CSS Grid

- Allows layout for child elements
- In vertical and horizontal grid
- Blocks can "span" multiple "cells"
- We used "areas"
    - With different column sizes
    - Not the only option

CSS Grid Properties

We will be using some additional CSS properties

Parent element: (with `display: grid;`)

- `grid-template-columns: repeat(12, 1fr);`
  - creates even distribution of space in columns
  - `12` can be any number
- `gap` - puts space between columns/rows

CSS Properties Child Element

- `grid-column: span 1;`
    - the `1` can be any number
    - Child will span that many cells
    - spans over any gap
- `grid-column: 3 / 6;`
    - the `3` and `6` can be any number
    - think of the `/` as "to"
    - Child will span from "line" 3 to "line" 6
    - lines are the start/end of cell boundaries
    - line 1 is left side of first cell
    - line 2 is right of first cell, left of 2nd

Not Areas

- We used `grid-template-areas` and `grid-area` before
    - Those are still valid
    - But we aren't using them here
    - Different way of laying them out

Grid layout without display: grid

- Grid column layout is a design idea
    - CSS Grids are a good way to implement
    - ...but not the only way
    - Can do with flex
    - Can do with percentage widths
- Concept vs implementation
    - different
    - ...but please use css grid

display: grid impacts direct children

Remember how `display: grid;` works

- only affects direct children
- to match non-child elements to grid
    - make wrapper width 100%
    - recreate the same grid inside wrapper

Grid column layouts

A common design pattern

- page layout
- aligns to a set of equally spaced columns
- A row will contain items
    - spanning cells
    - evenly or unevenly

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Responsive Alignment

Benefits of this column layout

- allows mix of sizes
- but consistent alignment
  - not off by a pixel or two
- don't need to declare areas
  - "rows" can auto wrap
- easily responsive
  - cells evenly expand

Adaptive Alignment

Another potential benefit

- Change the columns the page has
- and/or the cells an item spans
    - at different breakpoints
- Example:
    - Desktop: 12 columns
    - Tablet: 6 columns
    - Mobile: 1 column

Adaptive Tablet Example

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→ PhD Education

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Adaptive Phone Example

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12 Column Grid

- Many grid layouts exist
    - 2 column, 3 column, etc
- 12 column is very common
    - allows options for even spanning:
        - 1, 2, 3, 4, 6, 12
    - allows balanced combos:
        - 3+9, 4+8

12 column for desktop, at least

- Very common to change at smaller resolutions
    - to fewer columns in layout
    - also change spans of items

Why 12 columns though?

- Good number of options
- 1 cell still meaningful
  - mostly
  - so 24 is "too busy"
- all subjective
- This is why adaptive has fewer columns
  - no columns you don't want to use

Rule of Thirds

In photography, the **Rule of Thirds** says

- divide picture up into thirds
- vertically and horizontally
- the 4 intersections are more "visually interesting"

12 Column Format allows for thirds

Web design is a little different than photography

- Photos don't scroll

But you can still use that concept

- a 3+6 or 6+3 split
    - puts center of an item at "interesting" point
- a 4+8 or 8+4 can work if edges are interesting

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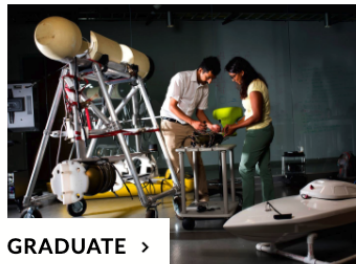→ Read story

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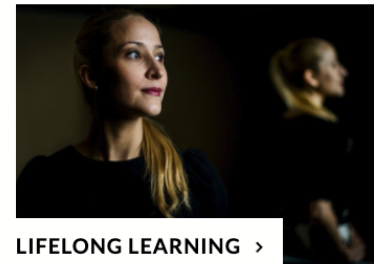COVID-19 Important
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Summary - CSS Grids

- We used `grid-template-areas` in the past
- For multi-column layout
    - can use `grid-template-columns`
        - with `repeat()`
        - for evenly sized columns
        - optionally `gap`
- `grid-column`
    - can take `span` to span cells
    - can use `/` to range from/to boundaries

Summary - 12 column grid

- Many grid layouts exist
    - Can be done without css grids
        - but why?
- 12 column very common in web dev
    - allows for different splits
- grids are naturally responsive

Summary - Adaptive Grids

Grids can make it easy to have adaptive breakpoints

- change the number of total columns
    - items will "wrap" to different rows
- change the span of different items
    - will be a reasonable size

You can have multiple adaptive breakpoints