DOM

Document Object Model

- Orginalt DOM for JavaScript
  - Manipulere dokumenter dynamisk i nettleser
- Språknøytral API
  - OMG IDL
- Standard for å
  - Representere
  - Aksessere
  - Manipulere
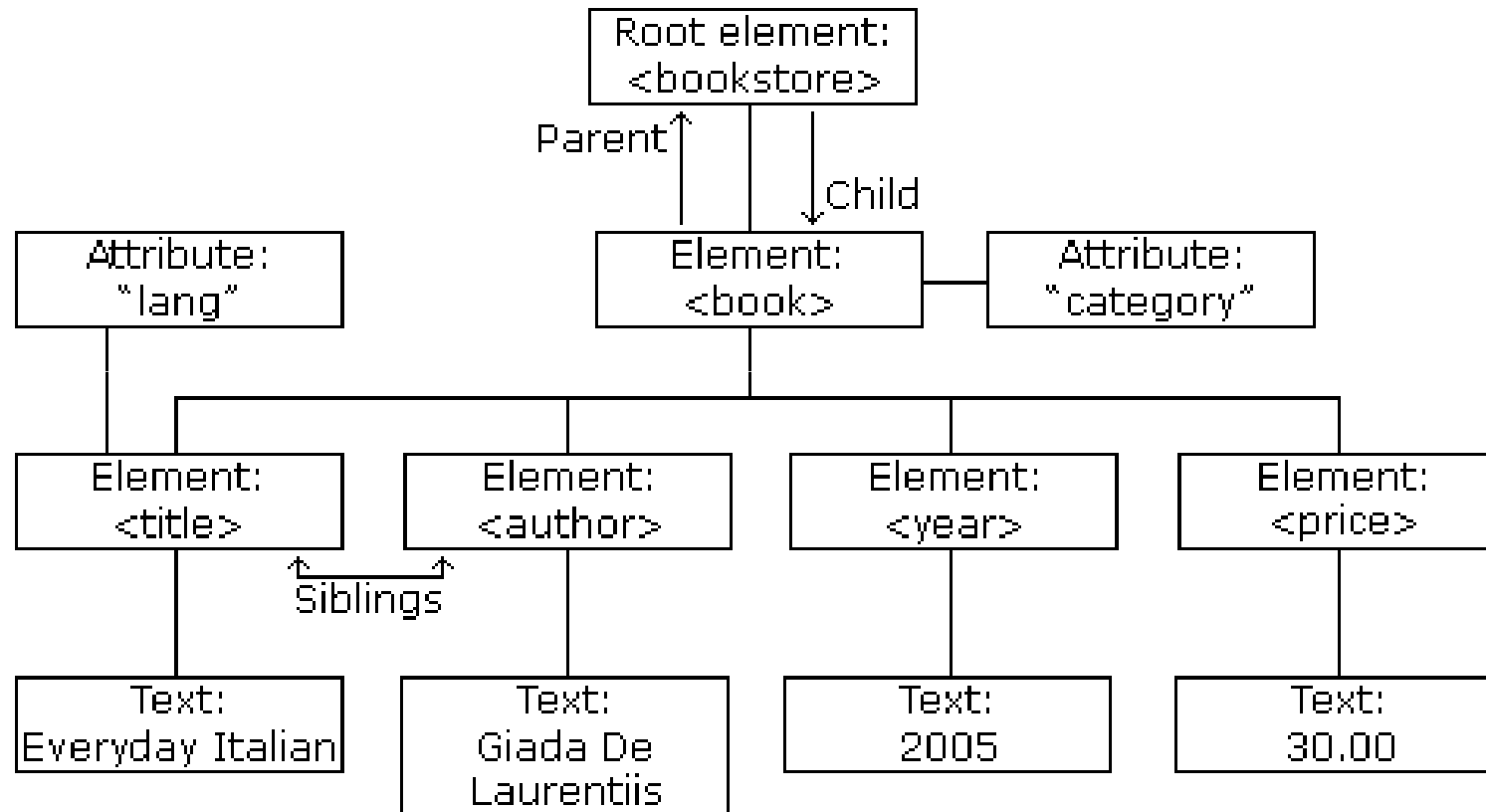- XML i form av noder i trær

W3C Recommendation

- Level 1
- Level 2
  - Core
  - Views
  - Events
  - CSS
  - Traversal and Range
  - HTML
- Level 3
  - Core
  - Load and Save
  - Validation
  - Events
  - XPath

Eksempel

```xml
<?xml version="1.0" encoding="ISO-8859-1"?>
<bookstore>
    <book category="COOKING">
        <title lang="en">Everyday Italian</title>
        <author>Giada De Laurentiis</author>
        <year>2005</year>
        <price>30.00</price>
    </book>
    <book category="CHILDREN">
        <title lang="en">Harry Potter</title>
        <author>J K. Rowling</author>
        <year>2005</year>
        <price>29.99</price>
    </book>
    <book category="WEB">
        <title lang="en">Learning XML</title>
        <author>Erik T. Ray</author>
        <year>2003</year>
        <price>39.95</price>
    </book>
</bookstore>
```

Eksempel forts.

Noder

- Node
  - Document
  - Element
  - Attr
  - DocumentType
  - Notation
  - Entity
  - EntityReference
  - ProcessingInstruction
  - CharacterData
    - Text
      - CDATASection
    - Comment

W3C recommendation

- Node
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- Rotnoden må være Document
- Barnnoder av Document må være
  - ProcessingInstruction,
  - Comment
  - Element (max én) eller
  - DocumentType (max én)
- En Attr-node er ikke barn av den Element-noden den tilhører

Node Properties

Node	.nodeName	.nodeValue	.nodeType
Document	**#document**	**Null**	**9**
DocumentType	Doctype name	Null	10
Element	**Element name**	**Null**	**1**
Attr	**Attribute name**	**Attribute value**	**2**
ProcessingInstruction	Target	Conent of node	7
Comment	#comment	Comment text	8
Text	**#text**	**Content of node**	**3**
CDATASection	#cdata-section	Content of node	4
Entity	Entity name	Null	6
Notation	Notation name	Null	12

Eksempel igjen

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```

Navigere

- Document.getElementsByTagname("name")
- Document.documentElement

Eks:
```
var x=xmlDoc.getElementsByTagName("book");
document.write(x.length + " \"book\" i ");
Var z=xmlDoc.documentElement;
document.write(z.nodeName);
```

3 "book" i bookstore

Navigere forts.

- Node.childNodes
- Node.firstChild / Node.lastChild
- Node.parentNode
- Node.nextSibling

Eks:

```
var x=xmlDoc.documentElement.firstChild.firstChild;
var z=xmlDoc.documentElement.childNodes.length;
for(var i=0;i<z;i++){
   document.write(x.nodeName + " - ");
   x=x.nextSibling;
}
```

title – author - year – price -

Eksempel igjen

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    </book>
 </bookstore>
```

Attributter

- Assosiert med Element
- Ikke en del av treet – kun egenskaper (properties)
- .attributes - NamedNodeMap
- Element.getAttribute("name")
- Element.getAttributeNode("name")
- NamedNodeMap.getNamedItem("name")

Eksempel: Attributter

```
var x=xmlDoc.getElementsByTagName("book");
var en=x.item(0).getAttribute("category");
var to=x.item(0).getAttributeNode("category").nodeValue;
document.write(en + " - " + to + "<BR/>");
for(var i=0; i<x.length; i++){
   var r=x.item(i).attributes.getNamedItem("category");
   document.write(r.nodeValue + " - ");
}
```

COOKING – COOKING
COOKING – CHILDREN - WEB

Attributter forts.

- Element.setAttribute("name", "value")
- Document.createAttribute("name")
- Element.setAttributeNode(Attr)
- Element.hasAttribute("name")
- Element.removeAttribute("name")
- Element.removeAttributeNode(Attr)
- Node.hasAttributes()

Eksempel: Attributter forts.

```
var x=xmlDoc.getElementsByTagName("book").item(0);
x.setAttribute("category", "eating");
x.setAttribute("size", "small");
var newAttr=xmlDoc.createAttribute("ISBN");
newAttr.nodeValue="ISBN-132512";
n.setAttributeNode(newAttr);
for(var i=0; i<x.attributes.length; i++){
    document.write(x.attributes.item(i).nodeValue + " - ");
}
```

eating – small – ISBN-132512 -

Noder

- Node.insertBefore(newNode, refNode)
- Node.cloneNode(includeAll?)
- Document.createElement("name")
- Node.appendChild(Node)
- Node.removeChild(Node)
- Node.replaceChild(newNode, oldNode)

Eksempel igjen

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            <year>2003</year>
             <price>39.95</price>
    </book>
 </bookstore>
```

Oppgave: Noder

```
var x=xmlDoc.documentElement;
var newNode=xmlDoc.createElement("book");
var newTitle=xmlDoc.createElement("title");
var newText=xmlDoc.createTextNode("A Notebook");
newTitle.appendChild(newText);
newNode.appendChild(newTitle);
var z=x.childNodes[0].cloneNode(true);
var r=xmlDoc.getElementsByTagName("book");
var y=x.removeChild(r.item(r.length-1));
x.replaceChild(newNode, x.firstChild);
x.insertBefore(z, newNode);
x.removeChild(x.childNodes.item(1));
x.appendChild(y);
for(var i=0; i<x.childNodes.length; i++){
   document.write(x.childNodes[i].firstChild.firstChild.data +
   "<BR/>");
}
```

Løsning

Everyday Italian

Harry Potter

XQuery Kick Start

Learning XML