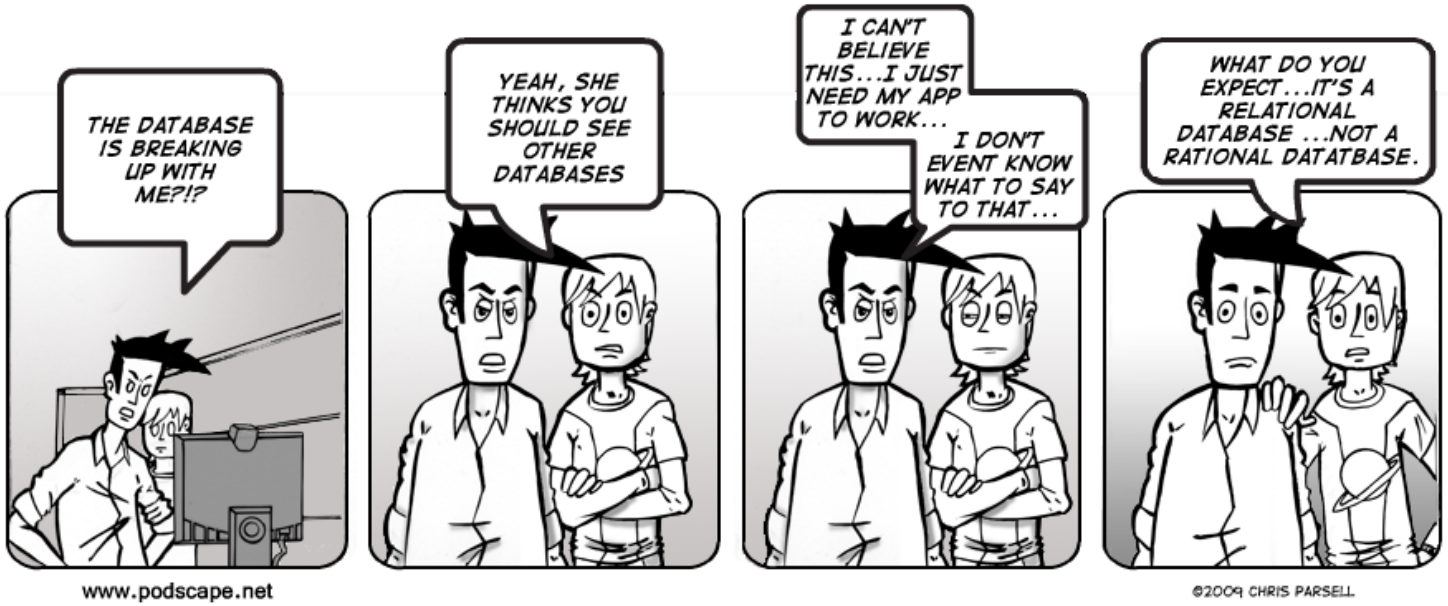
CSE 154



LECTURE 25: SQL AND HTML TABLES

Practice queries

- What are the names of all teachers Bart has had?

```SQL
SELECT DISTINCT t.name
FROM teachers t
JOIN courses c ON c.teacher_id = t.id
JOIN grades g ON g.course_id = c.id
JOIN students s ON s.id = g.student_id
WHERE s.name = 'Bart';
```

- How many total students has Ms. Krabappel taught, and what are their names?

```SQL
SELECT DISTINCT s.name
FROM students s
JOIN grades g ON s.id = g.student_id
JOIN courses c ON g.course_id = c.id
JOIN teachers t ON t.id = c.teacher_id
WHERE t.name = 'Krabappel';
```

HTML tables: <table>, <tr>, <td>

A 2D table of rows and columns of data (block element)

```
<table>
  <tr><td>1,1</td><td>1,2 okay</td></tr>
  <tr><td>2,1 real wide</td><td>2,2</td></tr>
</table>
```

HTML

1,1	1,2 okay
2,1 real wide	2,2

output

- `table` defines the overall table, `tr` each row, and `td` each cell's data
- tables are useful for displaying large row/column data sets
- NOTE: tables are sometimes used by novices for web page layout, but this is not proper semantic HTML and should be avoided

Table headers, captions: <th>, <caption>

```
<table>
  <caption>My important data</caption>
  <tr><th>Column 1</th><th>Column 2</th></tr>
  <tr><td>1,1</td><td>1,2 okay</td></tr>
  <tr><td>2,1 real wide</td><td>2,2</td></tr>
</table>
```

HTML

My important data

Column 1	Column 2
1,1	1,2 okay
2,1 real wide	2,2

output

- `th` cells in a row are considered headers; by default, they appear bold
- a `caption` at the start of the table labels its meaning

Styling tables

```
table { border: 2px solid black; caption-side: bottom; }
tr { font-style: italic; }
td { background-color: yellow; text-align: center; width: 30%; }
```

Column 1	Column 2
1,1	1,2 okay
2,1 real wide	2,2

My important data

output

- all standard CSS styles can be applied to a table, row, or cell
- table specific CSS properties:
  - `border-collapse`, `border-spacing`, `caption-side`, `empty-cells`, `table-layout`

The border-collapse property

```
table, td, th { border: 2px solid black; }
table { border-collapse: collapse; }                    CSS
```

Without `border-collapse`

Column 1	Column 2
1,1	1,2
2,1	2,2

With border-collapse

Column 1	Column 2
1,1	1,2
2,1	2,2

- by default, the overall table has a separate border from each cell inside
- the `border-collapse` property merges these borders into one

The rowspan and colspan attributes

```HTML
<table>
  <tr><th>Column 1</th><th>Column 2</th><th>Column 3</th></tr>
  <tr><td colspan="2">1,1-1,2</td>
    <td rowspan="3">1,3-3,3</td></tr>
  <tr><td>2,1</td><td>2,2</td></tr>
  <tr><td>3,1</td><td>3,2</td></tr>
</table>
```

HTML

Column 1	Column 2	Column 3
1,1-1,2		1,3-3,3
2,1	2,2	
3,1	3,2	

HTML

- `colspan` makes a cell occupy multiple columns; `rowspan` multiple rows
- `text-align` and `vertical-align` control where the text appears within a cell

Column styles: <col>, <colgroup>

```
<table>
  <col class="urgent" />
  <colgroup class="highlight" span="2"></colgroup>

  <tr><th>Column 1</th><th>Column 2</th><th>Column 3</th></tr>
  <tr><td>1,1</td><td>1,2</td><td>1,3</td></tr>
  <tr><td>2,1</td><td>2,2</td><td>2,3</td></tr>
</table>
```

HTML

Column 1	Column 2	Column 3
1,1	1,2	1,3
2,1	2,2	2,3

output

- `col` tag can be used to define styles that apply to an entire column (self-closing)
- `colgroup` tag applies a style to a group of columns (NOT self-closing

Don't use tables for layout!

- (borderless) tables appear to be an easy way to achieve grid-like page layouts
  - many "newbie" web pages do this (including many UW CSE web pages...)
- but, a `table` has semantics; it should be used only to represent an actual table of data
- instead of tables, use `div`s, widths/margins, floats, etc. to perform layout

- tables should not be used for layout!
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- TABLES SHOULD NOT BE USED FOR LAYOUT!!!
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Designing a query

- Figure out the proper SQL queries in the following way:
  - Which table(s) contain the critical data? (`FROM`)
  - Which columns do I need in the result set? (`SELECT`)
  - How are tables connected (`JOIN`) and values filtered (`WHERE`)?
- Test on a small data set (`imdb_small`).
- Confirm on the real data set (`imdb`).
- Try out the queries first in the MySQL console.
- Write the PHP code to run those same queries.
  - Make sure to check for SQL errors at every step!!