INFM 603: Information Technology and Organizational Context

Session 4: JavaScript – DOM and Events

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Thursday, October 2, 2014

Programming… is a lot like cooking!

Source: Iron Chef America

Arrays

- An array holds a collection of values
  - Each value is referenced with an index, starting from 0
- Creating an array:

```
var arr = new Array();
arr[0] = 0;
arr[1] = 3;
arr[2] = 2;
arr[3] = 4;
```

What happens if you don't specify value for a particular index?

  - Or, alternatively:

```
var arr = [0, 3, 2, 4];
```

  - Note, arrays automatically grow in size

Using Arrays

- Referencing values in an array:

  arr[0]

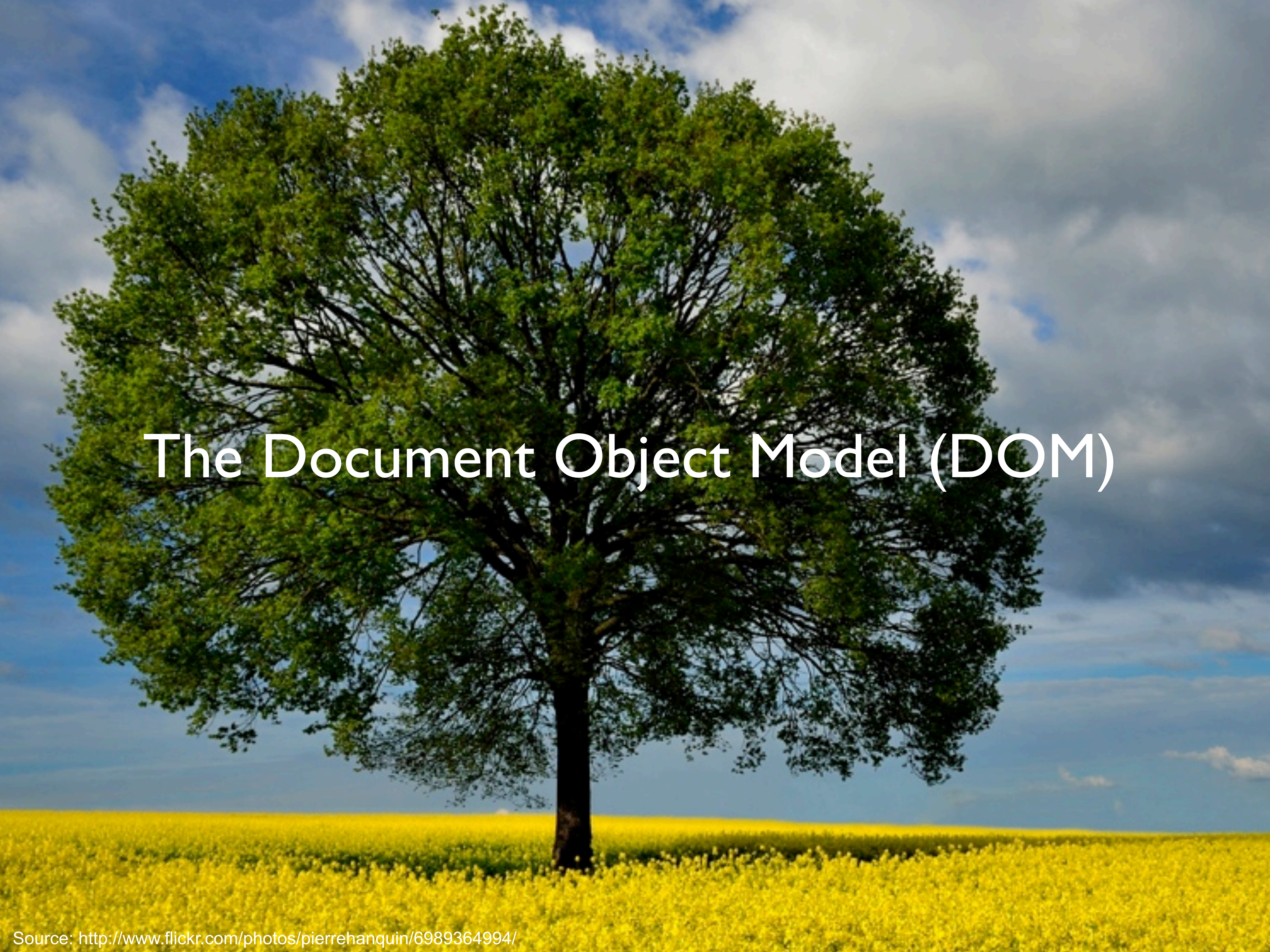
  name of array　　index (starts at 0!)

  - Array values can be used in other expressions and statements:
    var f = 5 + arr[0] + arr[2];
  - Find out the length of an array: arr.length
- Arrays and *for* loops go hand in glove:

```
var arr = [0, 3, 2, 4];
var sum = 0;
for (var i=0; i<arr.length; i++) {
  sum += arr[i];
}
console.log(sum);
```

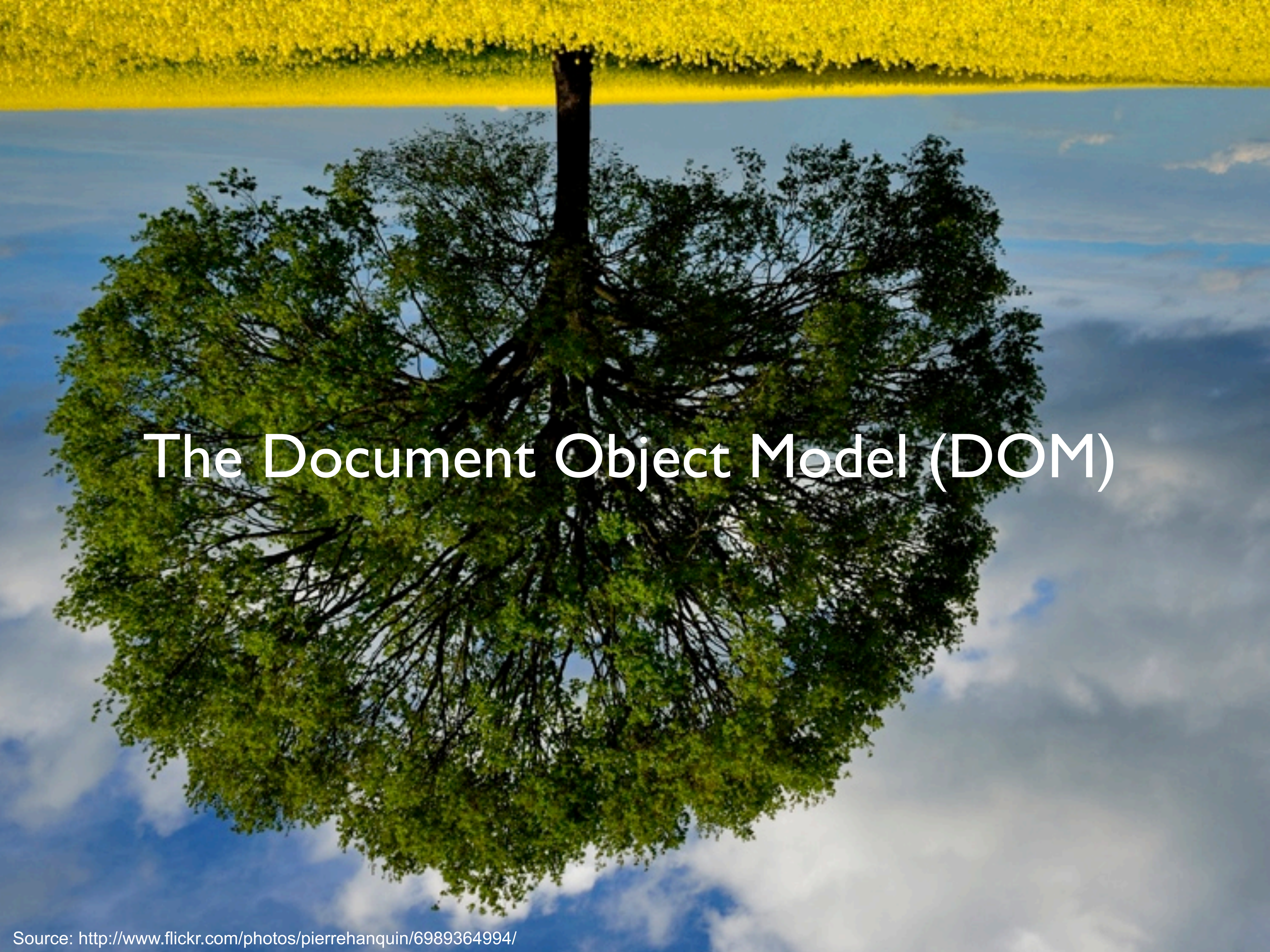
Cooking analogy?

Source: http://www.hayneedle.com/



The Document Object Model (DOM)

Source: http://www.flickr.com/photos/pierrehanquin/6989364994/



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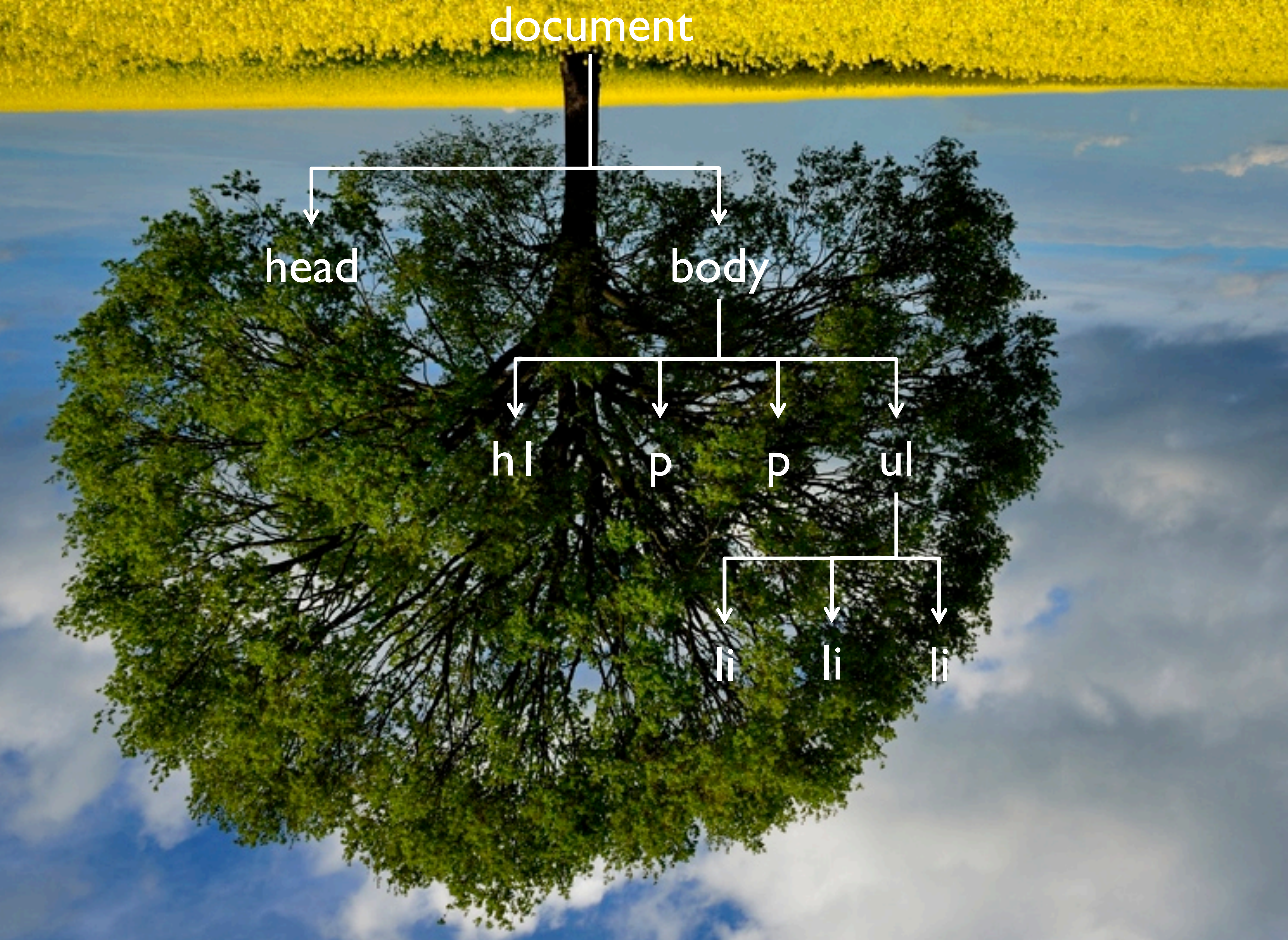


Source: http://www.flickr.com/photos/pierrehanquin/6989364994/

Asking the DOM to "do stuff"

the *method* is want you want the document "to do", usually a verb phrase

```
document.method("argument");
```

document represents the entire page and contains the DOM

arguments are additional details that you specify

More on the dot notation later…

DOM: Selecting Nodes

- Selecting a DOM node by id:

  document.getElementById("id");

  - Note, returns a DOM node
- Selecting DOM nodes by tag:

  document.getElementsByTagName("p");

  - Note, returns a collection (treat as an array)
- Once you select a DOM node:
  - Get a node's children: list.childNodes
  - Get a node's number of children: list.childNodes.length
  - Natural to iterate over child nodes using for loops

BTW, <div> tags are very useful for grouping elements together.

DOM: Manipulating Nodes

- Simplest way to manipulate DOM nodes: select the node and modifying its innerHTML property:

  ```
  var p = document.getElementById("para");
  p.innerHTML = "some text";
  ```

  - innerHTML can be *any* HTML!

- Modify a child node using innerHTML:

  ```
  document.getElementById("list").childNodes[1].innerHTML = "new item";
  ```

DOM: Building Nodes

- Building DOM nodes programmatically:

```
var p = document.createElement("p");
p.innerHTML = "here is some new text.";
document.getElementById("div1").appendChild(p);


var newItem = document.createElement("li");
newItem.innerHTML = "new list item";
document.getElementById("list").appendChild(newItem);
```

- Set setAttribute method to set attributes

```
document.getElementById("para").setAttribute("style", "font-family: arial");
```

DOM: Removing Nodes

- Select the node to remove, then use the removeChild method in its parent:

```
var list = document.getElementById("list");
var listItem = list.childNodes[1];
list.removeChild(listItem);
```

Let’s build a table!

Source: Wikipedia (Table)

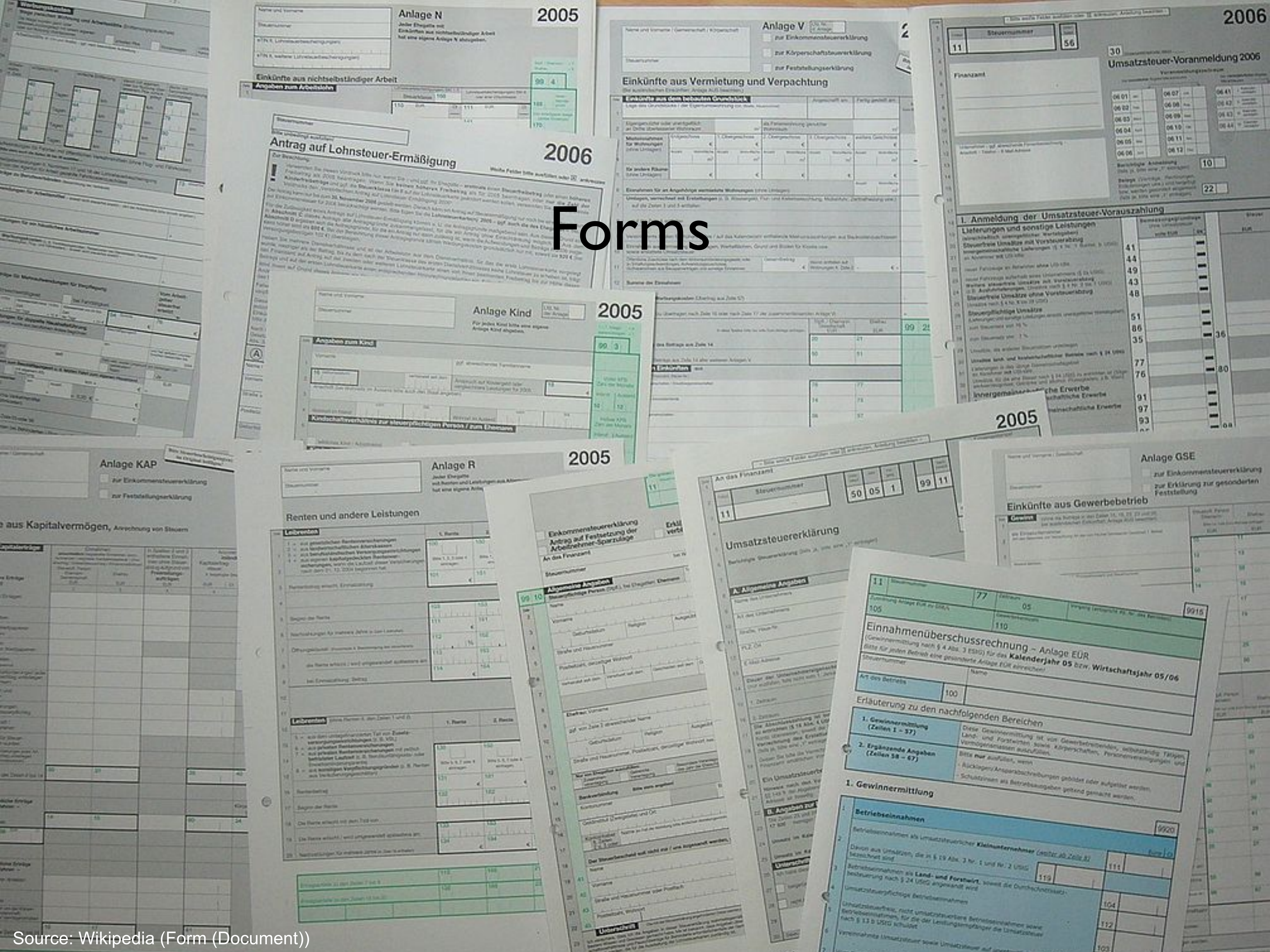
```
var t = document.createElement("table");
t.setAttribute("border", 1);
var row1 = document.createElement("tr");
var row1col1 = document.createElement("td");
row1col1.innerHTML = "A";
var row1col2 = document.createElement("td");
row1col2.innerHTML = "B";

row1.appendChild(row1col1);
row1.appendChild(row1col2);

t.appendChild(row1);

document.getElementById("div1").appendChild(t);
```

Events

- GUI are driven by events
- When an event happens, an event handler is called to “handle” the event
- Easier to show in an example…

Note, what I’m showing is slightly easier than what’s in the book…

Forms


Anlage N
2005
Einkünfte aus nichtselbständiger Arbeit
Anlage V
Einkünfte aus Vermietung und Verpachtung
2006
Umsatzsteuer-Voranmeldung 2006
Antrag auf Lohnsteuer-Ermäßigung
2006
Anlage Kind
2005
Anlage KAP
Anlage R
2005
Renten und andere Leistungen
2005
Anlage GSE
Einkünfte aus Gewerbebetrieb
Umsatzsteuererklärung
Einkommensteuererklärung
Einnahmenüberschussrechnung – Anlage EÜR

Source: Wikipedia (Form (Document))

Putting everything together…

Source: Wikipedia (Construction)