendations for Korean restaurants in NYC?

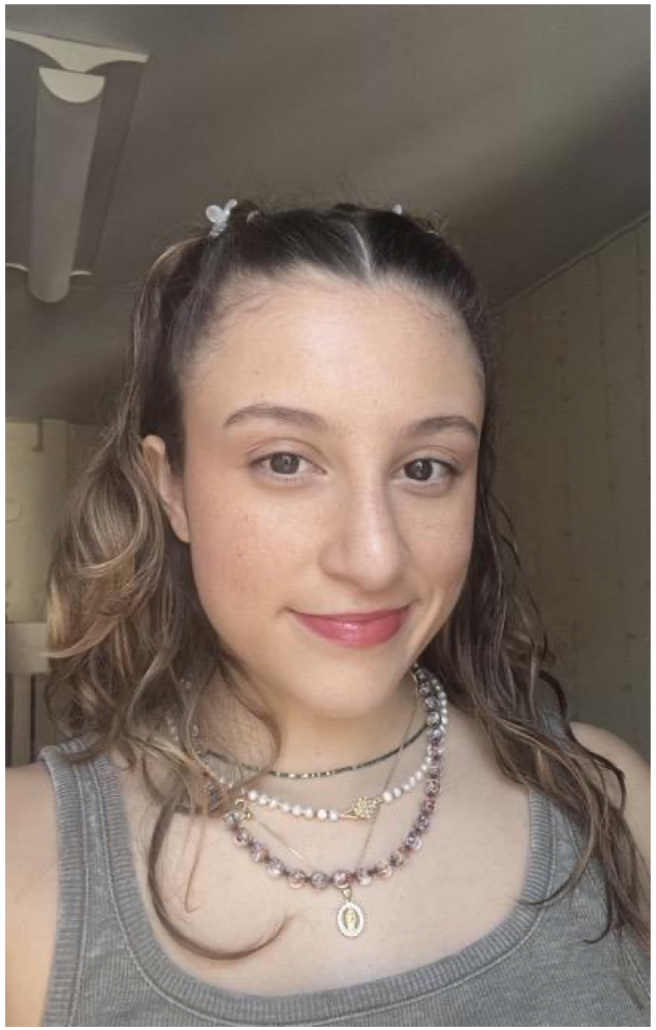
# Citlalli

- Senior in CC from Seattle
- Double Major in CS (Applications) and Film
- Was on the Pre-Med track until I randomly took 1004 and loved CS
- Fun Facts!
  - I have a Chihuahua and Blue Heeler back home
  - I play 5 instruments
  - I’m usually either writing or taking photos on film

# Christina

- Senior in CC from Vancouver, Canada
- Studying CS (Applications) + Visual Arts
  - Especially interested in HCI and AR/VR design!
- Previously a TA for this class in Fall ‘23
- A proponent of incorporating good design to make everyone’s lives easier + spark delight :’)
- Talk to me about :
  - Product Design internships (esp at startups!)
  - The international student experience (read: struggle)
  - Painting & Drawing
  - How to get dinner reservations in NYC (I’m struggling please help me)

# Luciana



- Senior in CC
- Studying CS (Applications)
- From Miami, FL (but also 🇨🇴!)
- Talk to me about:
  - DESIGN SYSTEMS!!!!!
  - Hating winter
  - PM/UXD Internships
    - Specifically in the media/non-tech sector
  - React/React Native <33333
  - Your roti roll order
  - Cats cats cats cats

# Kynnedy

- Junior in CC
- Double Major: CS and Cognitive Science.
- Specializations: AI and Human-Computer Interaction
- Building AI tools for science writing w/ Prof. Chilton
- Building spatialized audio screen readers w/ Prof. Smith
- Talk to Me About:
  - Internships @ MAMAA/Big Tech Companies
  - Research and publication opportunities
  - Classical/Contemporary music @ Columbia
  - BTS and Kdramas 🎶

# Jennifer

- 1st year MSCS student from Chengdu, China
- Graduated from Columbia as an undergrad (SEAS ‘23)
- TA for 4152 Engineering SaaS and 4115 PLT
- Talk to me about:
  - SWE internships
  - Product Manager intern experience
  - Interesting Columbia CS classes
  - Life as an undergrad and a master student
  - International student experience
  - Hotpot!🌶️Delicious food!🍽️

# Asia

- Junior CS Major in SEAS with interests in UI/UX, Computer Graphics, and AI/ML
- From PG County, Maryland
- I speak French and a little bit of Patois
- Some of my hobbies include making waist beads (jewelry), DJing, thrifting, and cosmetology
- Lately binging: The Boondocks
- Talk to me about:
  - Best CS Classes and Profs
  - Getting Involved with Research + more opportunities within CS
  - Breaking into FinTech
  - Music!!! Please do!!
  - Your next hairstyle/haircolor
  - Dogs
  - Really anything to be honest I'm a REAL YAPPER (I am chatty) 😭

# Sarah

- Senior in CC studying CS
- From Boulder, CO!
- Outside of school, I love to hike, walk dogs, do puzzles & sew :)
- Would love to talk about…
  - WebDev Freelancing
  - Working at startups vs. big tech
  - Columbia's Women in Computer Science!
  - your hobbies & your pets!!!

# Tao 🤠

- 2nd year PhD student working with Lydia
- From Shenzhen, China
- Undergrad @ Cornell
  - information science & communication
  - graduated in 2022, so i'm not that old lol, i also listen to olivia rodrigo & many kpop hehe
- Research on human-AI interaction design & creativity support tools
- Talk to me about…
  - anything :)
  - NYC concerts (i went to 5 concerts last summer and helped hold one in central park)
  - food (especially the all you can eat ones)
  - free trips (i went for free trips almost every 2 months)
  - PhD (maybe!)

# Teodora

- Senior in SEAS (CS + OR minor)
- From San Francisco, CA + Belgrade, Serbia
- Former TA for Intro to Python, Data Structures, and Intro to Databases
- Talk to me about
  - PM internships/full-time opportunities
  - Tennis, skiing, traveling
  - Anything start-up related
  - Columbia SEAS undergraduate experience
  - NYC concerts and music

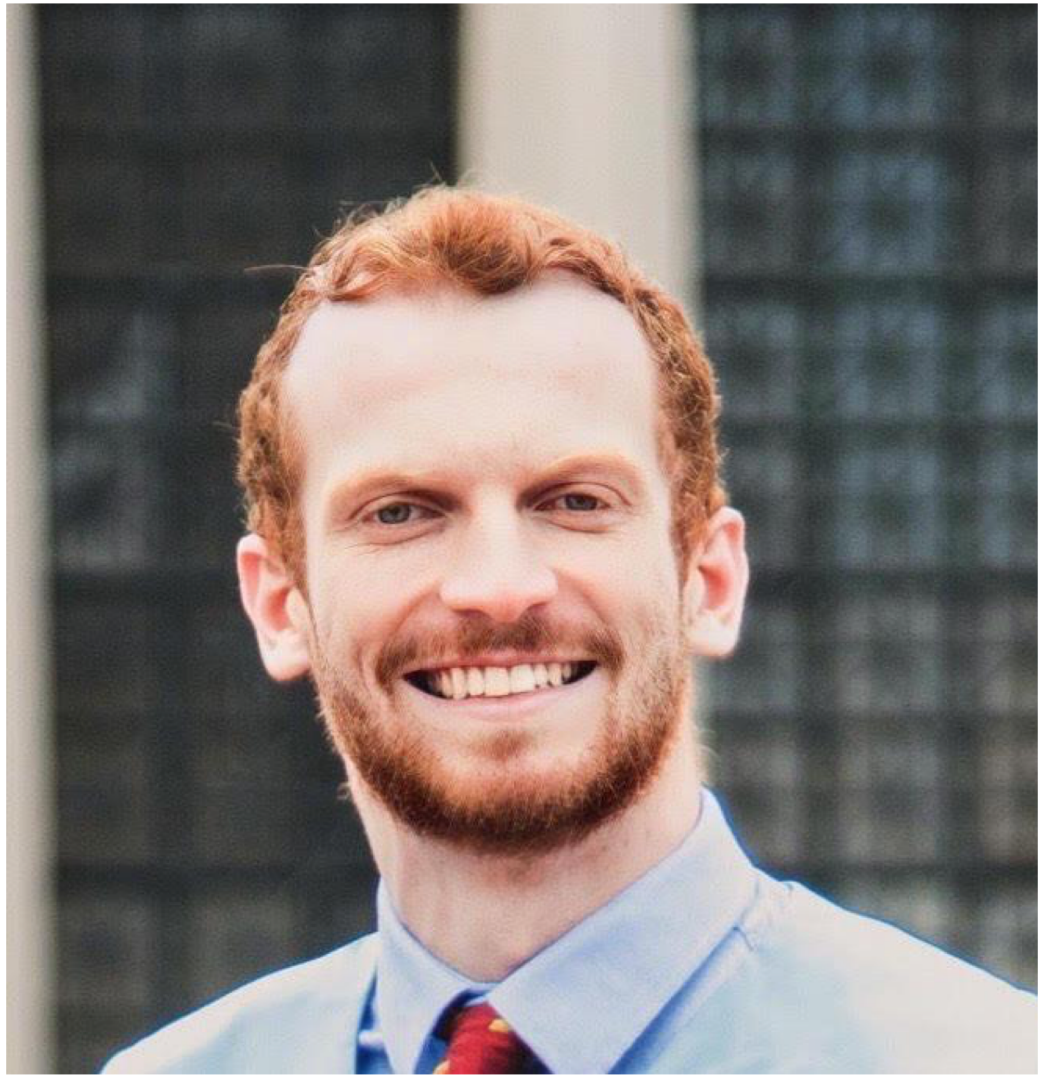
# Chris

- First-year MS student in SEAS from Beijing, China.
- Studying CS (application & machine learning)
- Talk to me about:

  SWE intern
  Music and Movie
  Traveling and History
  Soccer and NBA
- Tips for this course:

  Do project early, especially midterm!
  Have fun with your teammates!
  Talk to your TA!

# Gabe



- Education:
  - Masters in CS candidate
  - Undergrad @Columbia (MSExpress)
- Research:
  - Social media restriction algorithms w/ Professor Tamar Mitts
- From NYC (grew up 10 blocks away)
- Talk to me about:
  - Soccer (football), Basketball, Football
  - SWE Internships
  - Columbia University Product Manager's Club (PMC) or CIRCA
  - Restaurant recommendations!

# Michael

- Education:
  - Senior at Columbia
- Research:
  - Network protocols with Professor Daniel Rubenstein
  - Generative AI for code with Professor Lydia Chilton
- From Los Angeles, California
- Talk to me about:
  - Music
  - Memes
  - The Rule of 3’s™

# Pedro

- Senior in SEAS
- Studying CS
- From San Antonio, Texas
- Talk to me about:
  - CS Classes
  - Video Game Development

# Lidia

- Senior @ SEAS majoring in CS, minoring in East Asian Studies
- From Barbacena, Brazil
- Former TA for iOS Dev, current TA for UI Design and Intro to Databases
- Talk to me about
  - Anything Brazil related
  - CS classes at Columbia
  - Study abroad (I work at the study abroad office and I’ve studied abroad in Seoul!)
  - SWE work
  - App dev

# Karthik

- 1st year student in M.S. Computer Science & Journalism dual degree
- From Lake Oswego, Oregon
- Research with Lydia working on using LLMs to simulate human behavior!
- Talk to me about:
  - Fostering dogs & cats
  - Shoes (not if you resell though 😡)
  - Trees, mountains, and lakes
  - The ONE thing preventing you from becoming a professional athlete within the next year

# Nigel

- Senior in SEAS
- Studying CS
- From Amsterdam, Netherlands (but also 🇬🇭& 🇬🇧!)
- Talk to me about:
  - Classes at Columbia
  - International student experience
  - Working in Big Tech/Internships
  - Football (not Soccer)
  - Series/Movies
  - Hmmmm…….anything else

# Salvador

- Senior in CC
- Studying CS
- From Trenton, New Jersey (and El Salvador)
- Talk to me about:
  - Football (not American)
  - Figma or Illustrator
  - Swimming (I can’t)

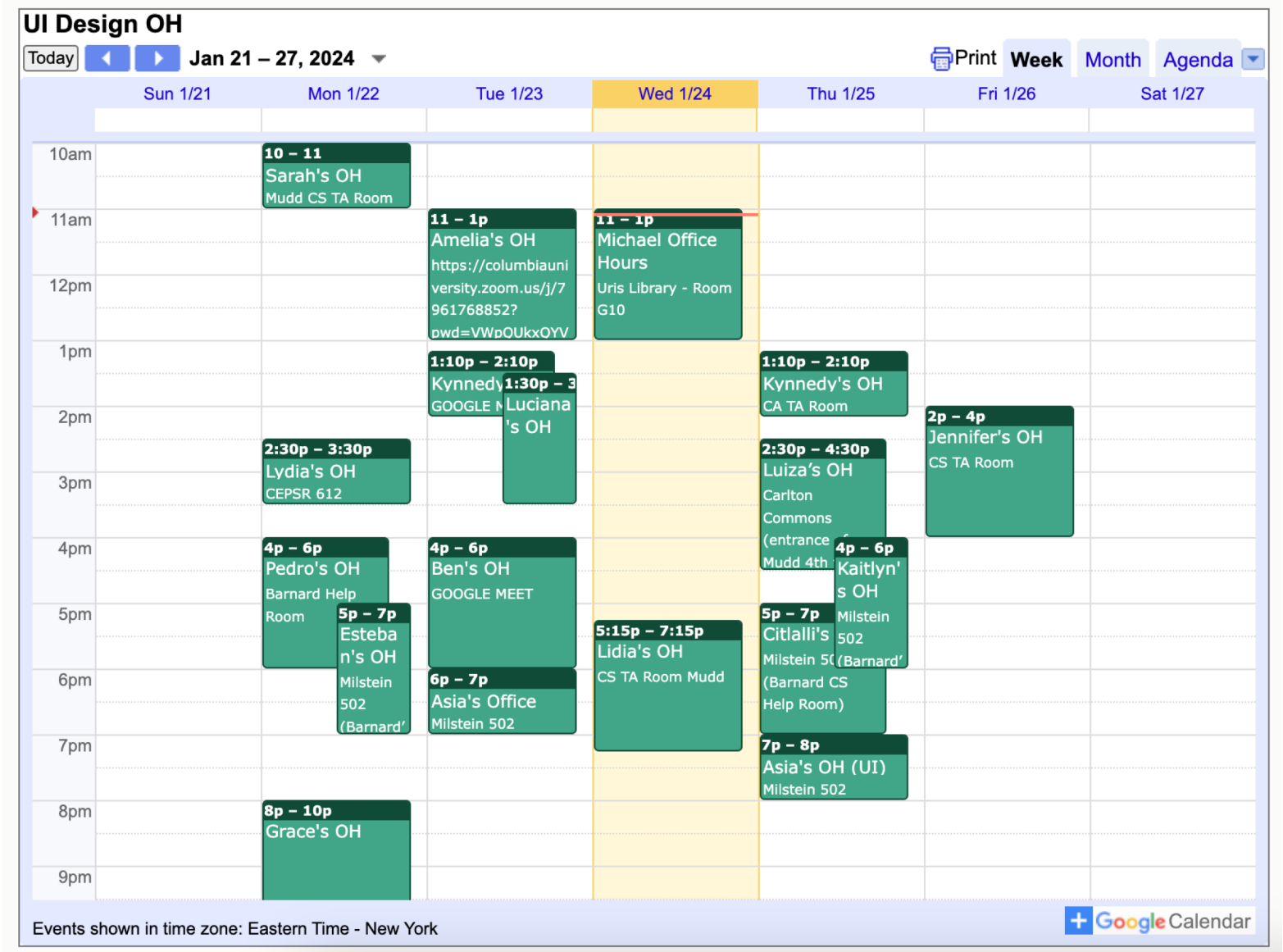
# Miranda

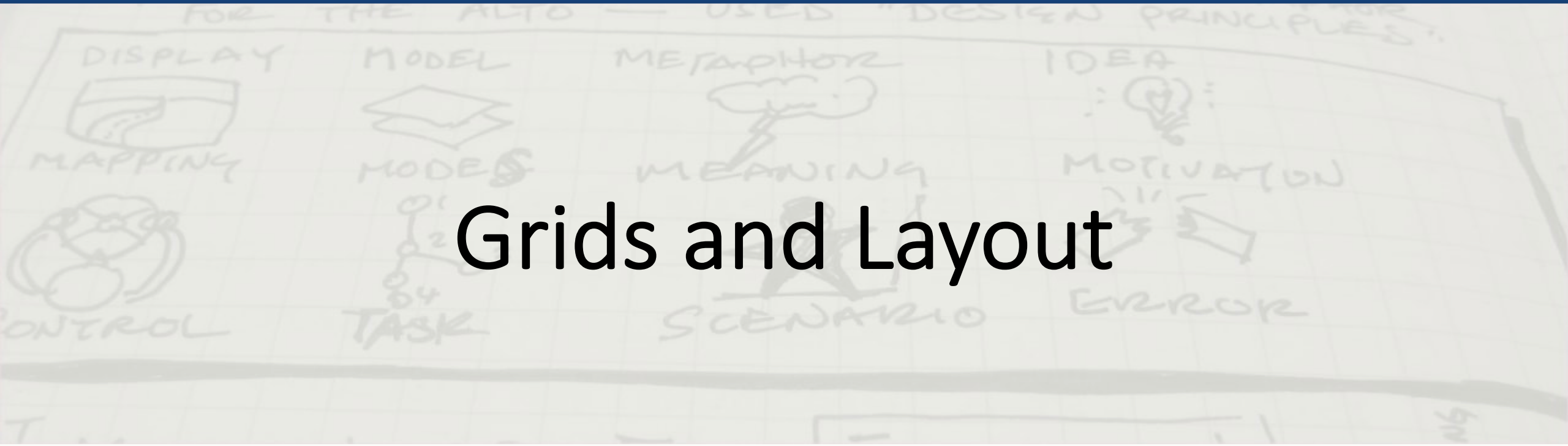
- Senior at Barnard
- Majoring in CS, minoring in dance
- From Boston
- Talk to me about
  - UX research
  - Design internships
  - Dance, acro, ice skating, yoga
  - Knitting!!

# Lindsey

- Junior in SEAS
- Majoring in CS
- From Long Island but also first gen from El Salvador!!!
- Currently Reading: The Fire Next Time by James Baldwin
- Talk to me about:
  - SWE internships
  - The problem with LinkedIn Influencers
  - HOUSE OF THE DRAGON !!!!!
  - Shoegaze
  - How to spend weekends off campus (i need advice)
  - Anything really

# We’re here to help.

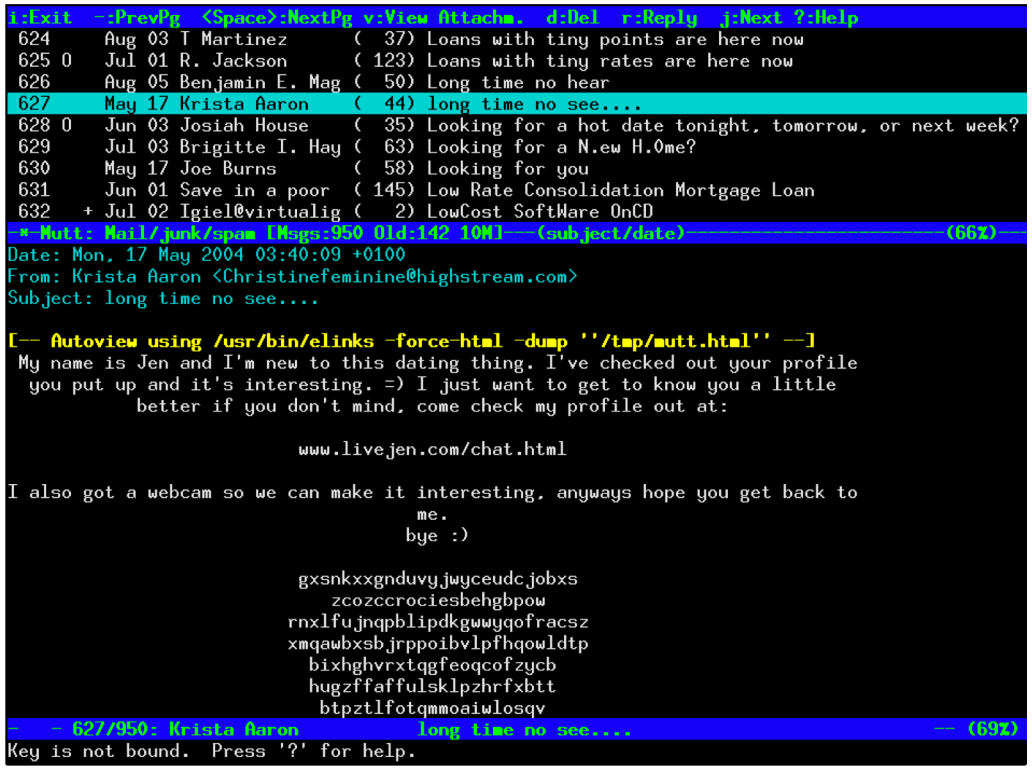




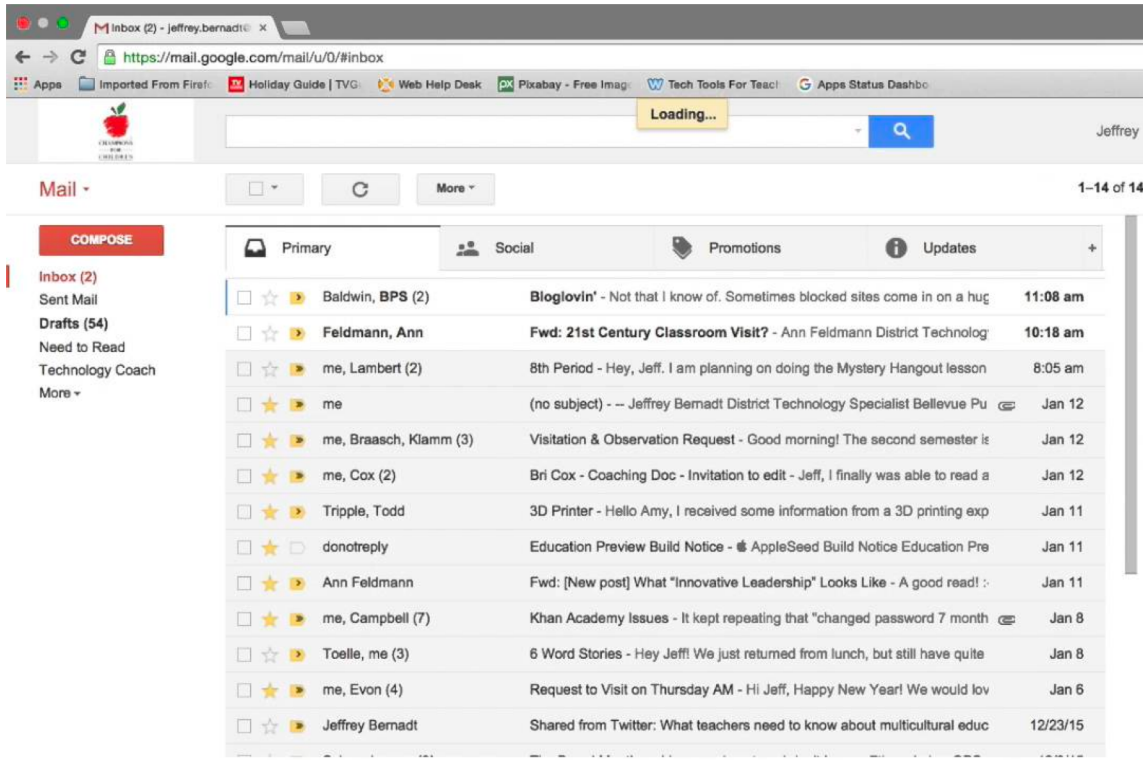

# Grids and Layout

Prof. Lydia Chilton
COMS 4170
24 January 2022

# The main feature of many websites is to **display information** in a way that helps users **accomplish a goal**.




Pine text-based email client



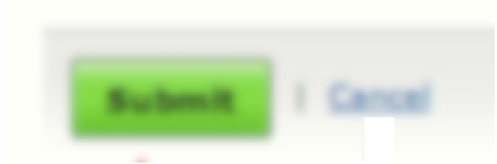

GMail

# Seven tools for visually indicating importance

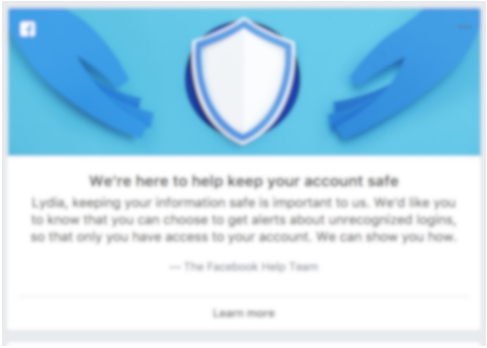
Conceptual grouping

Location

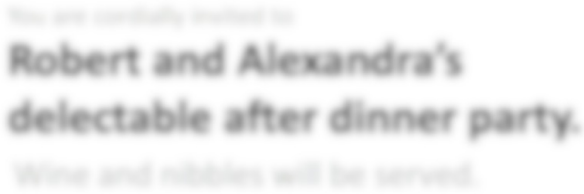
Whitespace




Size



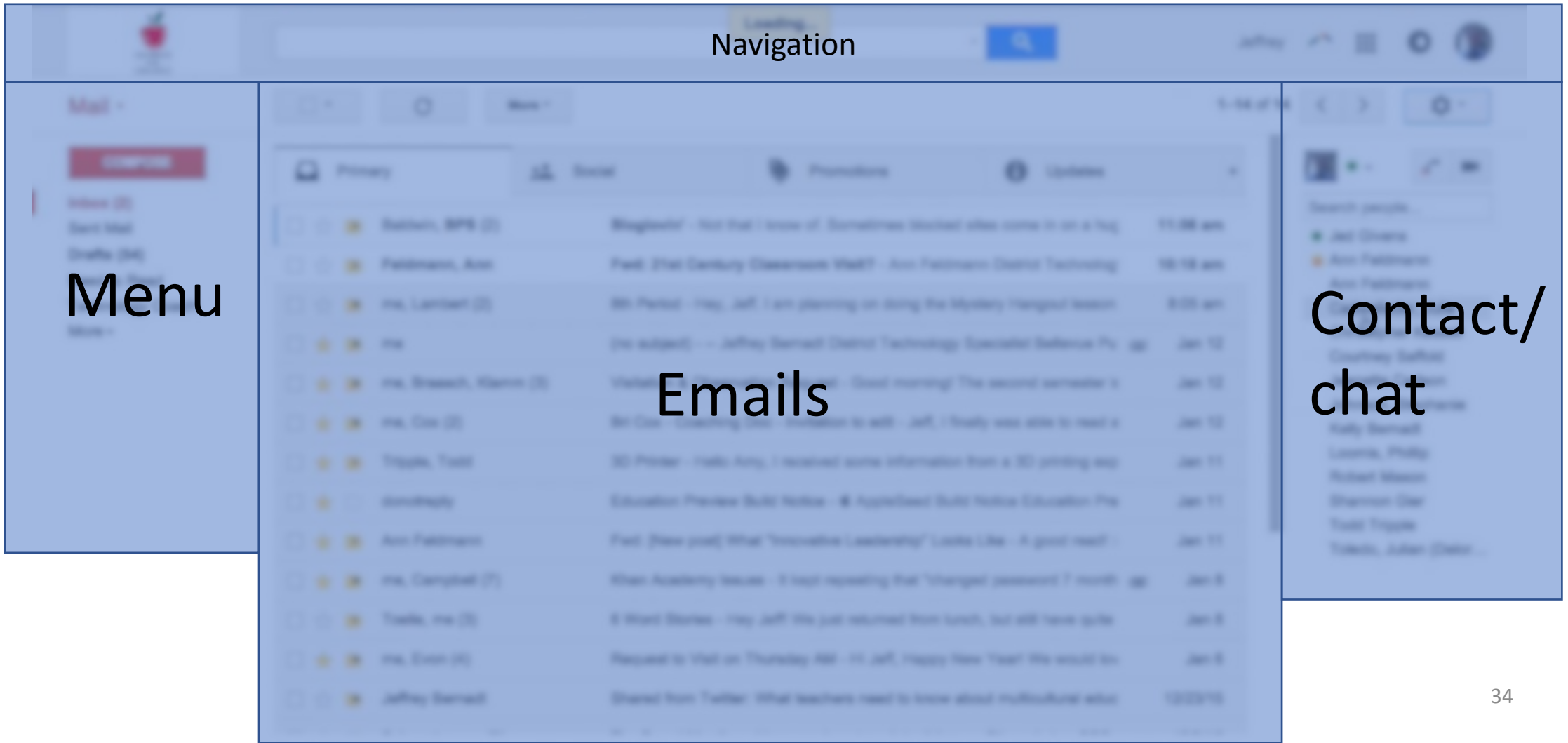

Images



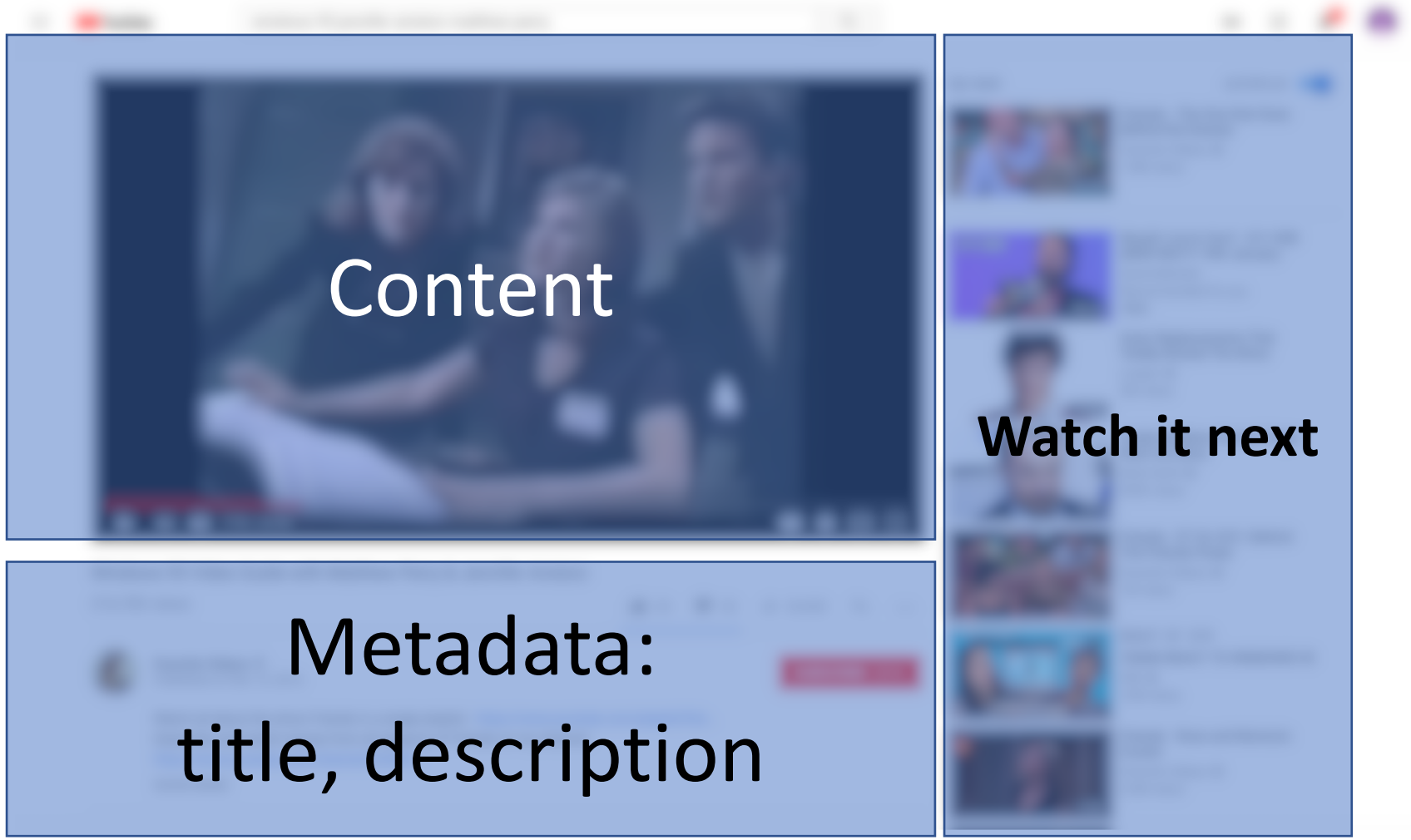

Contrast

Color

# Conceptual groups in Gmail

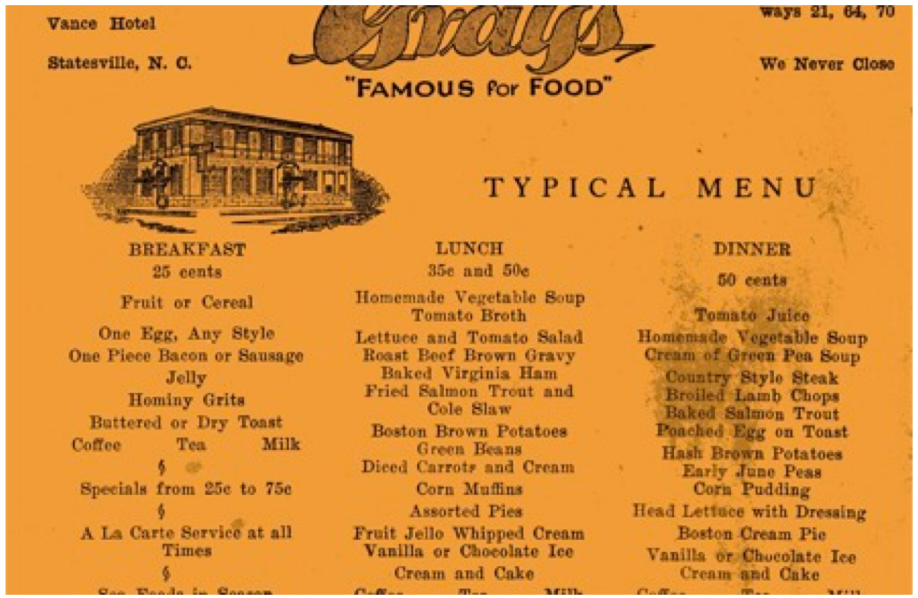


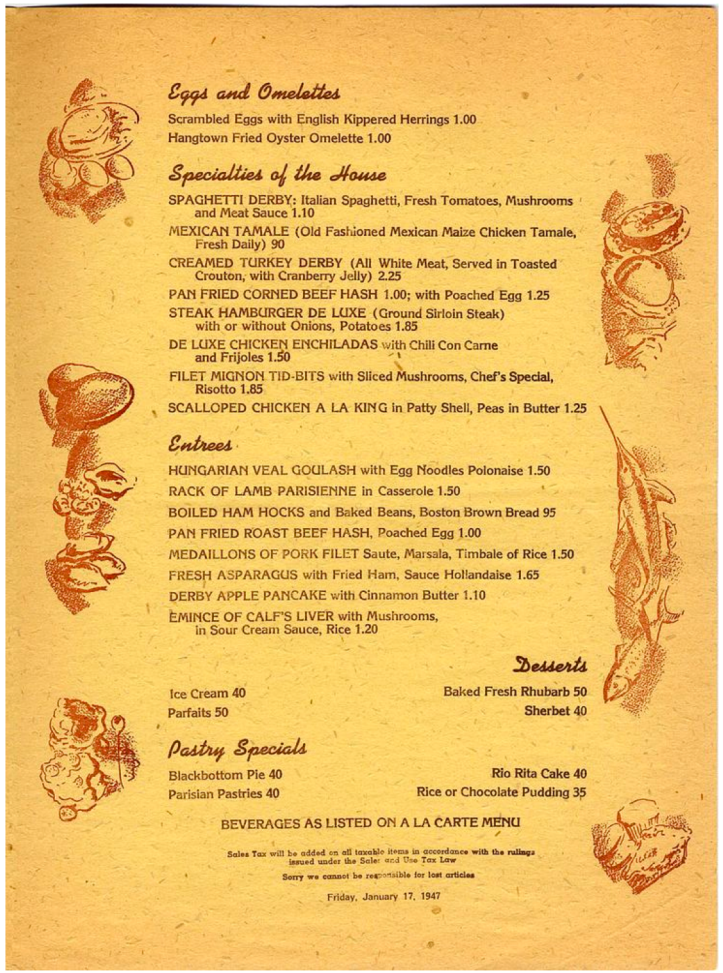
# Conceptual groups in YouTube



# How should we layout information on a page?

# Old school information layout



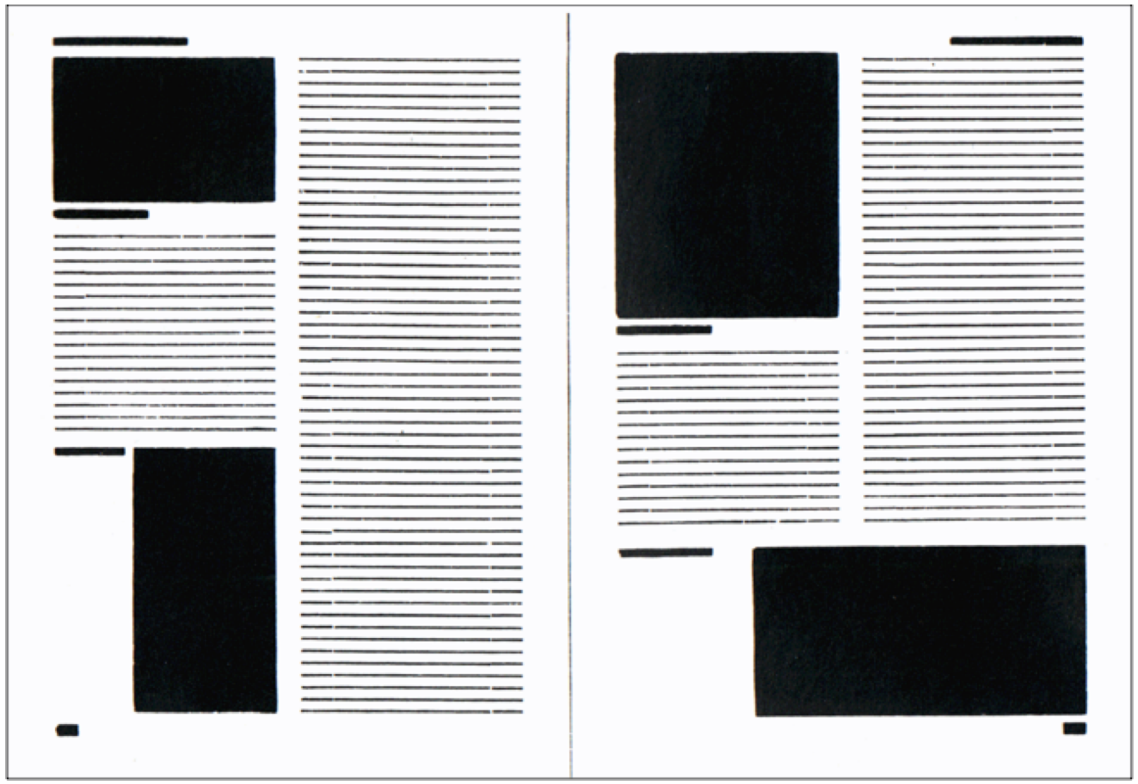

Symmetrical

Before:

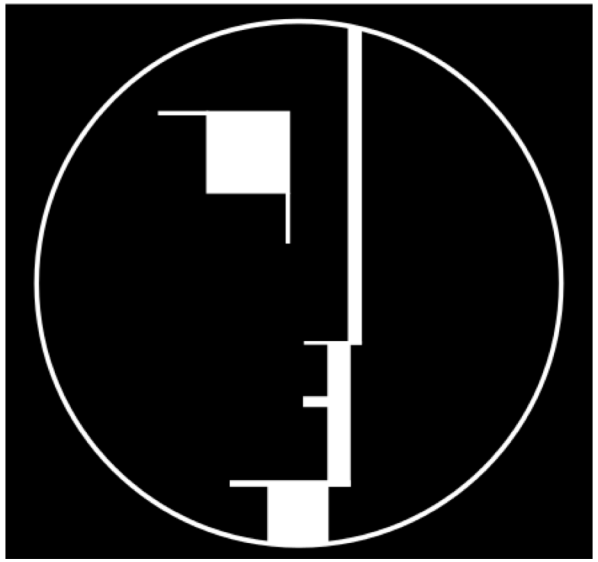
Symmetric Layout

Now:

Asymmetric Grids Layout

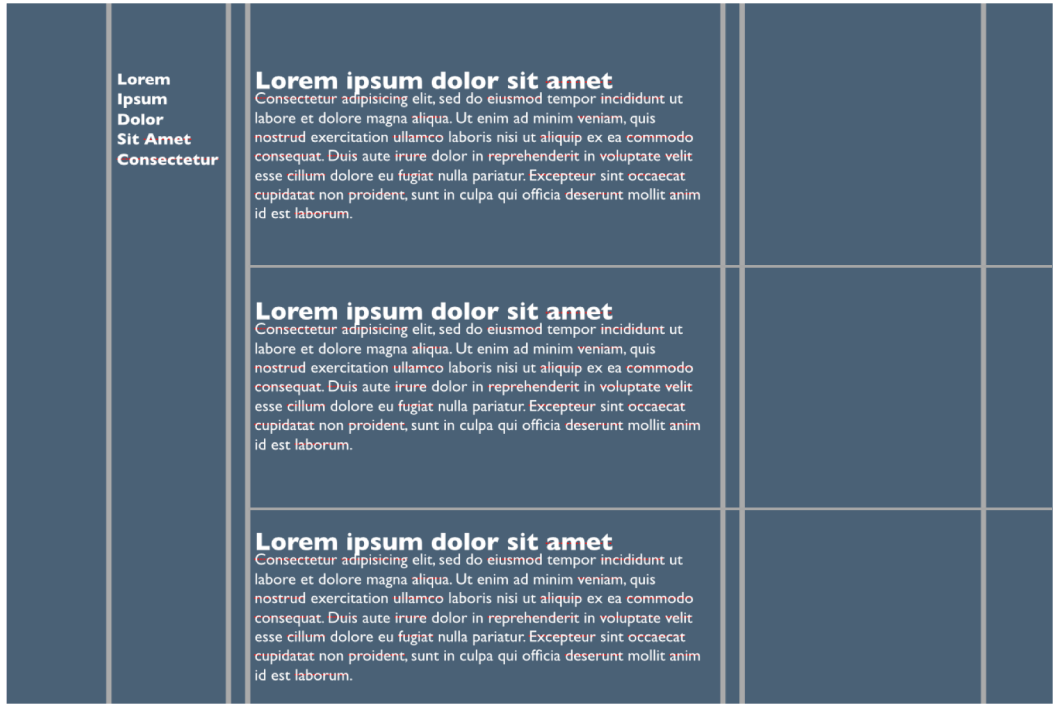


# The Bauhaus School of Design (1919-1933)

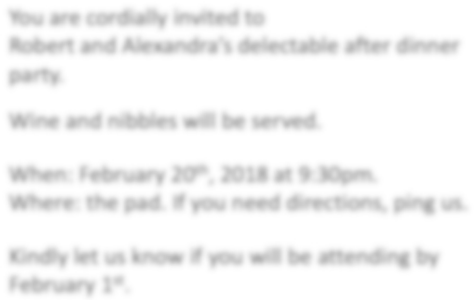


"[Bauhaus] attempted to unify the principles of mass production with individual artistic vision. It strove to combine aesthetics with everyday function."

# Grid Layouts:
# Typographer Jan Tschichold made grid layouts inspired by Bauhaus



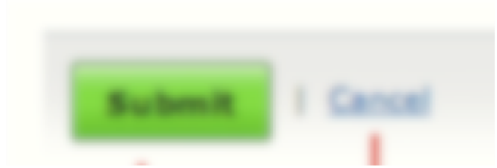
# Grids can convey importance though:
# Groups, location, size and whitespace




Conceptual grouping

Location

Whitespace




Size

# Grids can convey importance though: Groups, location, size and whitespace

**How do we create groups in a grid?**

By creating a column or row.

**How do we use location to make a group appear more important?**

Put the information in the upper left grid cell.

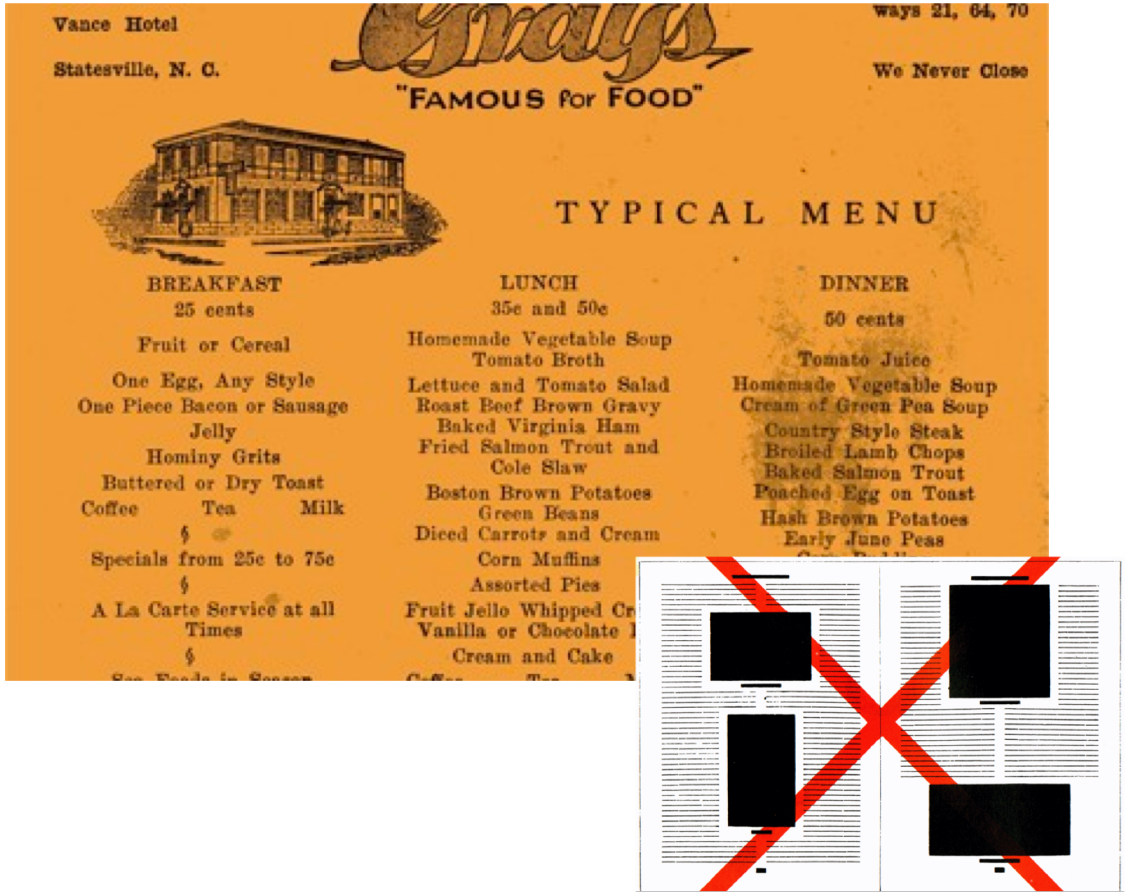
**How do we use size to make a group appear more important?**

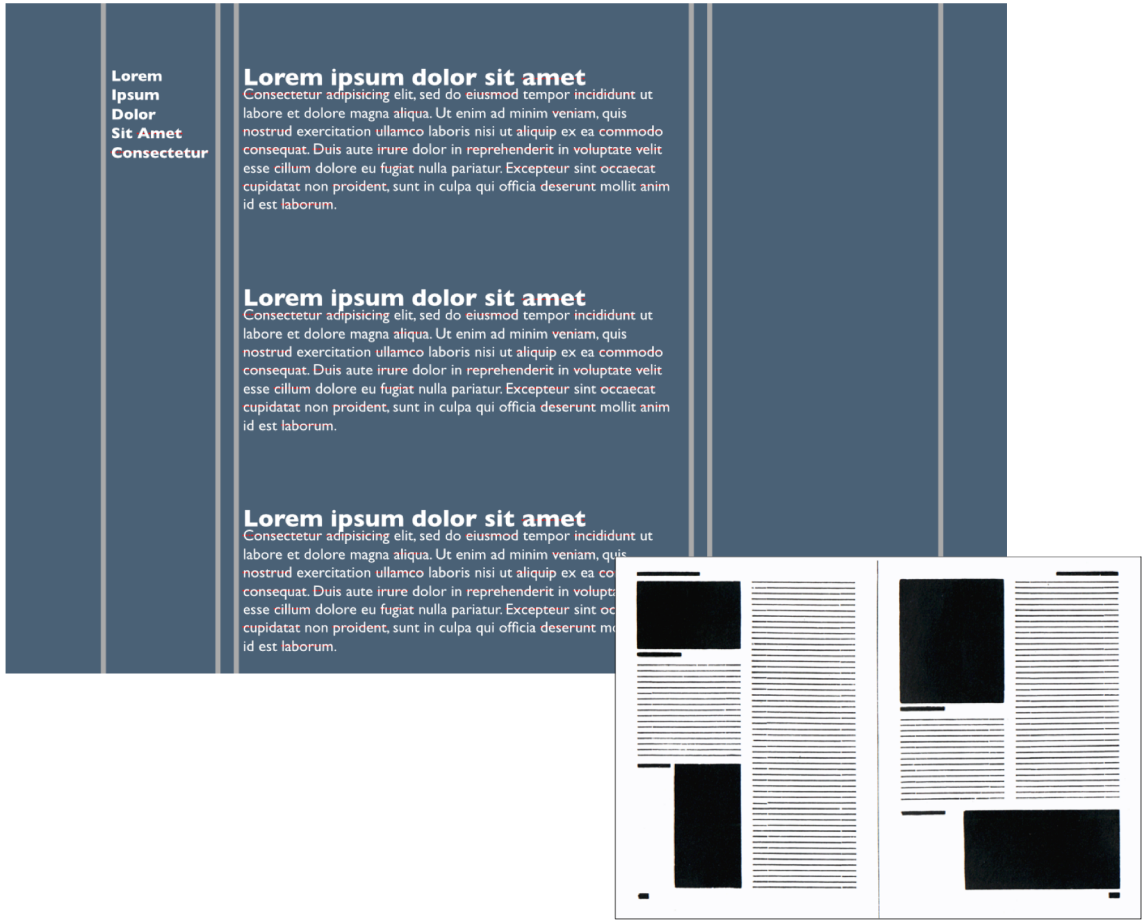
Make a column wider.

**How do we use whitespace to make a group appear more important?**

Increase the size of the gutters.

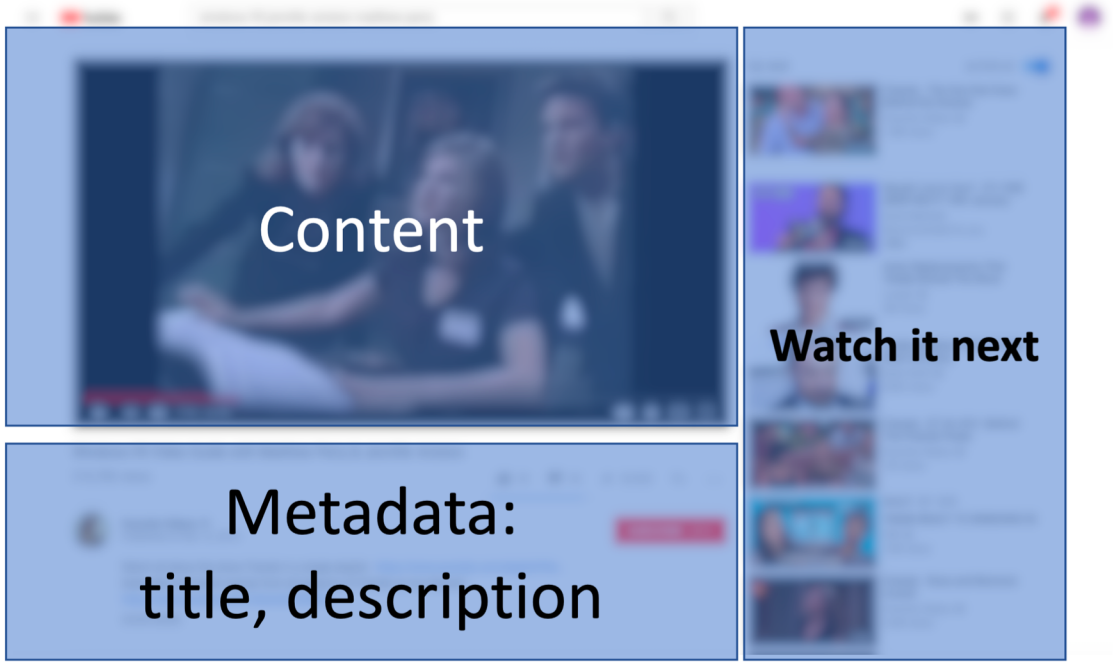
# Not all the ideas of the Bauhaus school are new.

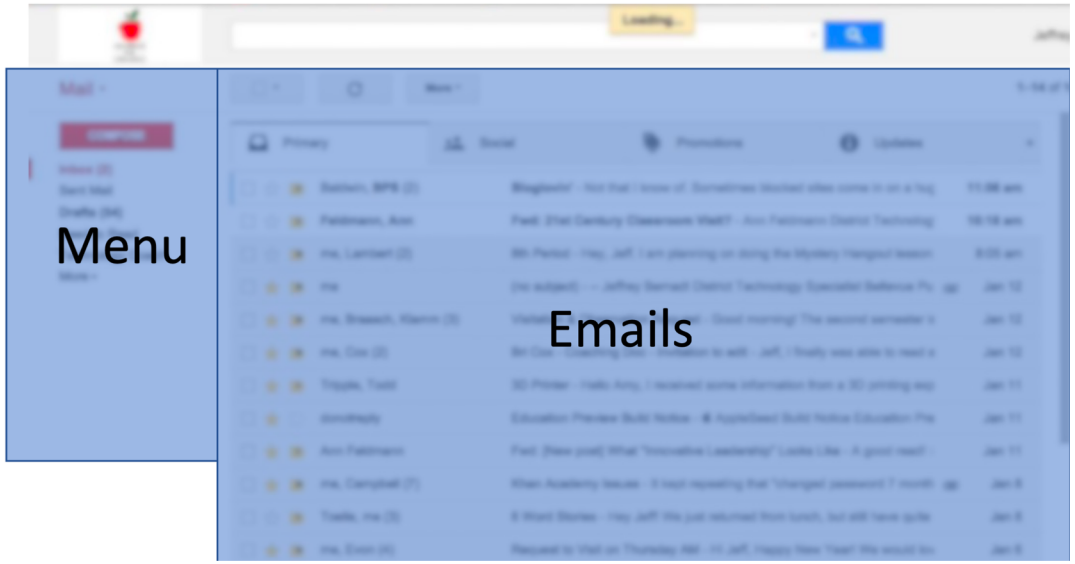



# But there is freedom from the symmetric layout.

# Grid layout heavily influenced web layout



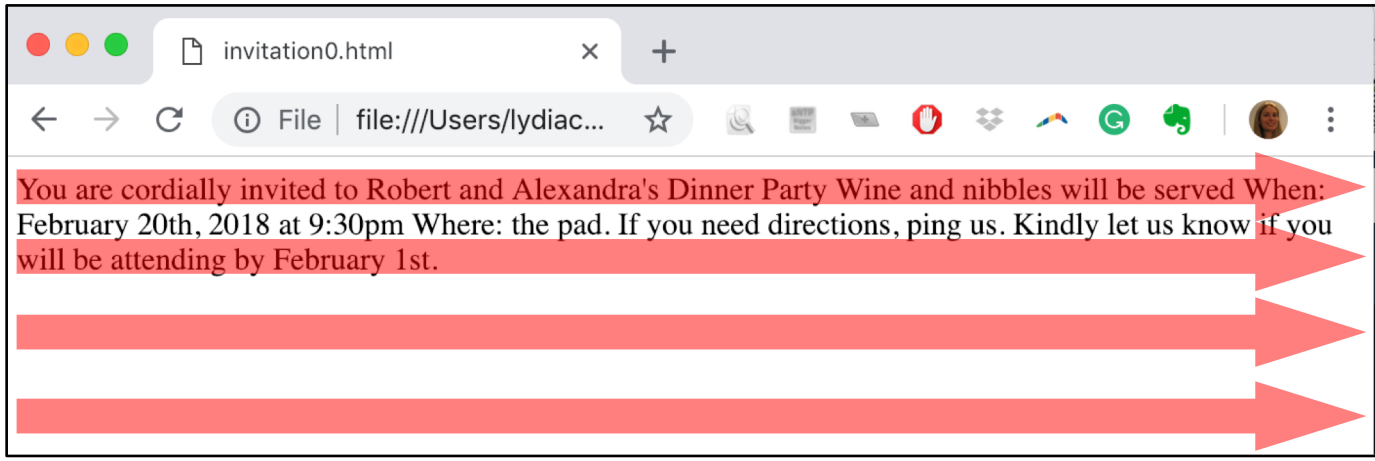
# Basic Layout in HTML (no grids yet)

How to construct the layout of information in HTML and CSS

# Web Browsers are in charge of rendering HTML

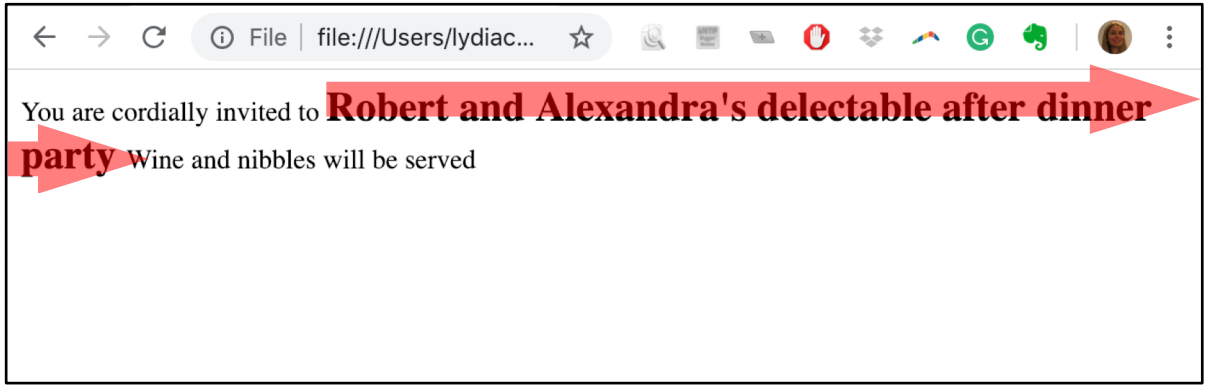
invitation0.html

```
1  <html>
2      <body>
3
4          You are cordially invited to
5          Robert and Alexandra's Dinner Party
6          Wine and nibbles will be served
7
8          When: February 20th, 2019 at 9:30pm
9          Where: the pad. If you need directions, ping us.
10
11         Kindly let us know if you will be attending by February 1st.
12
13
14     </body>
15 </html>
```



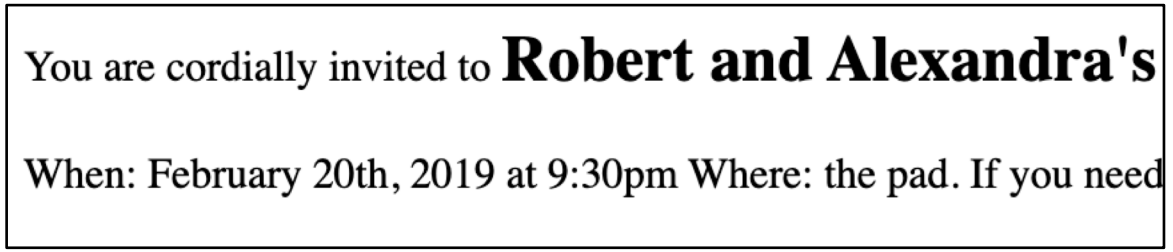
# When you add elements, they either obey the line-wrap layout or break it.

```
19          <div>
20              You are cordially invited to
21              <span class="dark big">
22                  Robert and Alexandra's
23                  delectable after dinner party
24              </span>
25              Wine and nibbles will be served
26          </div>
```




 elements **obey** line-wrap layout

```
<div>
    You are cordially invited to <span class
</div>
<div>
    When: February 20th, 2019 at 9:30pm Wher
</div>
```




 elements **break** line-wrap layout

# When you use a new element, ask: does it obey or break line-wrap layout?

Anchor
(hyperlink)

```
<a href="slides.pdf">Slides are here</a>
```

Slides are here

Image

```
<img src="columbia.jpg">
```

Form

```
<form action="/action_page.php">
  First name:<br>
  <input type="text" name="firstname" value="Mickey">
  <br>
  Last name:<br>
  <input type="text" name="lastname" value="Mouse">
  <br><br>
  <input type="submit" value="Submit">
</form>
```

First name:
Mickey
Last name:
Mouse

Submit

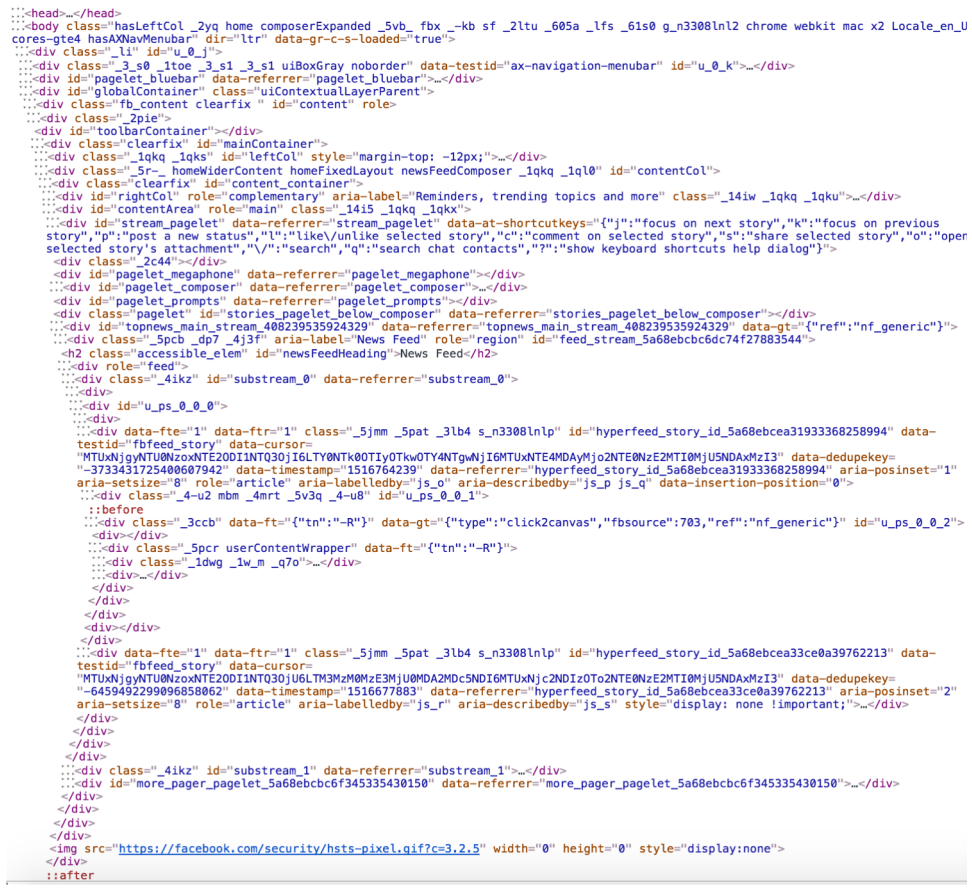
**The best way to know what a layout will look like is to run it.**

Today's goal:

# Remake this **information layout** in HTML and CSS

# “I finished coding up my website BUT….”

## “It just doesn’t work yet!”



# How would you help this person?

# **Iterative** Style of Programming

What is the **smallest** unit of progress I can make?

**Iteration**

**Goal**

```
<html>
  <body>
    Hello world!
  </body>
</html>
```

Hello World!

Does it look ok?

# Step 0. Make a html page, connect some CSS

```
<!DOCTYPE html>
<html>
<head>
<style>
  #test{
      color: blue;
  }
</style>
</head>

<body>
  <div id="test">Hello World!</div>
</body>

</html>
```

# What should we do first?

Make a container

# Step 1. Make a container div

```html
<div id="container">

</div>
```

```css
#container{
  width: 50px;
  height: 50px;
  background-color: grey;
}

```

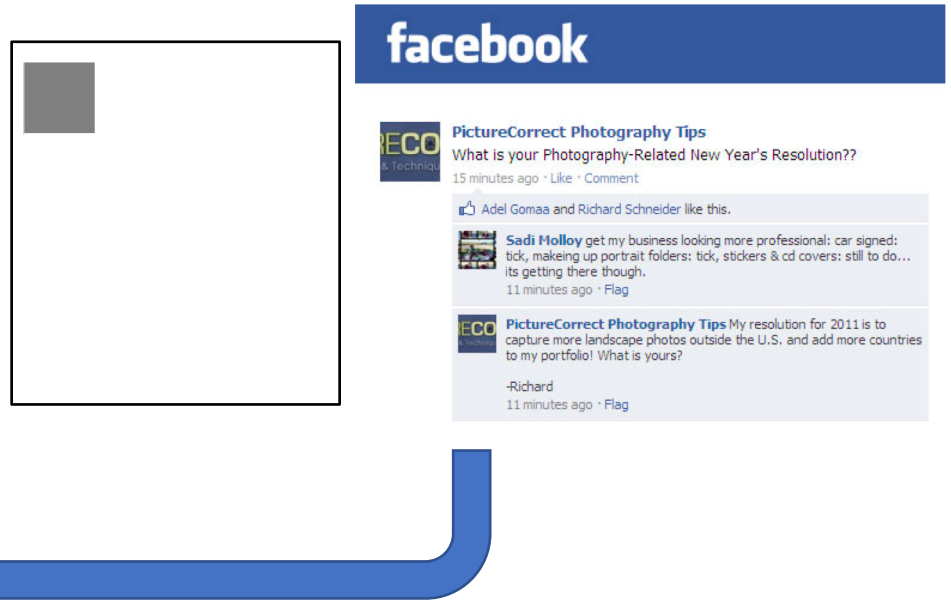
# **Iterative** Style of Programming

What's the most **basic** thing I can do to make **necessary** progress towards my goal?

**Iteration**

**Goal**

```
<html>
  <body>
    Hello world!
  </body>
</html>
```




Does it look ok? What's next?

# Give Container div realistic width.

```html
<div id="container">

</div>
```

```css
#container{
  width: 350px;
  height: 50px;
  margin: 50px;
  background-color: grey;
}
```

# What's next?

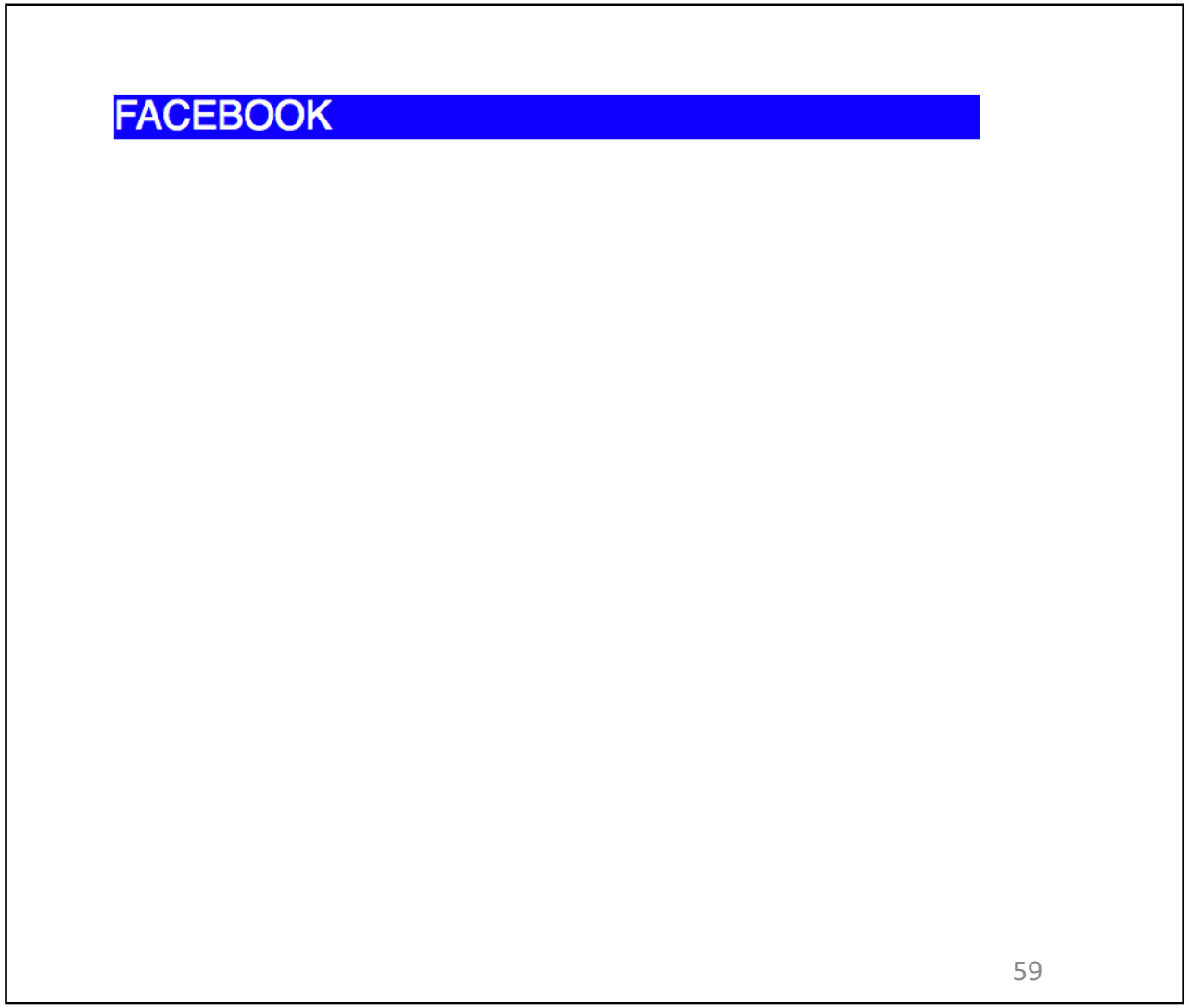
facebook
PictureCorrect Photography Tips
What is your Photography-Related New Year's Resolution??
15 minutes ago · Like · Comment
Adel Gomaa and Richard Schneider like this.
Sadi Molloy get my business looking more professional: car signed: tick, makeing up portrait folders: tick, stickers & cd covers: still to do... its getting there though.
11 minutes ago · Flag
PictureCorrect Photography Tips My resolution for 2011 is to capture more landscape photos outside the U.S. and add more countries to my portfolio! What is yours?
-Richard
11 minutes ago · Flag
James Donnelly Larger concerts to cover and improve my portrait editing style/skill
10 minutes ago · Flag
Jose Antonio Rubido To push my photpography foward full throttle
9 minutes ago · Flag
Deacon Jonathan Jerome Johnson To learn more and enhance the quality of my shots!
5 minutes ago · Flag
Latu Peti Vimahi Manulua-hafoka learn learn learn!!!
4 minutes ago · Flag

# Create a blue Facebook header

```html
<div id="container">
  <div id="fb_brand">
    FACEBOOK
  </div>
</div>
```

```css
#container{
  width: 350px;
  margin: 50px;
}

#fb_brand{
  background-color: blue;
  color: white;
}
```



# What next?

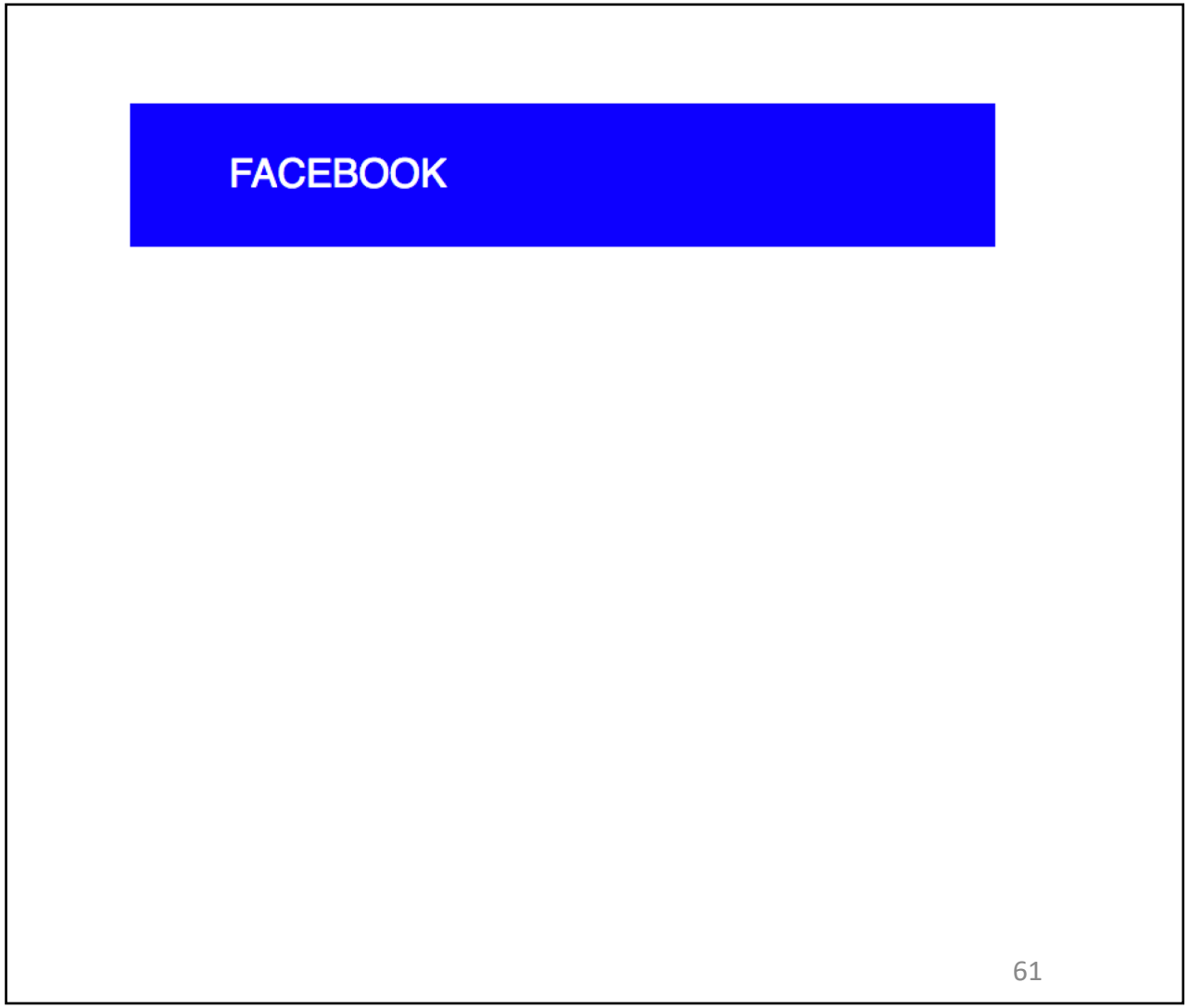
FACEBOOK

# Get header height right. (Add padding)

```html
<div id="container">
  <div id="fb_brand">
    FACEBOOK
  </div>
</div>
```

```css
#container{
  width: 350px;
  margin: 50px;
}

#fb_brand{
  background-color: blue;
  color: white;
  padding-left: 40px;
  padding-top: 20px;
  padding-bottom: 20px;
}
```

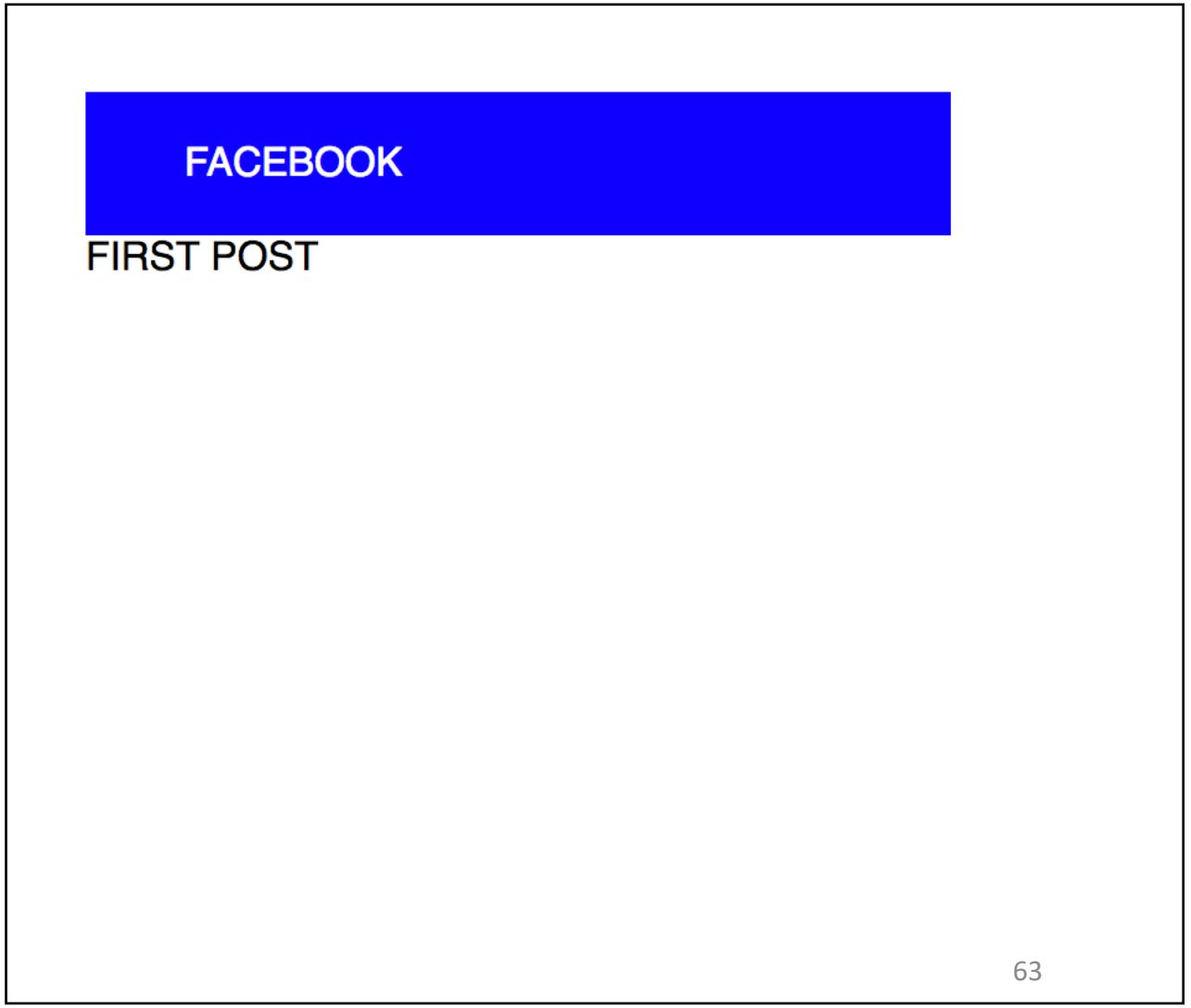


# What next?

FACEBOOK

# Add the first post

```
<div id="container">
  <div id="fb_brand">
    FACEBOOK
  </div>
  <div id="top_post">
    FIRST POST
  </div>
</div>
```



# What next?

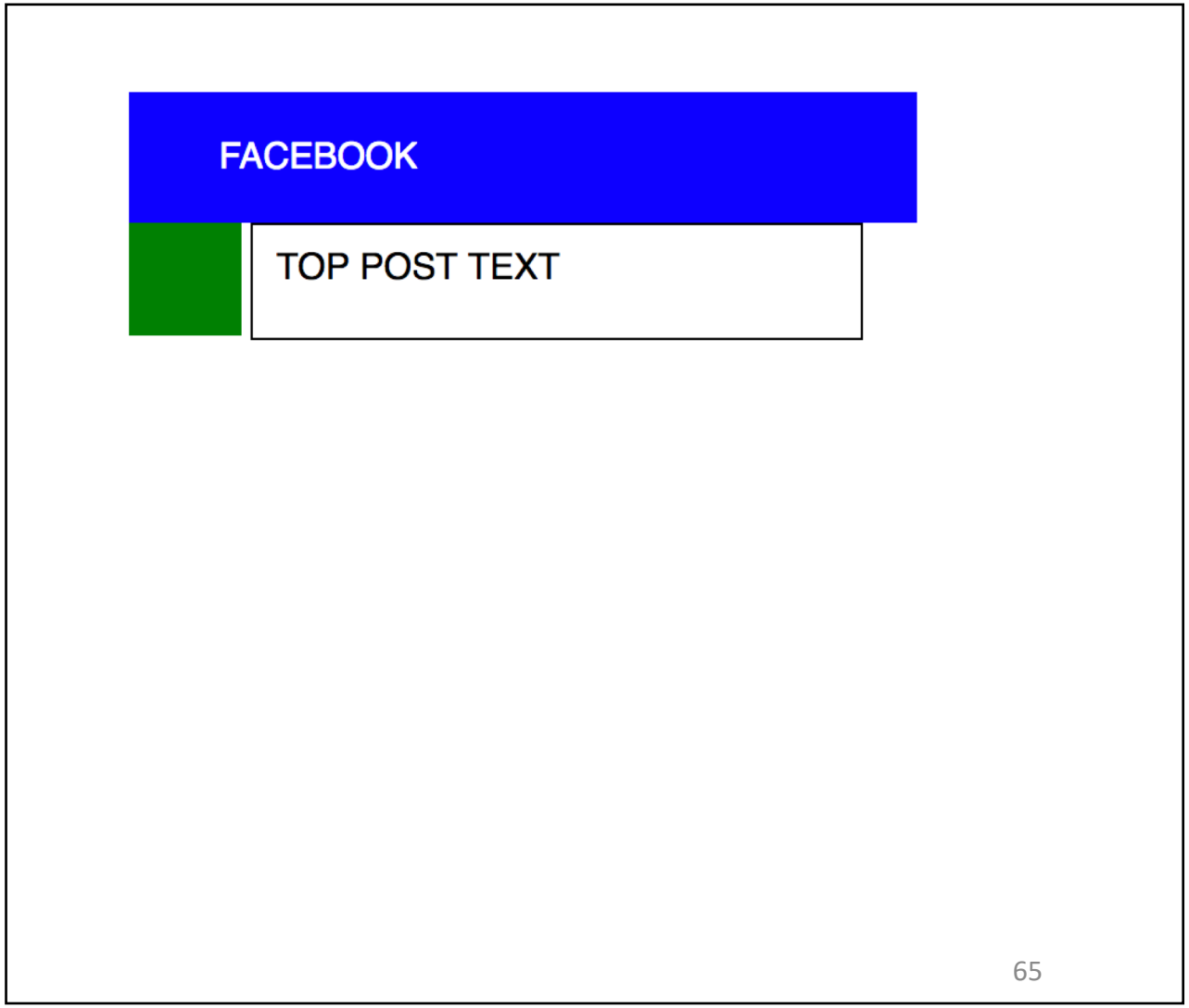
FACEBOOK

FIRST POST

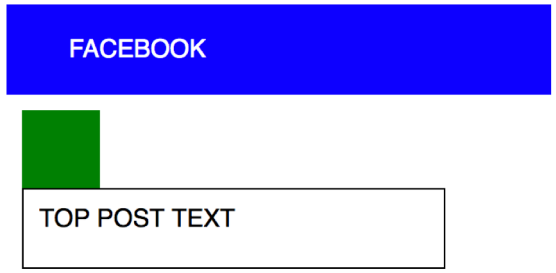
# Add internal structure to the first post

```
6   <div id="top_post">
7     <div id="top_post_image">
8     </div>
9     <div id="top_post_text">
10      TOP POST TEXT
11    </div>
12  </div>
```

```
14 #top_post_image{
15   height: 50px;
16   width: 50px;
17   background-color: green;
18   display: inline-block;
19 }
20
21 #top_post_text{
22   height: 30px;
23   width: 250px;
24   padding: 10px;
25   border: 1px solid black;
26   display: inline-block;
27   vertical-align: top;
28
29 }
```

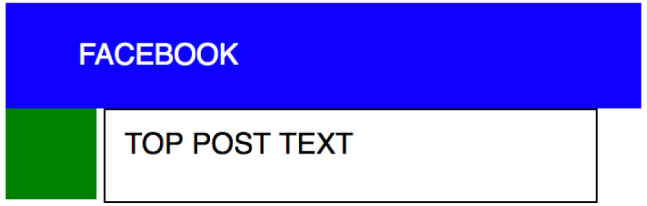


By default, DIV elements will flow down the page. `display: block`
To get them to flow across the page, you must set `display: inline-block`




```
#top_post_image{
  height: 50px;
  width: 50px;
  background-color: green;
  /*display: inline-block;*/
}

#top_post_text{
  height: 30px;
  width: 250px;
  padding: 10px;
  border: 1px solid black;
  /*display: inline-block;*/
  vertical-align: top;
}
```




```
#top_post_image{
  height: 50px;
  width: 50px;
  background-color: green;
  display: inline-block;
}

#top_post_text{
  height: 30px;
  width: 250px;
  padding: 10px;
  border: 1px solid black;
  display: inline-block;
  vertical-align: top;

}
```

# What next?

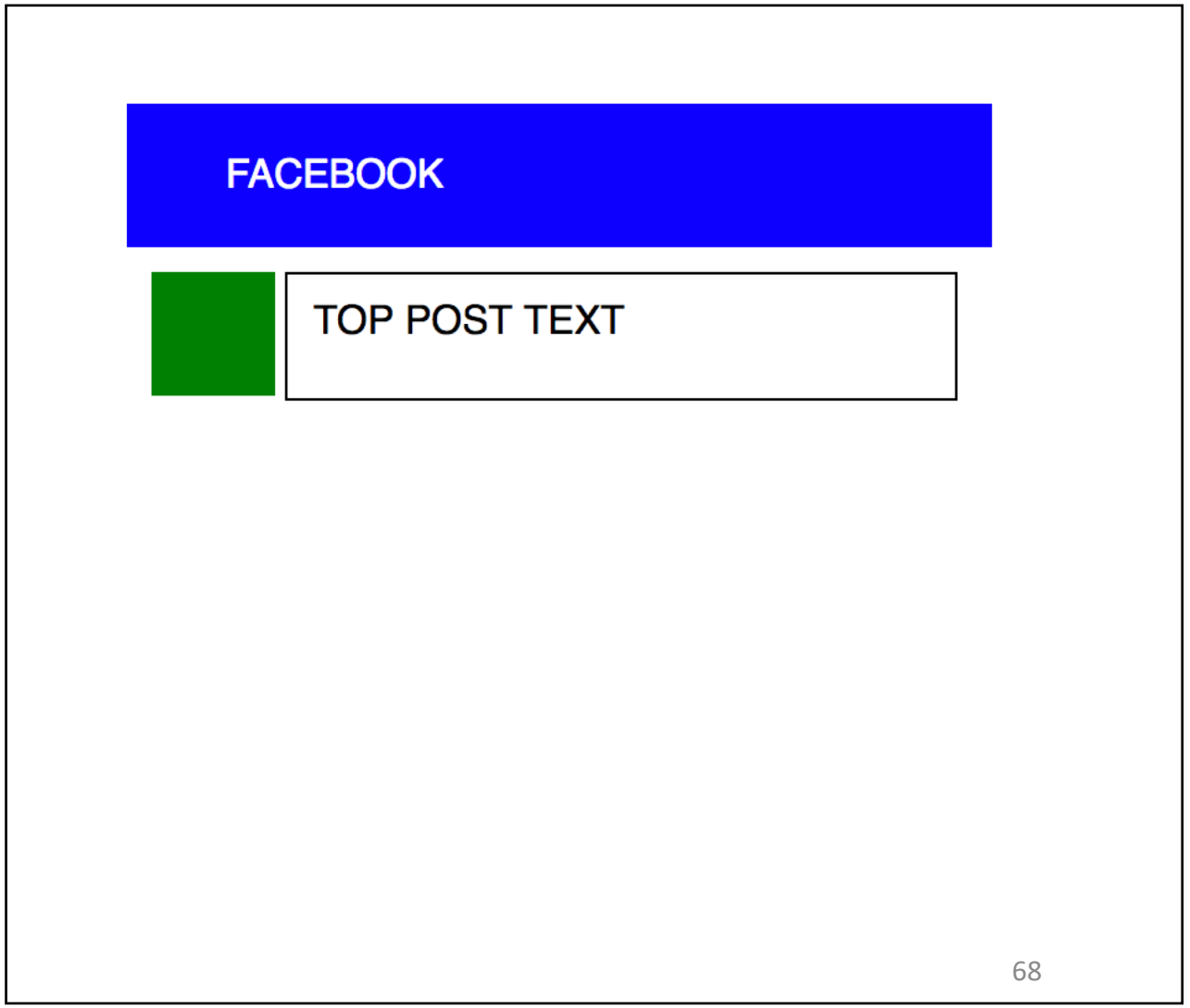
FACEBOOK

TOP POST TEXT

# Add padding on the top post

```
6   <div id="top_post">
7     <div id="top_post_image">
8     </div>
9     <div id="top_post_text">
10      TOP POST TEXT
11    </div>
12  </div>
```

```
14 #top_post{
15   padding: 10px;
16 }
17
```



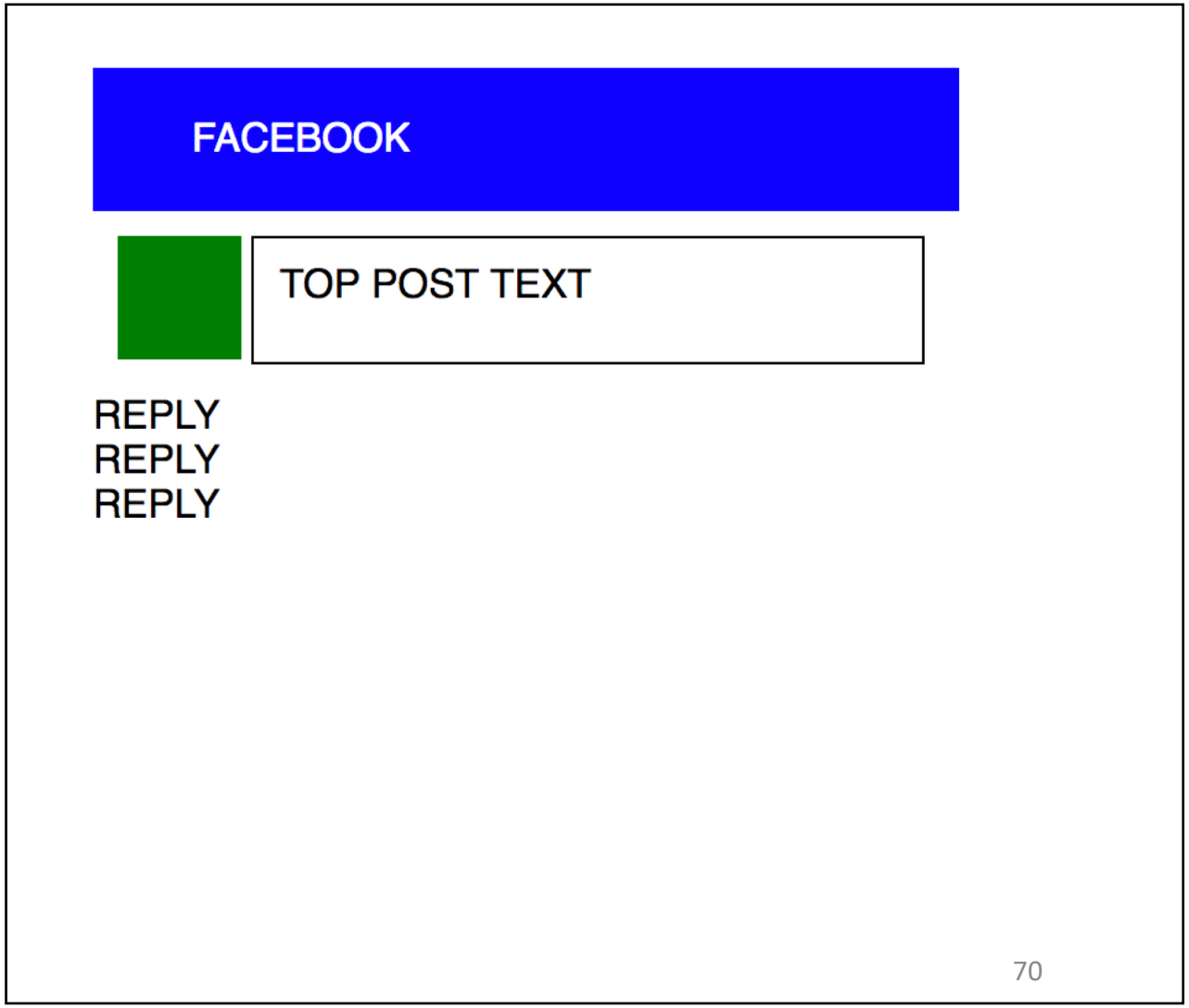
# What next?

FACEBOOK

TOP POST TEXT

# Add replies.

```
13  <div id="reply_container">
14    <div class="reply">
15      REPLY
16    </div>
17    <div class="reply">
18      REPLY
19    </div>
20    <div class="reply">
21      REPLY
22    </div>
23  </div>
```



# What next?

FACEBOOK

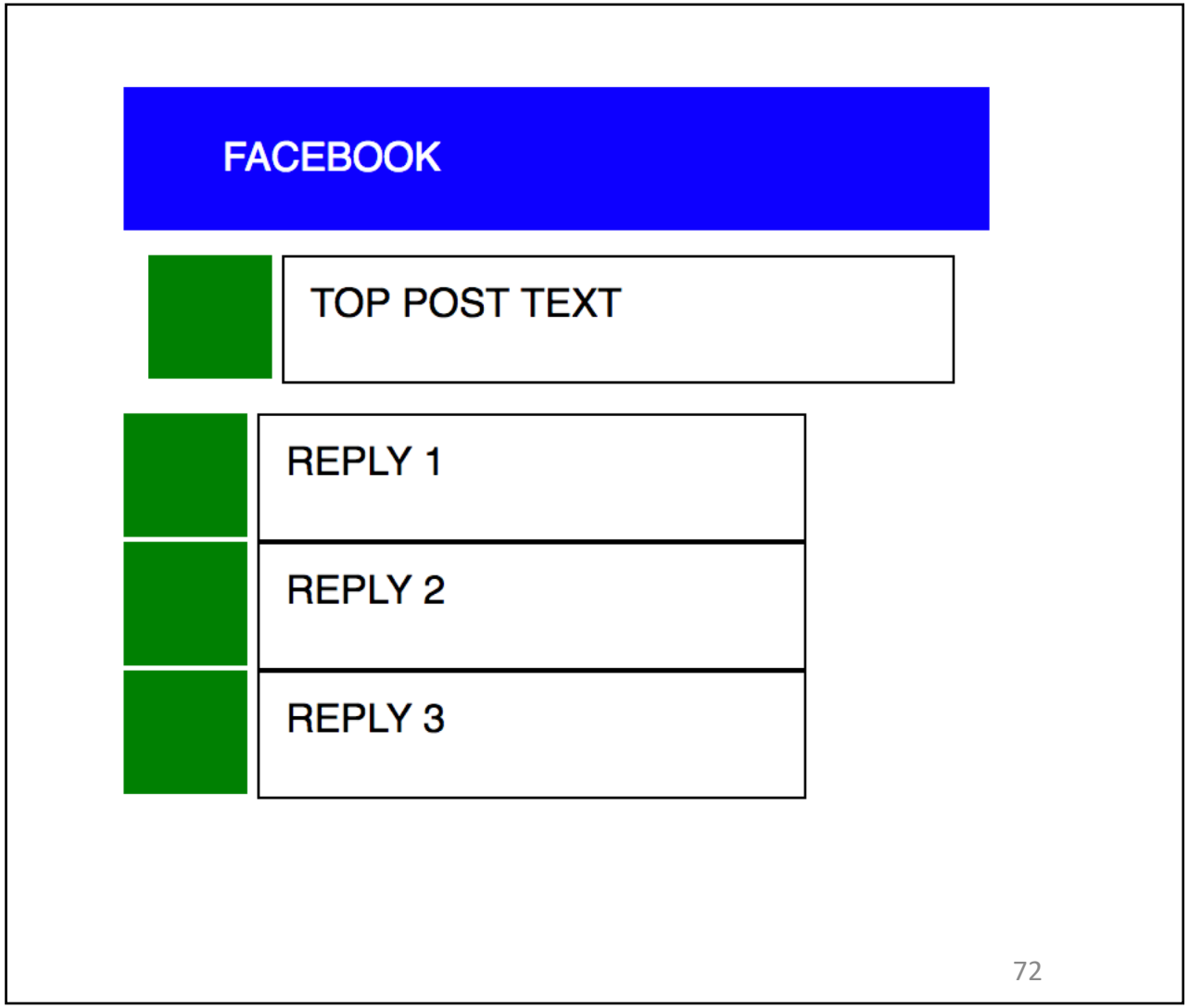
TOP POST TEXT

REPLY
REPLY
REPLY

# Reply substructure: image and text

```
14      <div class="reply">
15        <div class="reply_image">
16        </div>
17        <div class="reply_text">
18          REPLY 1
19        </div>
20      </div>
```

```
35  .reply_image{
36     height: 50px;
37    width: 50px;
38    background-color: green;
39    display: inline-block;
40    vertical-align: top;
41  }
42
43  .reply_text{
44    height: 30px;
45    width: 200px;
46    padding: 10px;
47    border: 1px solid black;
48    display: inline-block;
49    vertical-align: top;
50  }
```



# What next?

FACEBOOK

TOP POST TEXT

REPLY 1

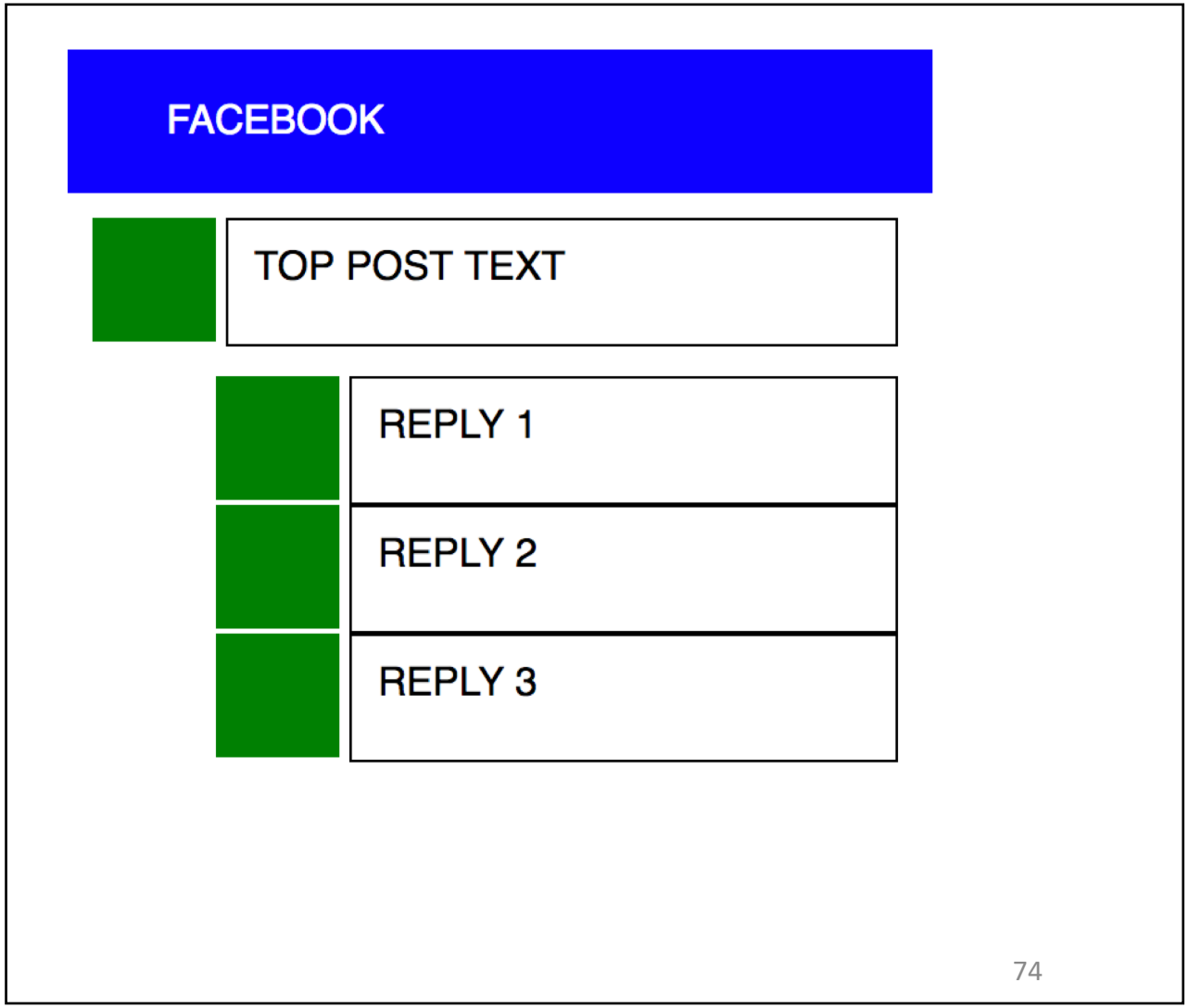
REPLY 2

REPLY 3

# Reply container positioning

```
13  <div id="reply_container">
14    <div class="reply">
15      <div class="reply_image">
16      </div>
17      <div class="reply_text">
18        REPLY 1
19      </div>
20    </div>
```

```
35 #reply_container{
36   padding-left: 60px;
37 }
38
```



# What next?

FACEBOOK

TOP POST TEXT

REPLY 1

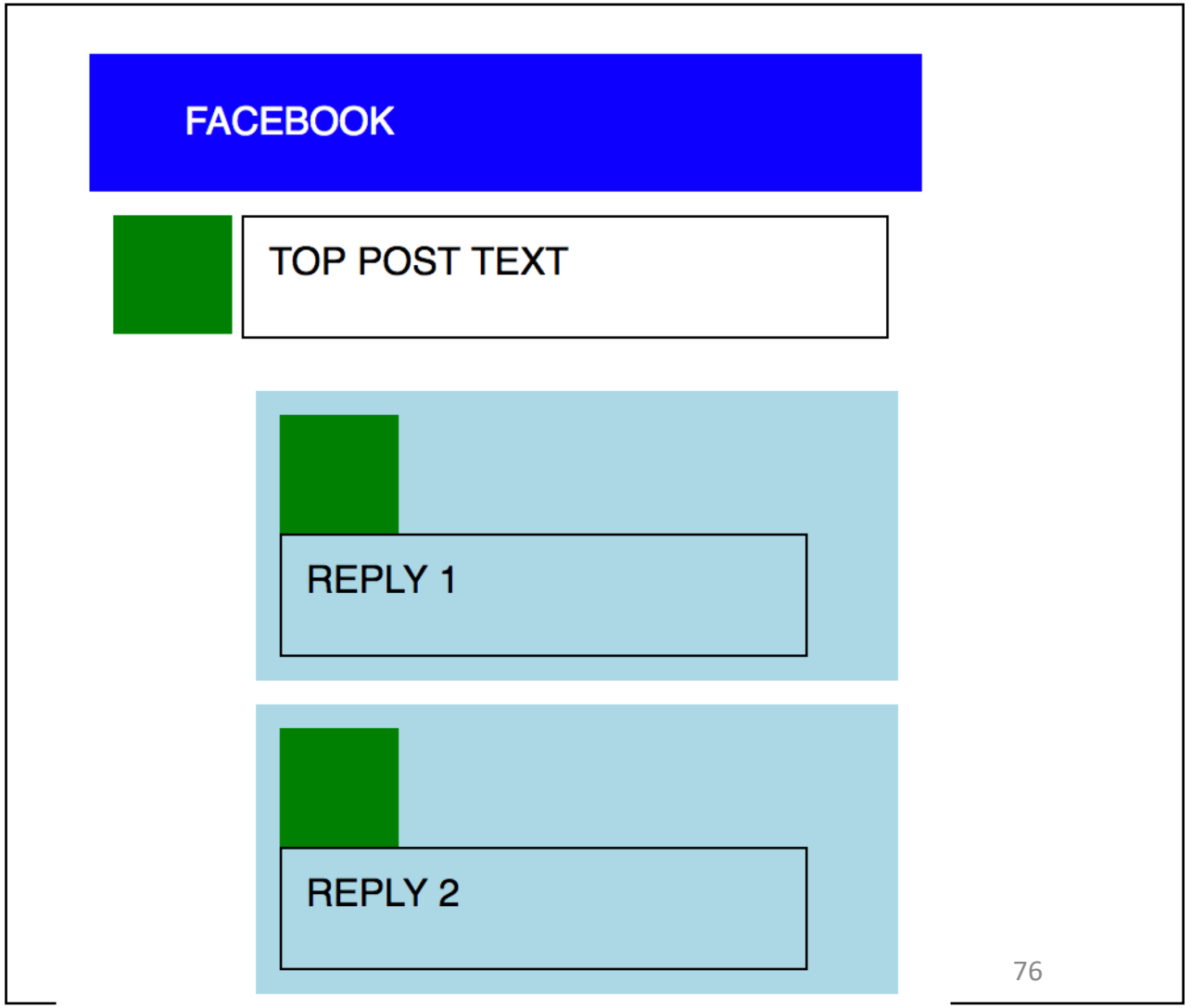
REPLY 2

REPLY 3

# Reply Class background-color

```
13   <div id="reply_container">
14     <div class="reply">
15       <div class="reply_image">
16       </div>
17       <div class="reply_text">
18         REPLY 1
19       </div>
20     </div>
```

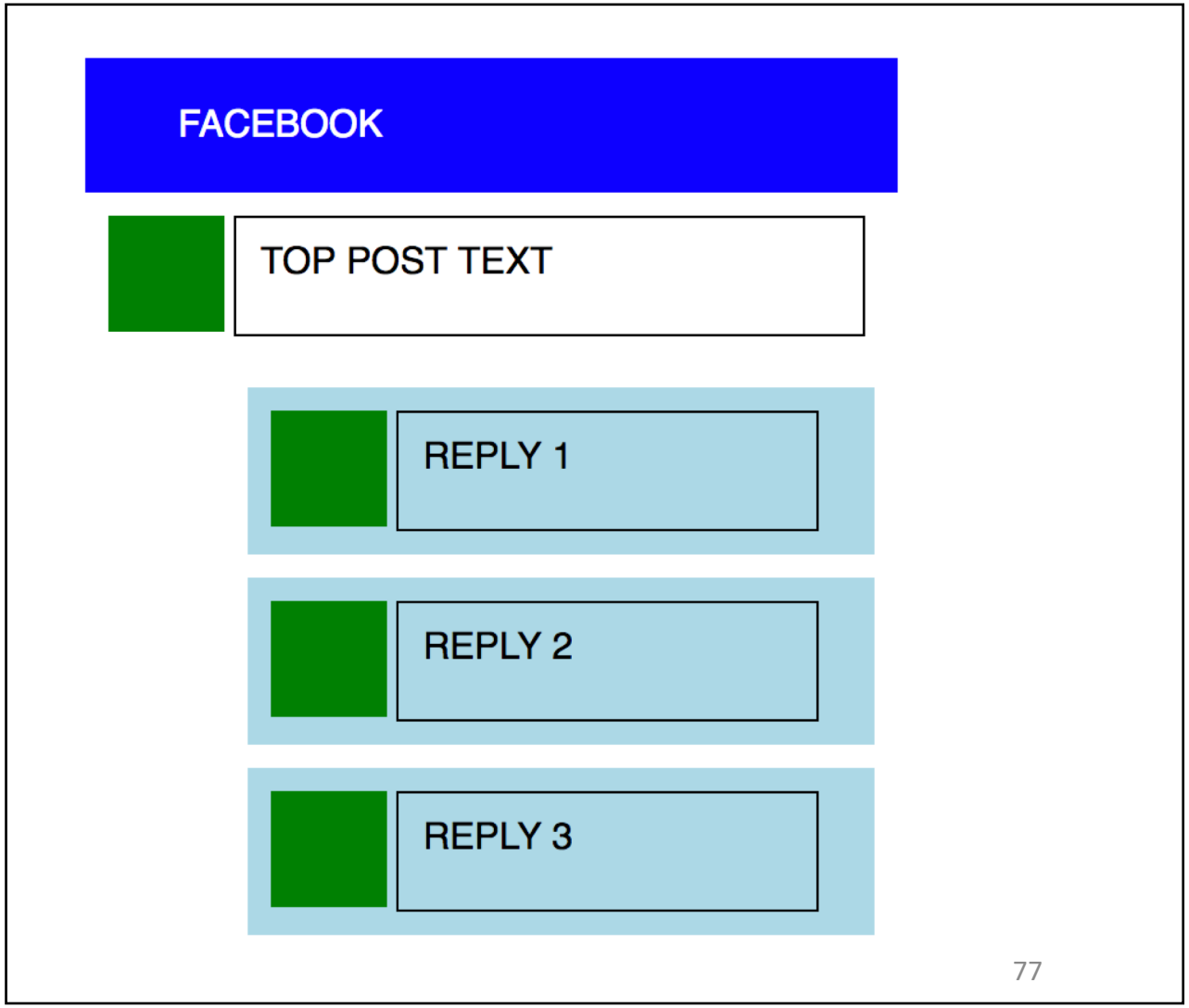
```
39 .reply{
40   background-color: lightblue;
41   padding: 10px;
42   margin: 10px;
43 }
```



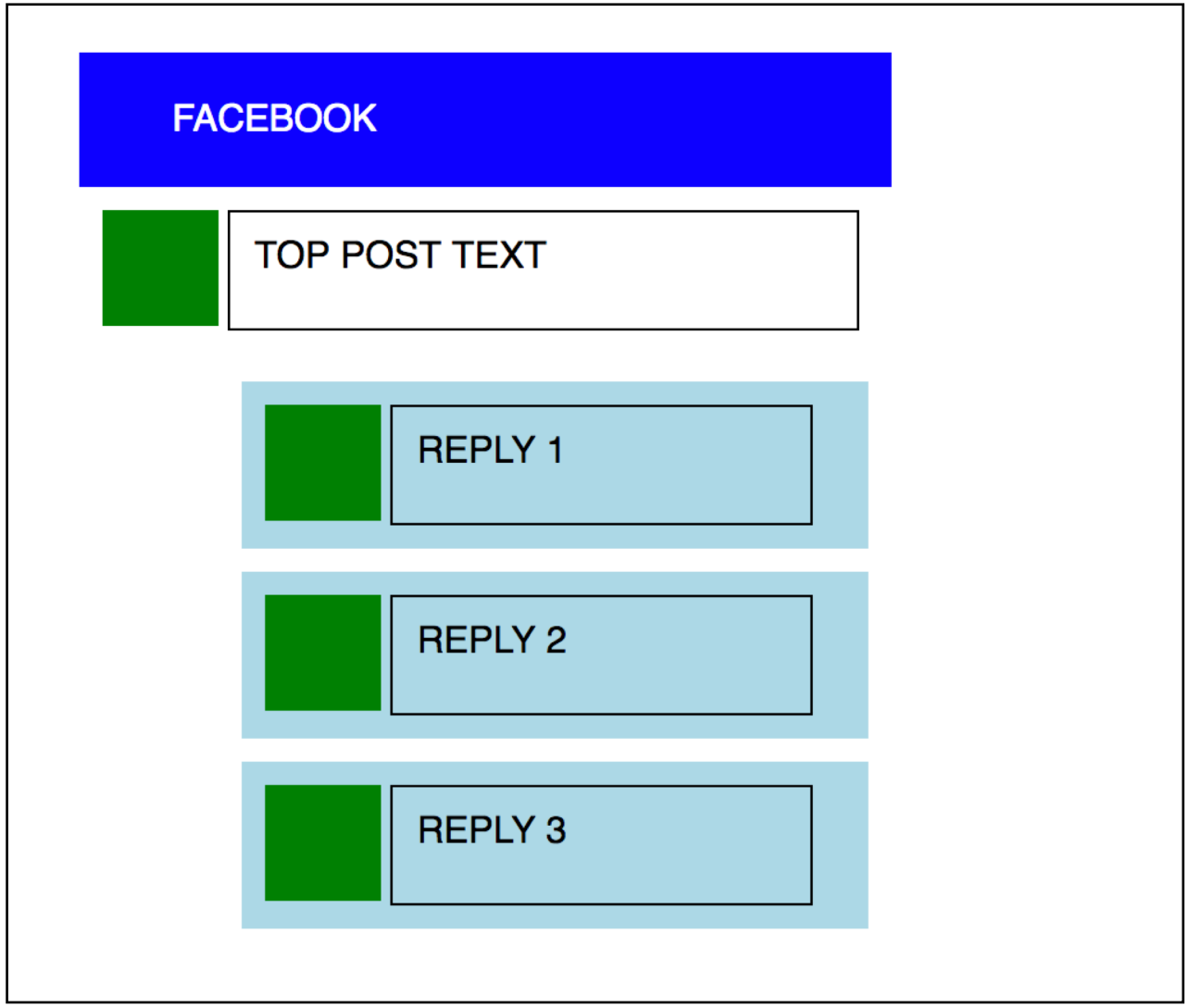
# Reduce Reply Text Width

```
13   <div id="reply_container">
14     <div class="reply">
15       <div class="reply_image">
16       </div>
17       <div class="reply_text">
18         REPLY 1
19       </div>
20     </div>
```

```
53 .reply_text{
54   height: 30px;
55   width: 160px;
56   padding: 10px;
57   border: 1px solid black;
58   display: inline-block;
59   vertical-align: top;
60 }
```



# What next?




facebook

**PictureCorrect Photography Tips**
What is your Photography-Related New Year's Resolution??
15 minutes ago · Like · Comment

Adel Gomaa and Richard Schneider like this.

**Sadi Molloy** get my business looking more professional: car signed: tick, makeing up portrait folders: tick, stickers & cd covers: still to do... its getting there though.
11 minutes ago · Flag

**PictureCorrect Photography Tips** My resolution for 2011 is to capture more landscape photos outside the U.S. and add more countries to my portfolio! What is yours?

-Richard
11 minutes ago · Flag

**James Donnelly** Larger concerts to cover and improve my portrait editing style/skill
10 minutes ago · Flag

**Jose Antonio Rubido** To push my photpography foward full throttle
9 minutes ago · Flag

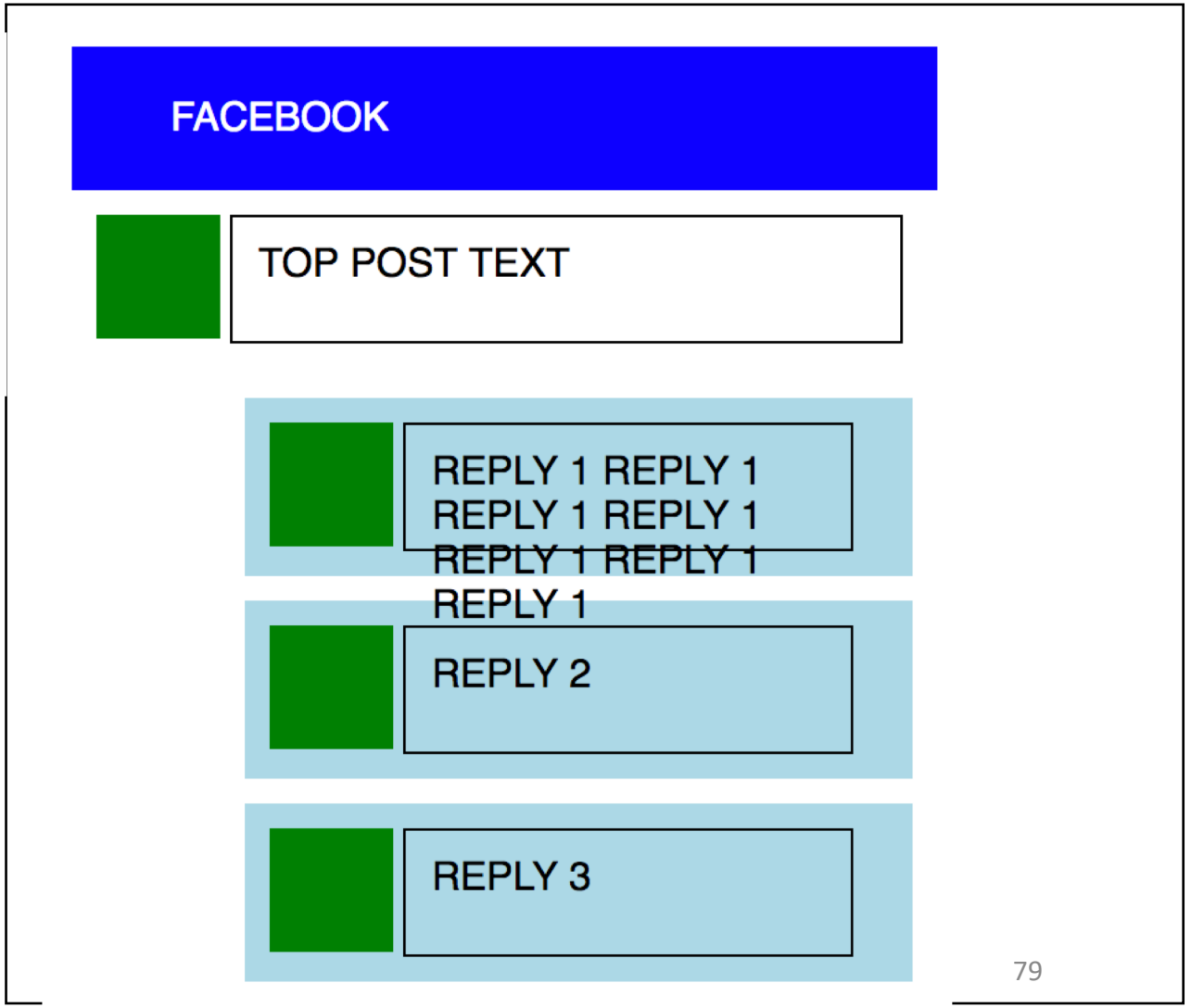
**Deacon Jonathan Jerome Johnson** To learn more and enhance the quality of my shots!
5 minutes ago · Flag

**Latu Peti Vimahi Manulua-hafoka** learn learn learn!!!
4 minutes ago · Flag

# Reply Text is longer

```
14      <div class="reply">
15        <div class="reply_image">
16        </div>
17        <div class="reply_text">
18          REPLY 1 REPLY 1 REPLY 1 REPLY 1 REPLY 1
19          REPLY 1  REPLY 1
20        </div>
21      </div>
```

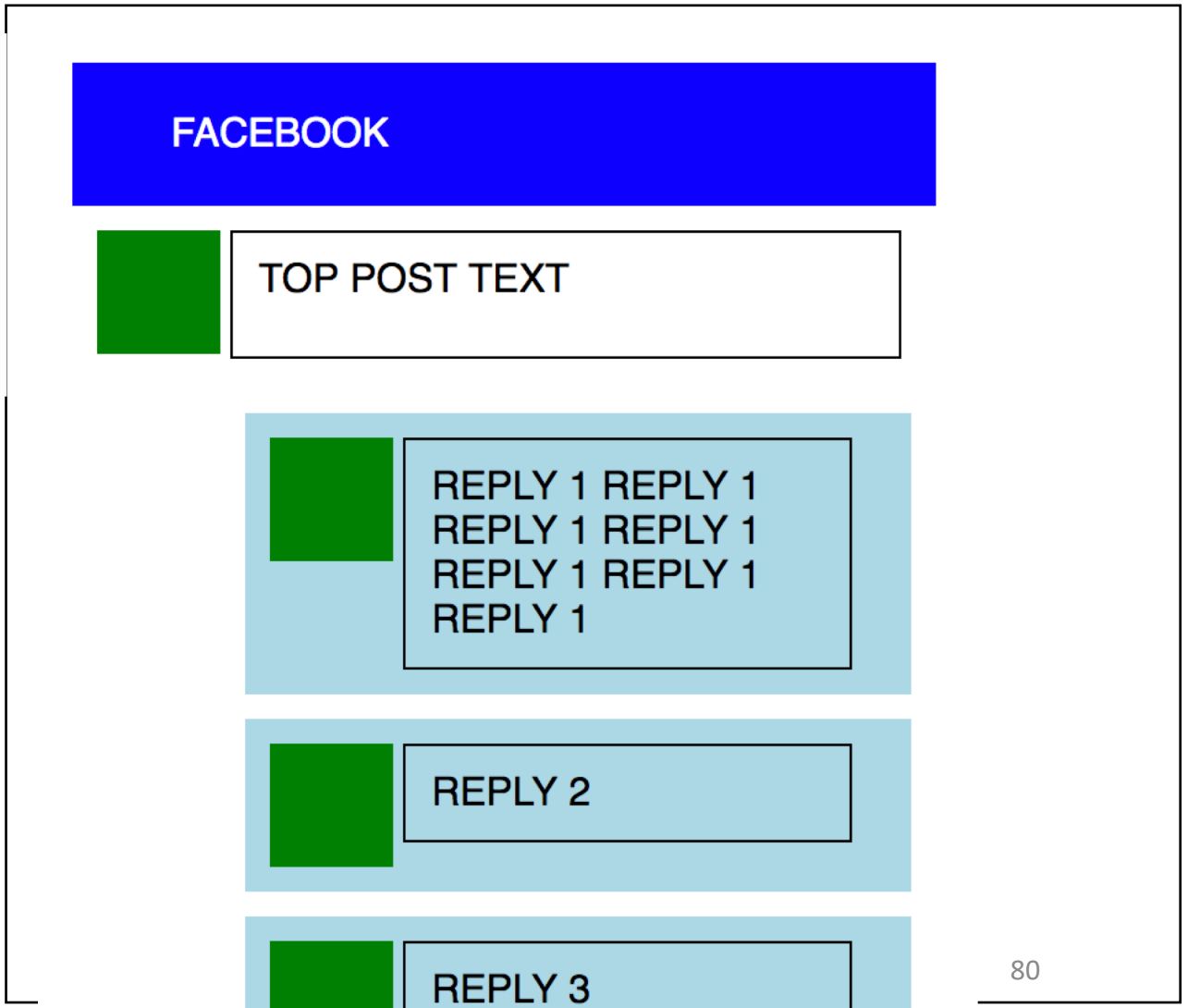
```
53  .reply_text{
54    height: 30px;
55    width: 160px;
56    padding: 10px;
57    border: 1px solid black;
58    display: inline-block;
59    vertical-align: top;
60  }
```



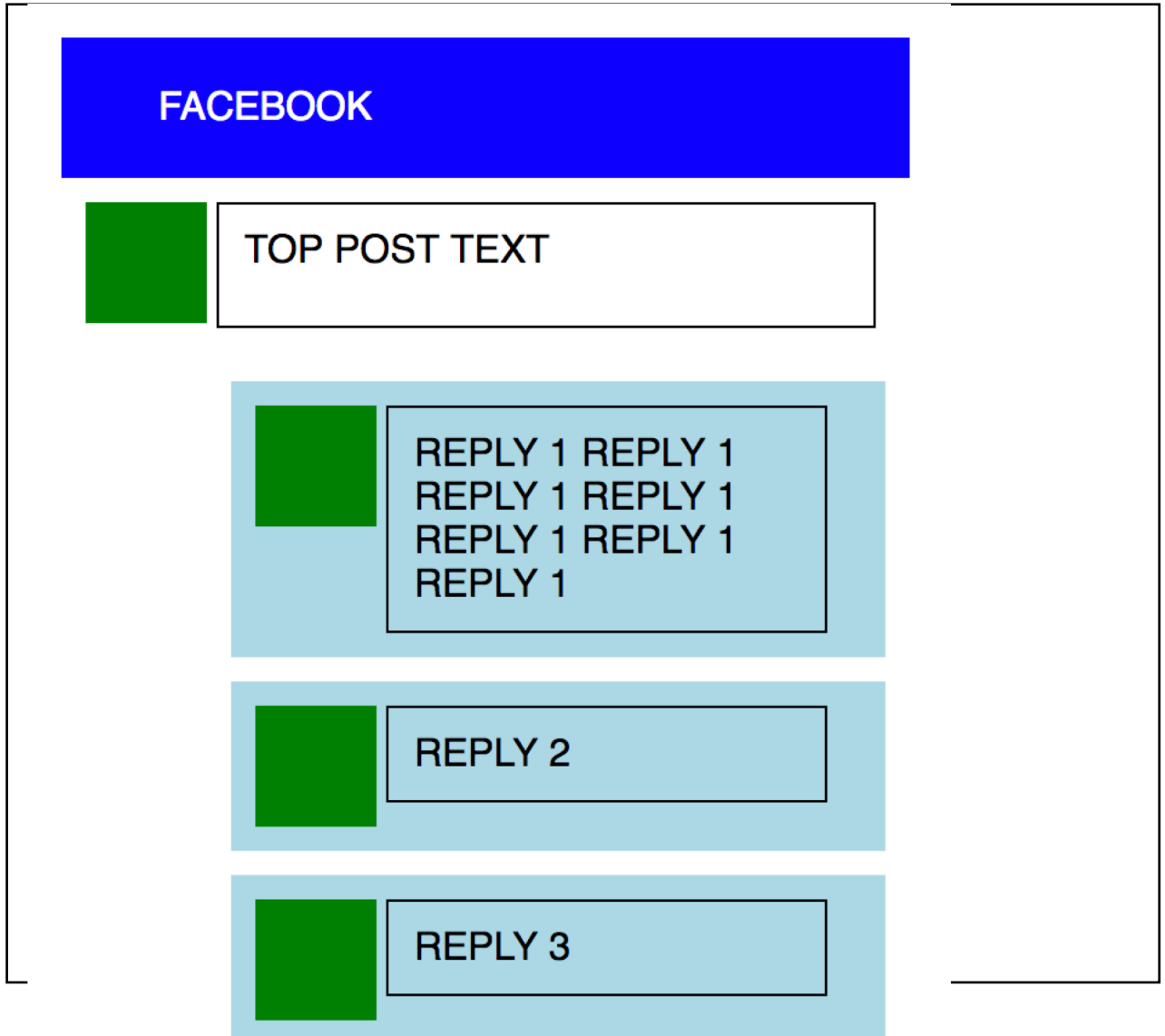
# Reply Text height fixed

```
14      <div class="reply">
15        <div class="reply_image">
16        </div>
17        <div class="reply_text">
18          REPLY 1 REPLY 1 REPLY 1 REPLY 1 REPLY 1
19          REPLY 1  REPLY 1
20        </div>
21      </div>
```

```
53  .reply_text{
54    /*height: 30px;*/
55    width: 160px;
56    padding: 10px;
57    border: 1px solid black;
58    display: inline-block;
59    vertical-align: top;
60  }
```



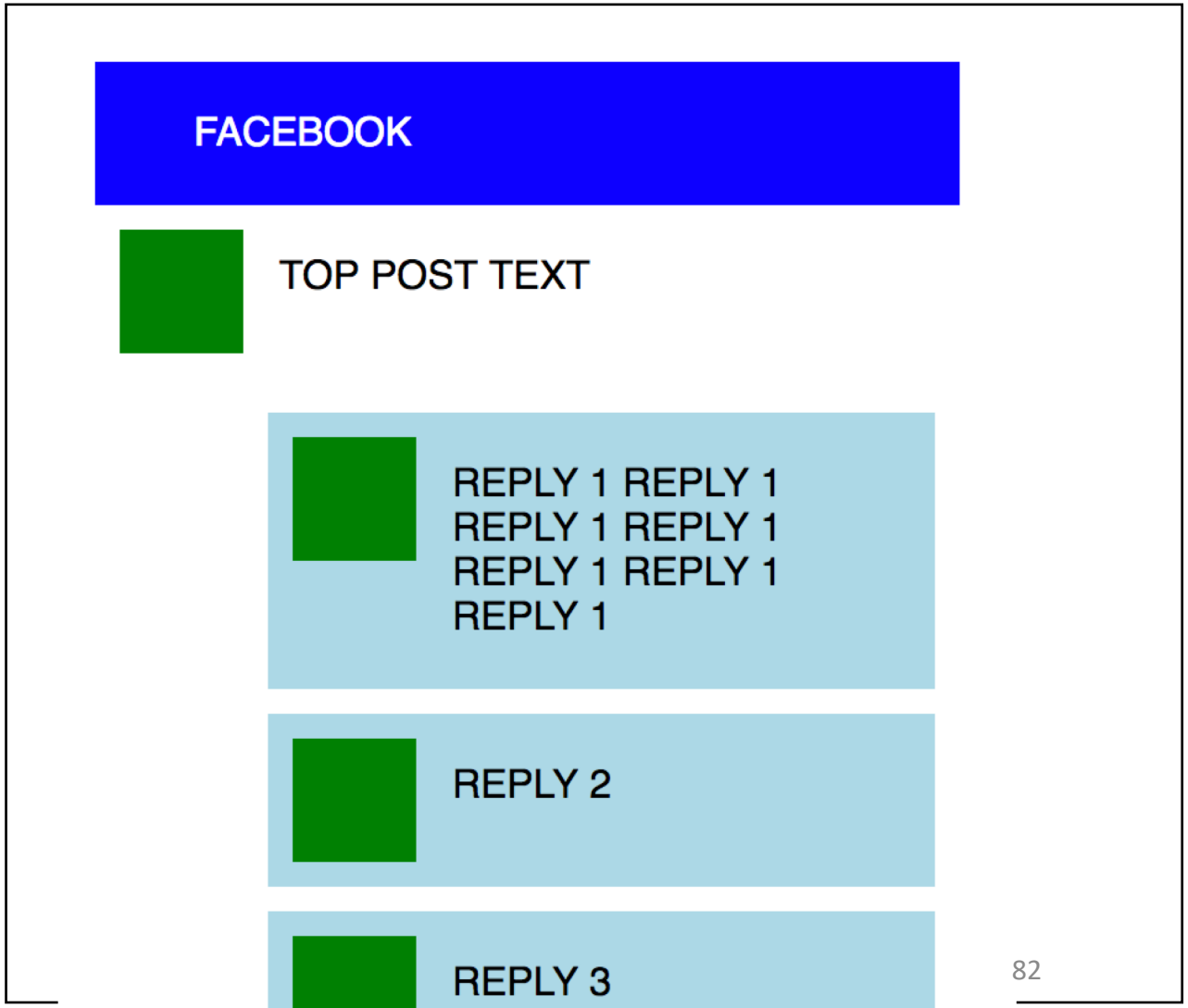
# What other scaffolding do I need to remove?



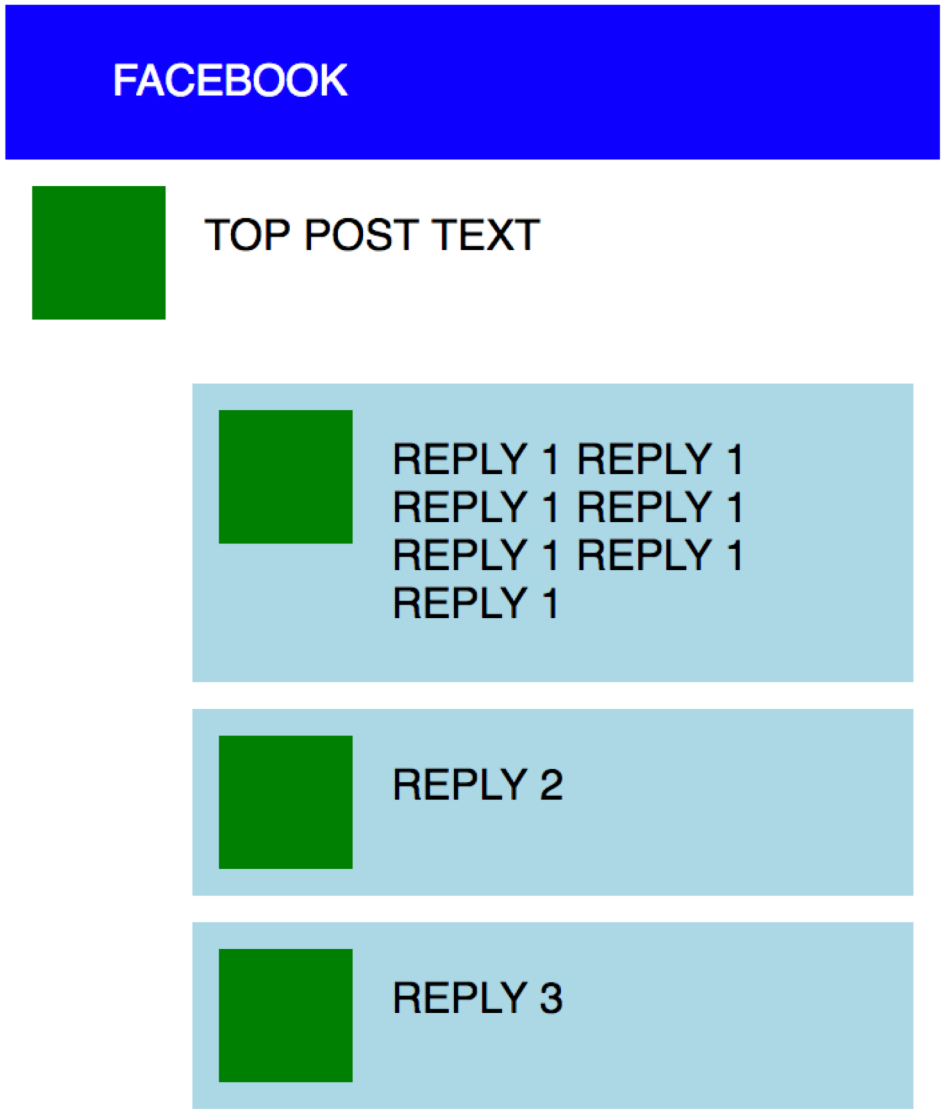
# Remove borders

```
25 #top_post_text{
26   height: 30px;
27   width: 250px;
28   padding: 10px;
29   /*border: 1px solid black;*/
30   display: inline-block;
31   vertical-align: top;
32
33 }
```

```
53 .reply_text{
54   width: 160px;
55   padding: 10px;
56   /*border: 1px solid black;*/
57   display: inline-block;
58   vertical-align: top;
59 }
```



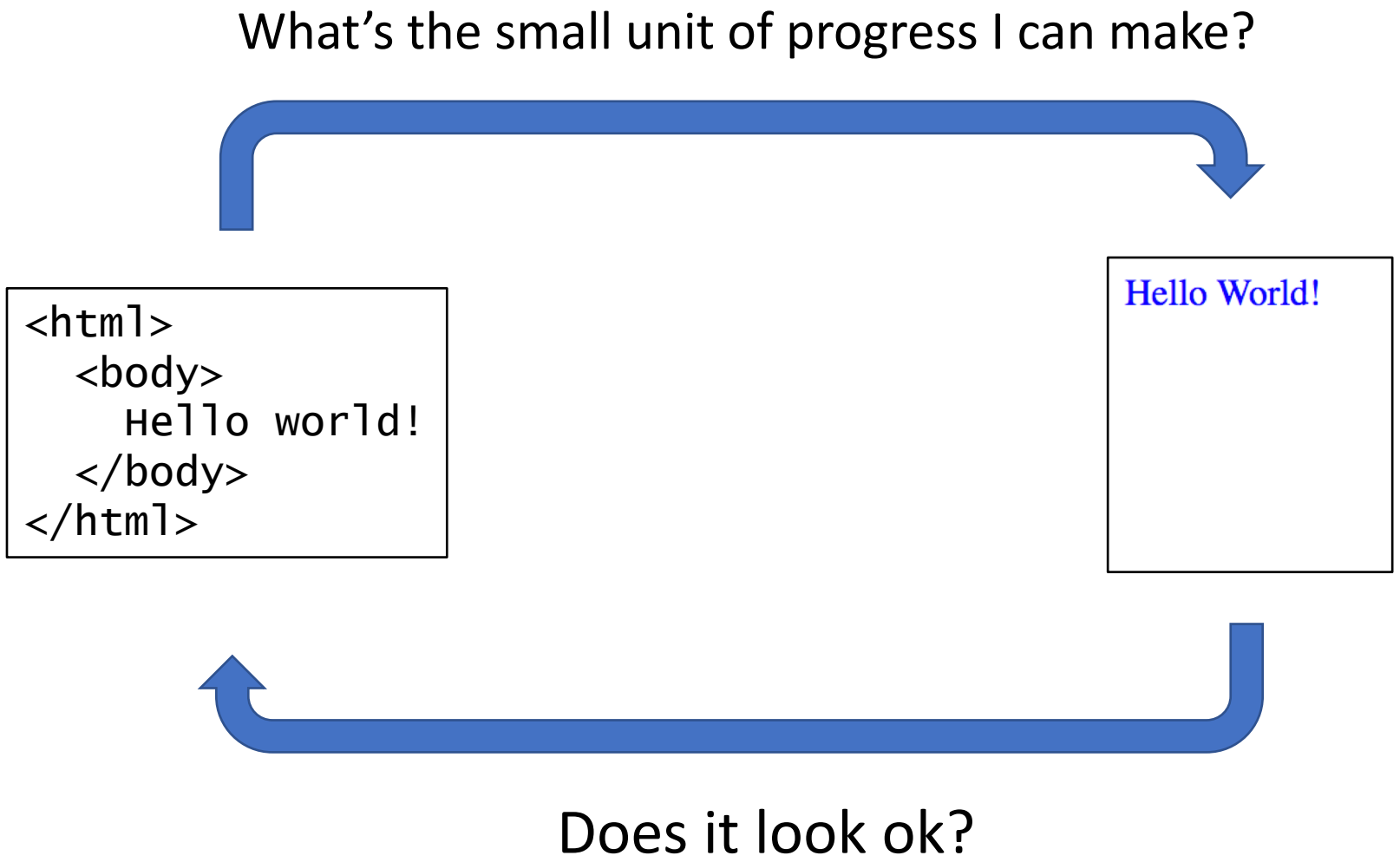
# This is a great start for layout!



# After layout… what next?

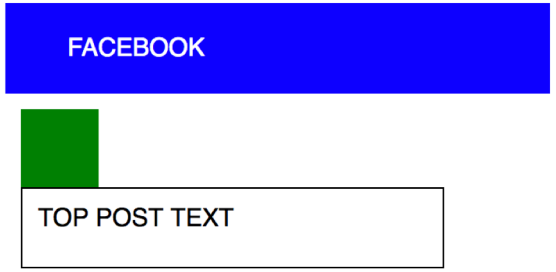
# Iterative Style of Programming

helps you build a mental model of your code.

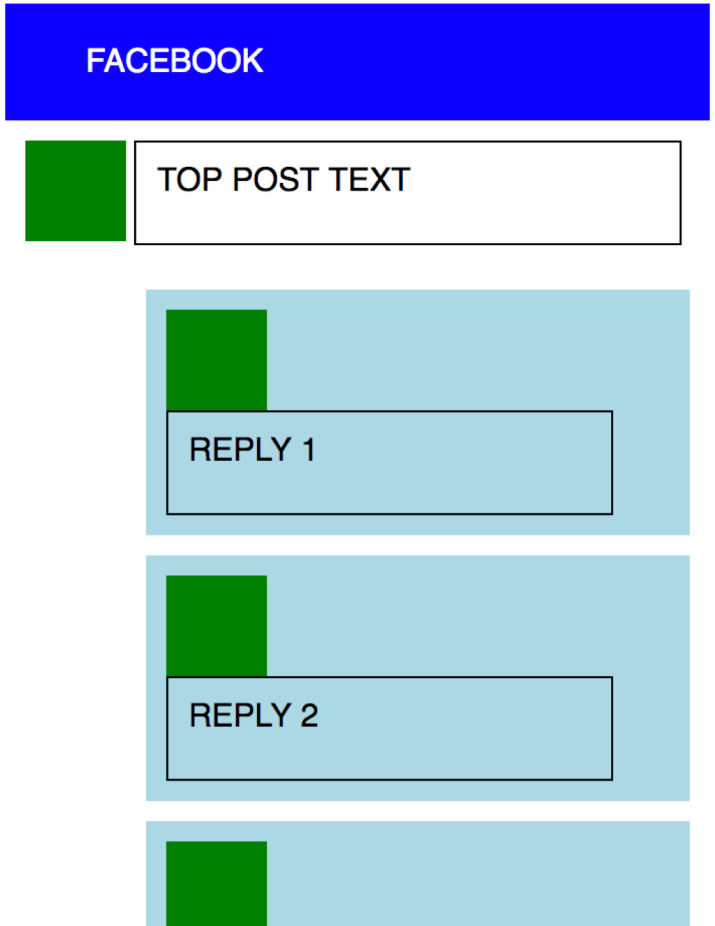


# Iterative Style of Programming helped me recover from errors one at a time (as I created them)

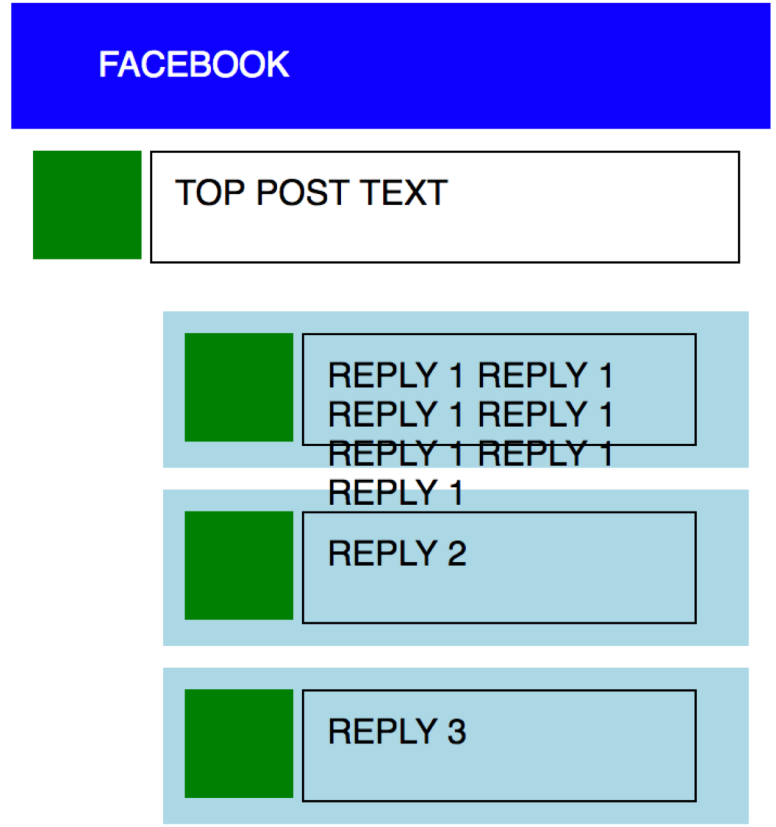
Error 1: display inline-block




Error 2: reply div padding




Error 3: Reply div height

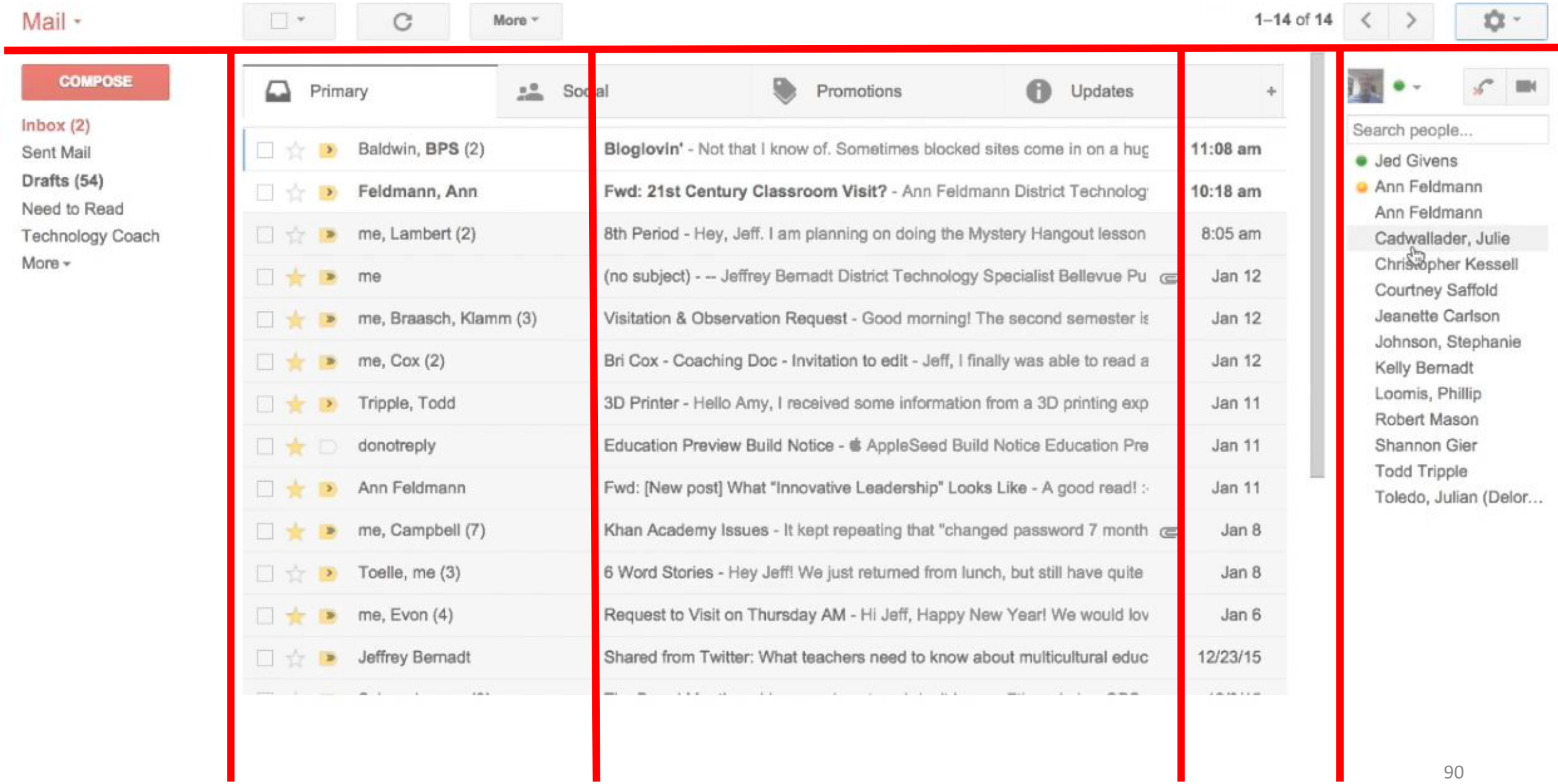


# Once you have too many bugs, you can't fix it.

# Grids

Currently the dominant way to layout information

# That worked but it would be much easier if we had a grid.


Mail
More
1–14 of 14
COMPOSE
Inbox (2)
Sent Mail
Drafts (54)
Need to Read
Technology Coach
More
Primary
Social
Promotions
Updates
Baldwin, BPS (2)
Bloglovin' - Not that I know of. Sometimes blocked sites come in on a hug
11:08 am
Feldmann, Ann
Fwd: 21st Century Classroom Visit? - Ann Feldmann District Technolog
10:18 am
me, Lambert (2)
8th Period - Hey, Jeff. I am planning on doing the Mystery Hangout lesson
8:05 am
me
(no subject) - -- Jeffrey Bernadt District Technology Specialist Bellevue Pu
Jan 12
me, Braasch, Klamm (3)
Visitation & Observation Request - Good morning! The second semester is
Jan 12
me, Cox (2)
Bri Cox - Coaching Doc - Invitation to edit - Jeff, I finally was able to read a
Jan 12
Tripple, Todd
3D Printer - Hello Amy, I received some information from a 3D printing exp
Jan 11
donotreply
Education Preview Build Notice - AppleSeed Build Notice Education Pre
Jan 11
Ann Feldmann
Fwd: [New post] What "Innovative Leadership" Looks Like - A good read!
Jan 11
me, Campbell (7)
Khan Academy Issues - It kept repeating that "changed password 7 month
Jan 8
Toelle, me (3)
6 Word Stories - Hey Jeff! We just returned from lunch, but still have quite
Jan 8
me, Evon (4)
Request to Visit on Thursday AM - Hi Jeff, Happy New Year! We would lov
Jan 6
Jeffrey Bernadt
Shared from Twitter: What teachers need to know about multicultural educ
12/23/15
Search people...
Jed Givens
Ann Feldmann
Ann Feldmann
Cadwallader, Julie
Christopher Kessell
Courtney Saffold
Jeanette Carlson
Johnson, Stephanie
Kelly Bernadt
Loomis, Phillip
Robert Mason
Shannon Gier
Todd Tripple
Toledo, Julian (Delor...

YouTube

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New

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Looper
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Nicki Swift
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**Friends - ET On VH1: Behind The Friends Finale**
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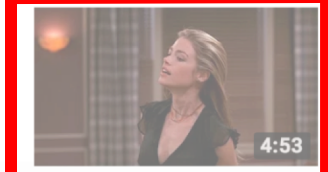
REACT S7 • E19
**TEENS REACT TO WINDOWS 95**
FBE
12M views




**Friends - Ross and Monica's Cousin**
Favorite Videos
8.6M views

# Twitter Bootstrap

An implementation of grid layout

# How many **columns** do you see?

**Columbia University**
@Columbia

"The best education is one that prepares you for your own venture into the unknown." - Lee C. Bollinger, Columbia University President

New York, New York

columbia.edu

Joined February 2011

Tweet to Columbia University

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**Columbia University** @Columbia · 39m
Groundbreaking. Beautiful. Monumental. Posing Modernity: The Black Model from Manet and Matisse to Today is closing soon. Come now, it's free! @ColumbiaSOA #arts #Harlem ow.ly/Q8rM30nssdJ

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**Yale University** @Yale Follow

**Harvard University** @H… Follow

**Find people you know**
Import your contacts from Gmail

Connect other address books

**Trends for you** · Change

**#SDLive**
37.9K Tweets

**#Sabres**
2,607 Tweets

**James Ingram**
R&B legend James Ingram has died at age 66

**Rusev**
3,867 Tweets

**#SBGC**

# How wide is the middle (compared to the sides)?

**Columbia University**
@Columbia

"The best education is one that prepares you for your own venture into the unknown." - Lee C. Bollinger, Columbia University President

New York, New York
columbia.edu
Joined February 2011

Tweet to Columbia University

4 Followers you know

2,754 Photos and videos

Tweets | Tweets & replies | Media

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@ColumbiaSOA #arts #Harlem ow. /Q8rM30nssdJ

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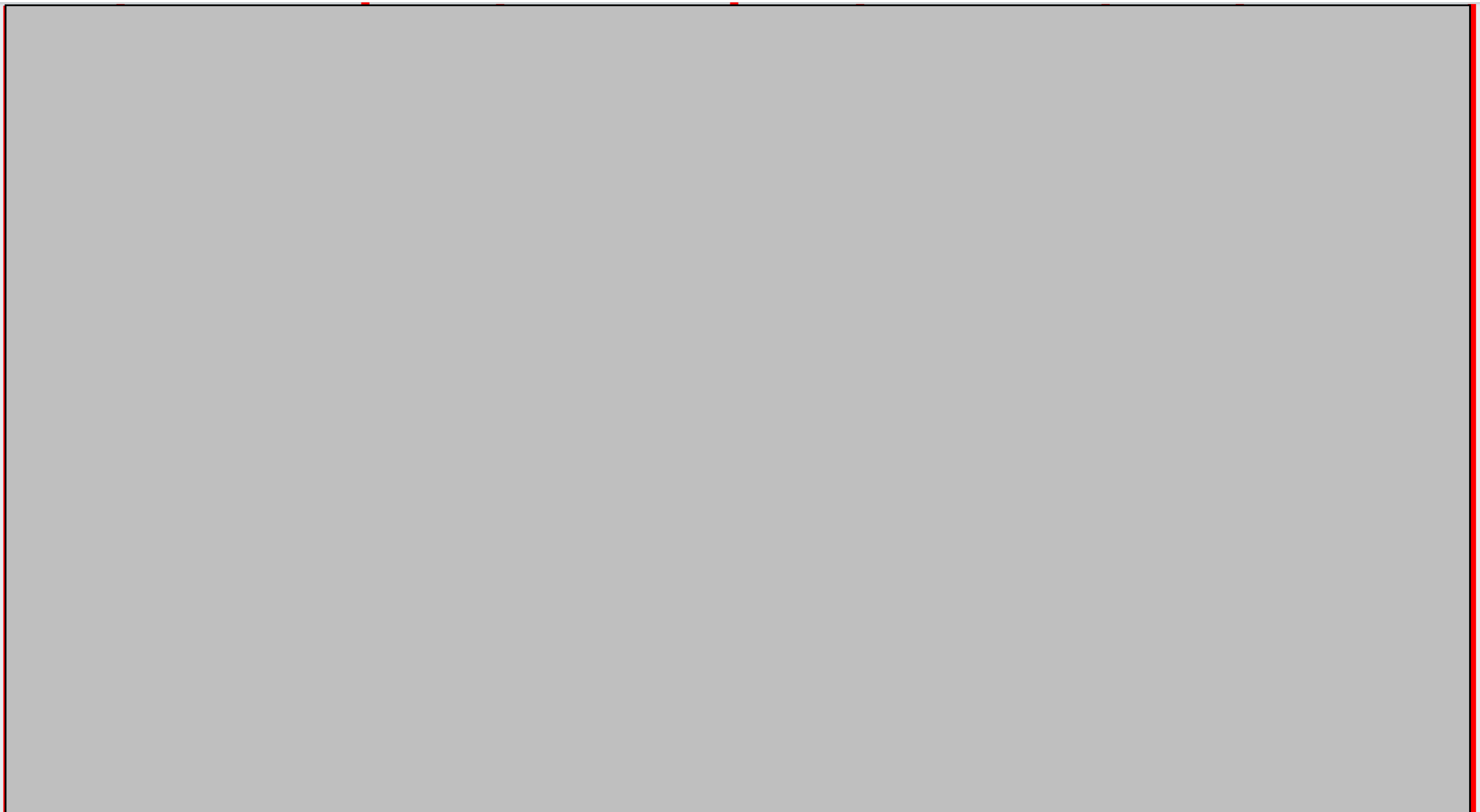
2,607 Tweets

**James Ingram**
R&B legend James Ingram has died at age 66

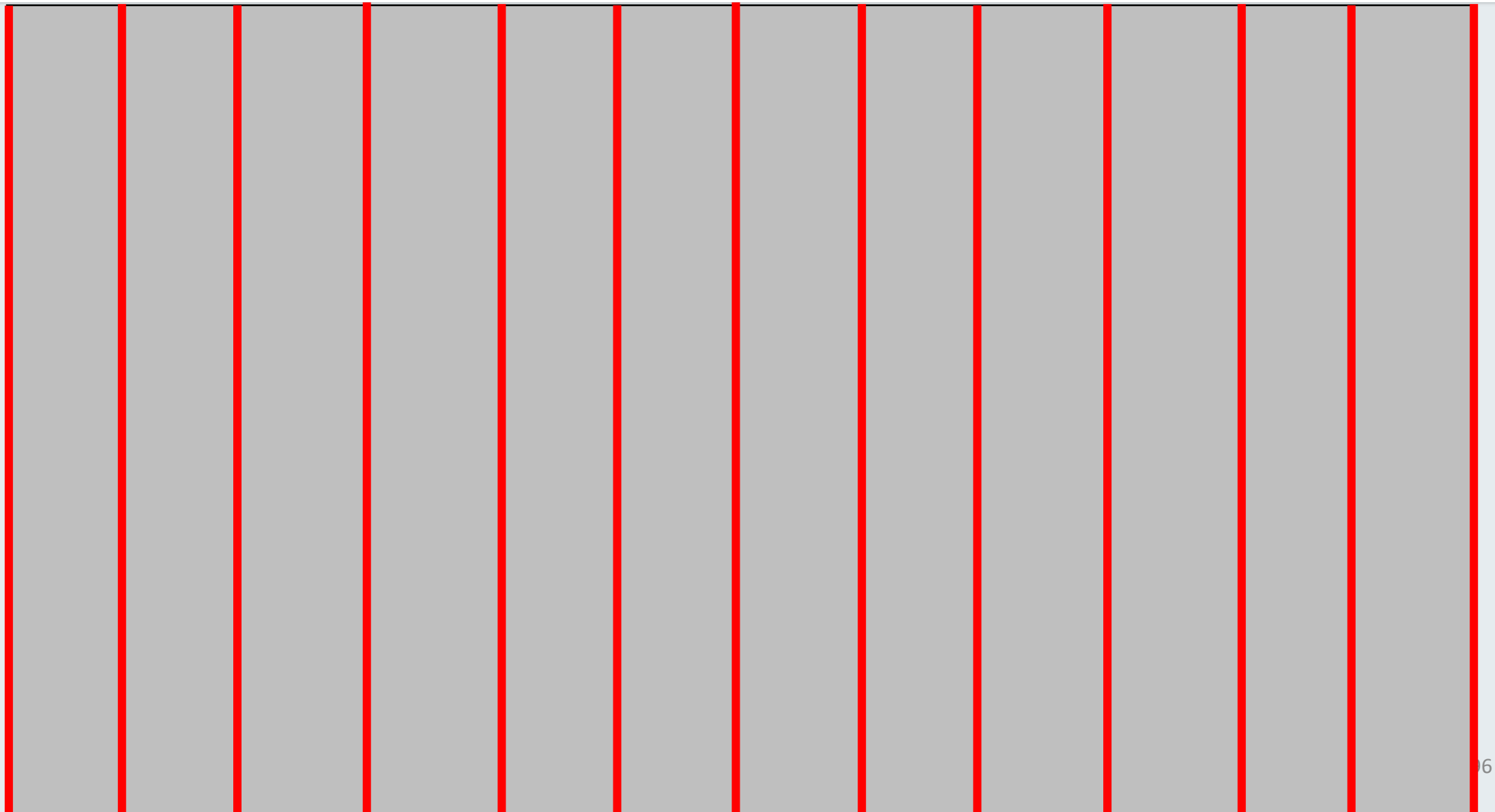
**Rusev**
3,867 Tweets

**#SBGC**

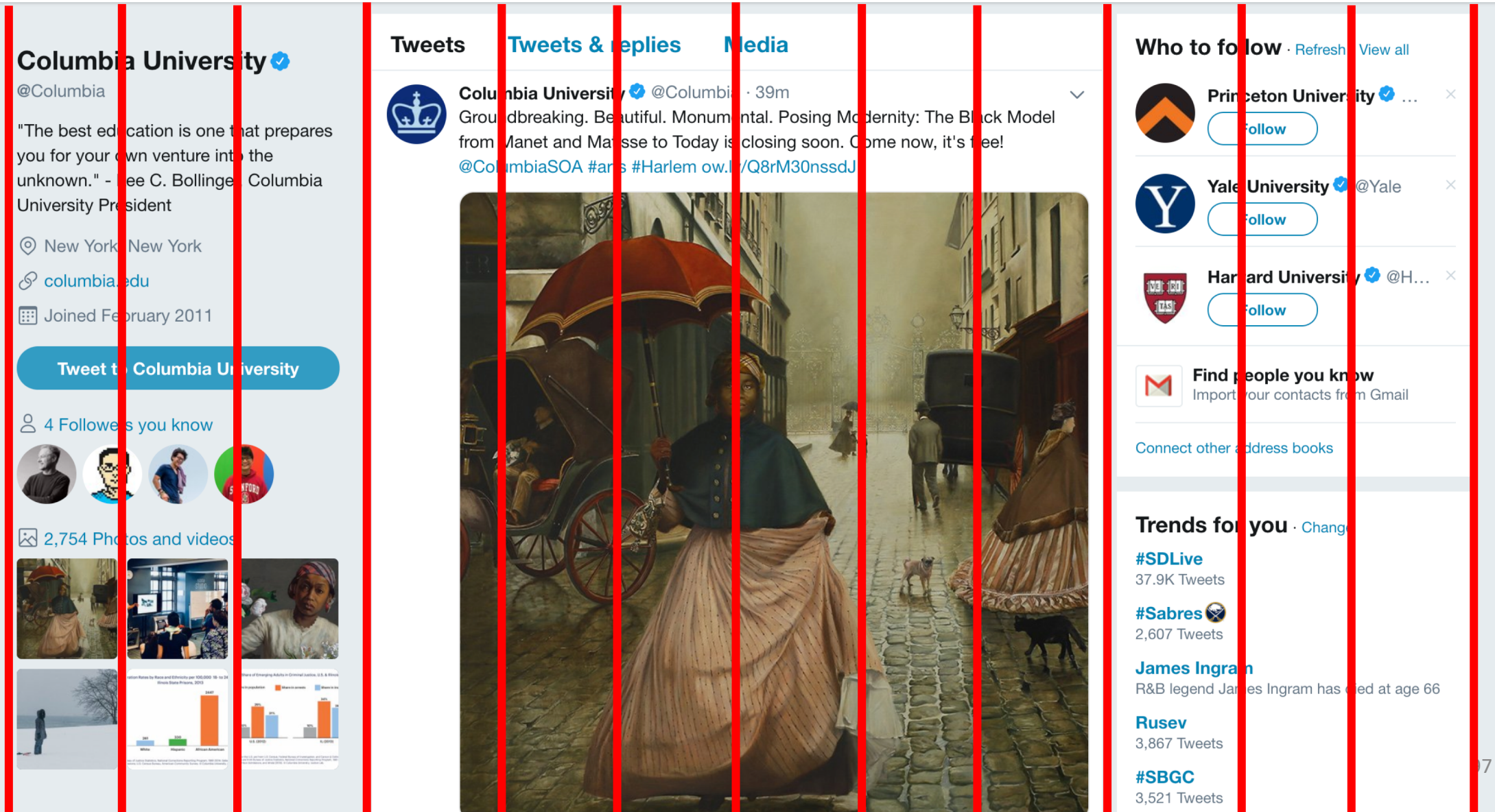
# All content goes in the main container



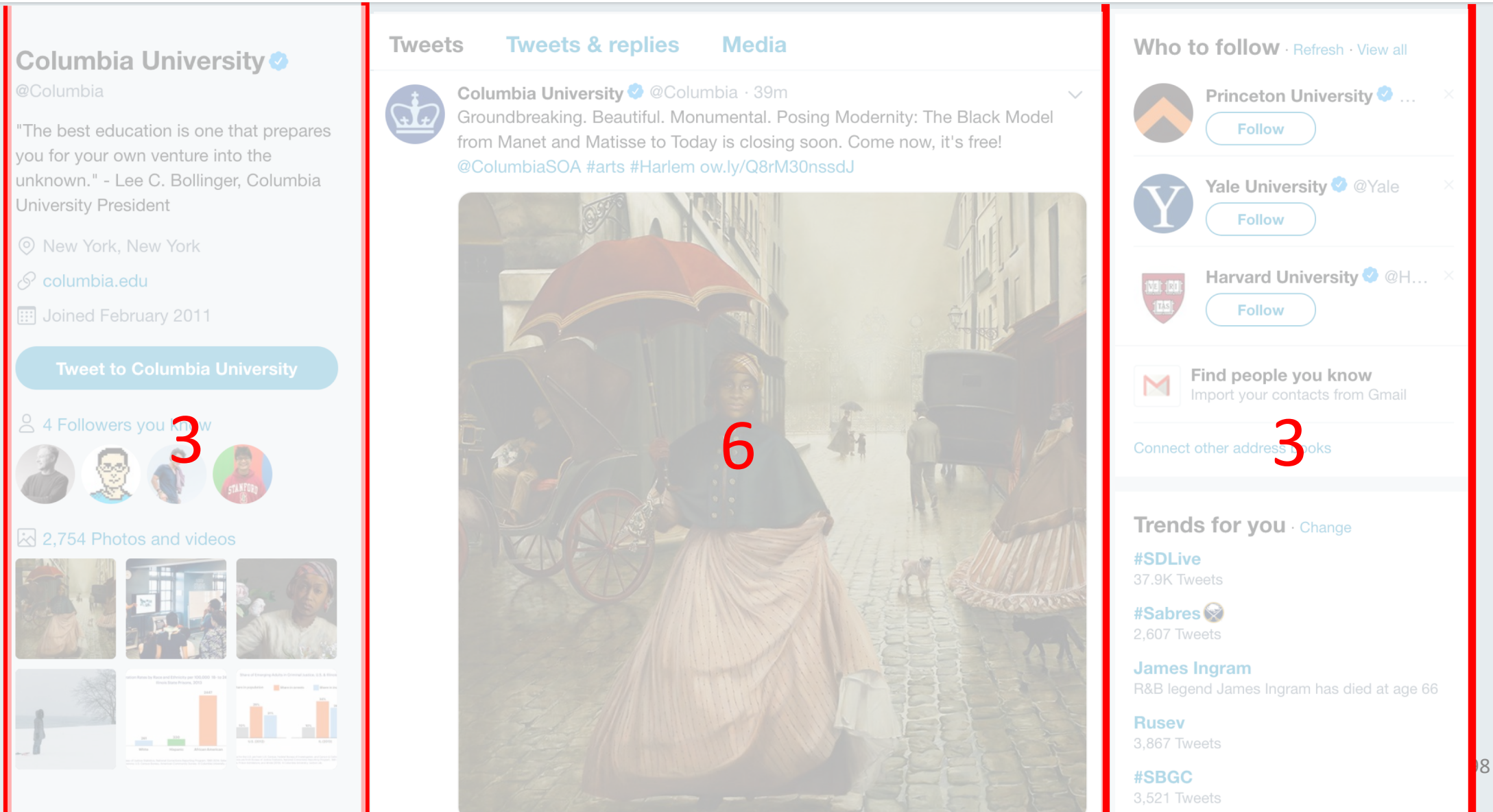
# The container is divided into **12 columns**



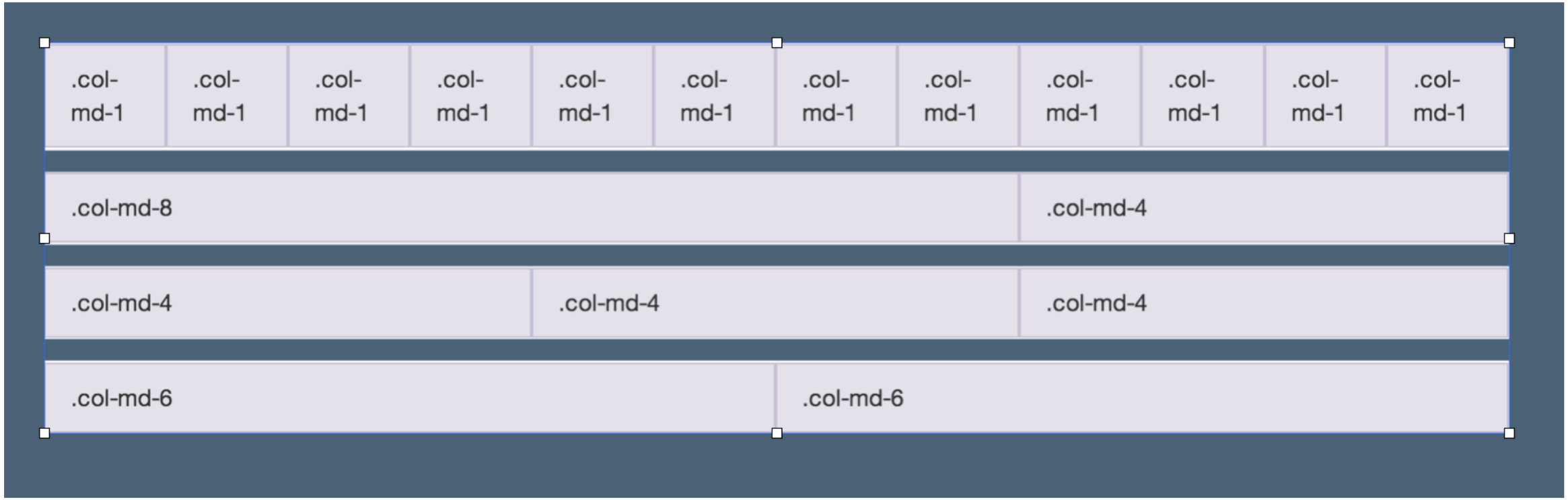
# You get to apportion those 12 columns



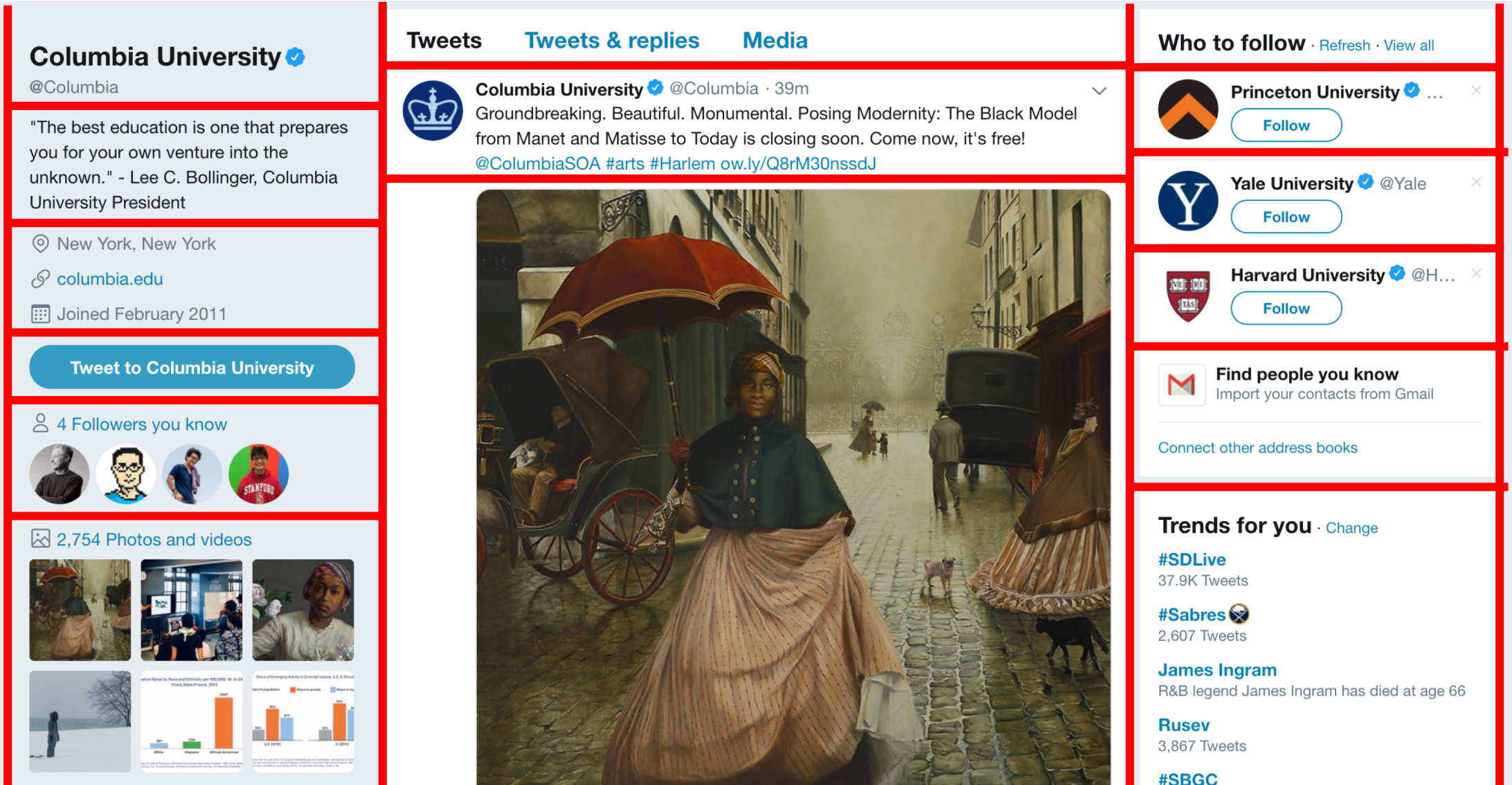
# 12 columns: split in 3, 6, 3



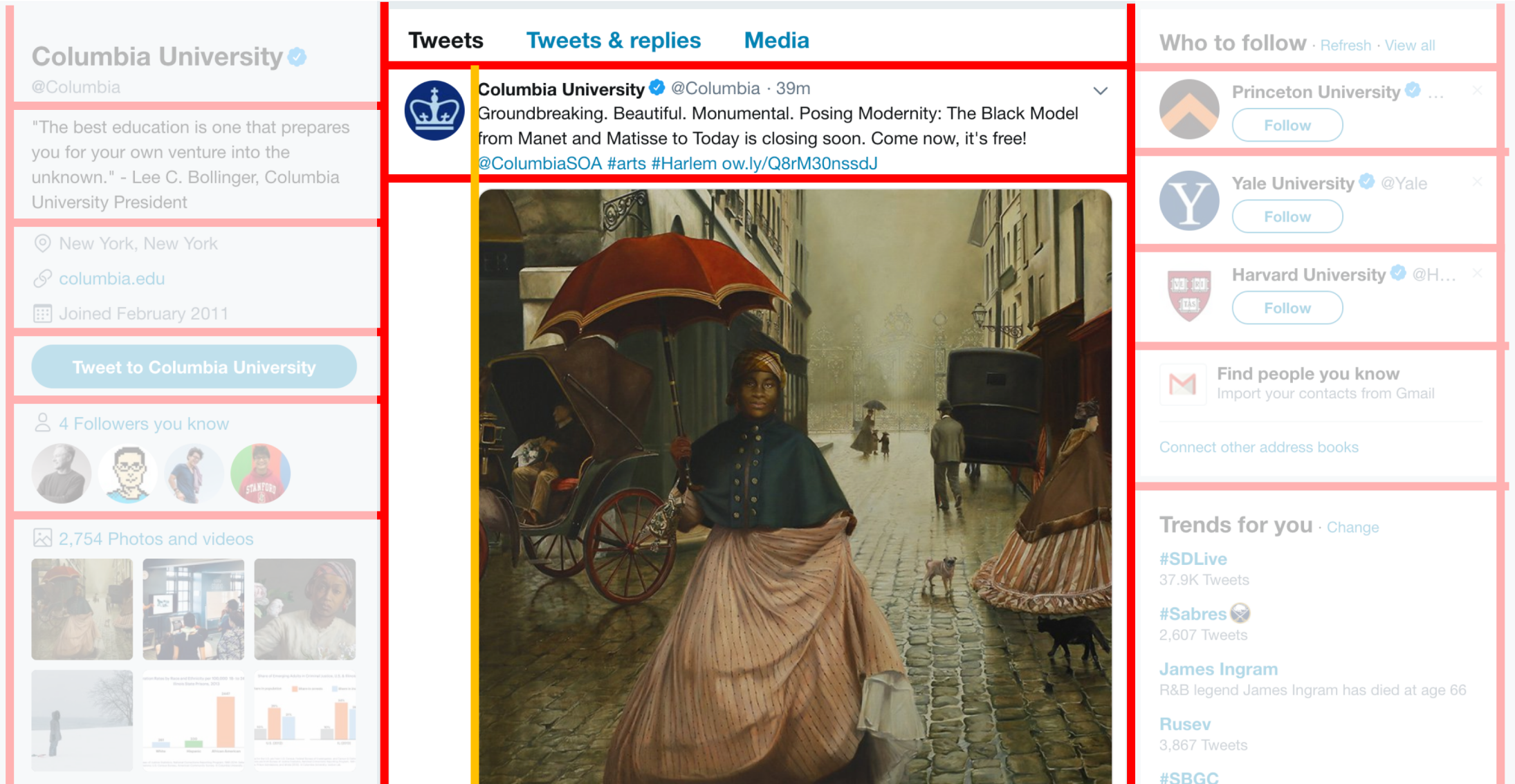
# **Bootstrap grid**. How many columns?



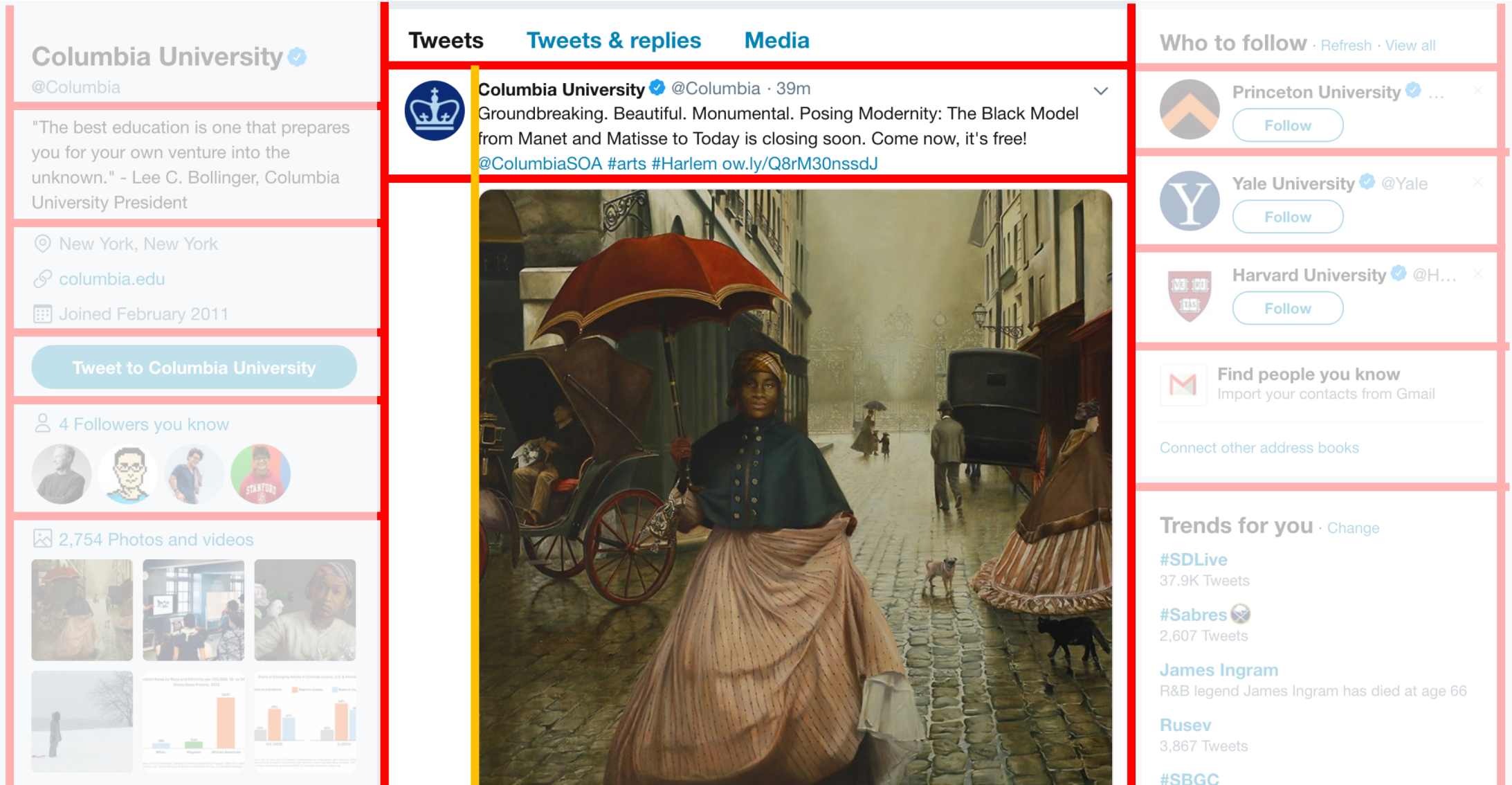
# Do the columns have the same rows?



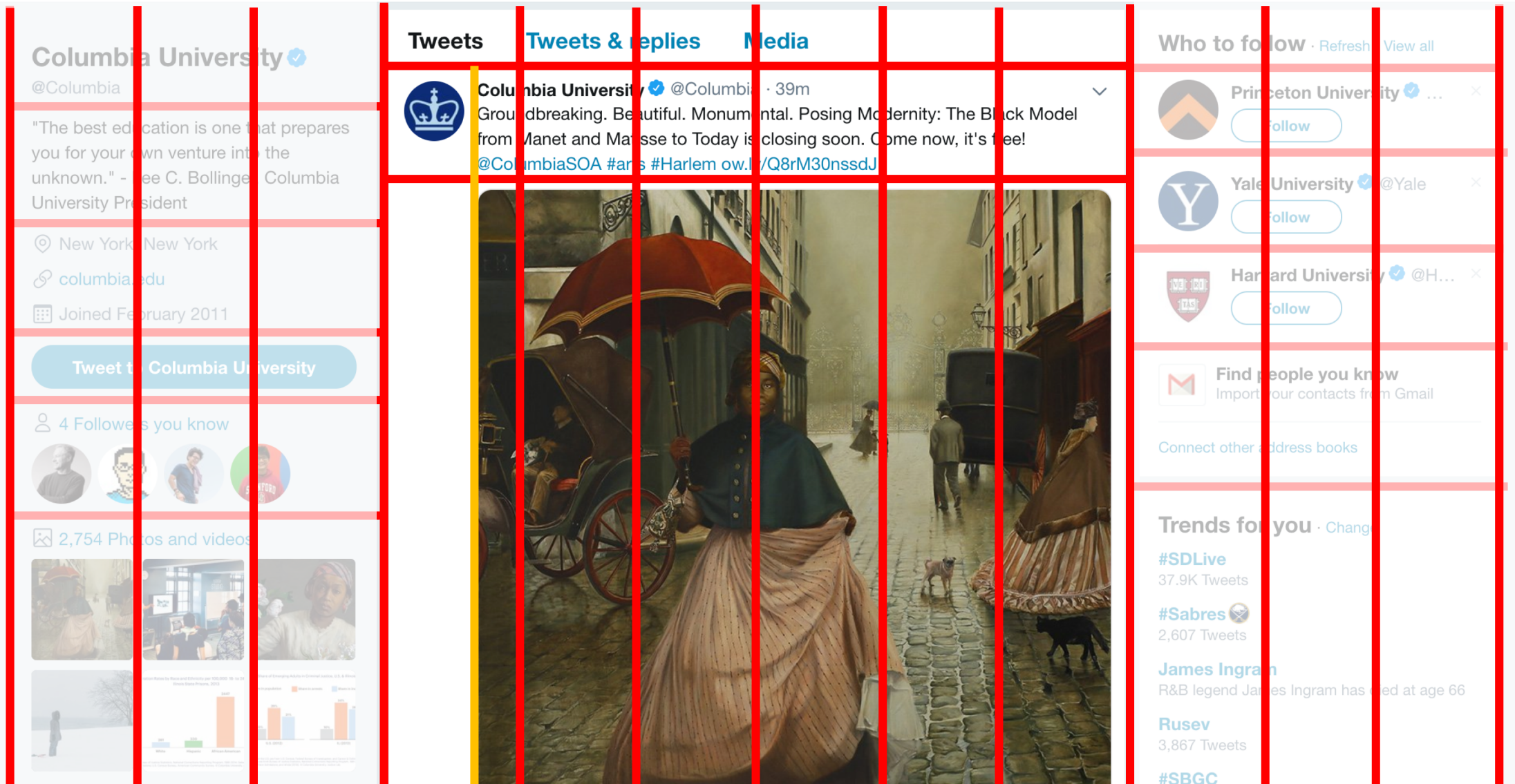
# Is there alignment within the column?



# Can you use the original grid?

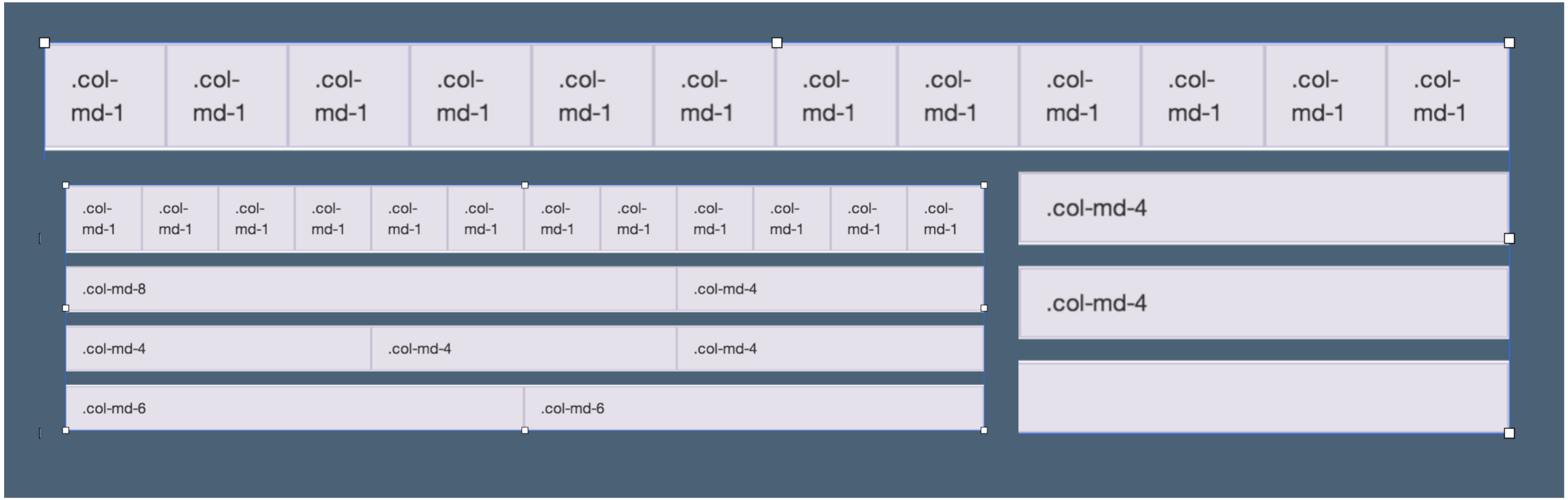


# Can you use the original grid? **NO**



# Grids within grids!!!

# Nested grids.
Apportion 12 columns with in a column.



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NBA · 2 hours ago

**This bot-generated Coachella...**
Haha · 3 hours ago

**People are going crazy over this...**
Business Insider · 5 hours ago

**New to Twitter?**

Sign up now to get your own personalized timeline!

Sign up

## Featured Tweets

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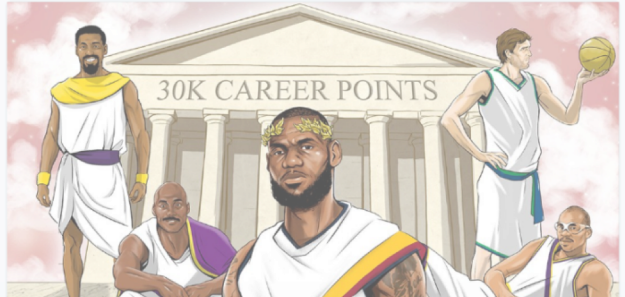
### Sports commentary ›




### World News ›

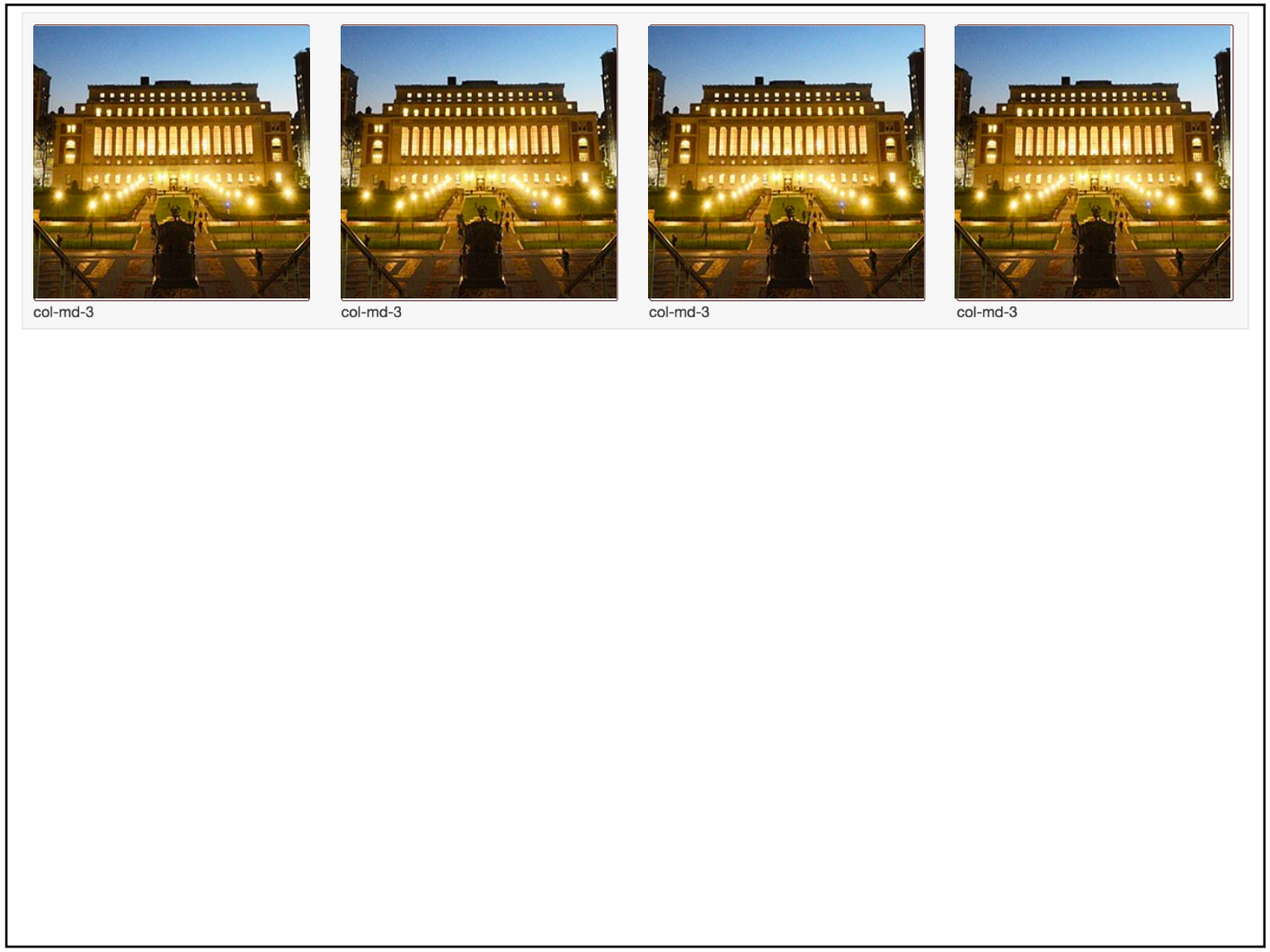
# Add Bootstrap to your HTML

CSS & JS in <head> tag, before your own CSS

```
<!doctype html>
<html>
  <head>
    <meta charset="utf-8">
    <title>Test</title>

    <!-- Add Boostrap -->
    <link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-alpha.6/css/bootstrap.min.css" integ
    <script src="https://code.jquery.com/jquery-3.1.1.slim.min.js" integrity="sha384-A7FZj7v+d/sdmMqp/nOQwliLvUsJfDHW-
    <script src="https://cdnjs.cloudflare.com/ajax/libs/tether/1.4.0/js/tether.min.js" integrity="sha384-DztdAPBWPRXSA
    <script src="https://maxcdn.bootstrapcdn.com/bootstrap/4.0.0-alpha.6/js/bootstrap.min.js" integrity="sha384-vBWWz

    <!-- Add our own CSS and JS -->

    <link href="components/main.css" rel="stylesheet" type="text/css">

```

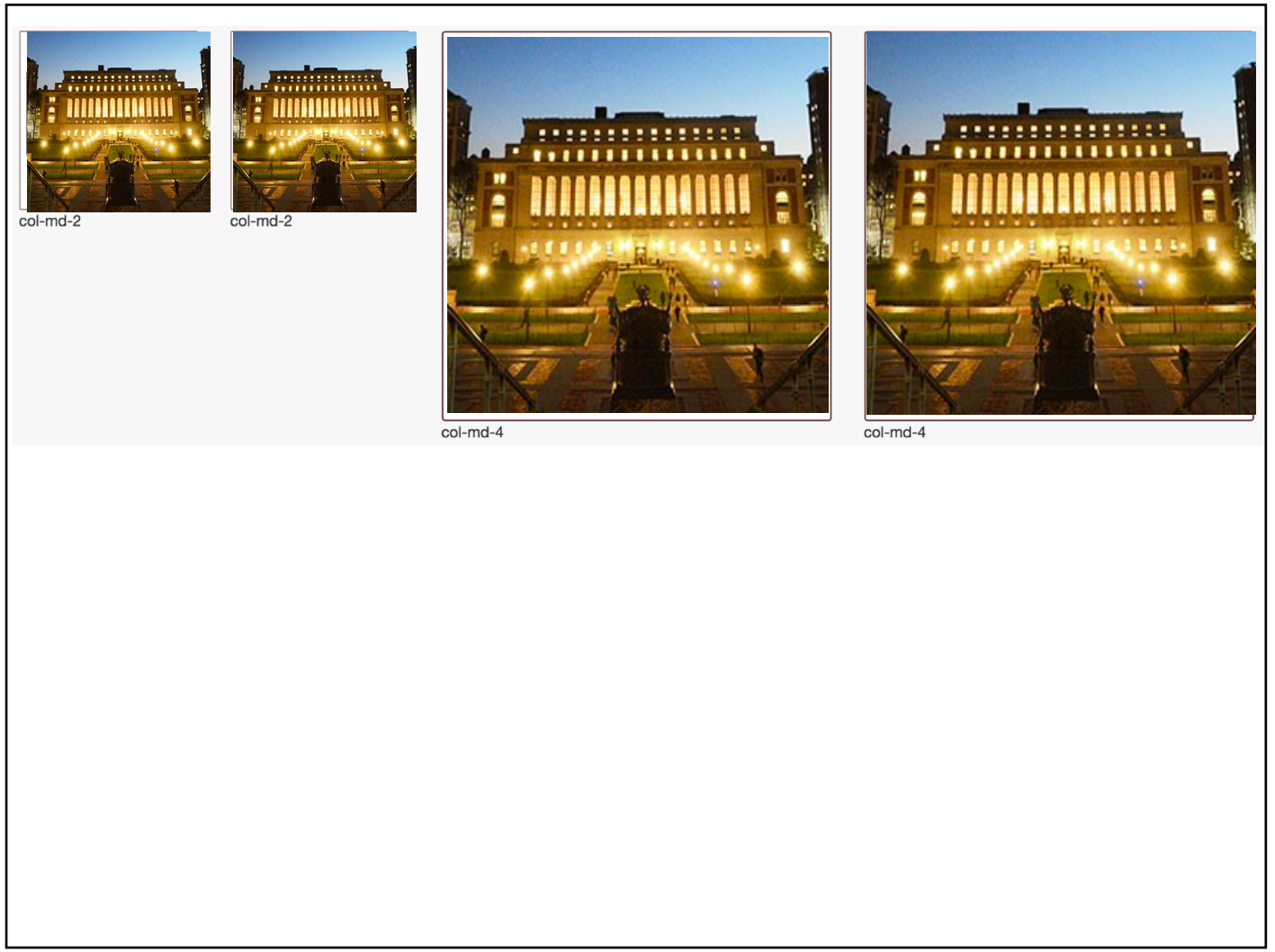
# 1. What will this produce?

```
<div class=“container">
  <div class="row">
    <div class=“col-md-3”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-3”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-3”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-3”>
      <img src="./columbia.jpg">
    </div>
  </div>
</div>
```



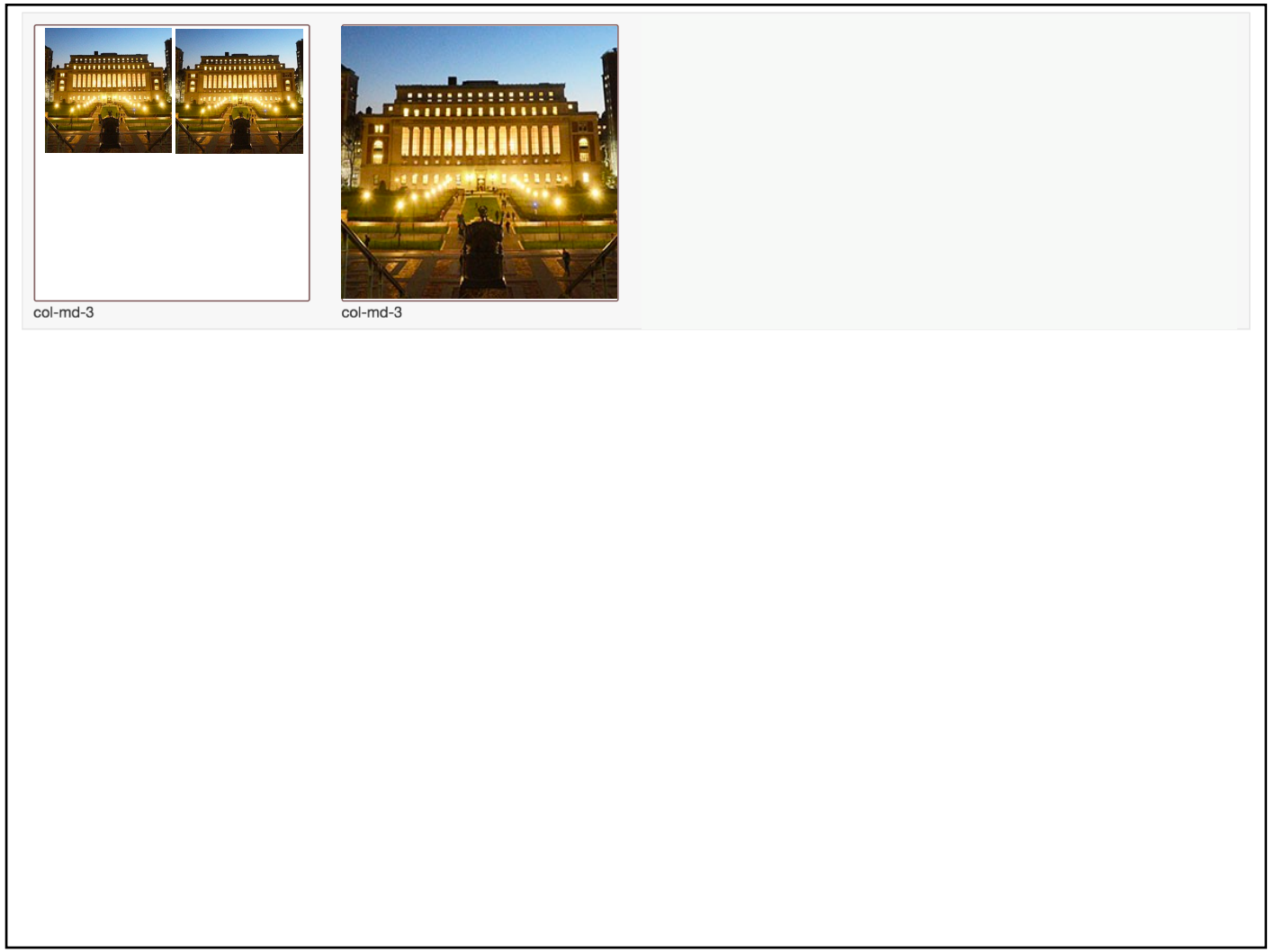
# 2. What will this produce?

```
<div class=“container">
  <div class="row">
    <div class=“col-md-2”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-2”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-4”>
      <img src="./columbia.jpg">
    </div>
    <div class=“col-md-4”>
      <img src="./columbia.jpg">
    </div>
  </div>
</div>
```

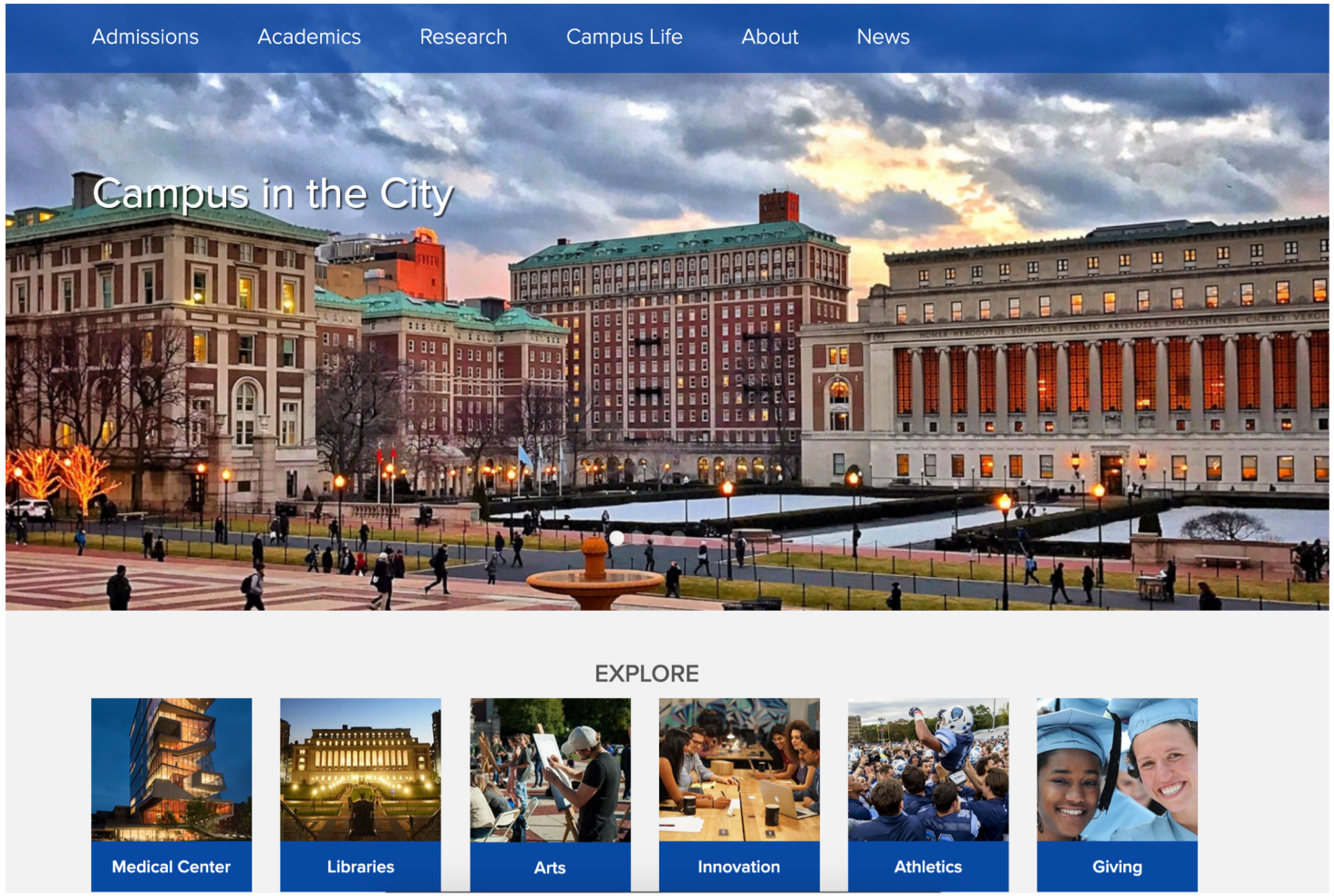


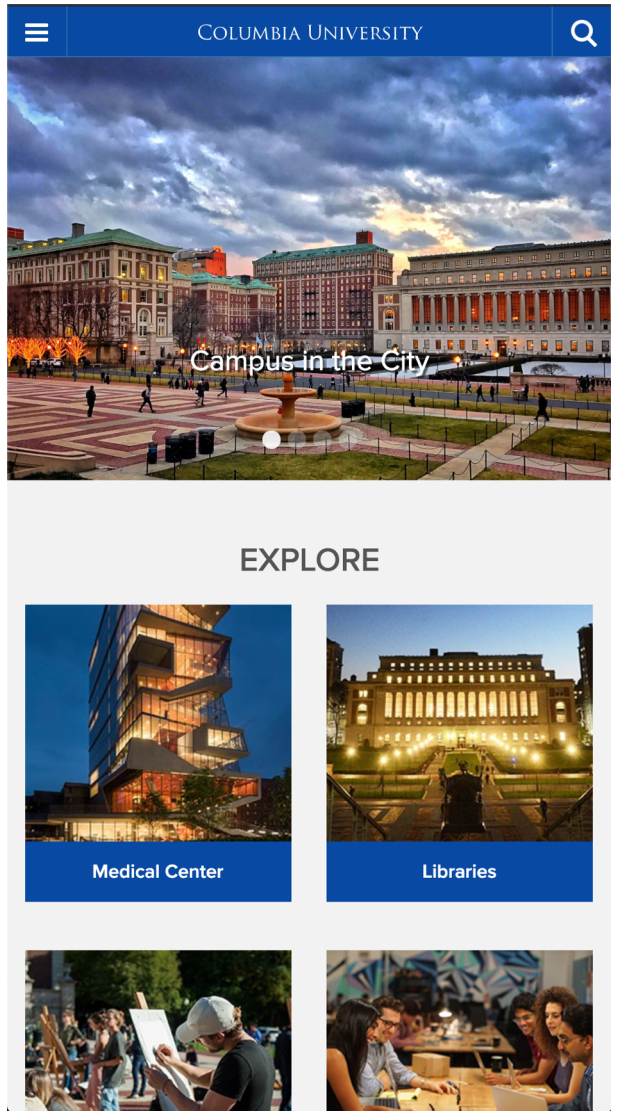
# 3. What will this produce?

```
<div class=“container">
  <div class="row">
    <div class=“col-md-3”>
      <div class="row">
        <div class="col-md-6">
            <img src="./cu.jpg">
        </div>
        <div class="col-md-6">
            <img src="./cu.jpg">
        </div>
      </div>
    </div>
    <div class=“col-md-3”>
      <img src="./cu.jpg">
    </div>
    <div class=“col-md-6”>
    </div>
  </div>
</div>
```



# Bootstrap solves another problem for you



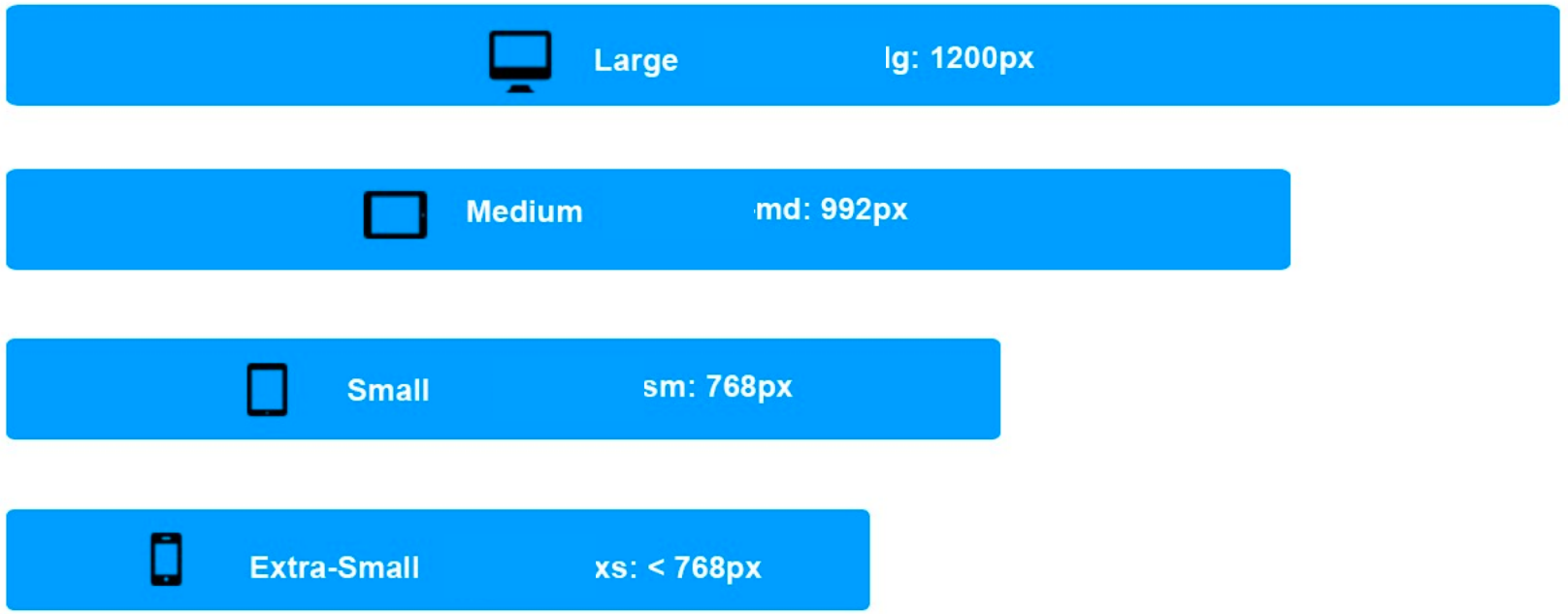



# 4. Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Bootstrap enables **responsive design**: making it easy for the layout to respond to changes in the screen size.

# Four Device sizes




Desktops

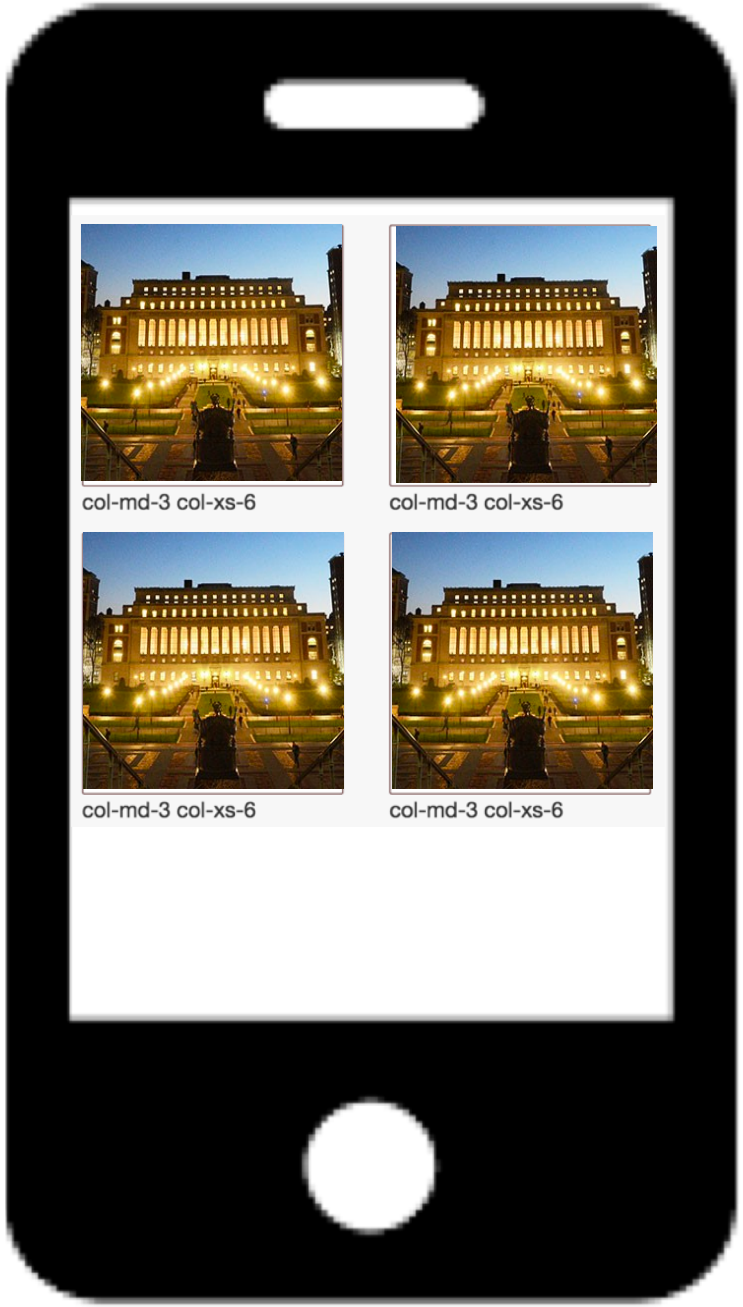
Laptops

Tablets

Phones

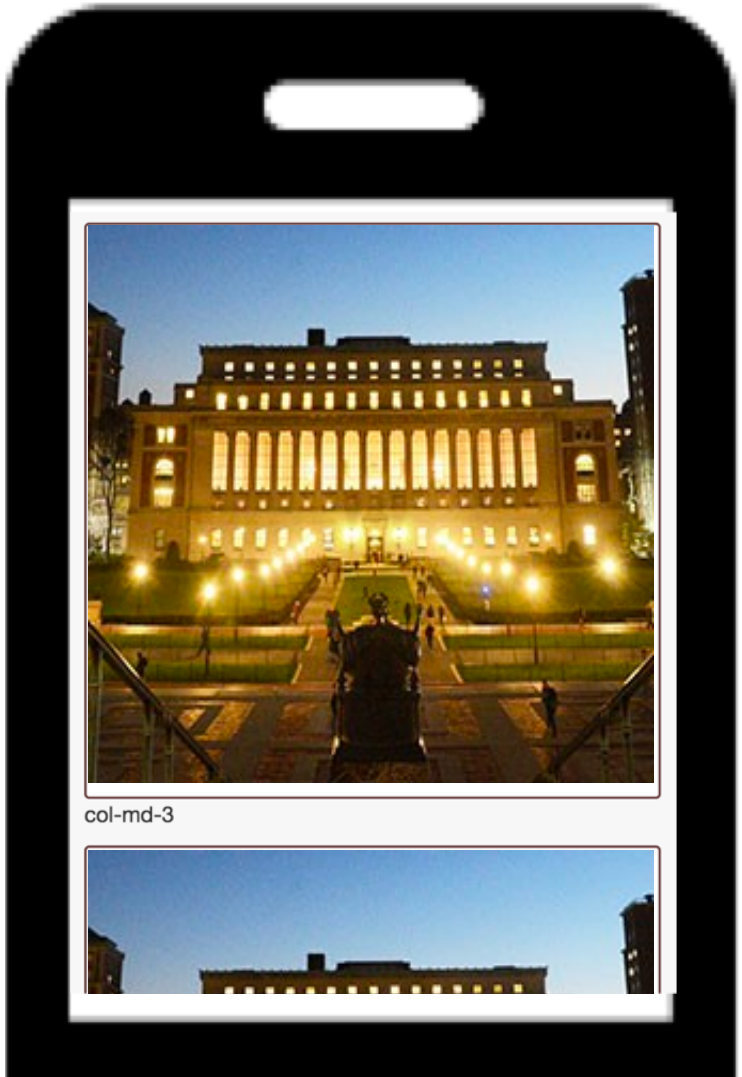
# What will this do on a phone?

```
<div class="row">
  <div class="col-md-3 col-sm-6">
    <img src="./columbia.jpg">
  </div>
  <div class="col-md-3 col-sm-6">
    <img src ="./columbia.jpg">
  </div>
  <div class="col-md-3 col-sm-6">
    <img src ="./columbia.jpg">
  </div>
  <div class="col-md-3 col-sm-6">
    <img src ="./columbia.jpg">
  </div>
</div>
```

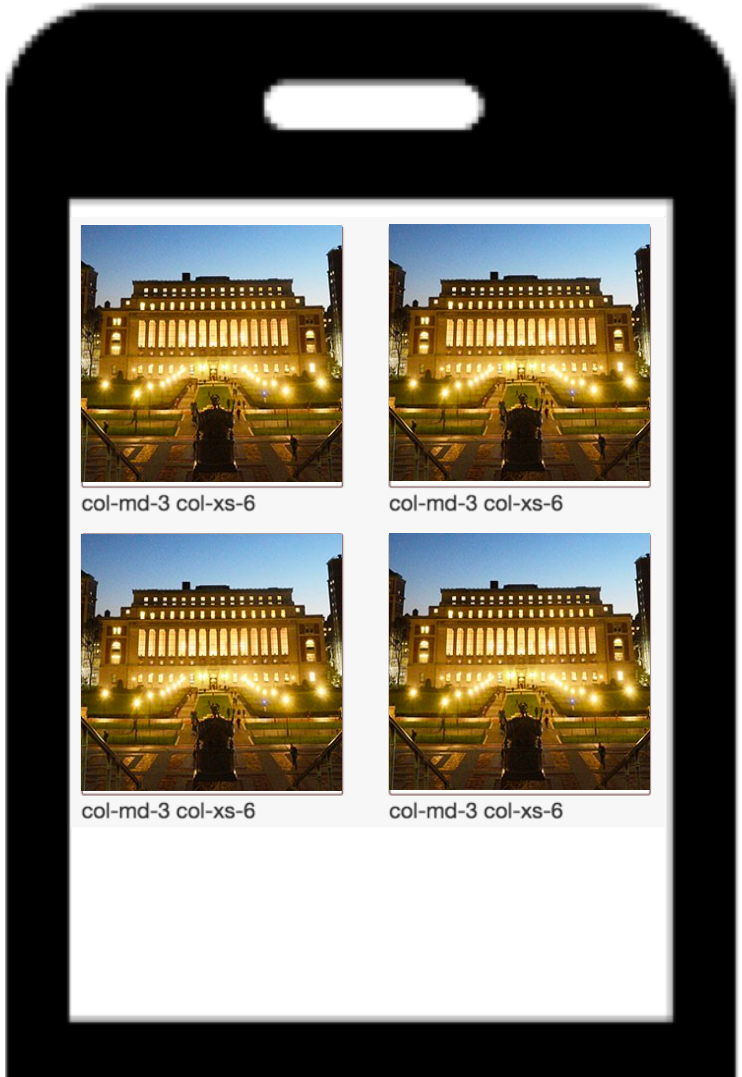


# What's the difference in layout?

`class="col-md-3"`

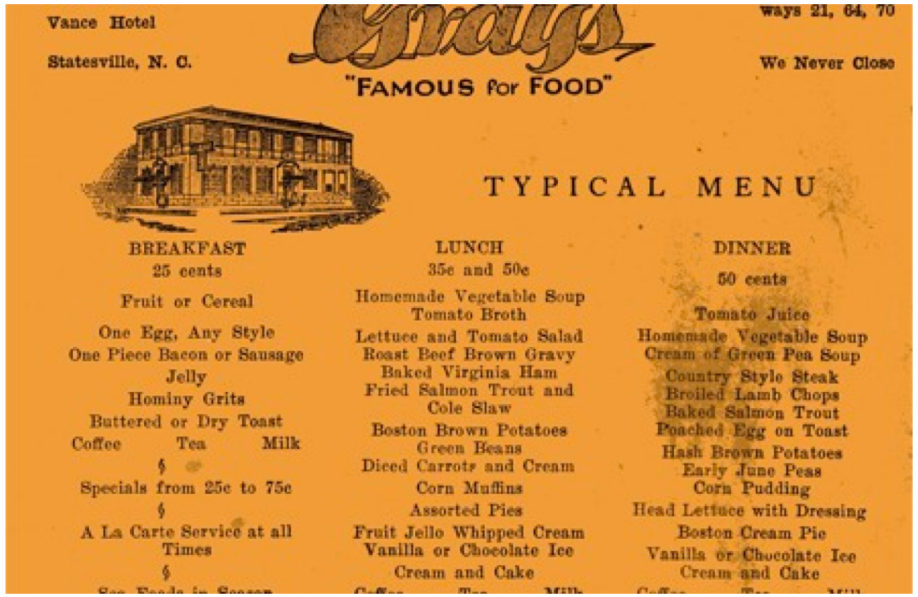


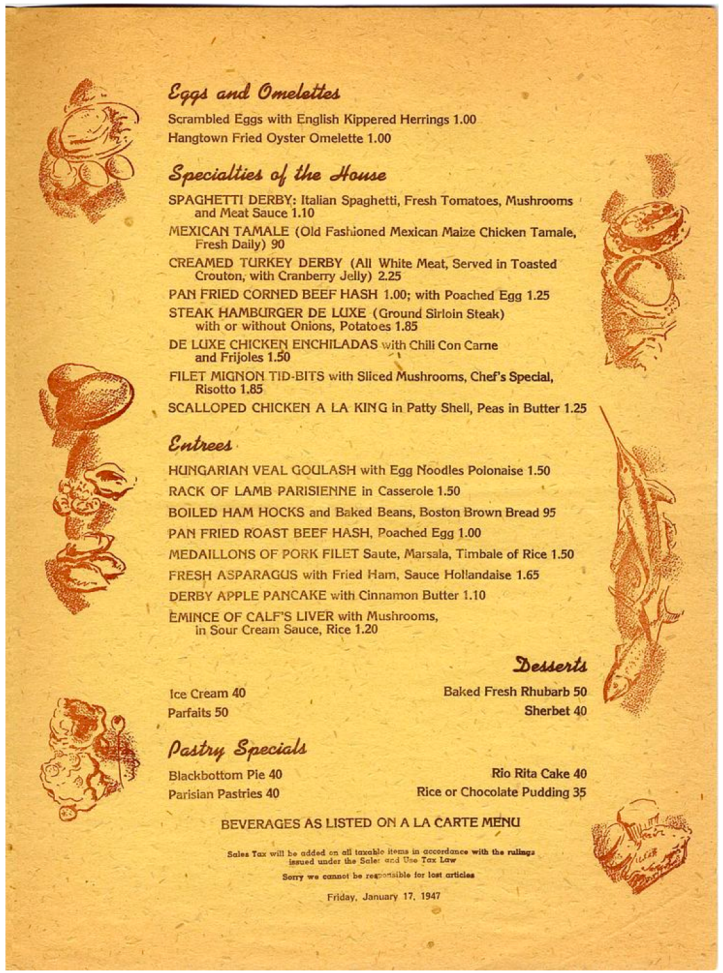

`class="col-md-3 col-sm-6"`



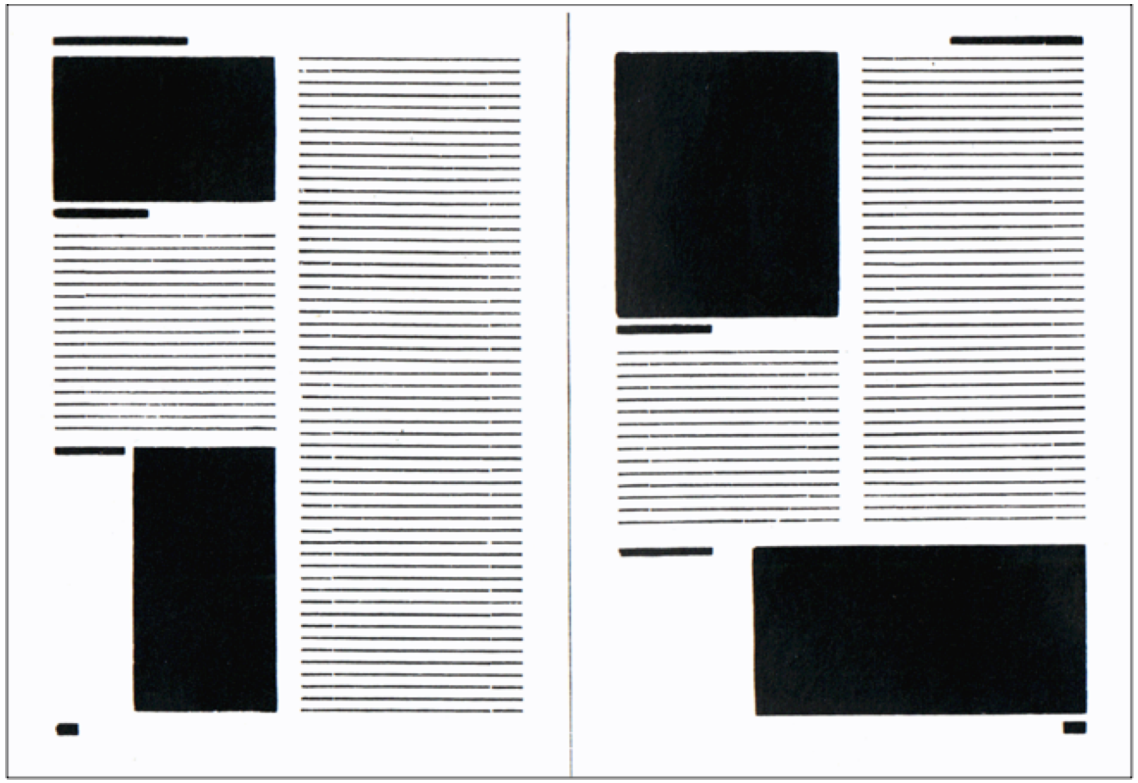
# In summary…

# Old school information layout was symmetrical



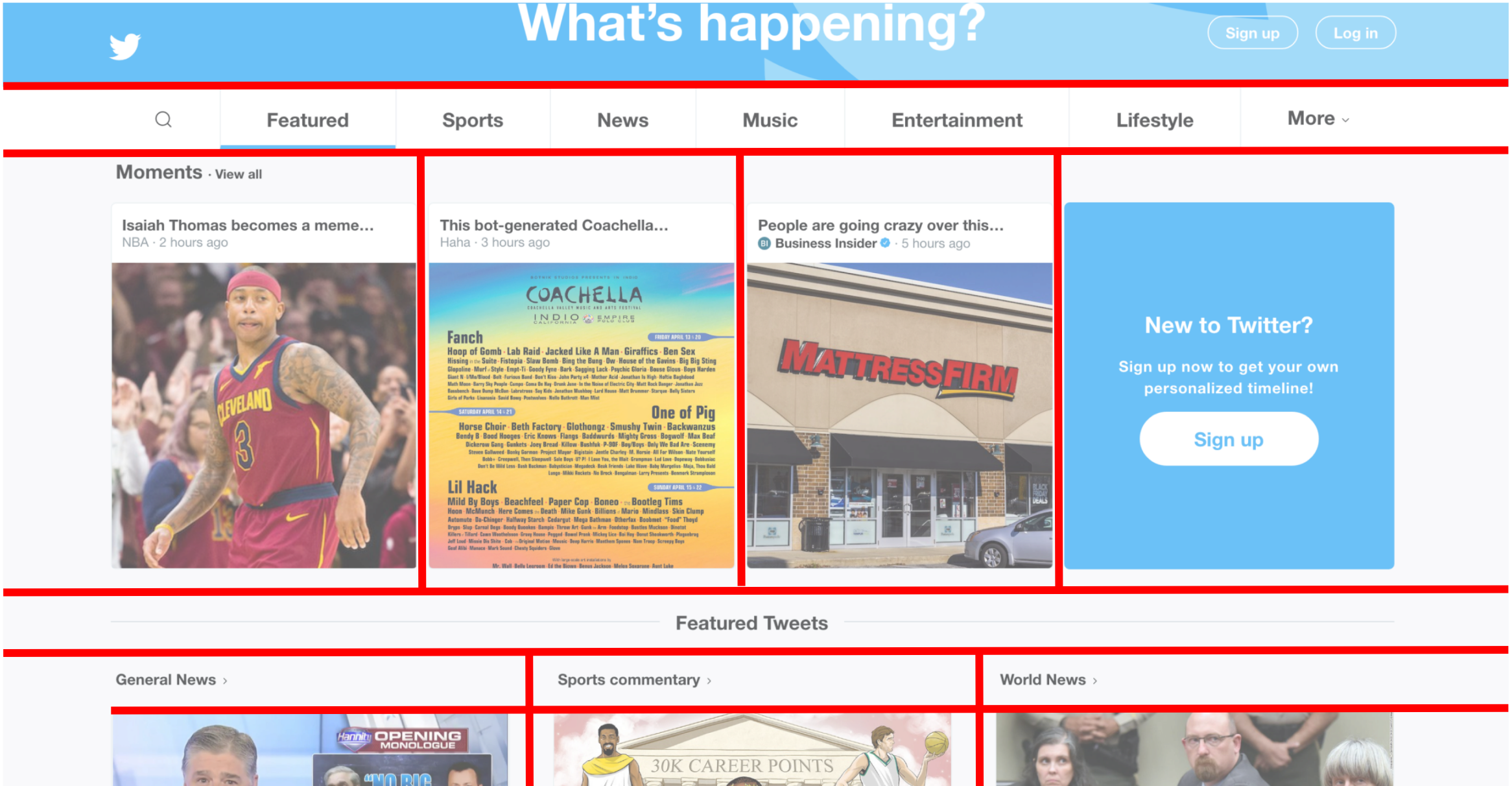



# The Bauhaus School of Design helped give rise to asymmetric grid layouts.

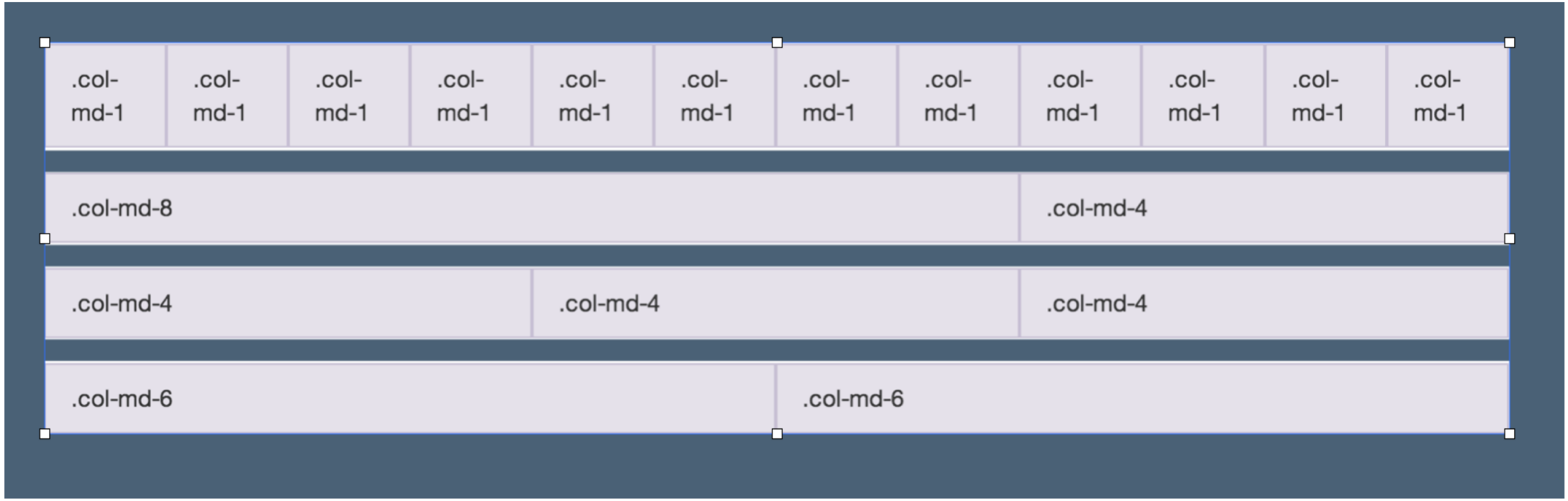


# **Grids** layouts help you convey importance with grouping, location, size, and whitespace.

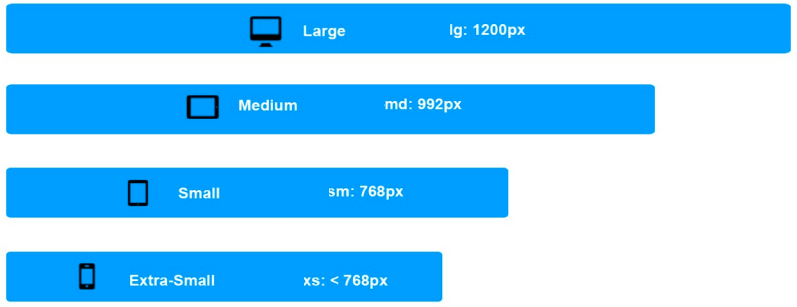
# Twitter Bootstrap is a widely used grid system.

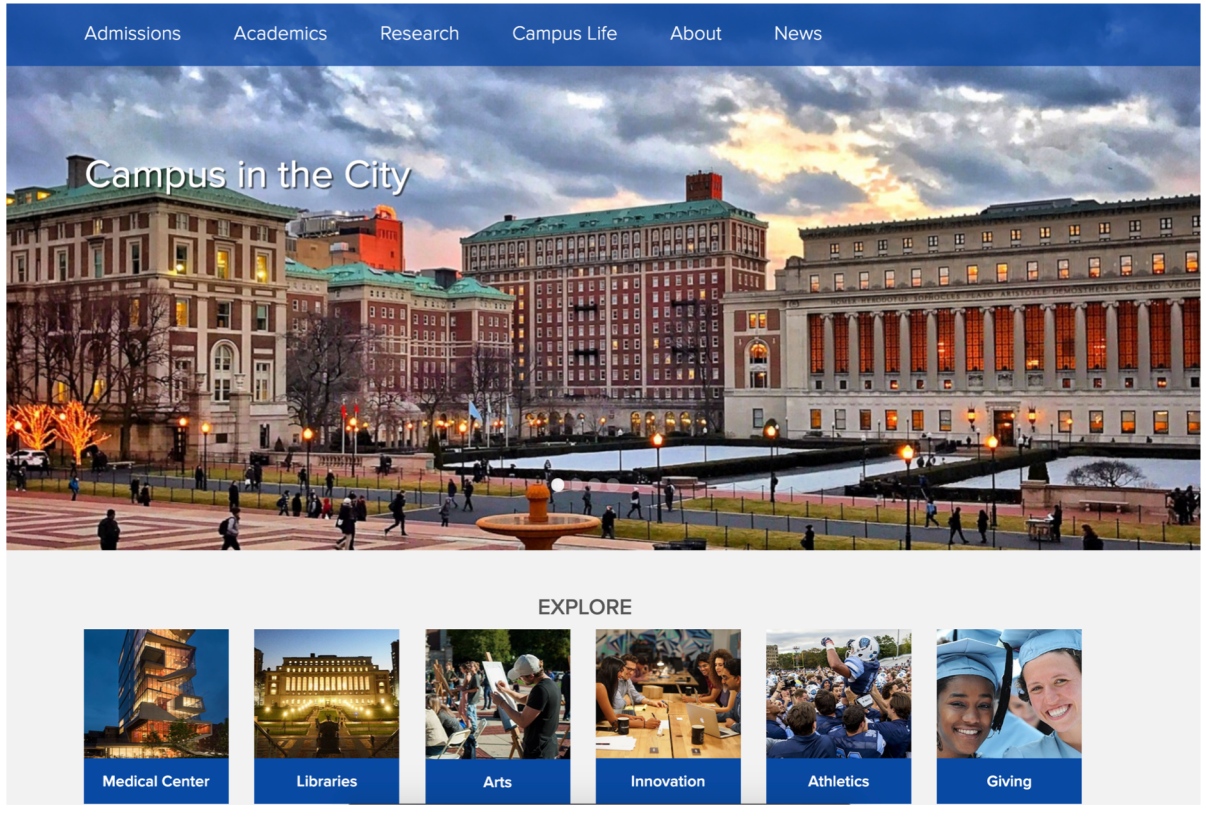


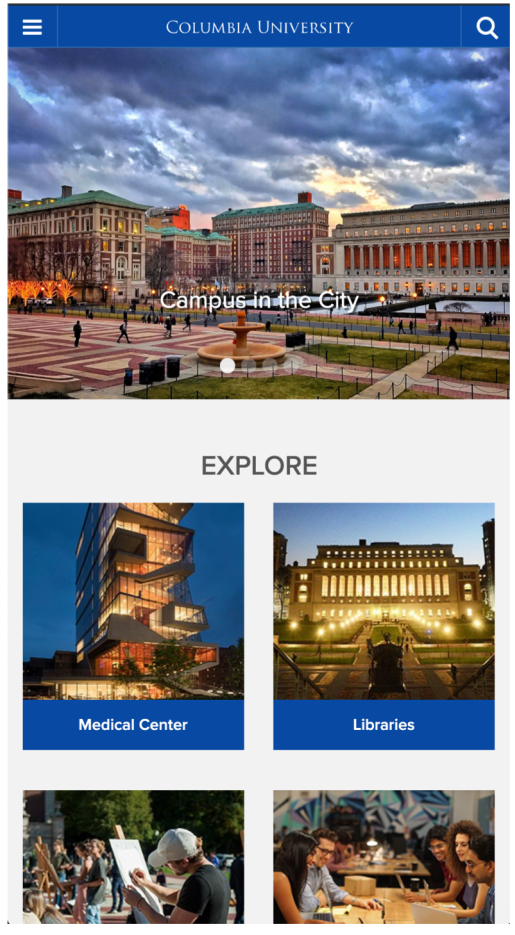
# Bootstrap allocates width into **twelve columns**



# **Responsive design** helps you specify the layout for different sized screens



# Iterative Style of Programming

helps you build a mental model of your code.

What's the **smallest** unit of progress I can make?

```
<html>
  <body>
    Hello world!
  </body>
</html>
```

Hello World!

Does it look ok?

# Homework 2: Grids and Layout

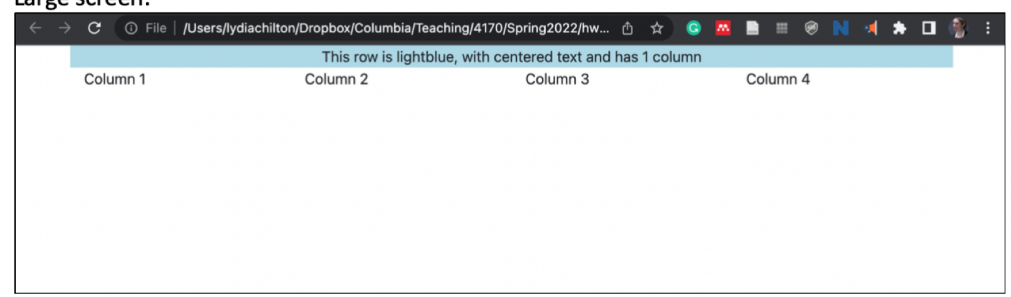
Warm up: due Friday 1/26 @ 11:59pm on Courseworks
Main: due Tuesday 1/30 @ 11:59pm on Courseworks.
(accepted as on-time until Wednesday 1/31 @8am)

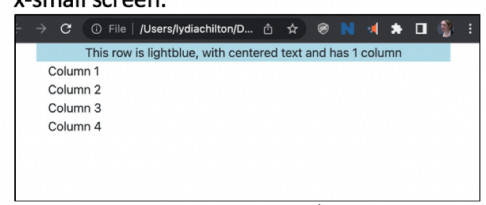
*Problems:*

1. **Recreate the following webpage.** (Shown below at two different screen sizes)
    a. Use Bootstrap 5.0.2.
    b. Add the following information in the in the <head> section to attached the correct version of bootstrap and to allow your browser to easily simulate responsive design:

```
<meta name="viewport" content="width=device-width, initial-scale=1">

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet" crossorigin="anonymous">
```

Large screen:




x-small screen: