Indices

Indices can be used to extract values from within a matrix. An index gives the position(s) from which to get the values.

```
Accessing elements
>> block
10  20  30  40
110 120 130 140
210 220 230 240
```

```
Indices
Indices can be also be used to select cells within matrices, to which to assign values.
```

```
Assign values to ranges
>> block(2,2:3) = 0;
```

```
Indices
Indices can be used to grab or copy whole sections of a matrix for some other purpose.
```

```
Making small copies
>> smallBlock = block(1:3,1:2);
```

```
``
Arrays as indices

Rather than hard-coding the positions, you can use an array to select positions.

<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>110</td>
<td>0</td>
<td>0</td>
<td>140</td>
</tr>
<tr>
<td>1</td>
<td>210</td>
<td>220</td>
<td>230</td>
<td>240</td>
</tr>
</tbody>
</table>

Arrays as indices

from software-carpentry.org

```matlab
>> vector = [0, 10, 20, 30];
>> index = [4, 2 , 3];
>> vector(index)
[30, 10, 20]
```

Review

- Indices are used to select positions within matrices (or vectors). They can be used to
  - Extract data from a matrix
  - Select positions to which to assign values
  - Identify subsets of a matrix
  - Arrays can be used as indices