Image Compression
Key question

• What is it that digital displays actually store so you can see what's being displayed?
What are pixels?

(pixel is an element)

(picture elements)

(an element is a part of something)
Pixels in black and white
How could a computer store this image as numbers?
We’ve just discussed run-length encoding
Completed run-length encoding

A
B
C
D
E
F
G
H

4,2,2
3,1,2,1,1
3,1,2,2
0,1,3,2,2
0,4,2,1,1
1,1,4,1,1
2,4,2
3,2,3
Run Length Encoding

<table>
<thead>
<tr>
<th>Grid Size: 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of bits for grid: 25</td>
</tr>
<tr>
<td>Number of characters for encoding: 5</td>
</tr>
</tbody>
</table>

```
5
5
5
5
5
```
What is it that digital displays actually store so you can see what's being displayed?
Supporting Resources

- **CS Unplugged - Squeezing pictures into less space**
  https://www.csunplugged.org/en/topics/image-representation/squeezing-pictures-into-less-space/

- **CS Unplugged - Run Length Encoding worksheets**
  https://www.csunplugged.org/en/resources/run-length-encoding/

- **CS Unplugged at Home - Squeezing pictures**
  https://www.csunplugged.org/en/at-home/squeezing-pictures/

- **CS Unplugged - Colour by numbers**
  https://www.csunplugged.org/en/topics/image-representation/colour-by-numbers/

- **Computer Science Field Guide - Data Representation - Images and Colours**

- **Computer Science Field Guide - Pixel Viewer**

- **CS Unplugged - Video 1 - Run Length Encoding**