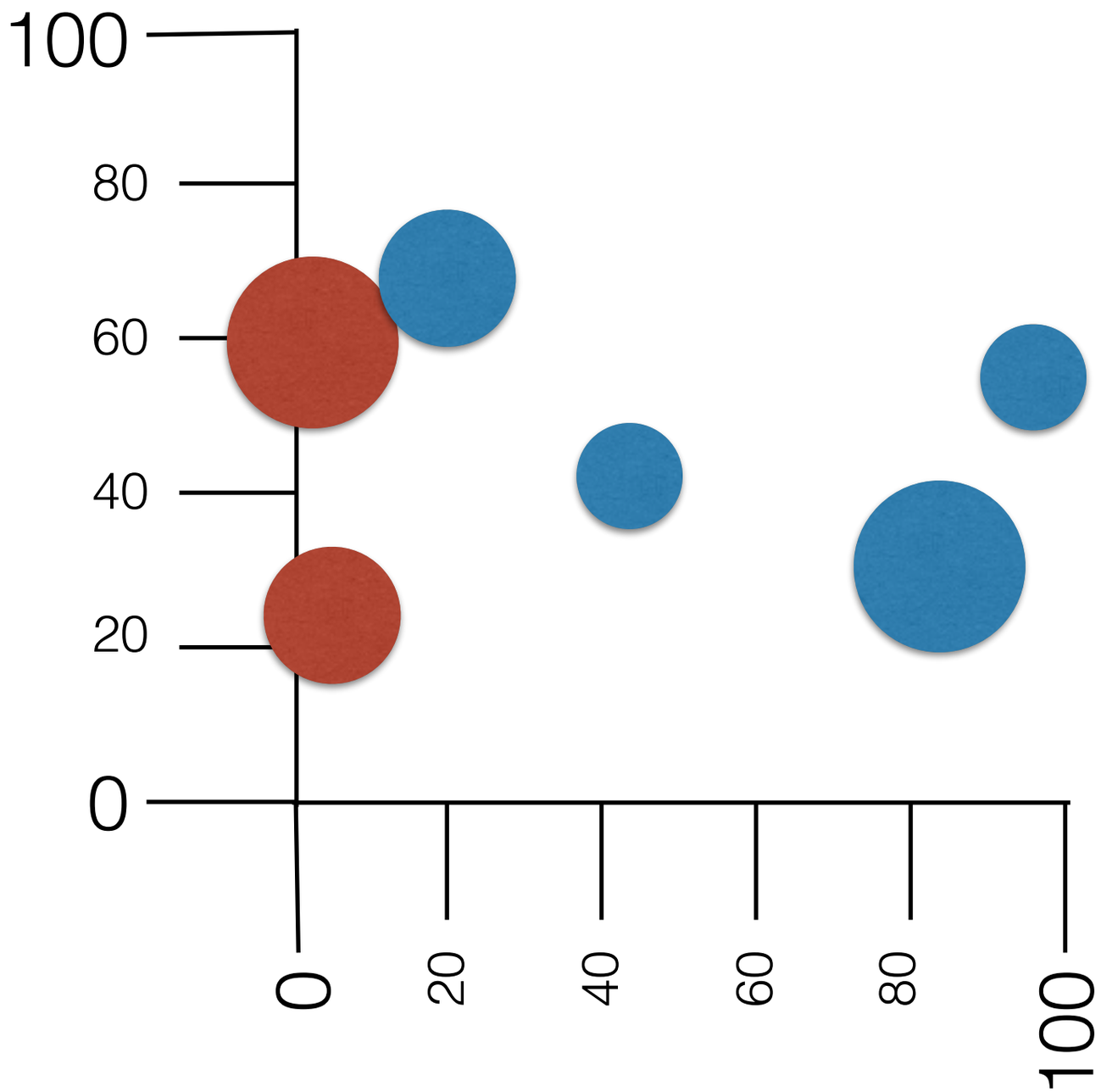
Enter, Update, Exit

Lab 5

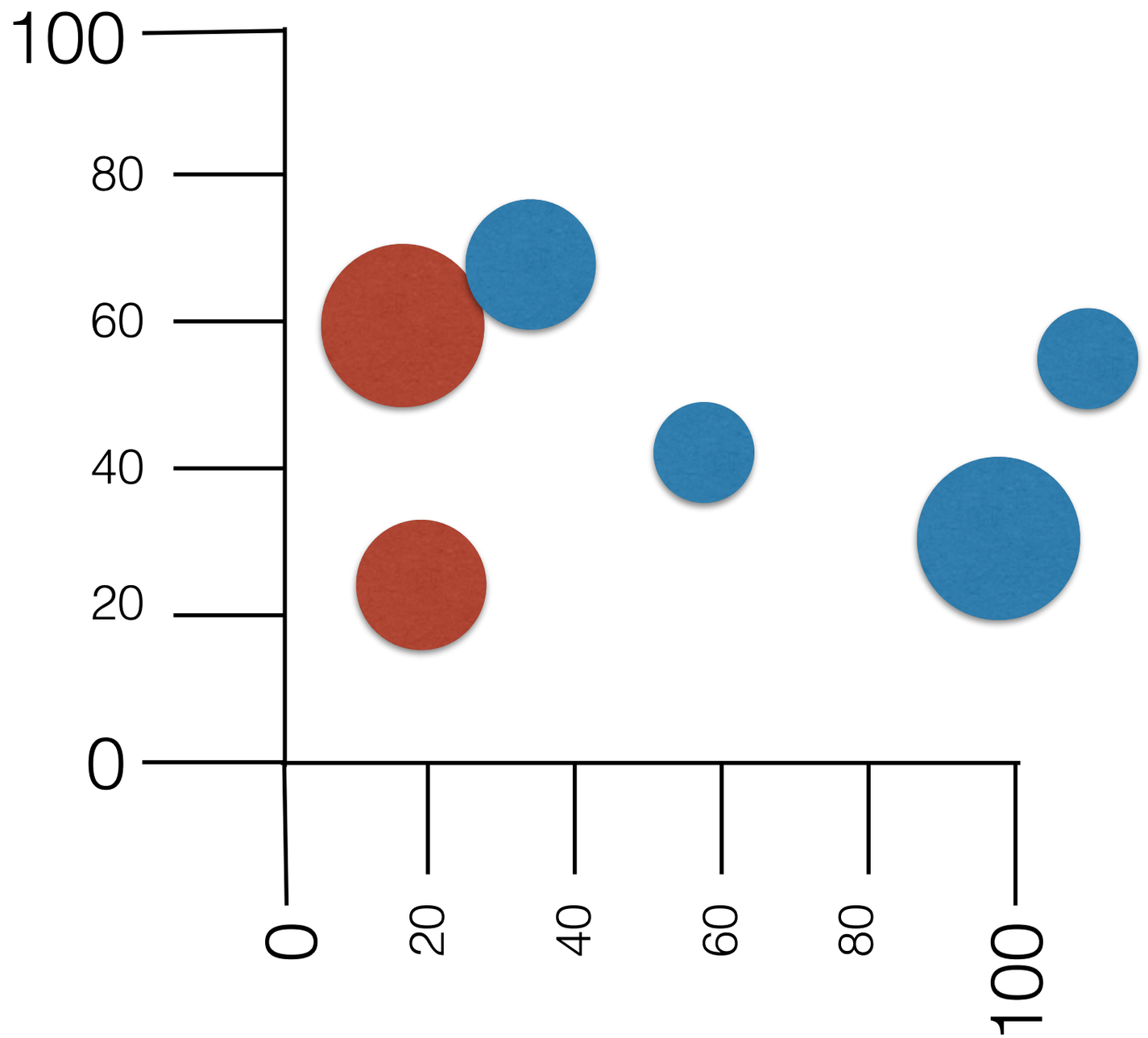
Feedback Lab 4

- Axis placement
- Axis drawing
- The ‘g’ element

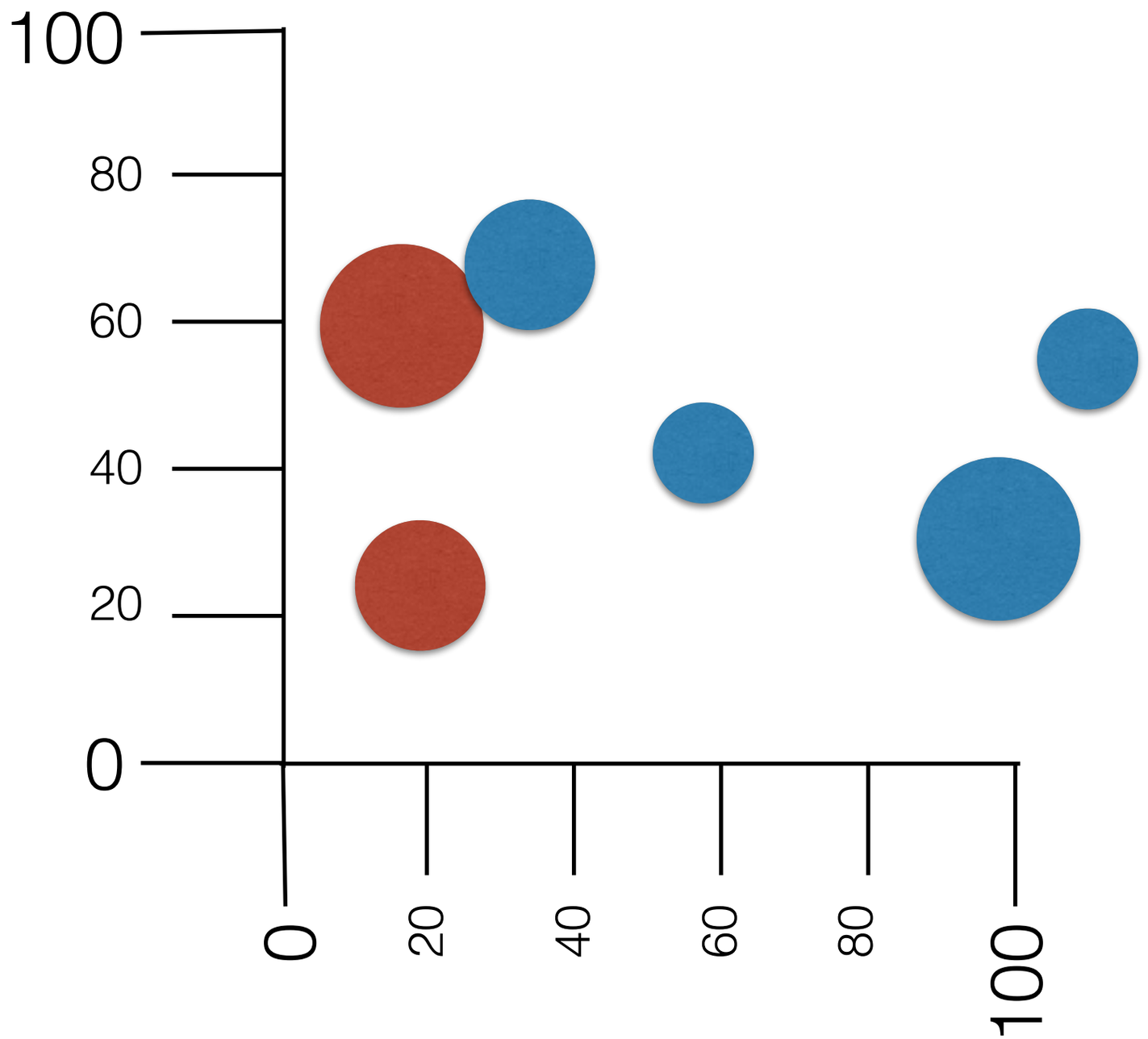
This happens…



Solution ?

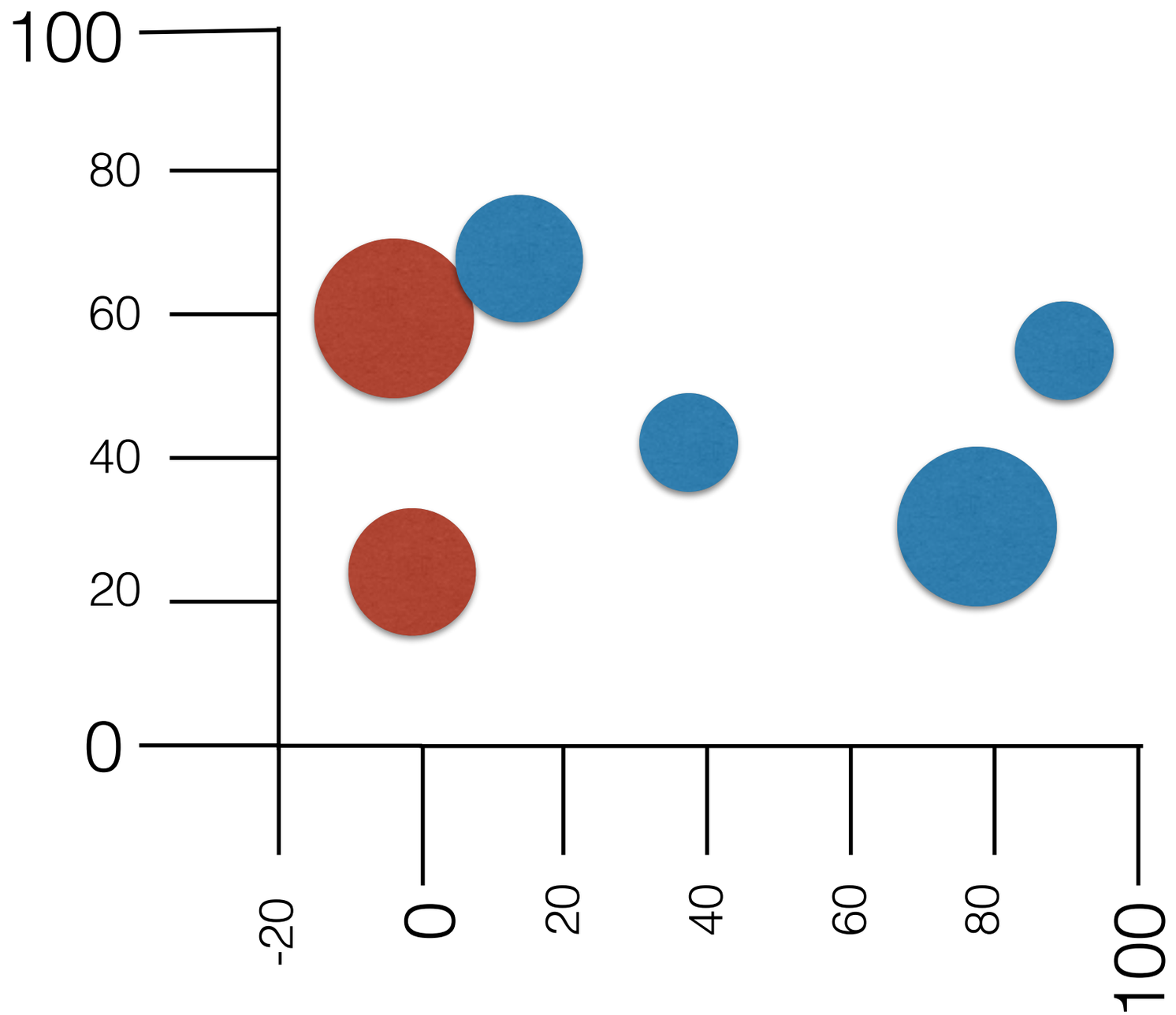


Solution ?

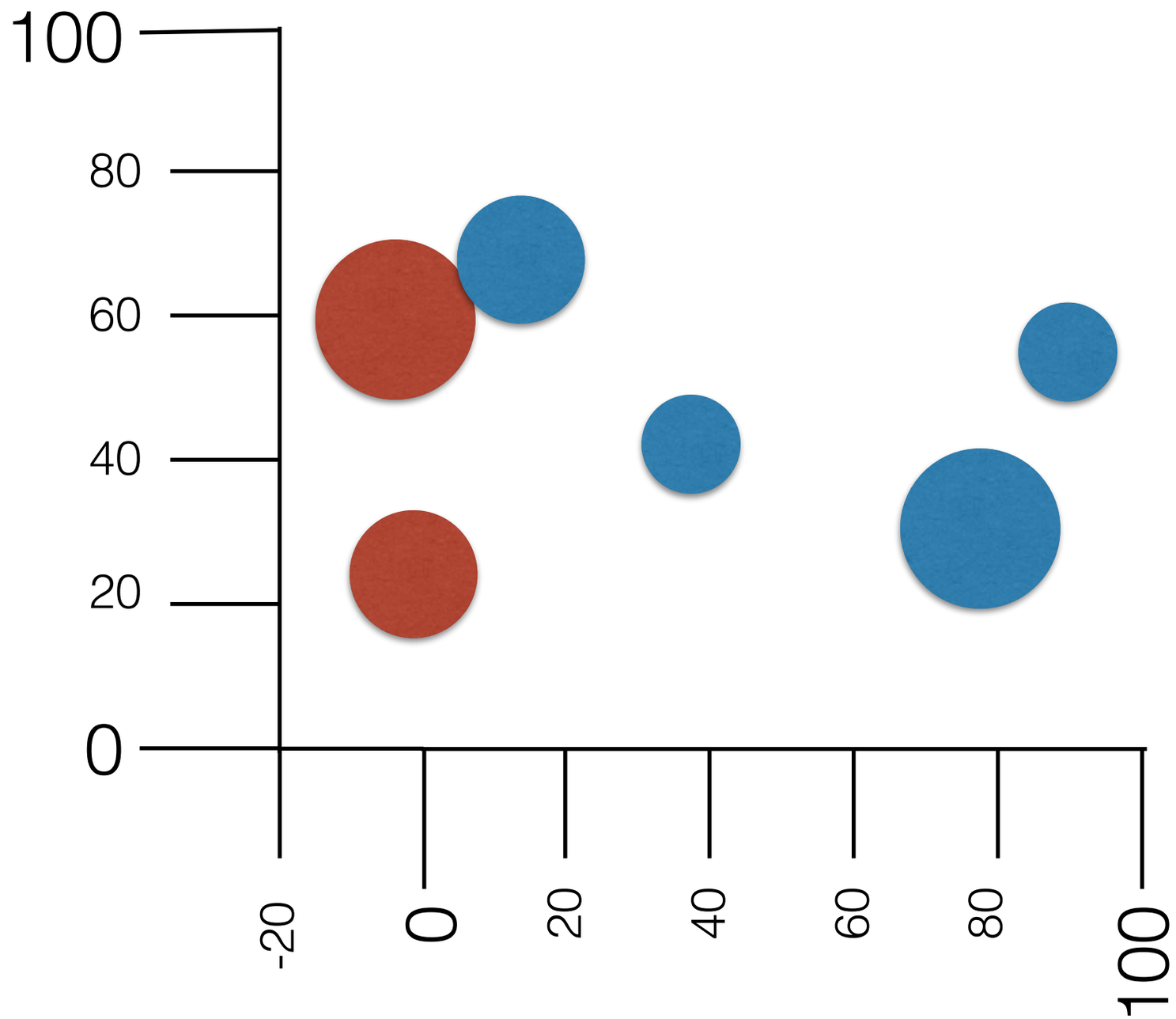


NO !!

Solution ?

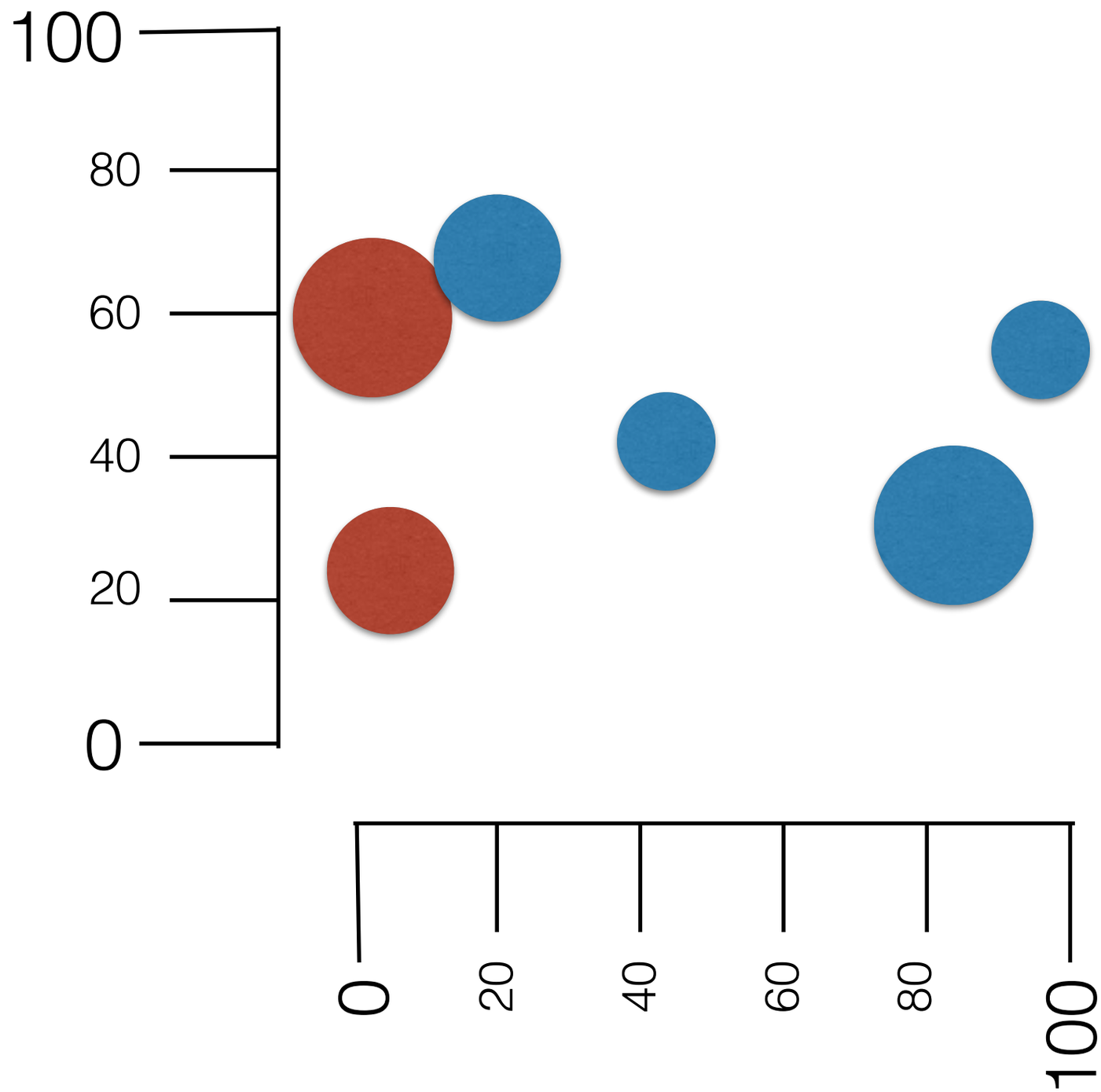


Solution ?

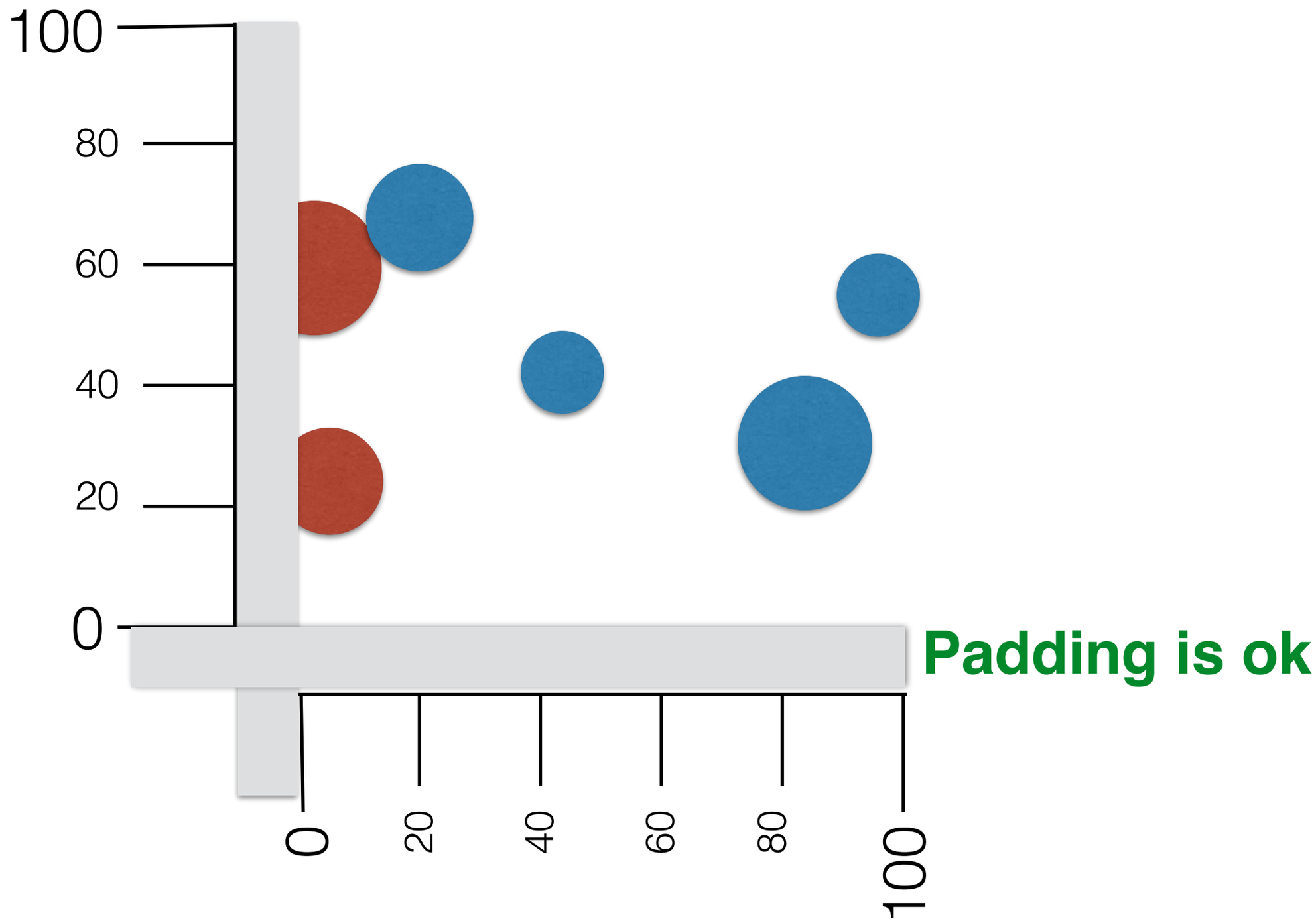


ok, BUT bad style

Solution ?

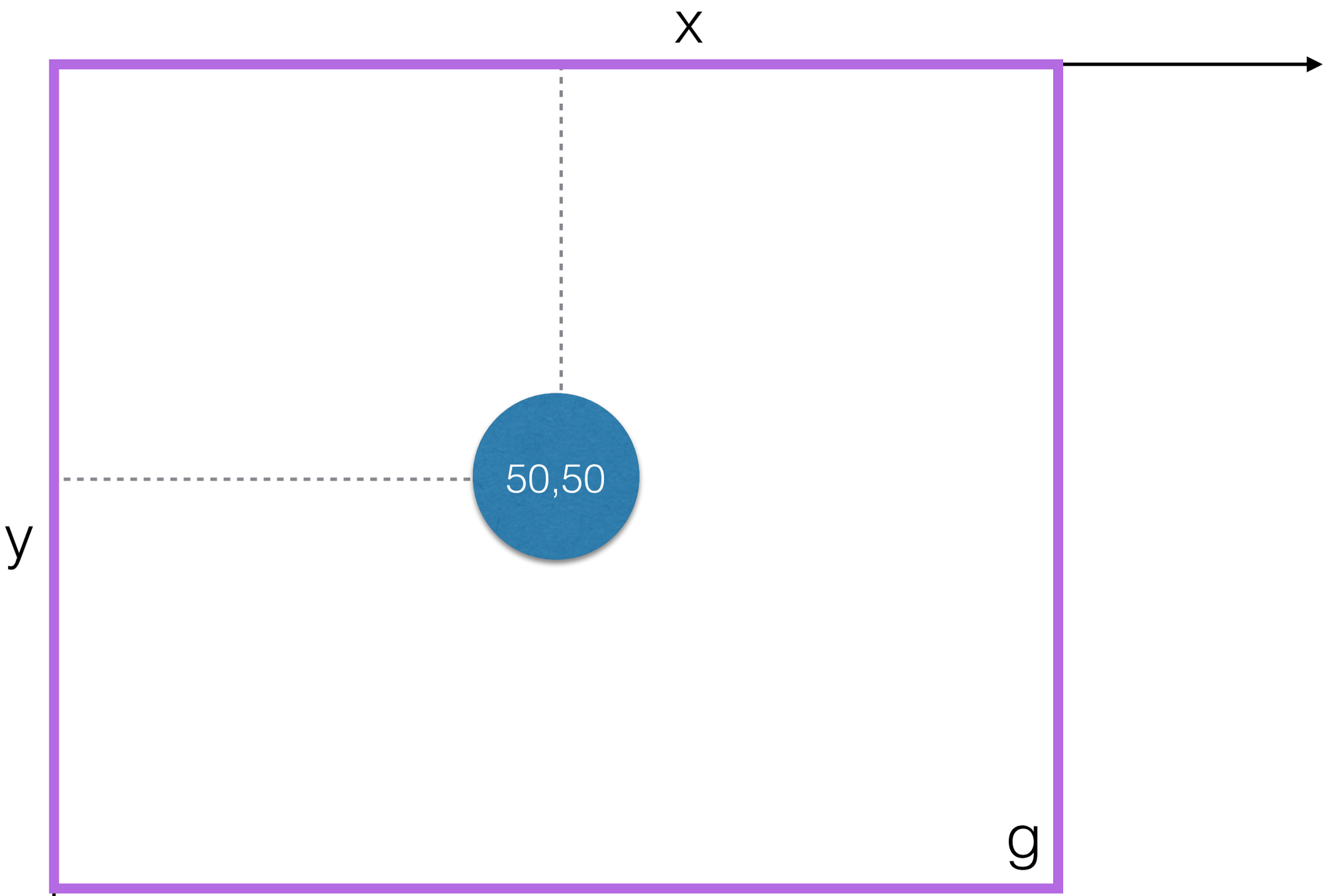


Solution ?

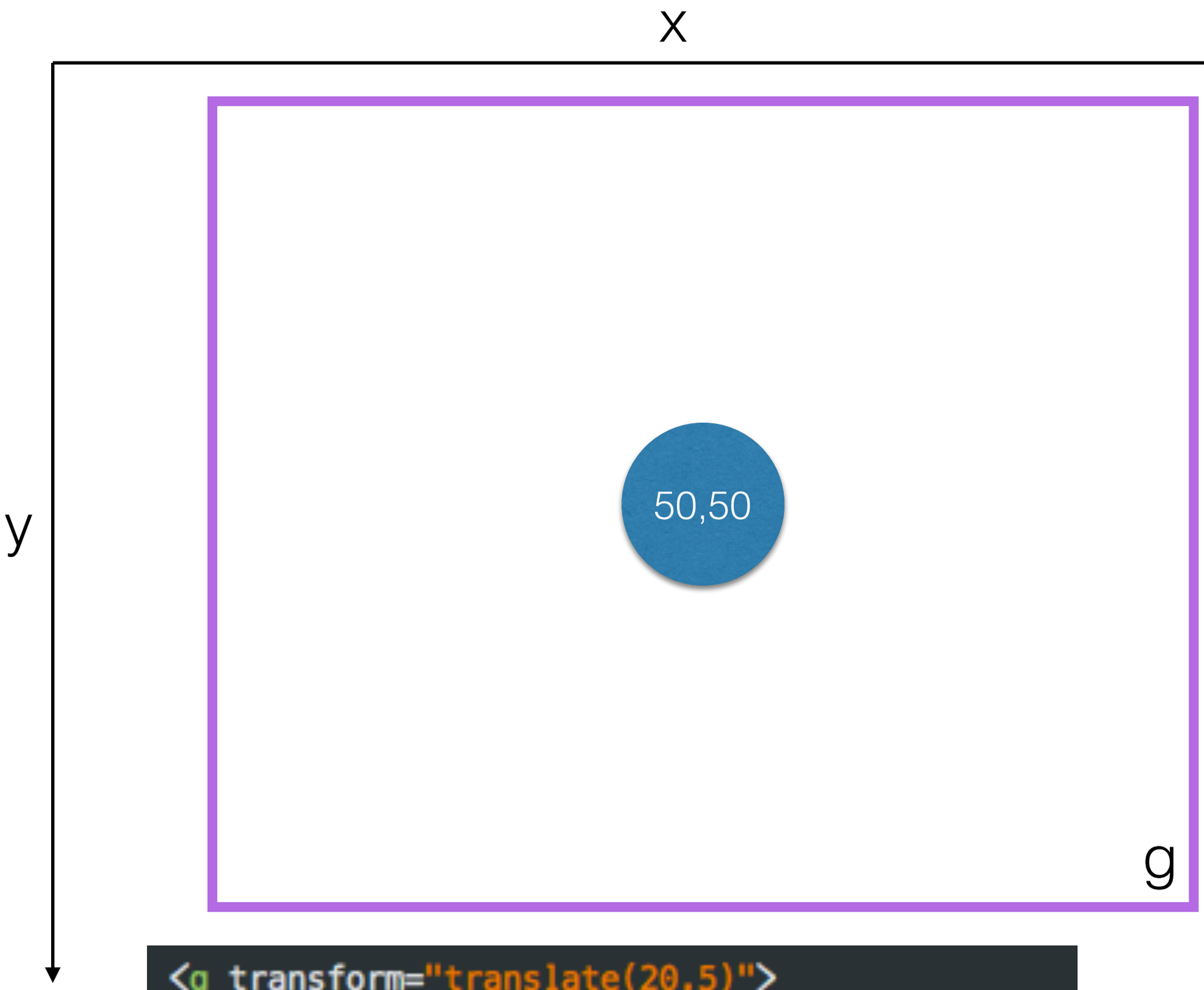


The ‘g’ element

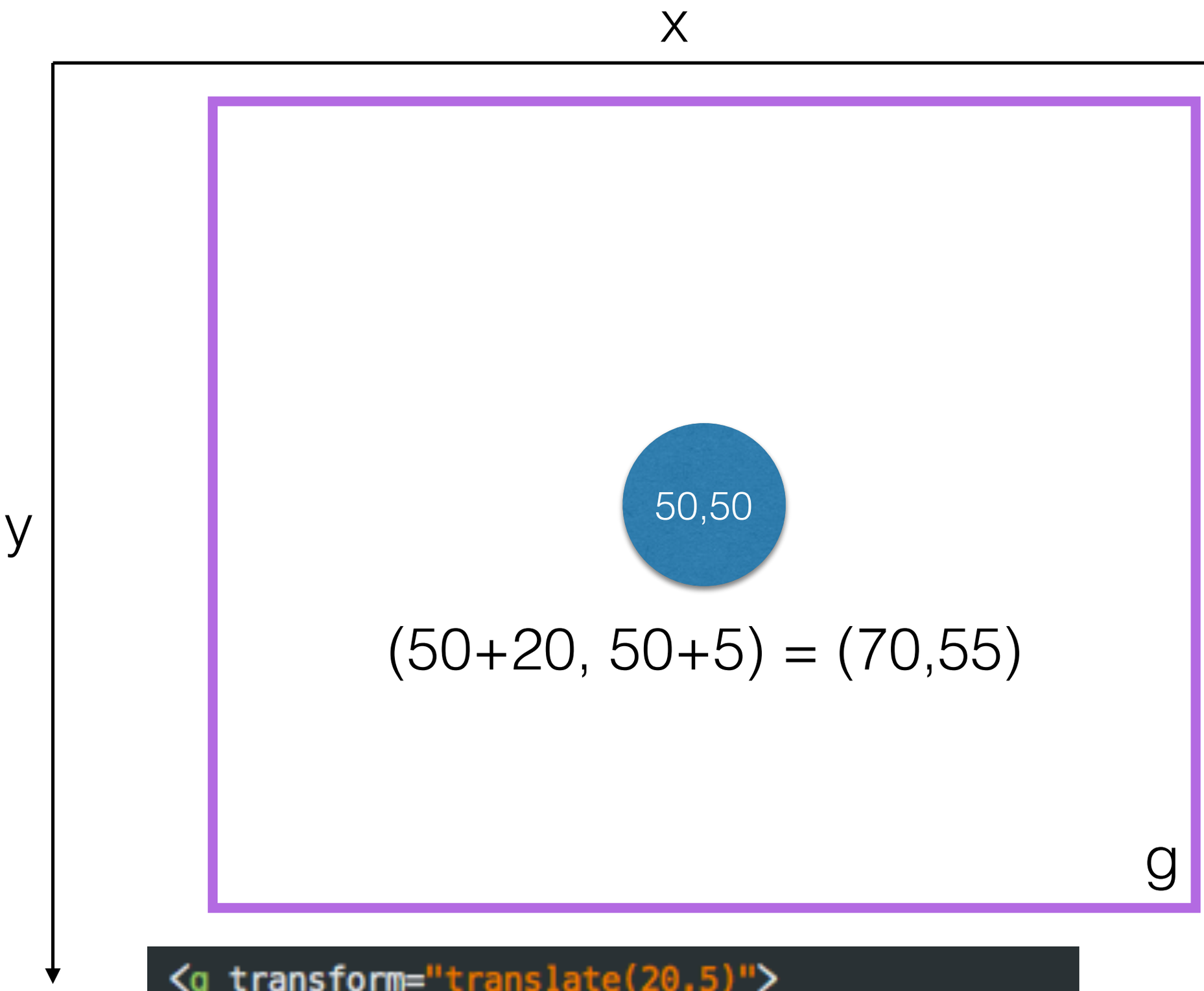
- groups visual elements
- starts a new coordinate system
- all transformations to the ‘g’ apply to all elements in the group
- think of grouping in Keynote or Powerpoint




```
<g>
    <circle r="10" cx="50" cy ="50"></circle>
</g>
```



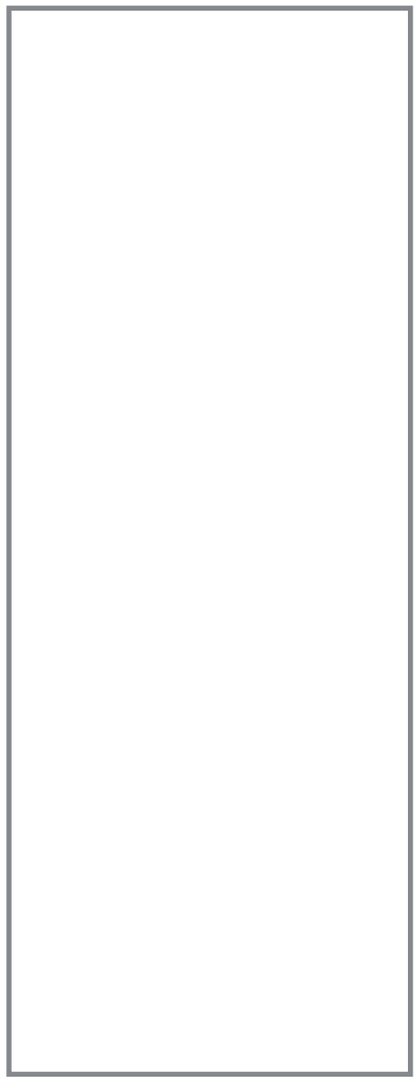

```
<g transform="translate(20,5)">
    <circle r="10" cx="50" cy ="50"></circle>
</g>
```




```
<g transform="translate(20,5)">
    <circle r="10" cx="50" cy ="50"></circle>
</g>
```

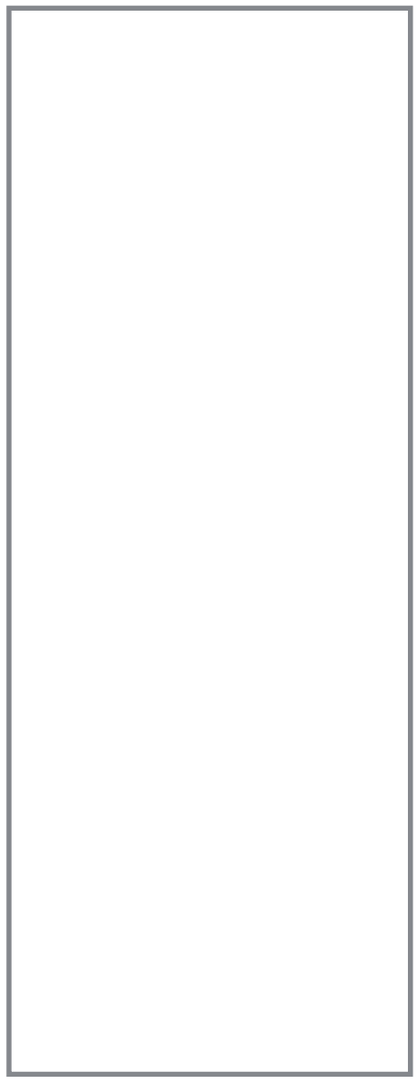
The ‘g’ element is a container for D3 to draw an axis into.

<g id=‘blob’></g>



The ‘g’ element is a container for D3 to draw an axis into.

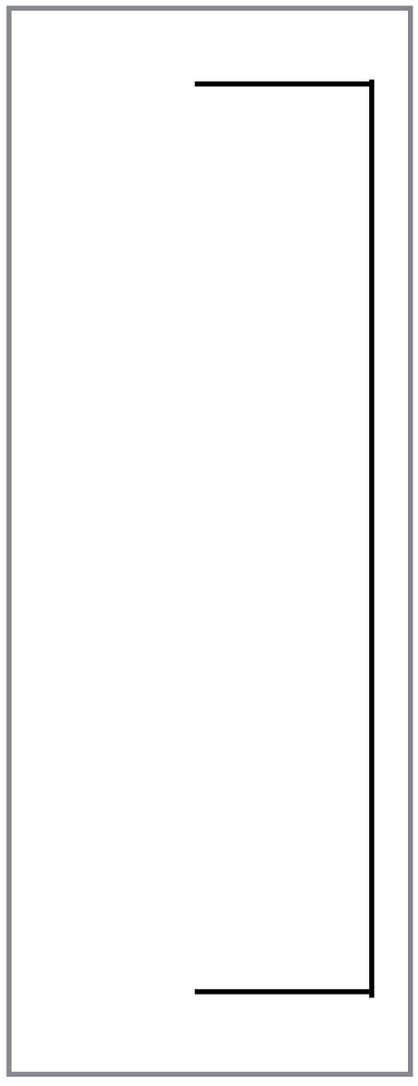
<g id=‘blob’></g>



```
d3.select('#blob').call(axis);
```

The ‘g’ element is a container for D3 to draw an axis into.

<g id=‘blob’></g>



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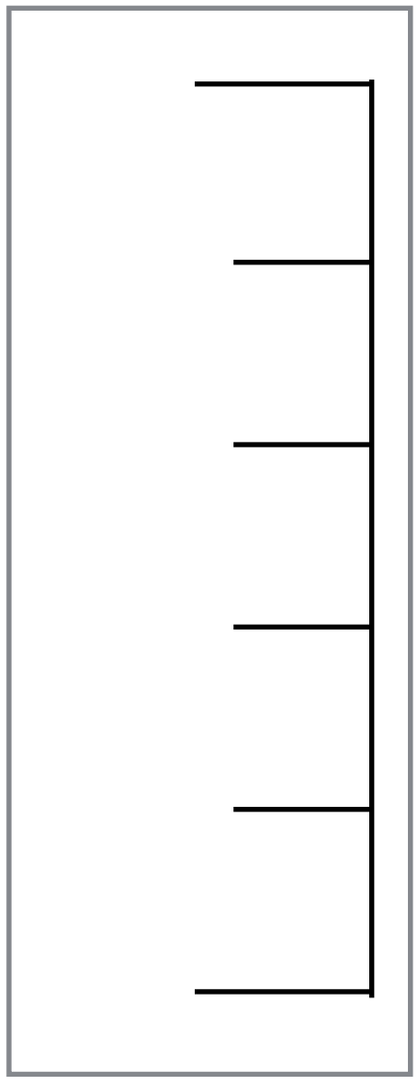
<g id=‘blob’></g>



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The ‘g’ element is a container for D3 to draw an axis into.

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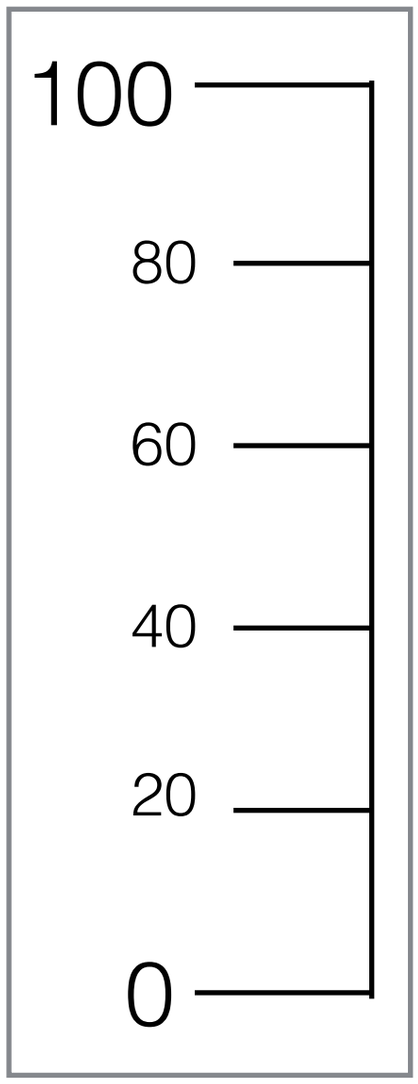


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d3.select('#blob').call(axis);
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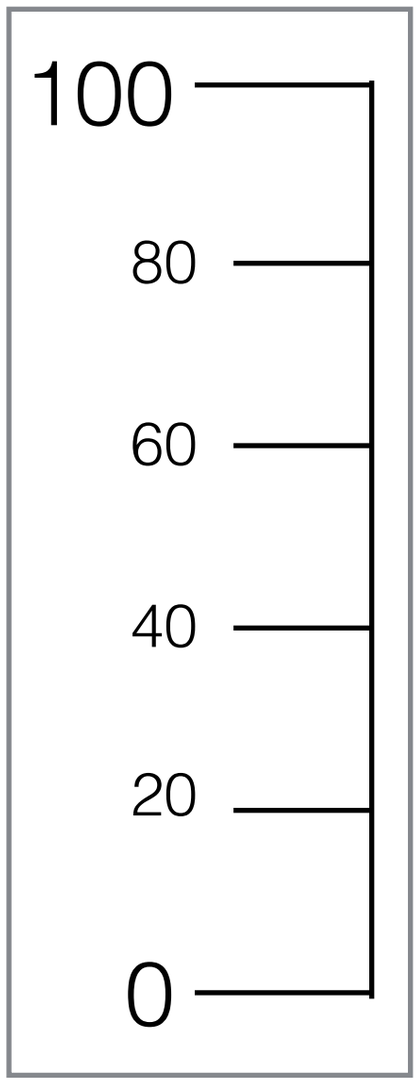
The ‘g’ element is a container for D3 to draw an axis into.

<g id=‘blob’></g>

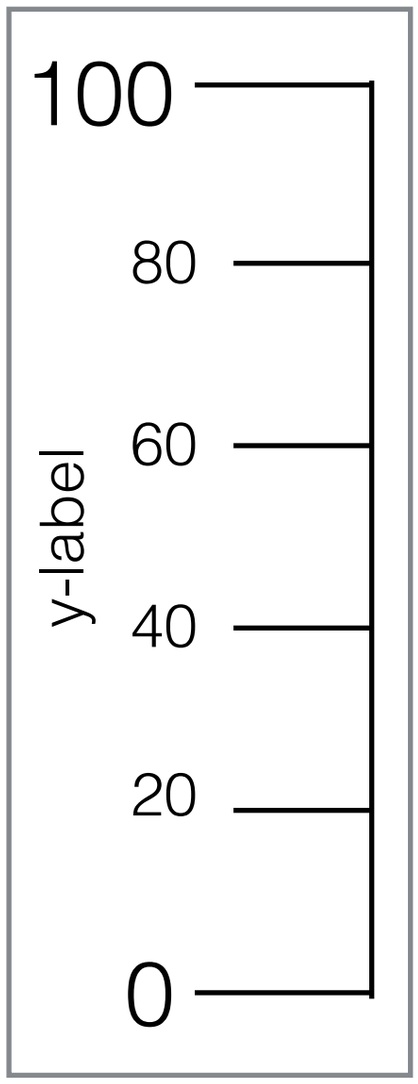



```
d3.select('#blob').call(axis);
```

```
d3.select(‘#blob’).append(‘text’)…
```

The ‘g’ element is a container for D3 to draw an axis into.

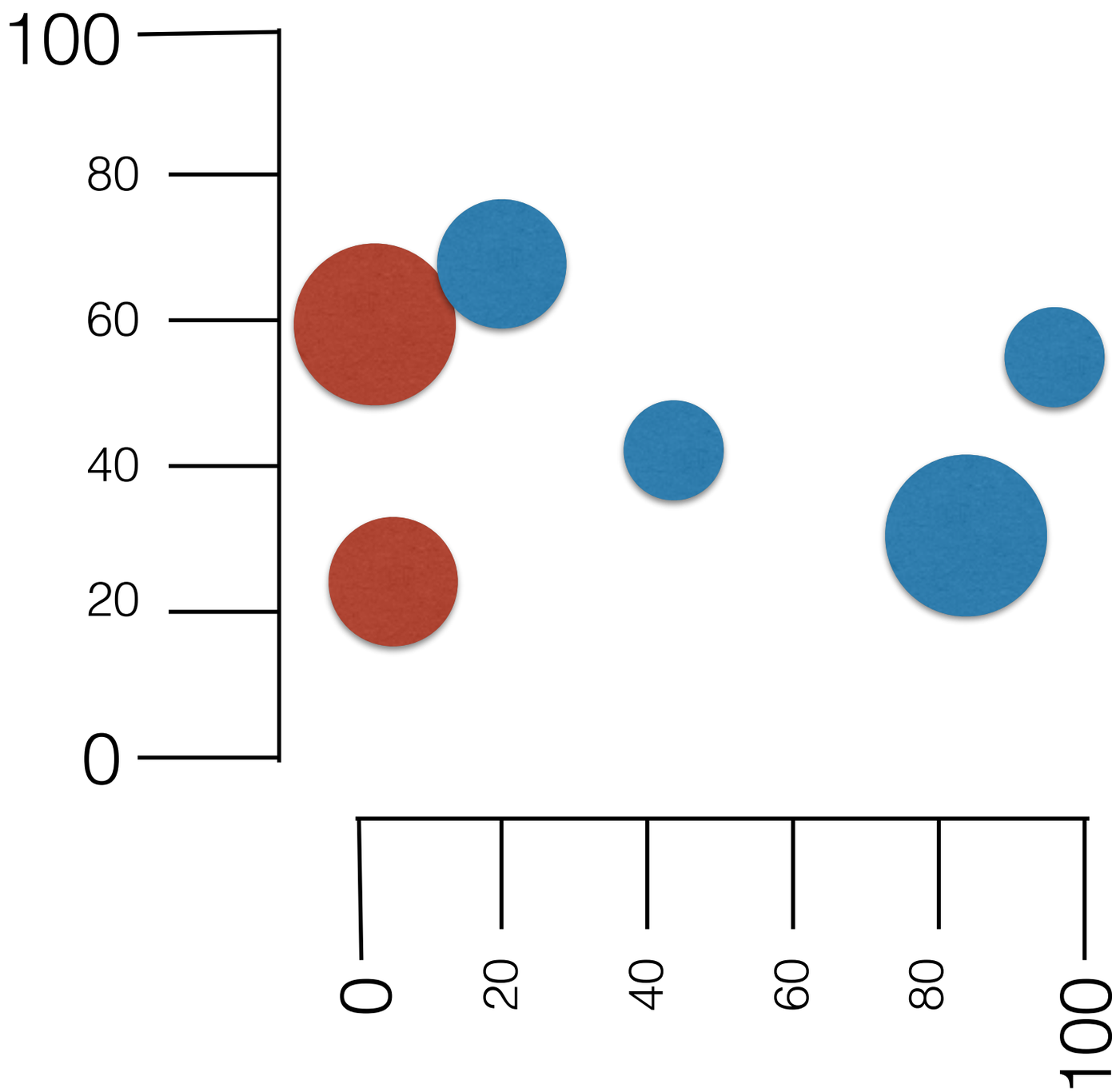
<g id=‘blob’></g>



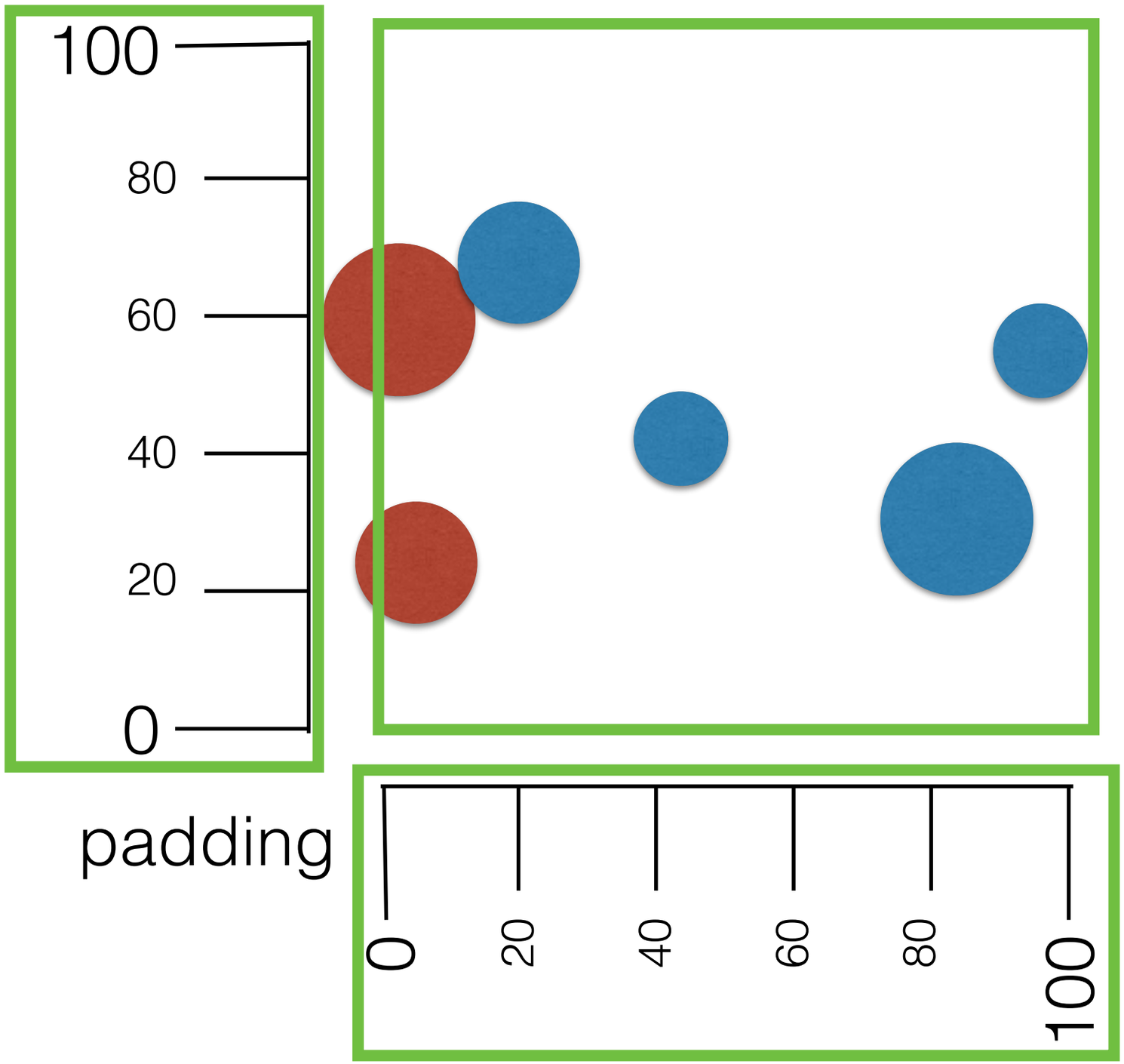

```
d3.select('#blob').call(axis);
```

```
d3.select(‘#blob’).append(‘text’)…
```

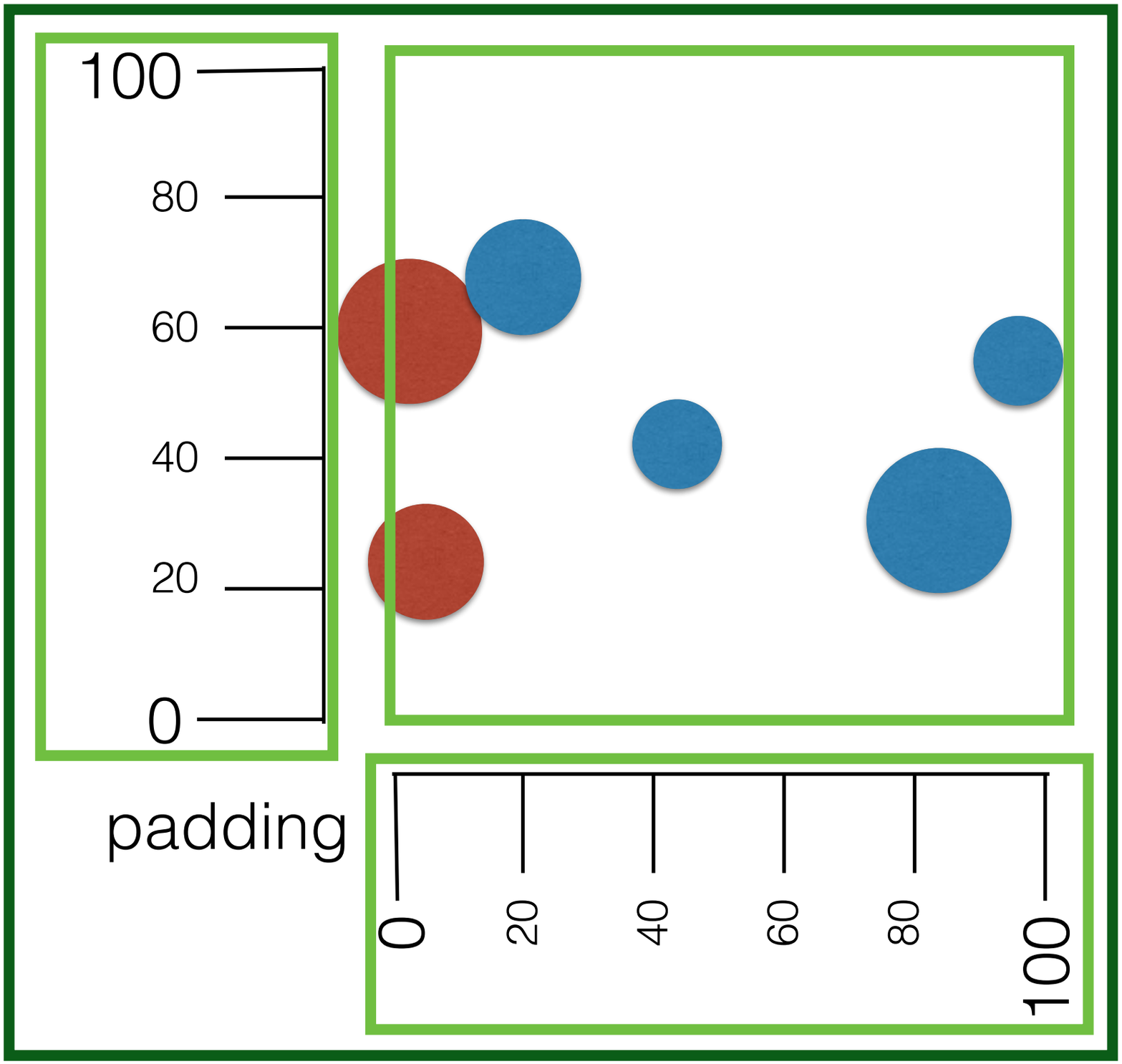
SVG Mantra: “Groups are my friend. I can structure my drawing with them.”



SVG Mantra: “Groups are my friend. I can structure my drawing with them.”



SVG Mantra: “Groups are my friend. I can structure my drawing with them.”



move the whole scatterplot

READ THE MANUAL

Follow the step by step instructions
before you start with the activities.

CS
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Enter, Update, Exit

Lab 5

```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}
```

```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}

var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```

```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}

var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```

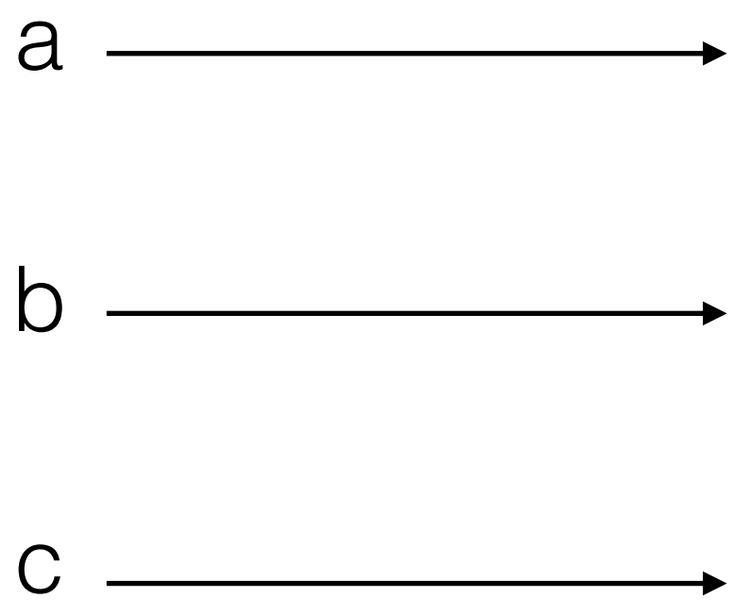
a

b

c

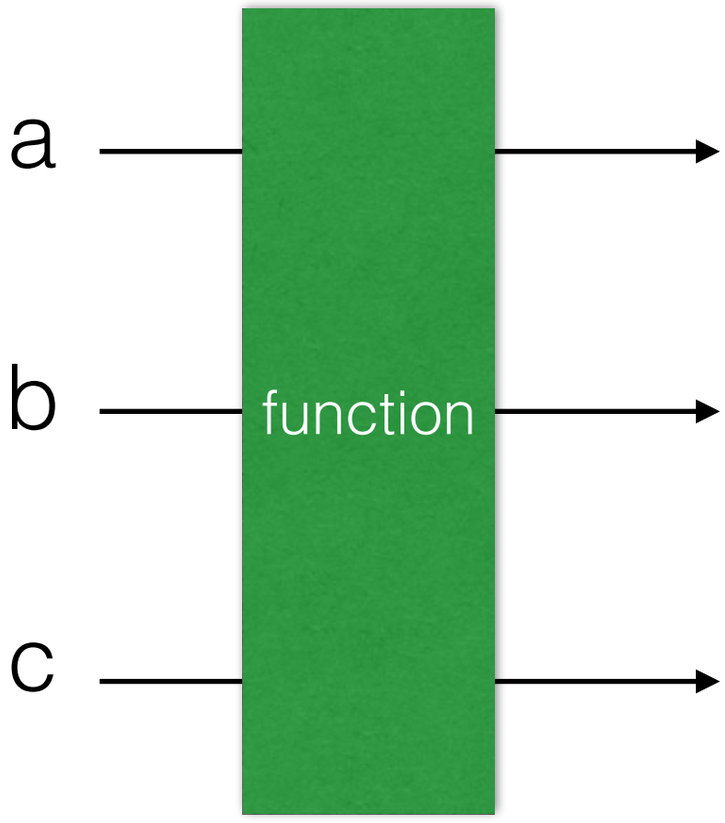
```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}

var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```



```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}

var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```



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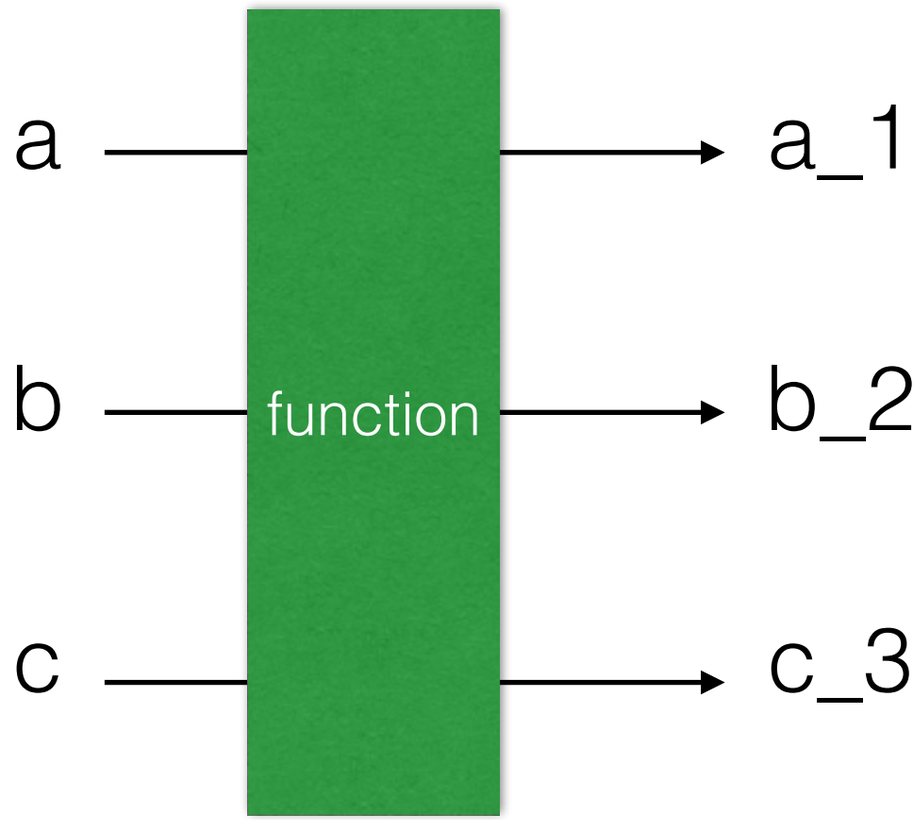
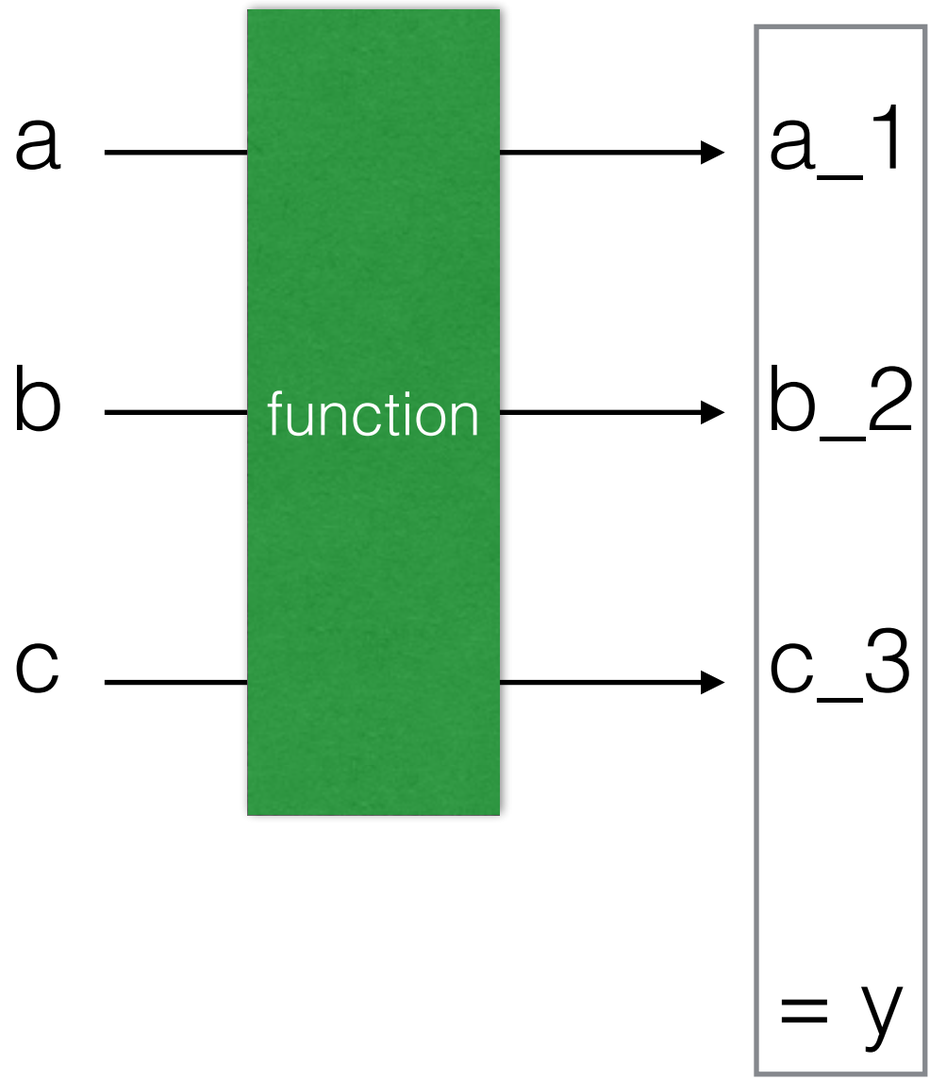
var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```



```
var x = [‘a’,’b’,’c’].forEach(function(d, i){console.log(d);}

var y = [‘a’,’b’,’c’].map(function(d, i){return d+’_’+i;}
```



Data Driven Documents (D3):
Every data item maps to a visual item.

homer

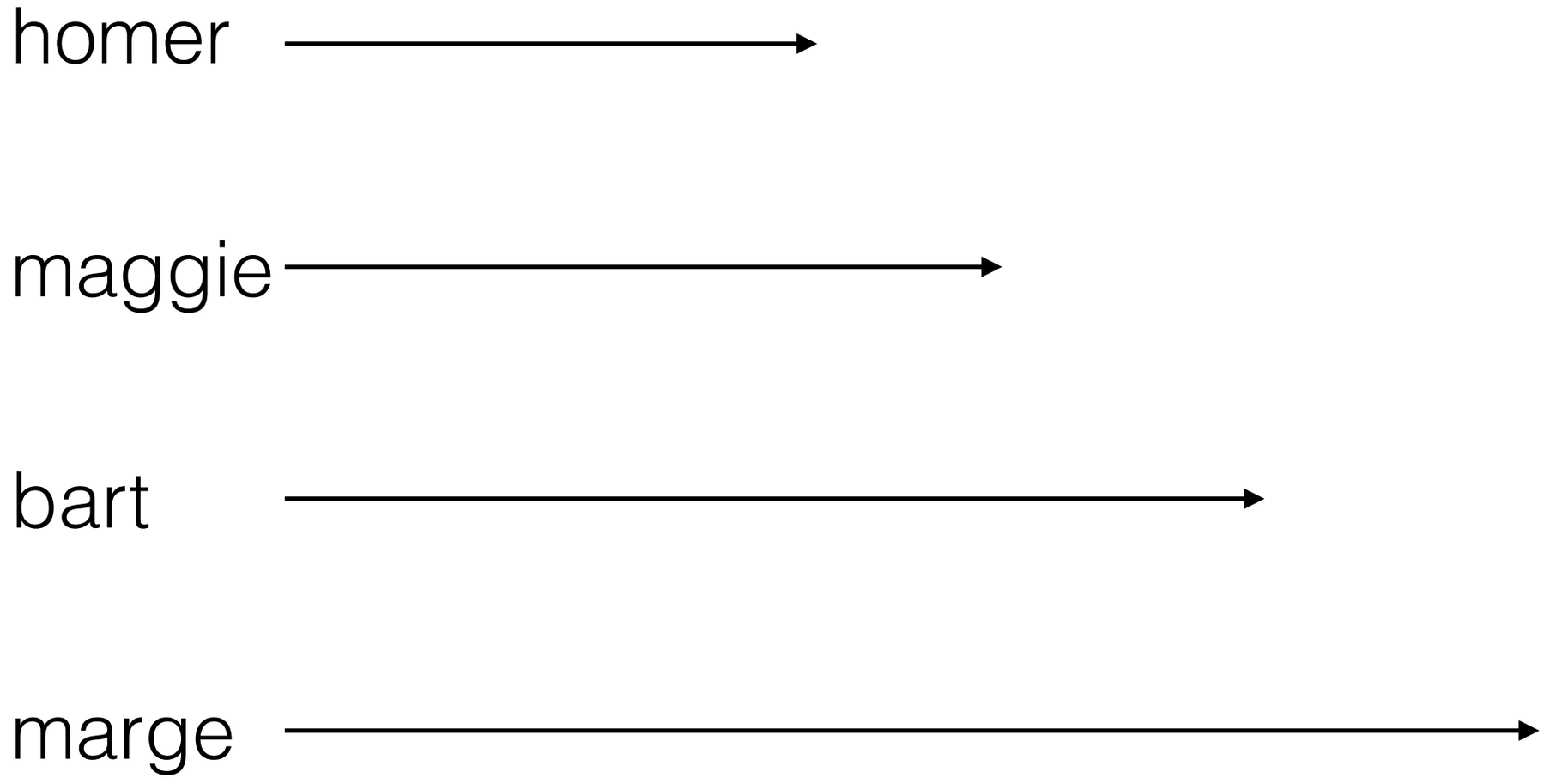
maggie

bart

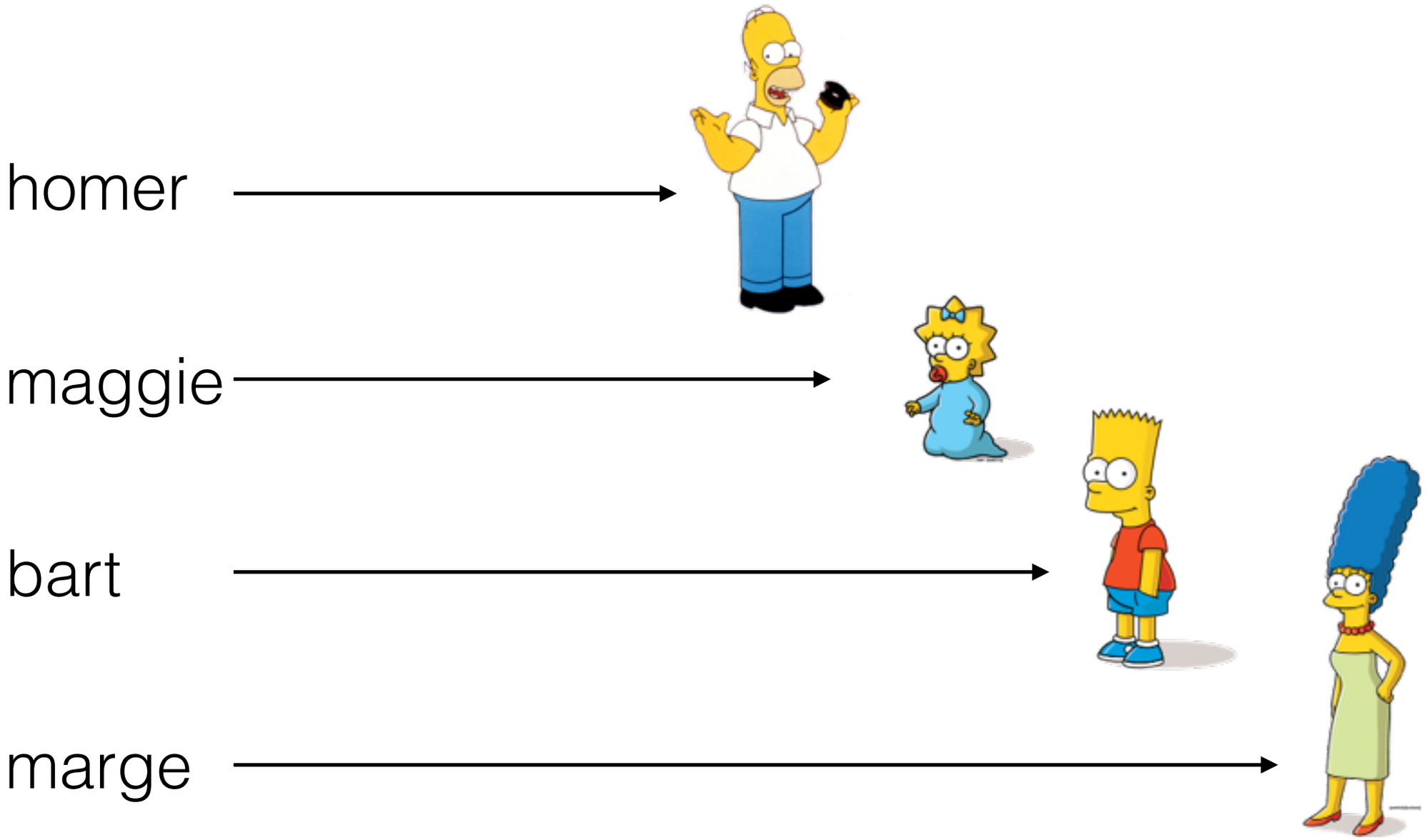
marge

Data **Document (Vis)**

Data Driven Documents (D3):
Every data item maps to a visual item.

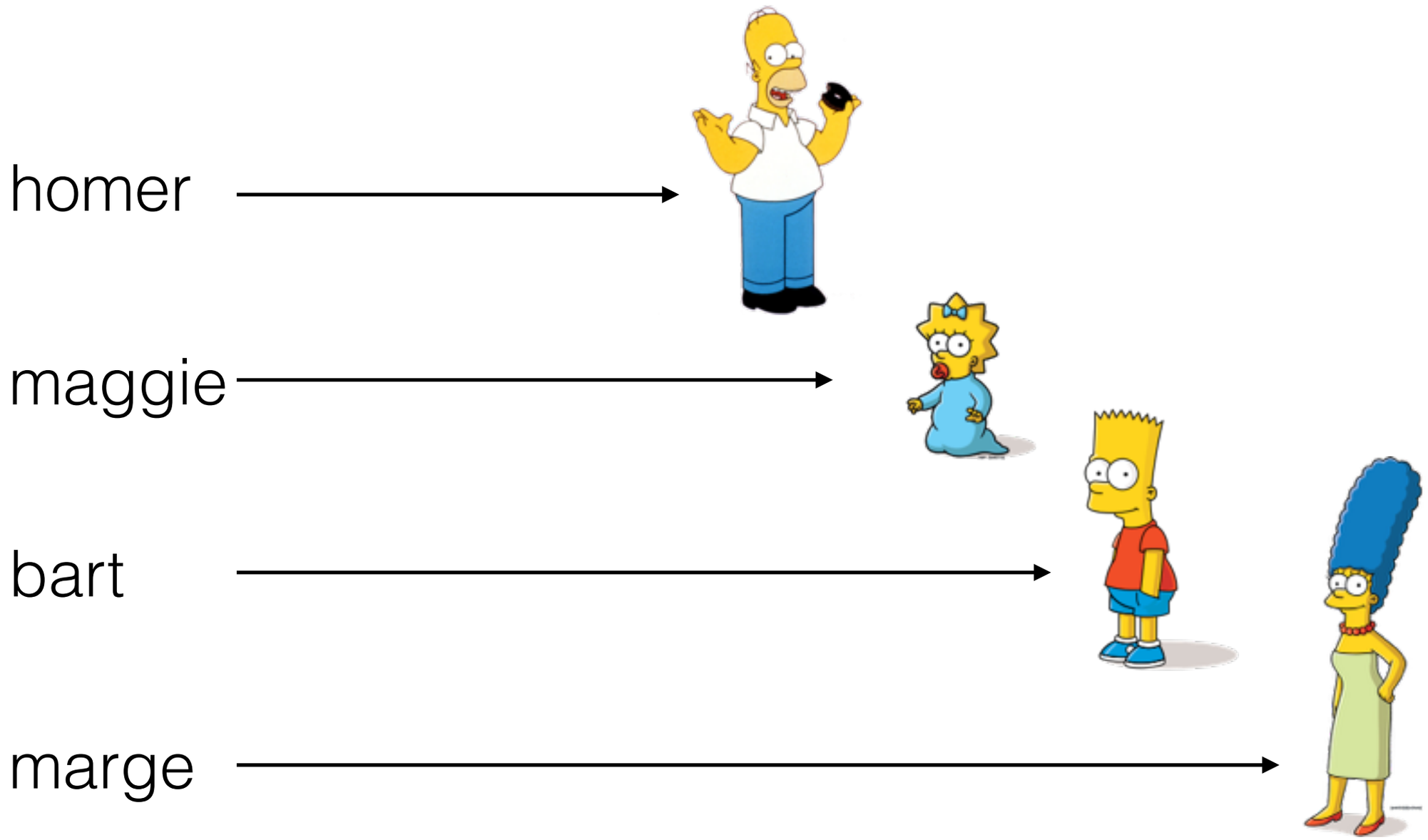


Data Driven Documents (D3):
Every data item maps to a visual item.



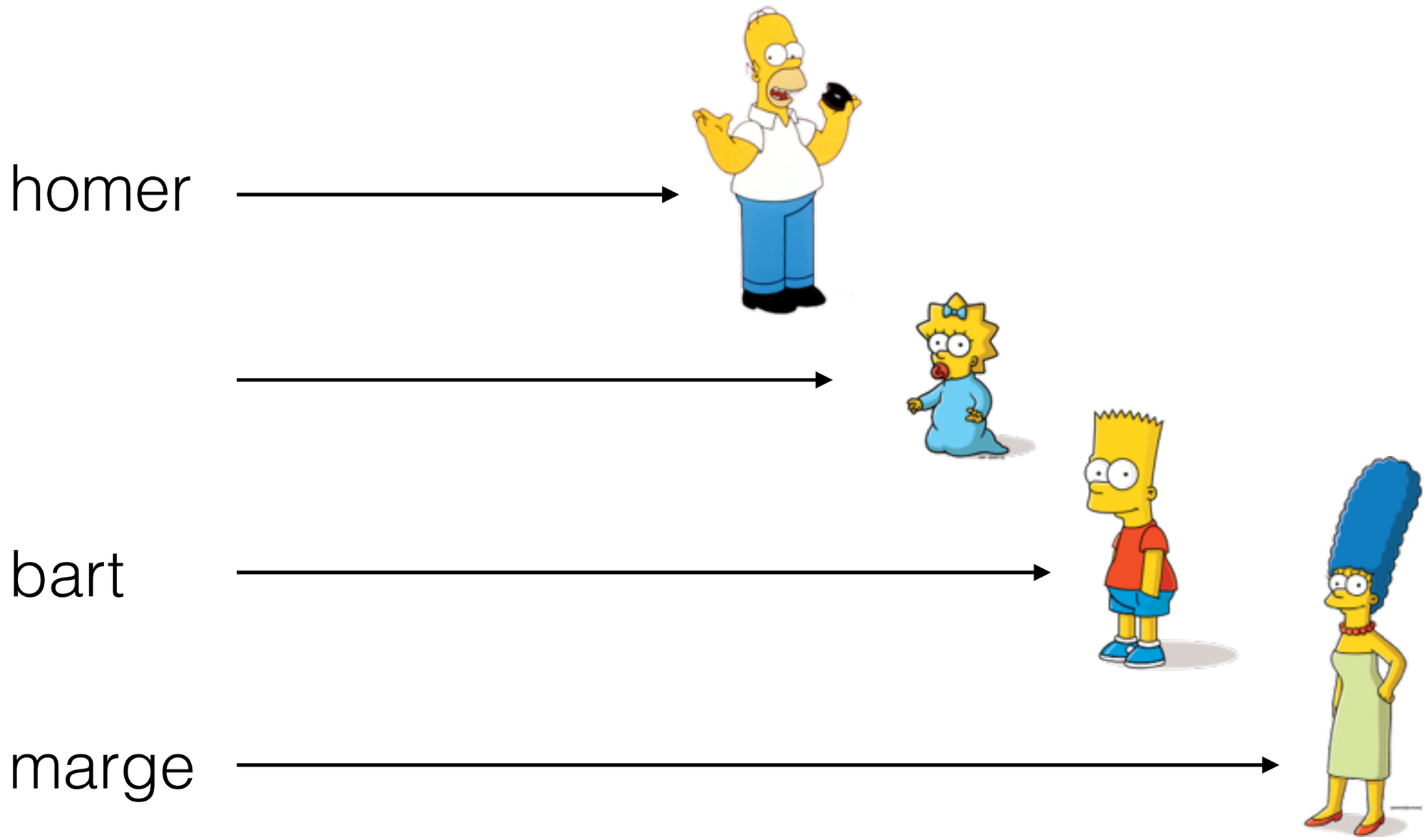
Data **Document (Vis)**

Data Driven Documents (D3):
If data disappears…



Data **Document (Vis)**

Data Driven Documents (D3): If data disappears…



Data Driven Documents (D3): If data disappears…

homer

bart

marge

Data **Document (Vis)**

Data Driven Documents (D3):
If data appears…

homer

bart

marge

Data **Document (Vis)**

Data Driven Documents (D3):
If data appears…

homer

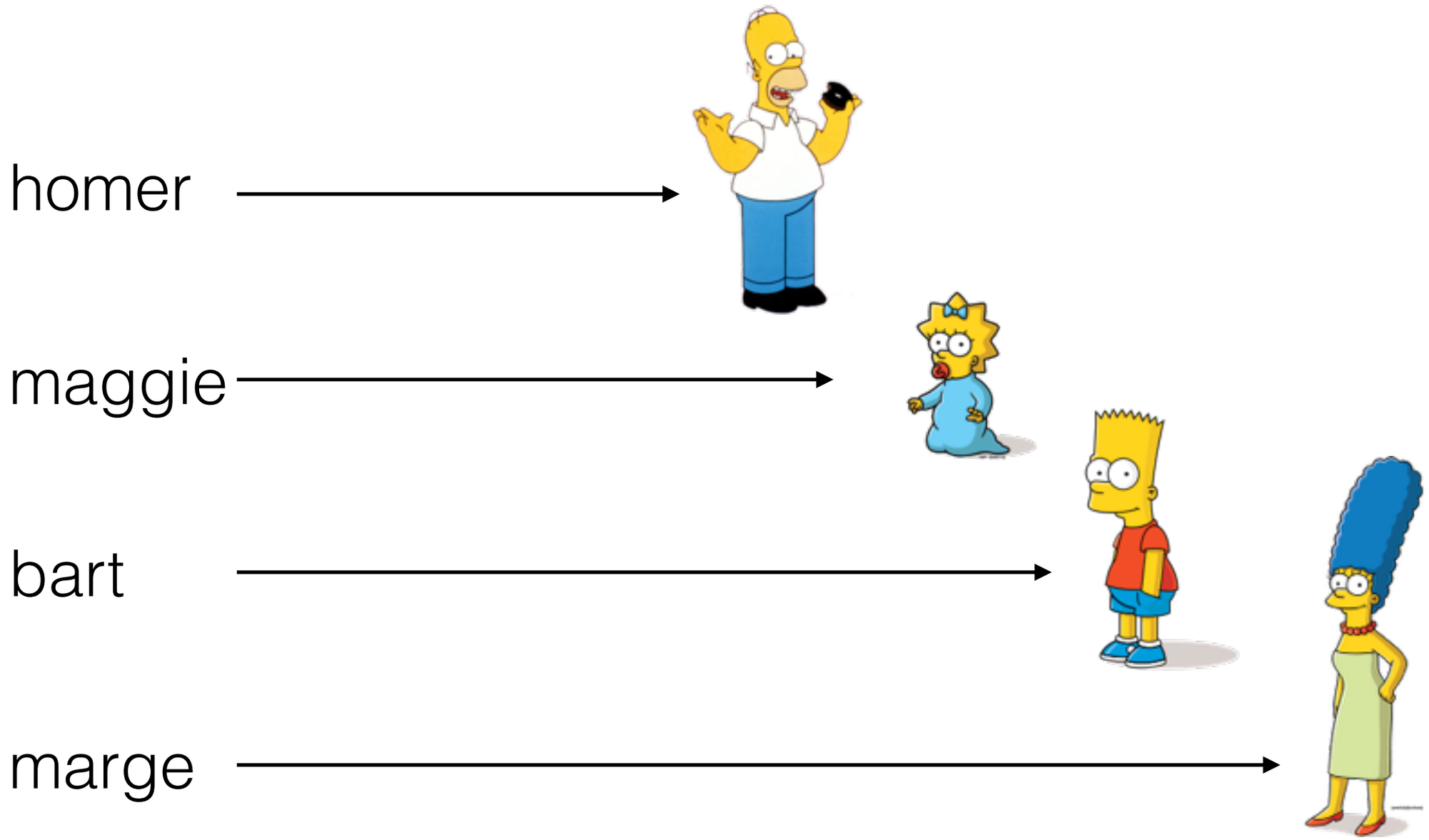
maggie

bart

marge

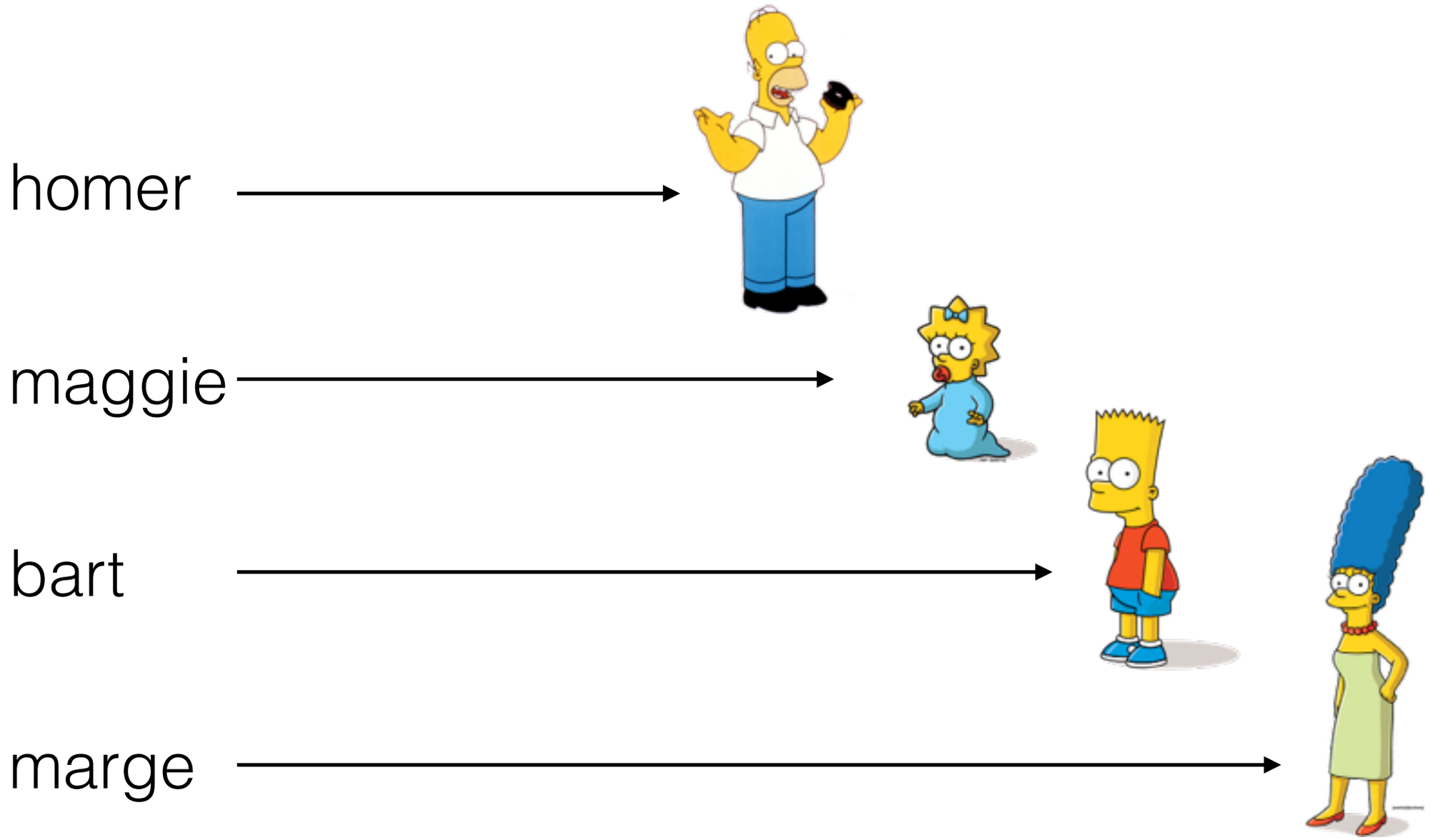
Data **Document (Vis)**

Data Driven Documents (D3):
If data appears…



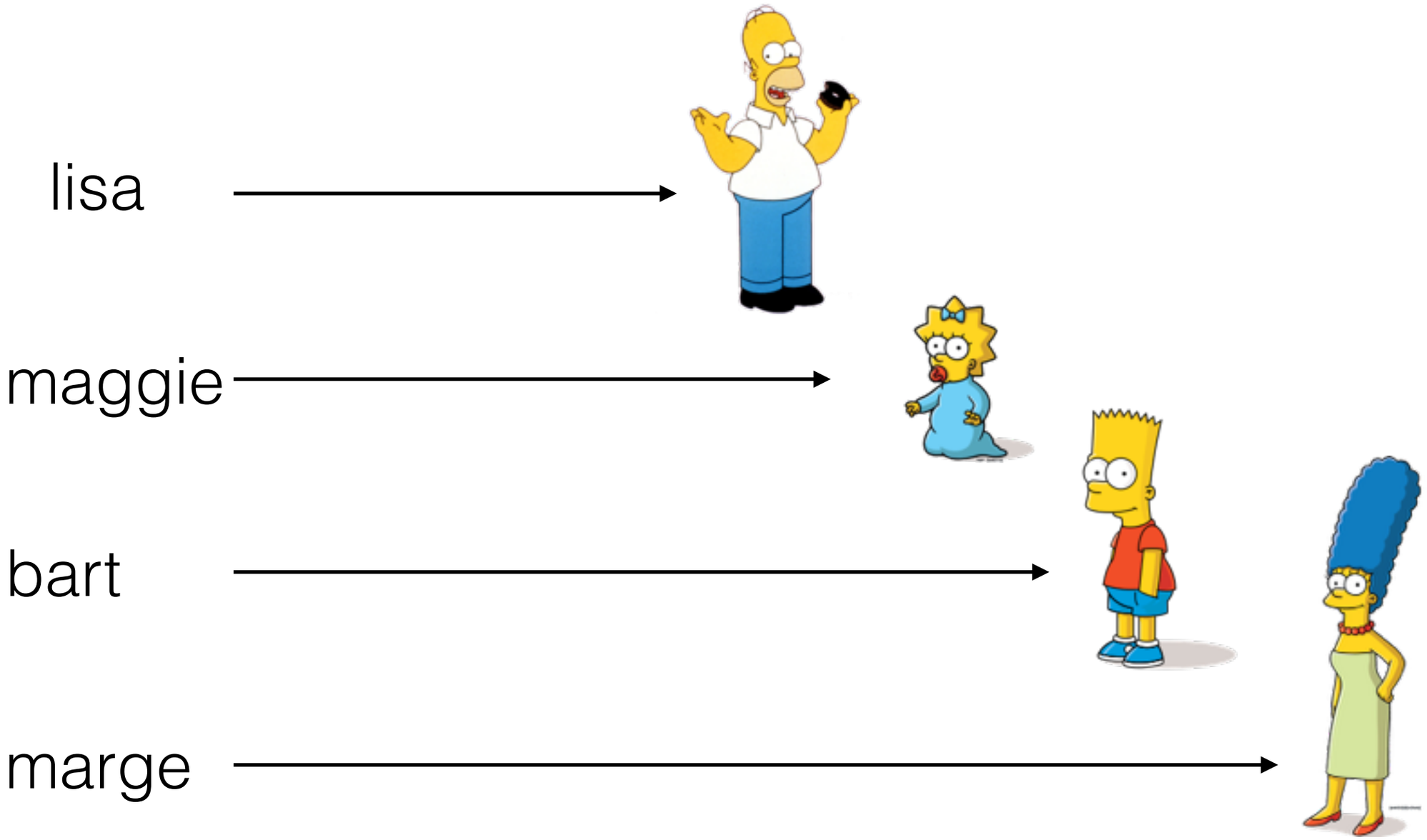
Data **Document (Vis)**

Data Driven Documents (D3):
If data changes…

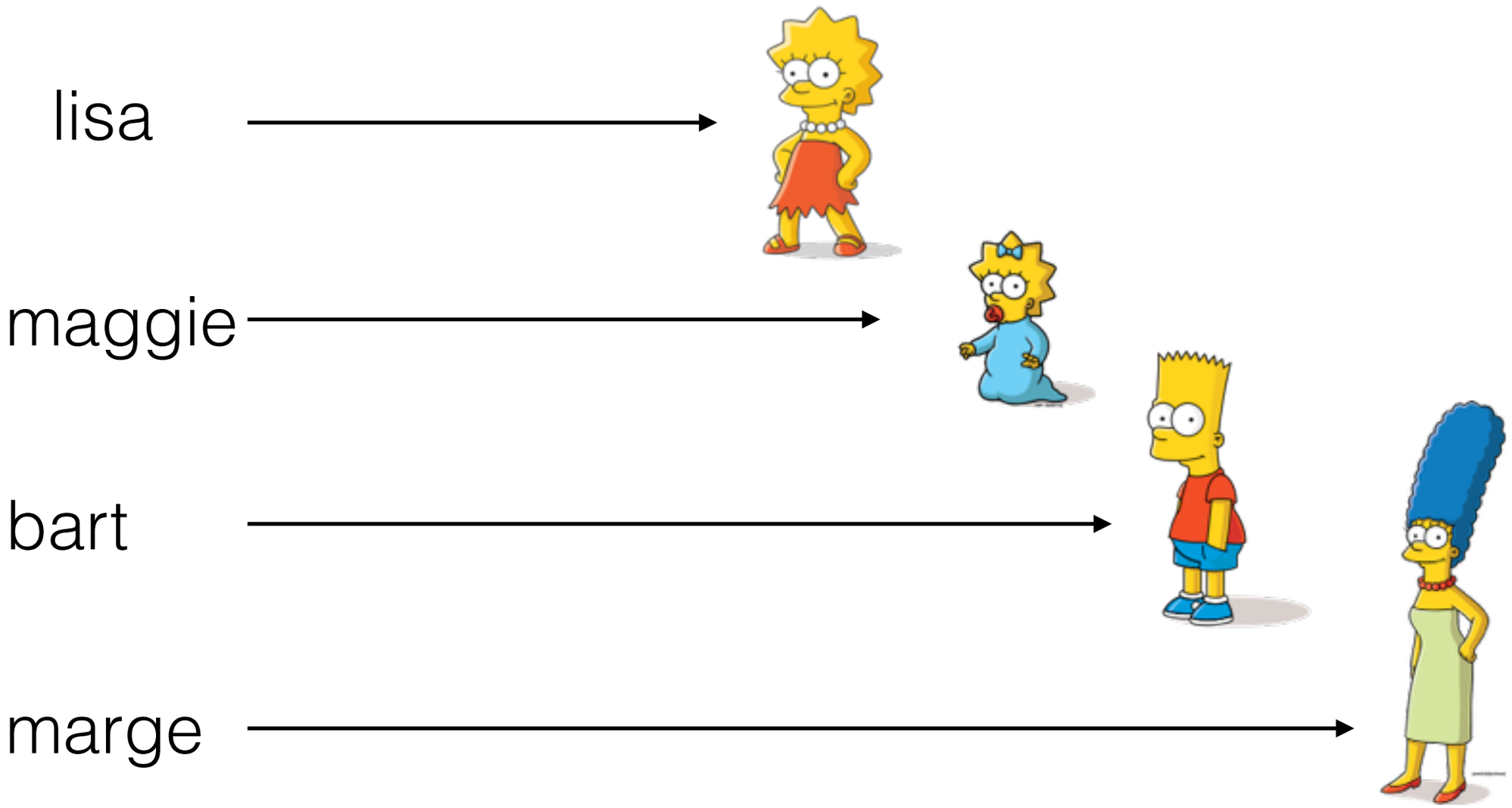


Data **Document (Vis)**

Data Driven Documents (D3):
If data changes…

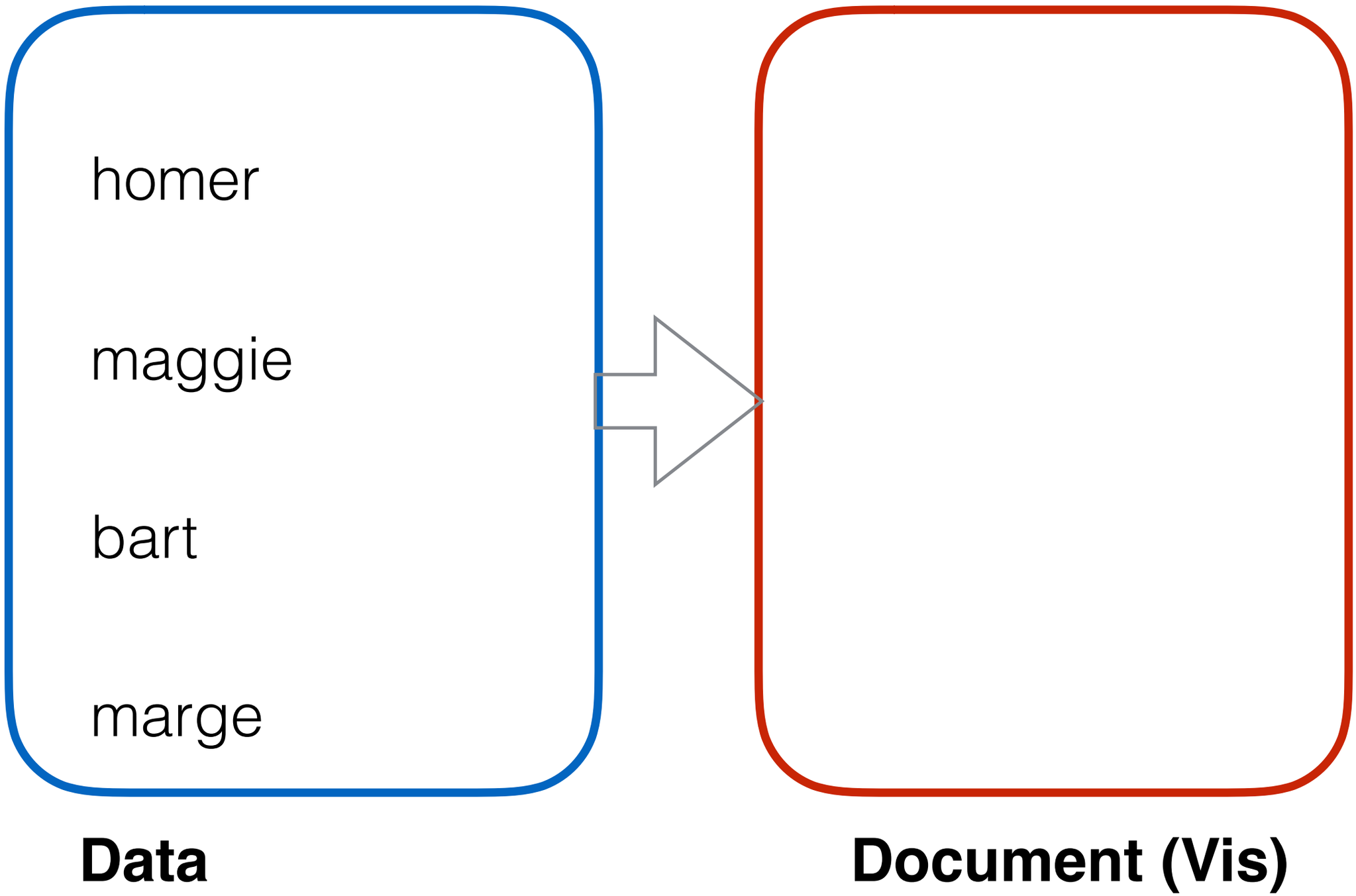


Data Driven Documents (D3):
If data changes…

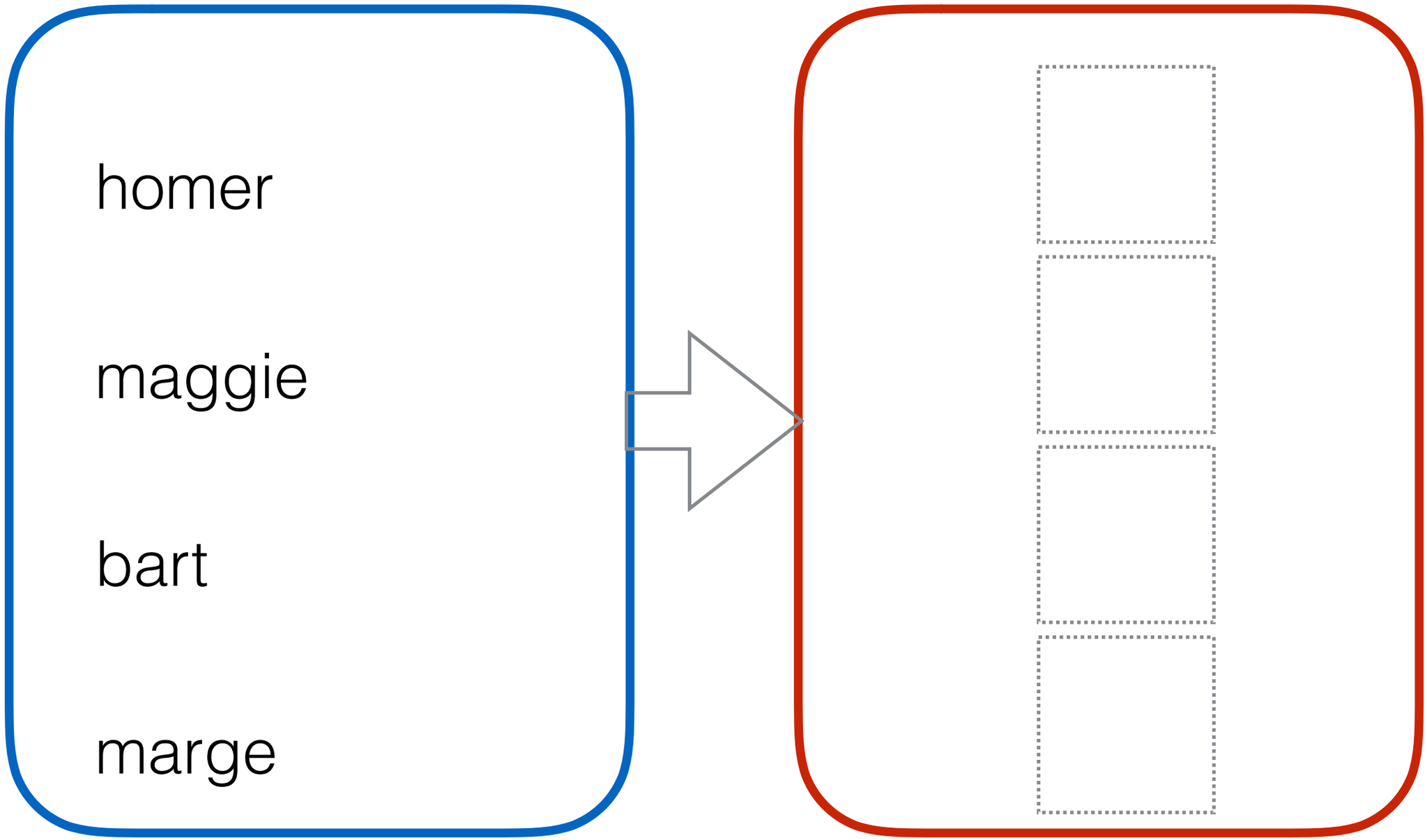


Data **Document (Vis)**

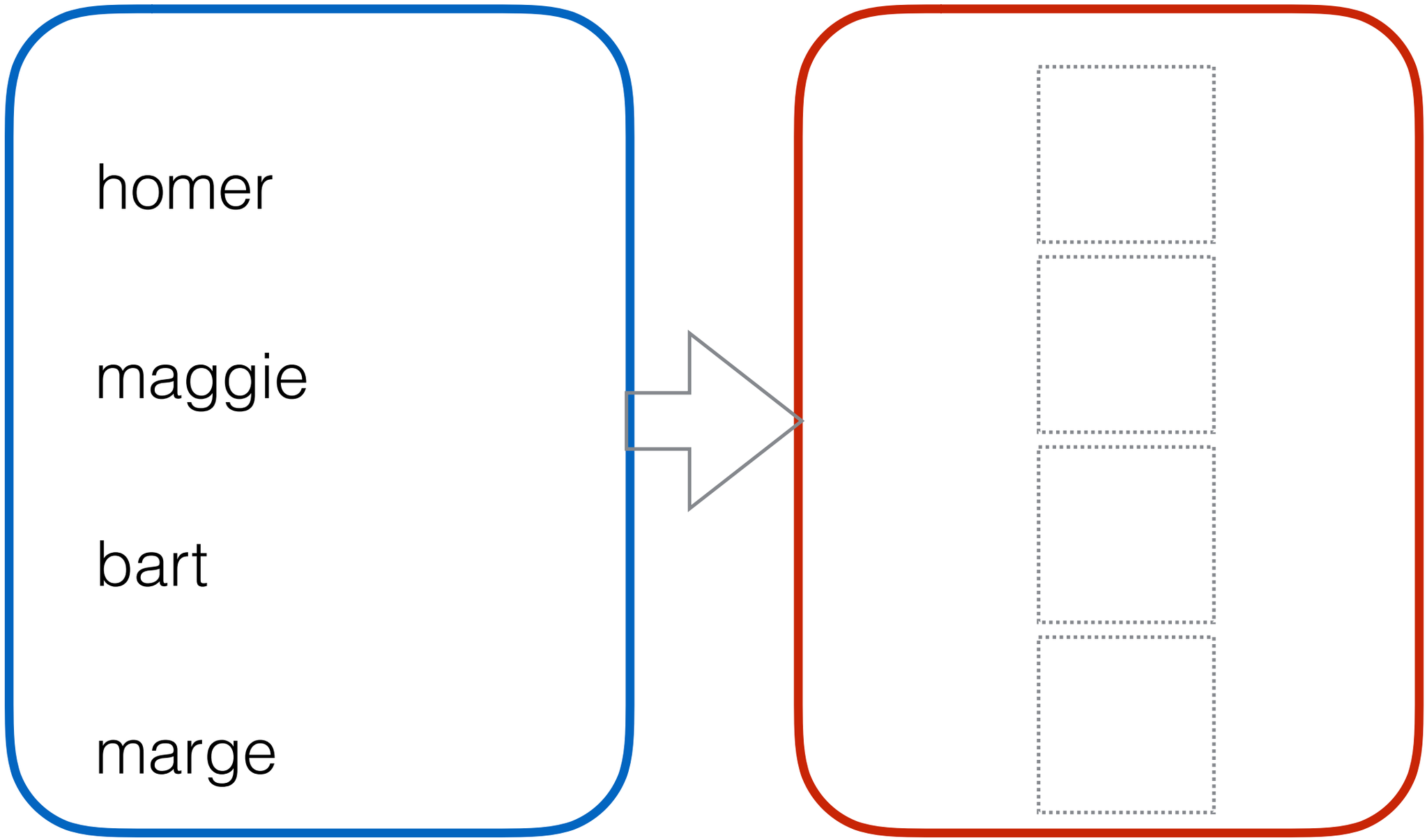
```
var allData = {‘homer’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
```



```
var allData = {‘homer’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
var allThatEnter = simpsons.enter()
```



```
var simpsons = svg.selectAll(“.simpson”).data(allData);
var allThatEnter = simpsons.enter()
allThatEnter.append(‘img’).attr(…);
```



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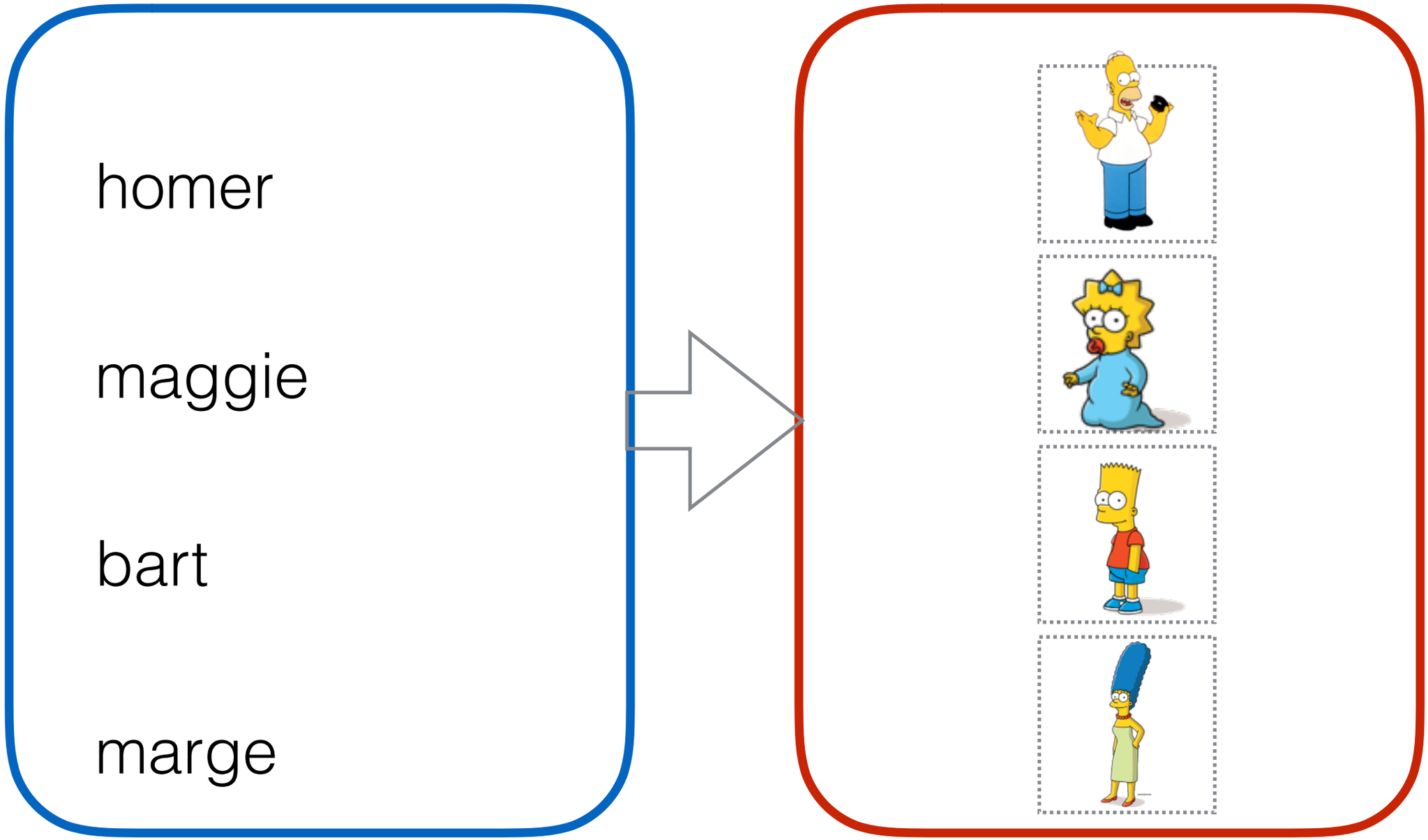

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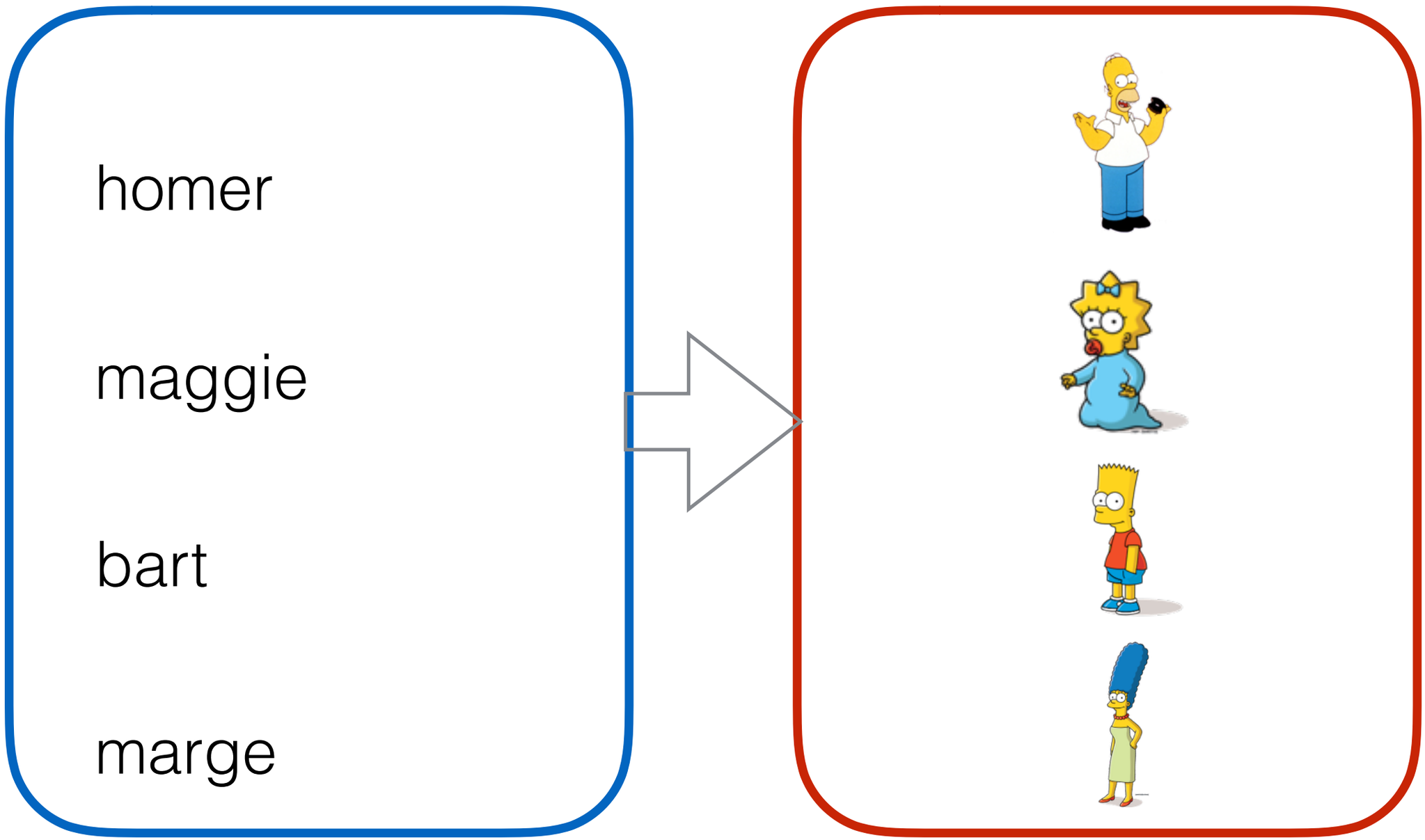

Data **Document (Vis)**

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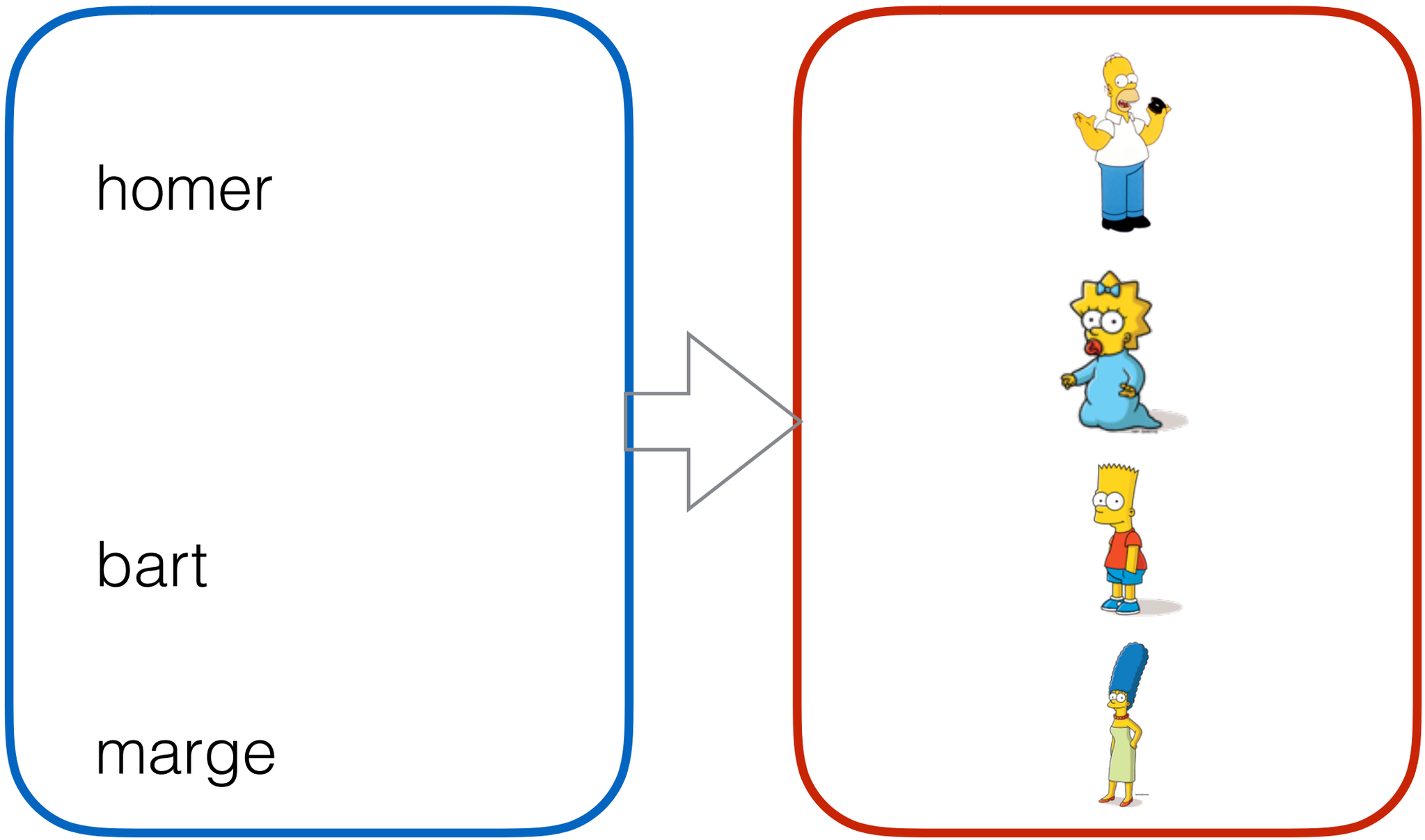
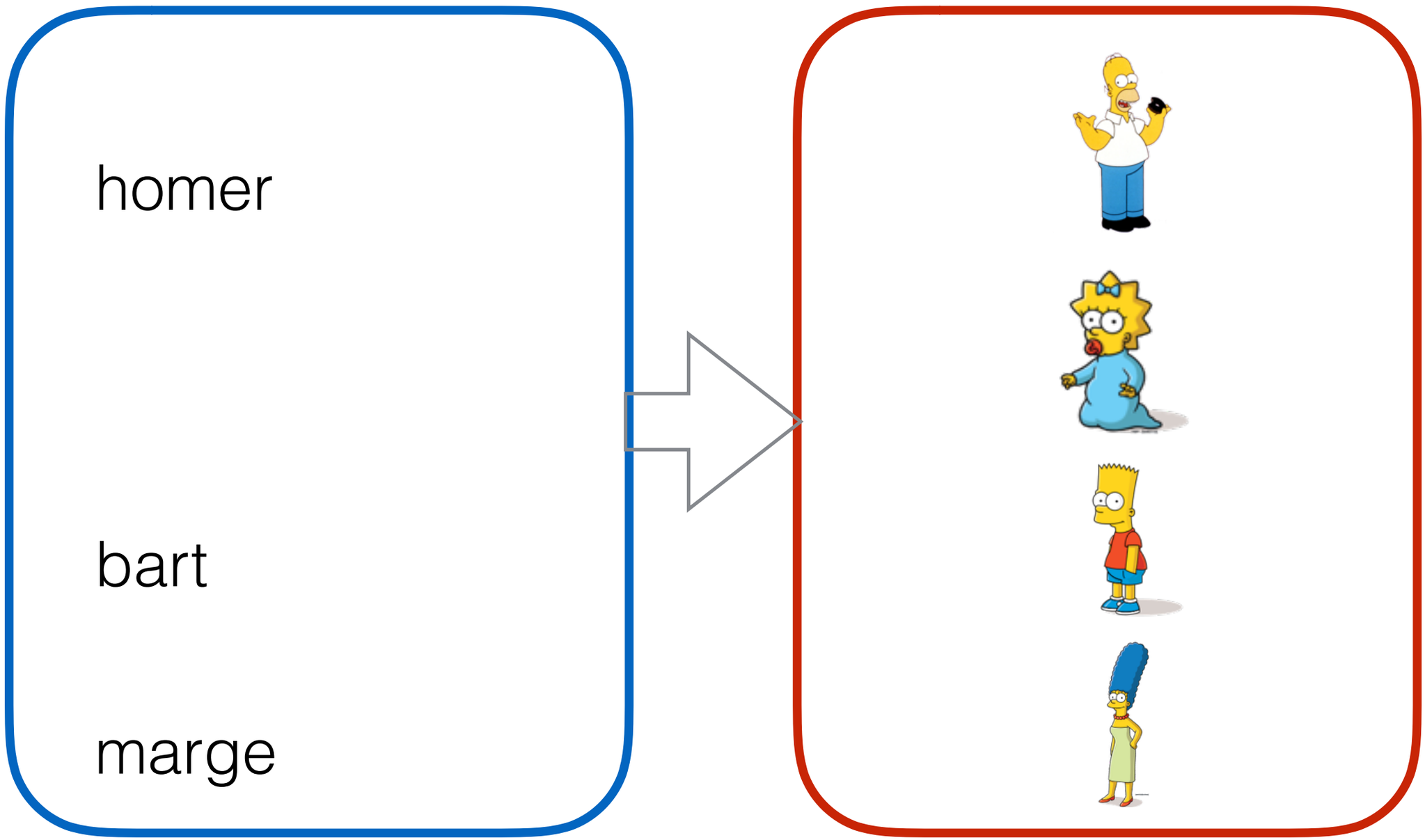


Data **Document (Vis)**

```
var allData = {‘homer’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
var allThatLeave = simpsons.exit()
```



Data **Document (Vis)**

```
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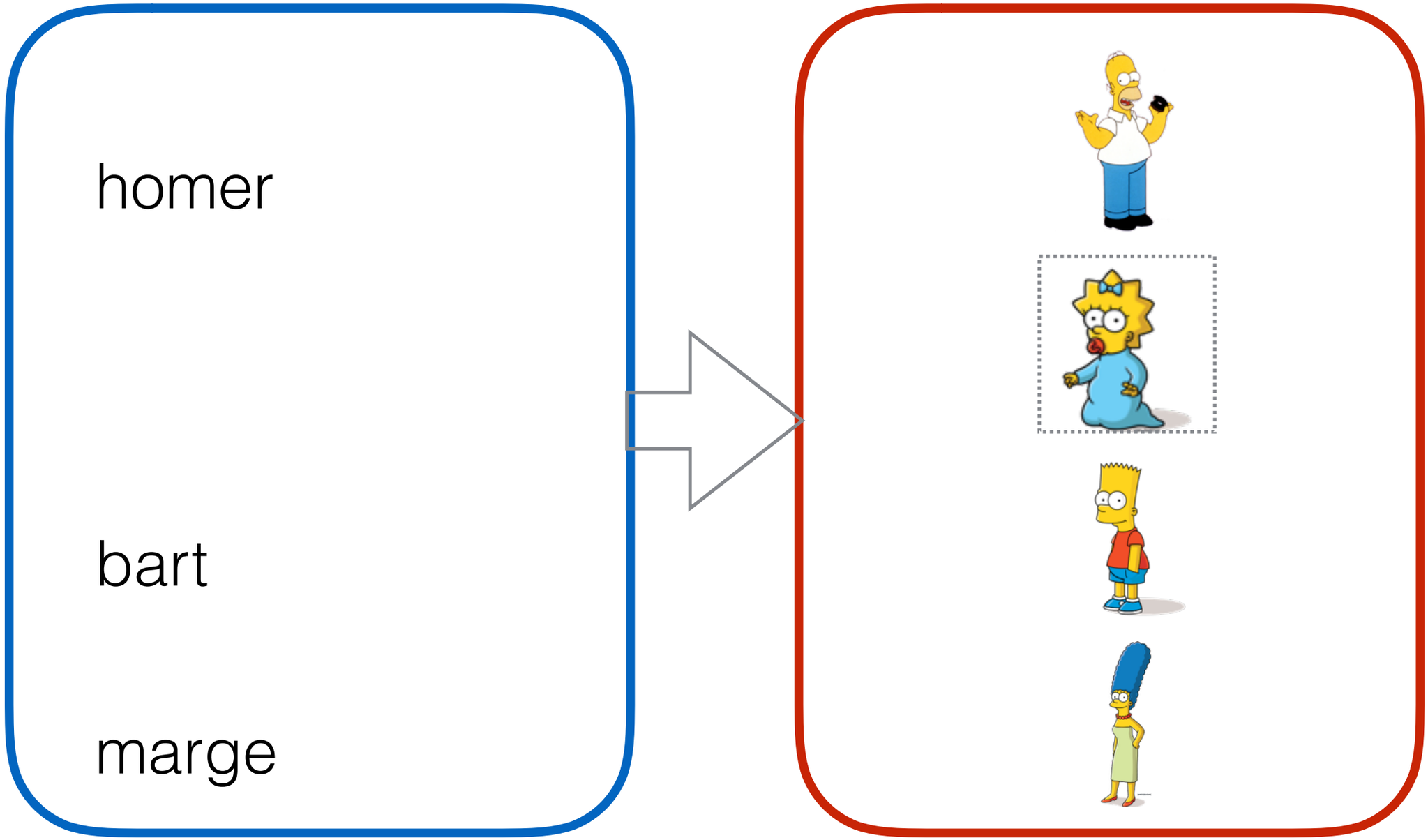
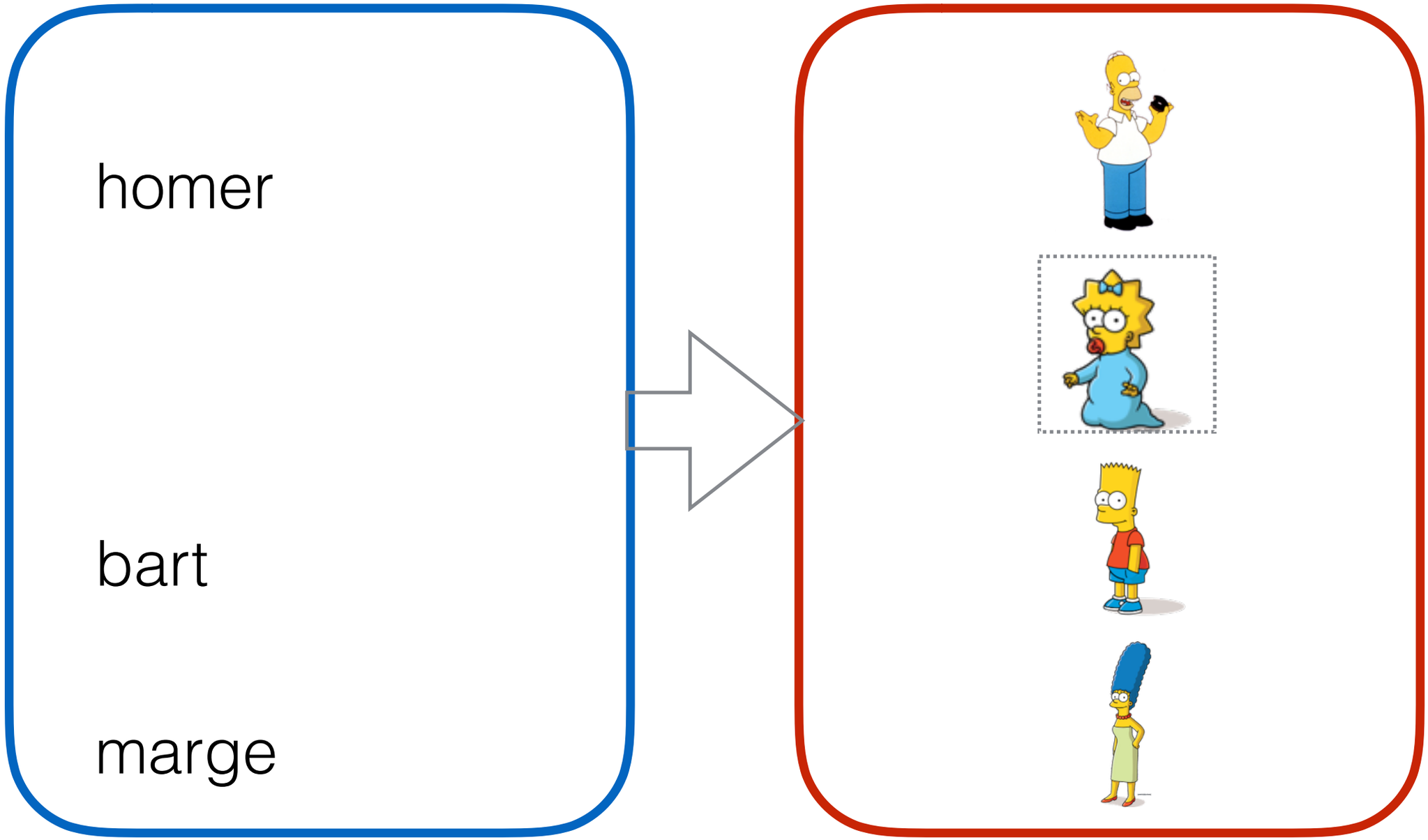


```
var allData = {‘homer’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
var allThatLeave = simpsons.exit();
allThatLeave.remove();
```



Data **Document (Vis)**

```
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var simpsons = svg.selectAll(“.simpson”).data(allData);
var allThatLeave = simpsons.exit();
allThatLeave.remove();
```
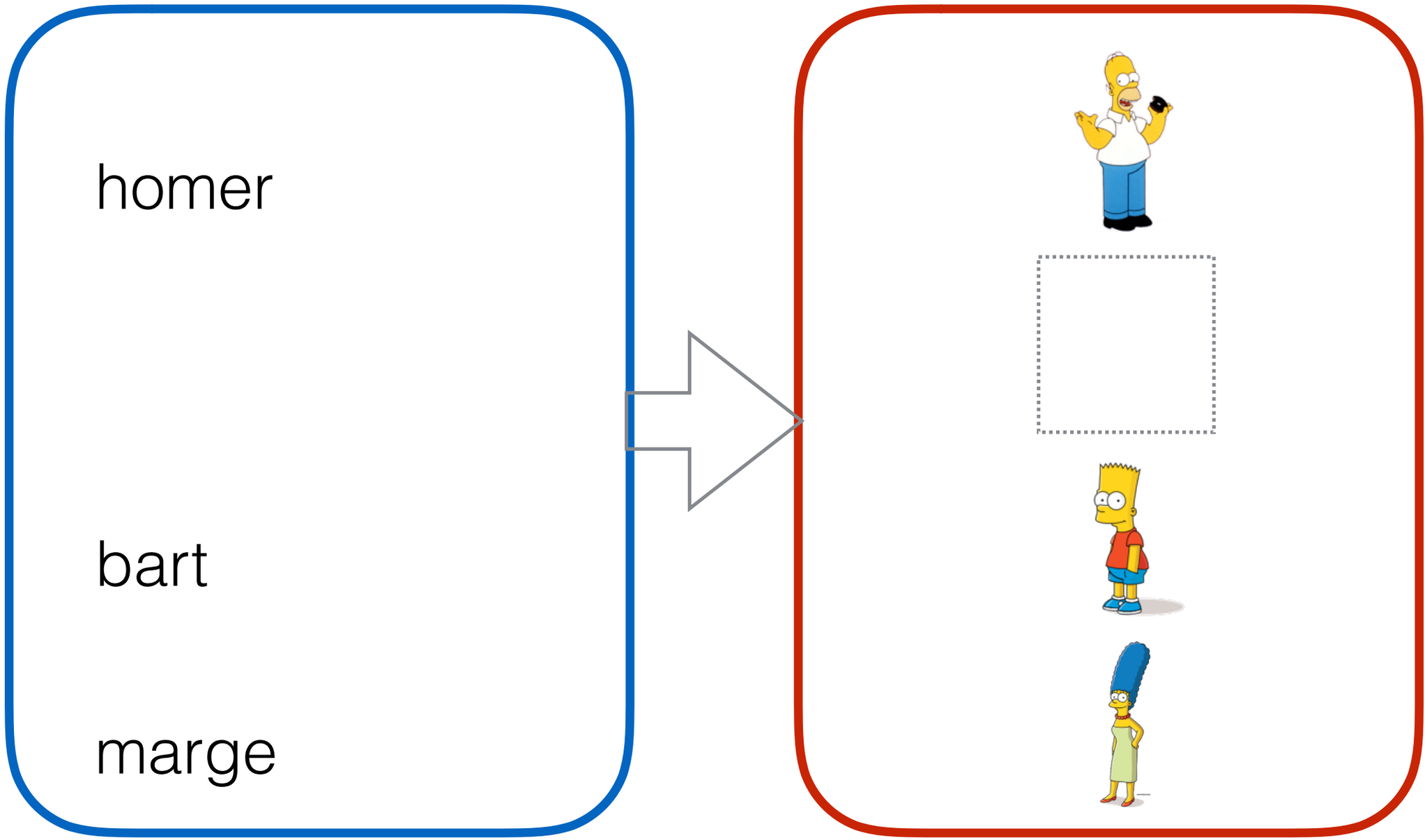
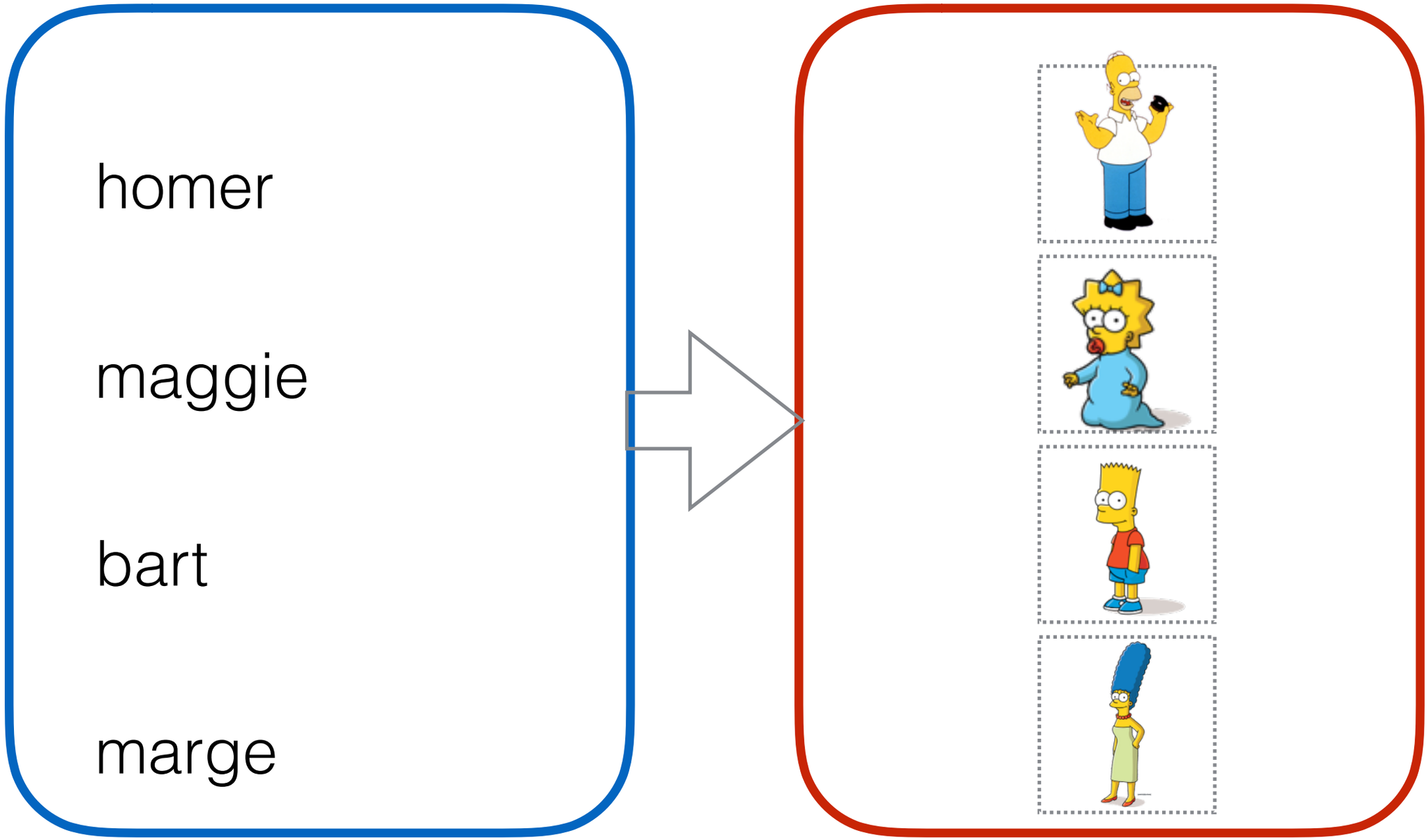
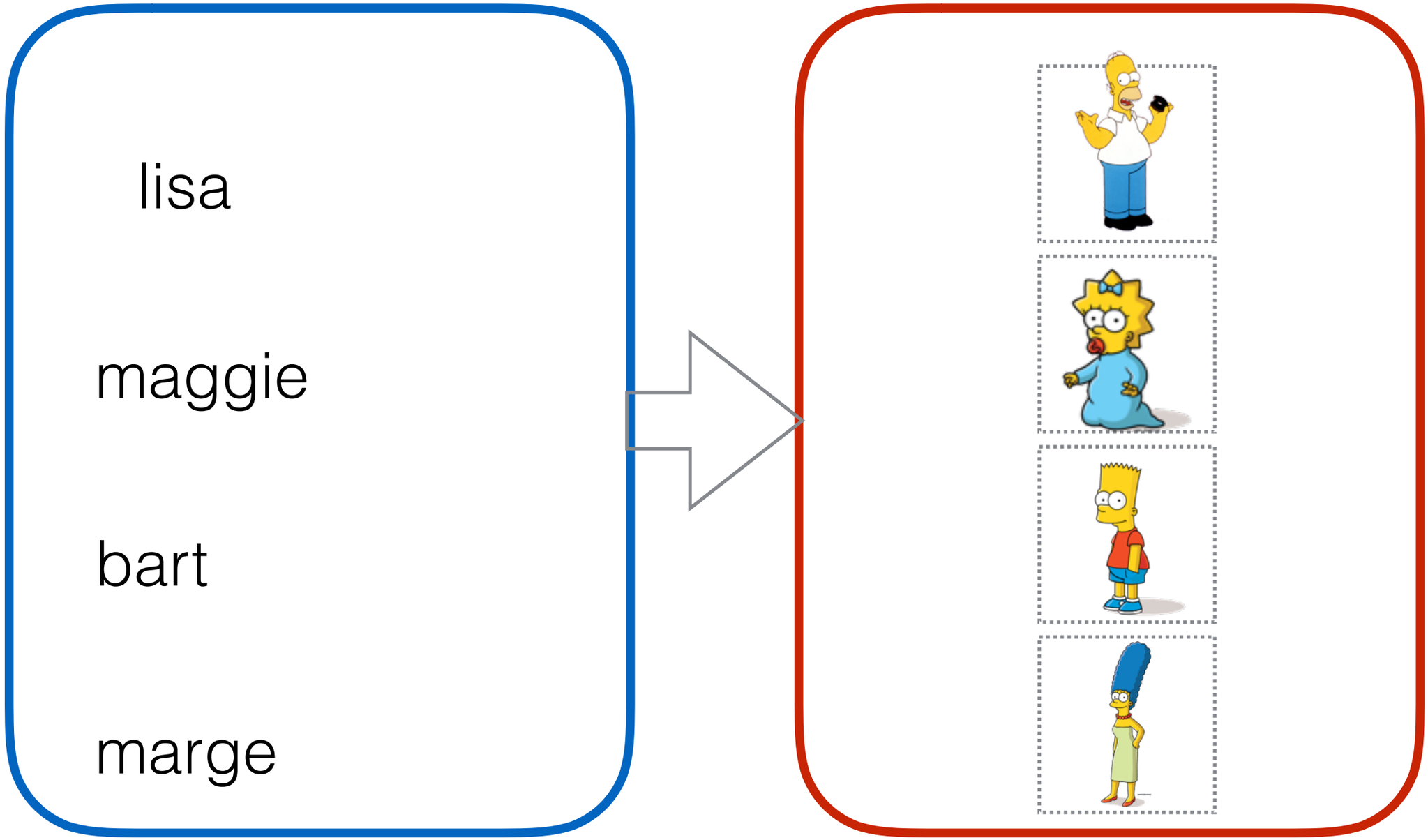



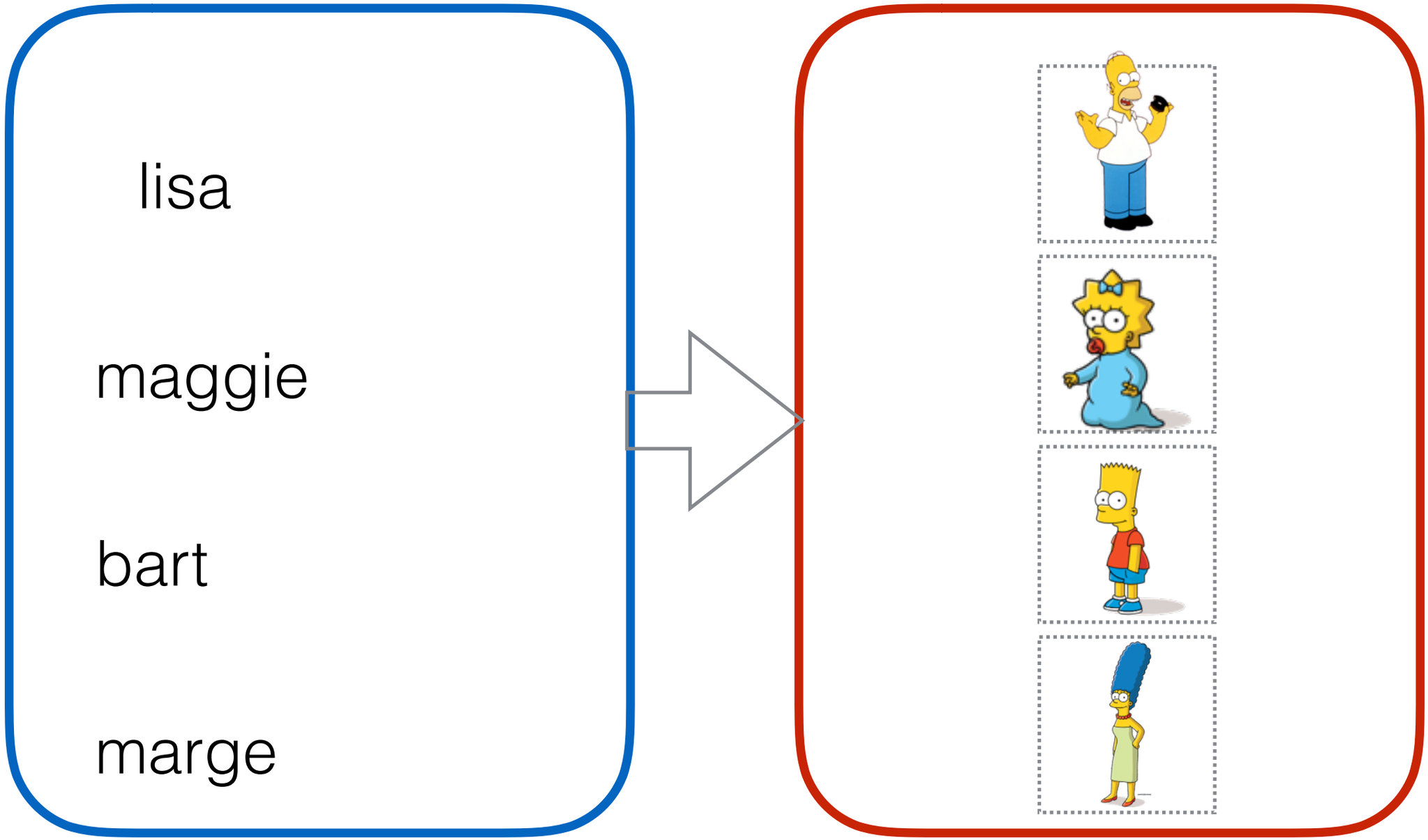
```
var allData = {‘lisa’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
```



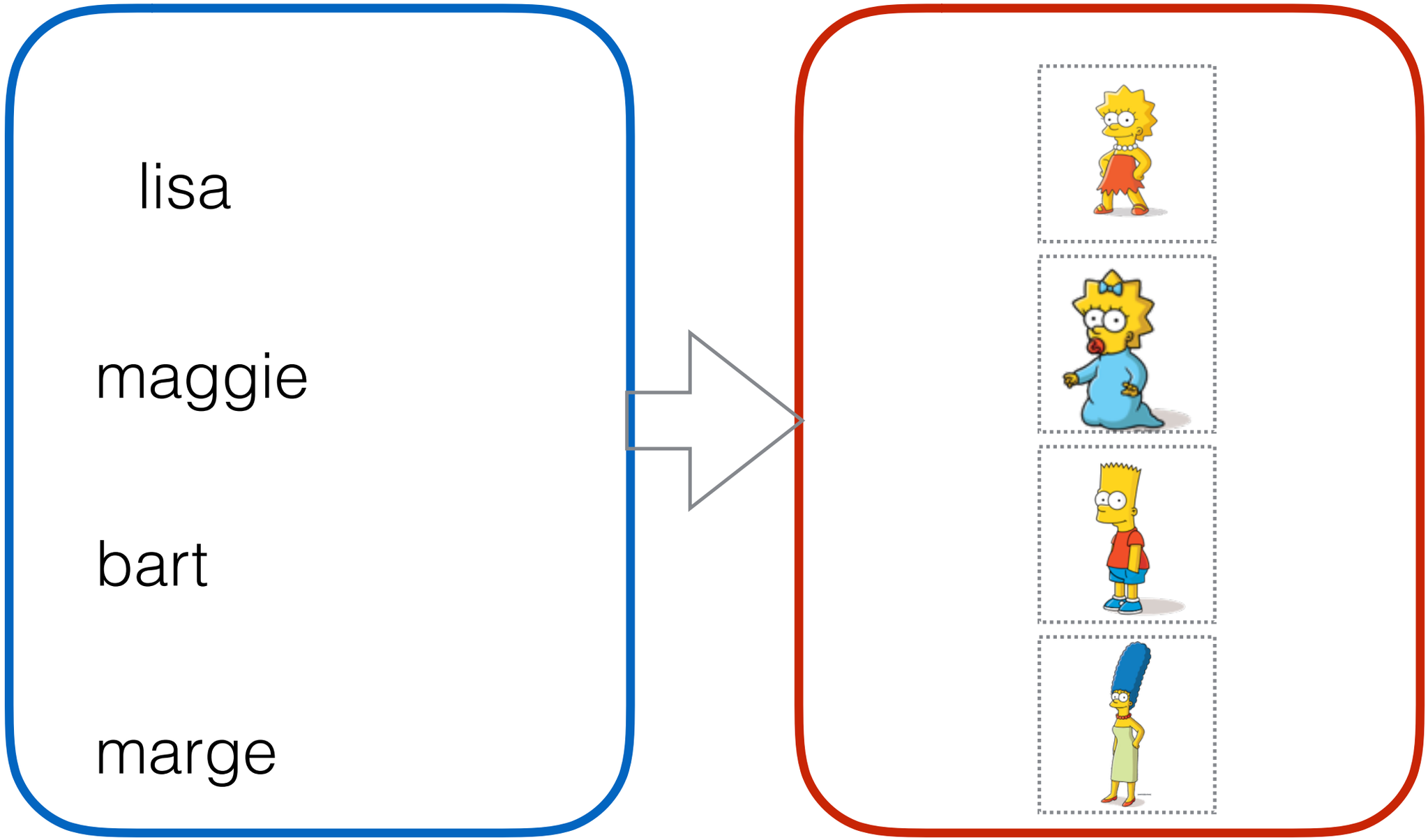
```
var allData = {‘lisa’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
```



```
var allData = {‘lisa’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
simpsons.attr(‘href’,function(d){return d+”.jpg”};
```



```
var allData = {‘lisa’,’maggie’,’bart’,’marge’}
var simpsons = svg.selectAll(“.simpson”).data(allData);
simpsons.attr(‘href’,function(d){return d+”.jpg”};
```



Hen's most frequently used D3 snippet

```
var simpsons = svg.selectAll(".simpsons").data(allData);
simpsons.exit().remove();

// --- adding Element to class simpsons
var simpsonsEnter = simpsons.enter().append("circle").attr({
    "class":"simpsons"
    "href":function(d){return d+".jpg"}
})

// --- changing nodes for simpsons
simpsons.attr({
    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
})
```

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var simpsons = svg.selectAll(".simpsons").data(allData);
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// --- adding Element to class simpsons
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```

binding

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})
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binding

remove

Hen's most frequently used D3 snippet

```
var simpsons = svg.selectAll(".simpsons").data(allData);
```

binding

```
simpsons.exit().remove();
```

remove

```
// --- adding Element to class simpsons
var simpsonsEnter = simpsons.enter().append("circle").attr({
    "class":"simpsons"
    "href":function(d){return d+".jpg"}
})
```

add

define all **static** attributes

```
// --- changing nodes for simpsons
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    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
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```

Hen's most frequently used D3 snippet

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var simpsons = svg.selectAll(".simpsons").data(allData);
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    "href":function(d){return d+".jpg"}
})

// --- changing nodes for simpsons
simpsons.attr({
    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
})
```

binding

remove

add

define all **static** attributes

every data item has a visual representative **AND**
every visual representatives has a data item

Hen's most frequently used D3 snippet

```
var simpsons = svg.selectAll(".simpsons").data(allData);
```
binding

```
simpsons.exit().remove();
```
remove

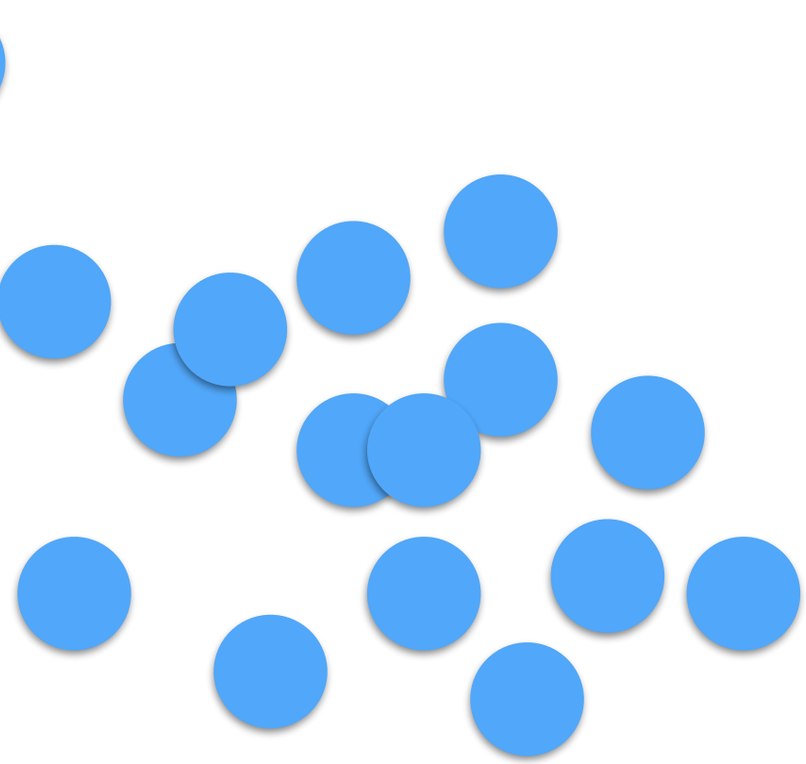
```
// --- adding Element to class simpsons
var simpsonsEnter = simpsons.enter().append("circle").attr({
    "class":"simpsons"
    "href":function(d){return d+".jpg"}
})
```
add

define all **static** attributes

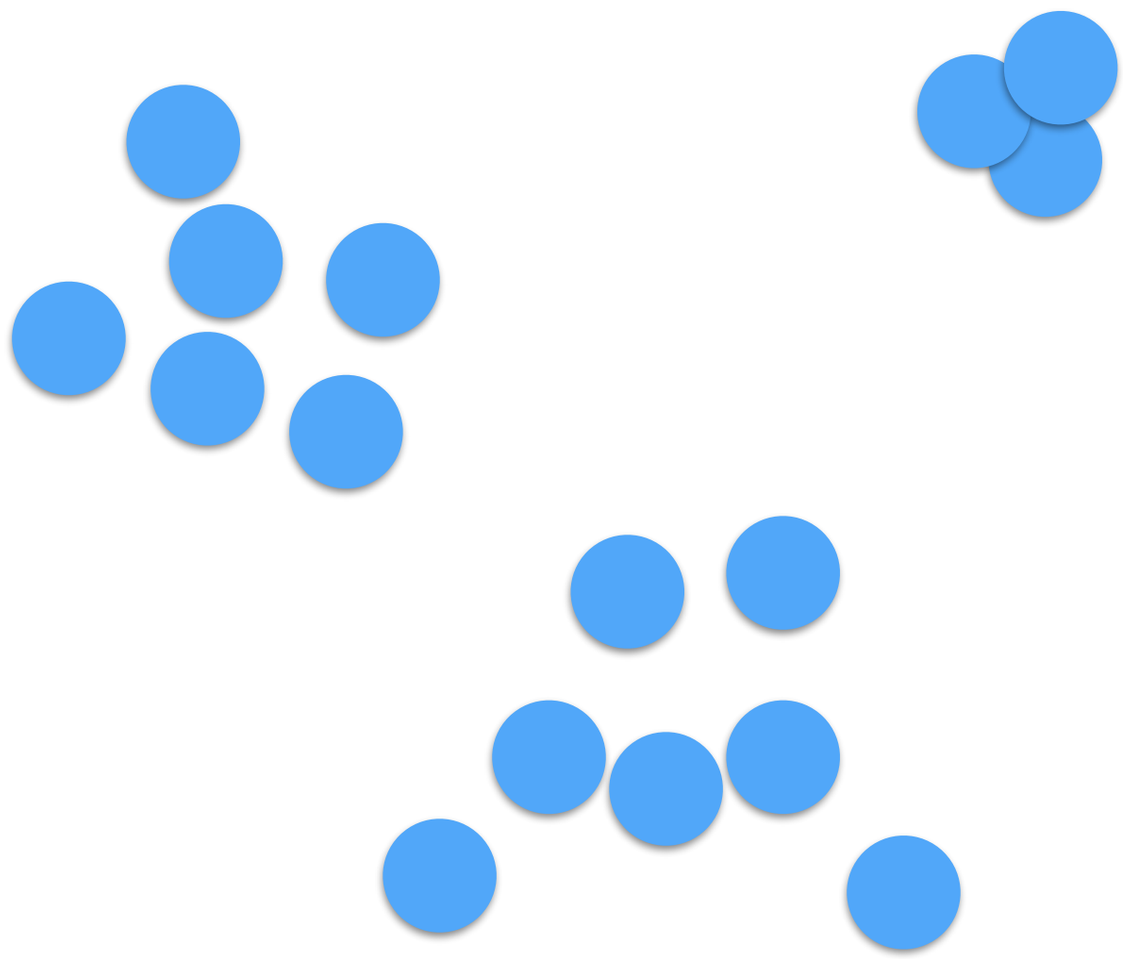
```
// --- changing nodes for simpsons
simpsons.attr({
    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
})
```
define all **dynamic** attributes

every data item has a visual representative **AND**
every visual representatives has a data item

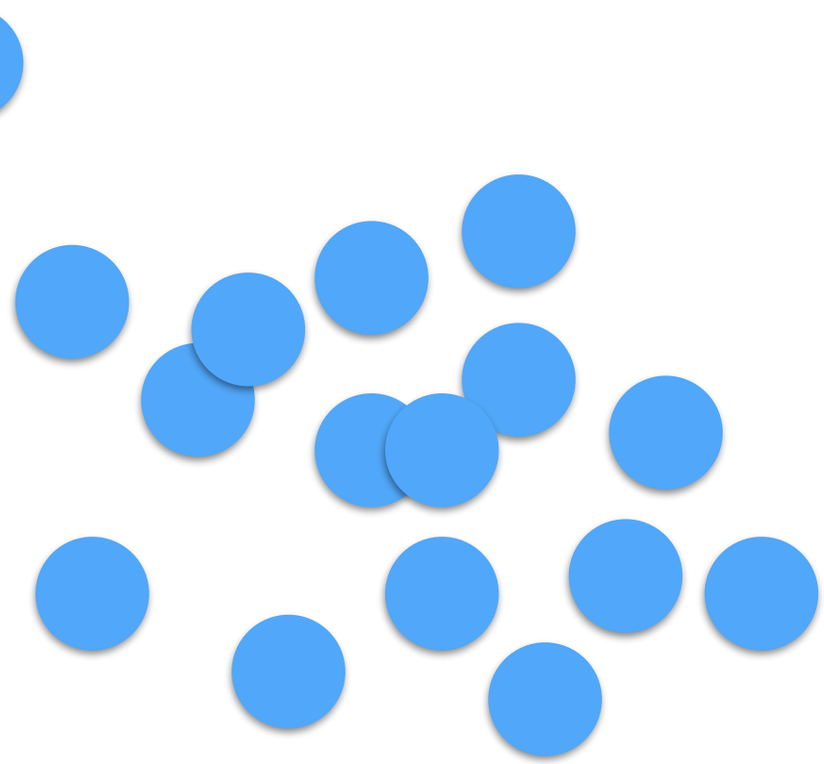
Remember Lecture 4



Remember Lecture 4

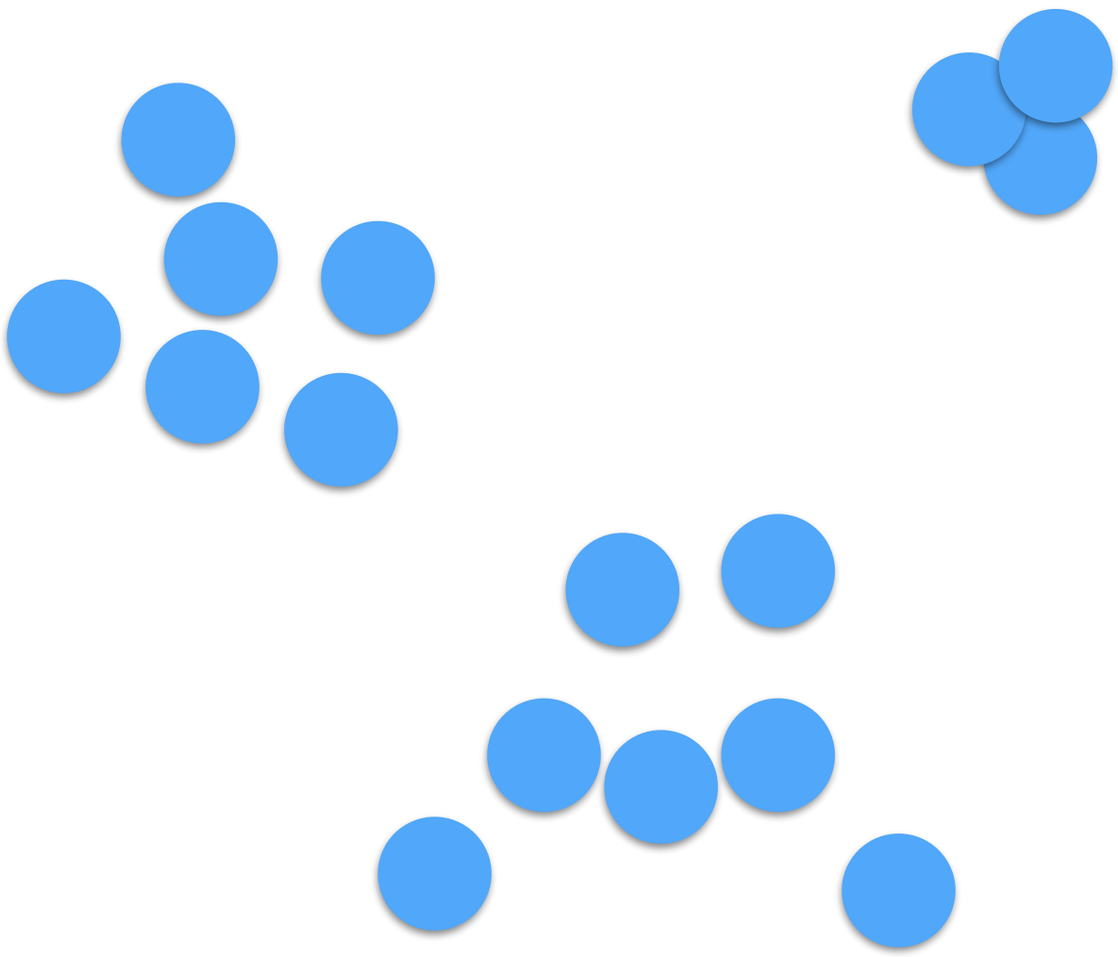


Change Blindness



transitions can help

Change Blindness



transitions can help

```
var simpsons = svg.selectAll(".simpsons").data(allData);
simpsons.exit().remove();

// ---- adding Element to class simpsons
var simpsonsEnter = simpsons.enter().append("circle").attr({
    "class":"simpsons"
    "href":function(d){return d+".jpg"}
})

// ---- changing nodes for simpsons
simpsons.attr({
    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
})
```

.transition().duration(2000)

```
var simpsons = svg.selectAll(".simpsons").data(allData);
simpsons.exit().remove();

// ---- adding Element to class simpsons
var simpsonsEnter = simpsons.enter().append("circle").attr({
    "class":"simpsons"
    "href":function(d){return d+".jpg"}
})

// ---- changing nodes for simpsons
simpsons.transition().duration(2000).attr({
    r: function(d,i ){return i*20;},
    cx: function (d){return scalePosX(d);}
})
```

one more thing

CS
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Use the key function in D3

```
var allData = [
  {firstName: “homer”, name:”simpson”},
  {firstName: “maggie”, name:”simpson”},
  {firstName: “bart”, name:”simpson”},
  {firstName: “marge”, name:”simpson”}
]
```

Use the key function in D3

```
var allData = [
 {firstName: “homer”, name:”simpson”},
 {firstName: “maggie”, name:”simpson”},
 {firstName: “bart”, name:”simpson”},
 {firstName: “marge”, name:”simpson”}
]
```

```
{firstName: “homer”, name:”simpson”} = {firstName: “maggie”, name:”simpson”}
```

?

Use the key function in D3

```
var allData = [
  {firstName: “homer”, name:”simpson”},
  {firstName: “maggie”, name:”simpson”},
  {firstName: “bart”, name:”simpson”},
  {firstName: “marge”, name:”simpson”}
]
```

?

{firstName: “homer”, name:”simpson”} = {firstName: “maggie”, name:”simpson”}

```
svg.selectAll(‘.simpson’)
  .data(allData, function(d,i){return d.firstName;})
```