

Tehnici Web

CURSUL 6

Semestrul I, 2017-2018
Carmen Chirita

<https://sites.google.com/site/fmitehniciweb/>

Orice tab al unui browser contine un obiect **window** (din clasa Window)

Proprietatea **document** a obiectului window e obiectul document al paginii web (apartine clasei Document)

Elementul <script> din <head> este procesat inaintea elementului <body>; in acel moment arborele DOM nu este creat si elementele lui nu pot fi accesate.

Pentru a putea accesa proprietatea document a obiectului window trebuie ca pagina sa fie incarcata:

```
window.onload=function()  
{cod JavaScript;}
```

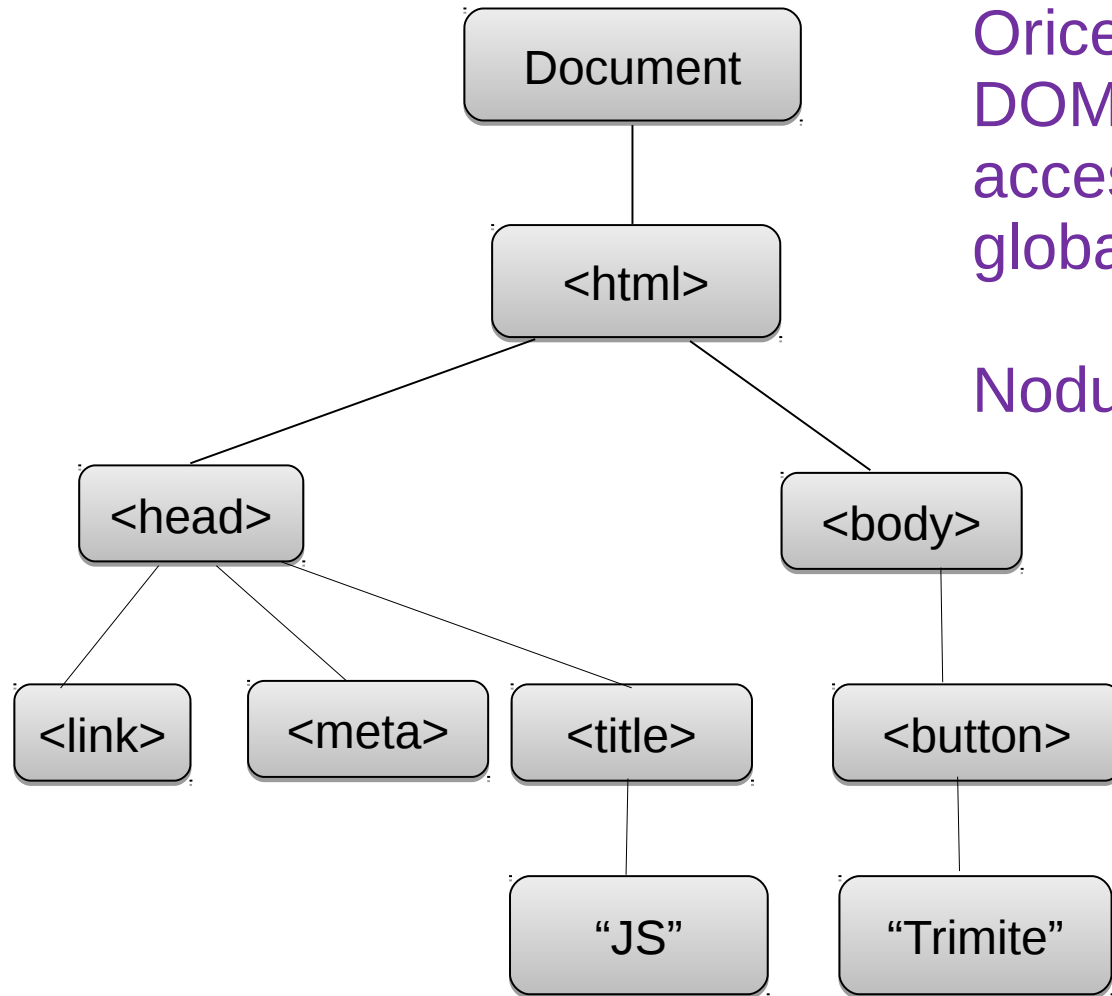
```
window.onload=myMain;  
function myMain()  
{cod JavaScript;}
```

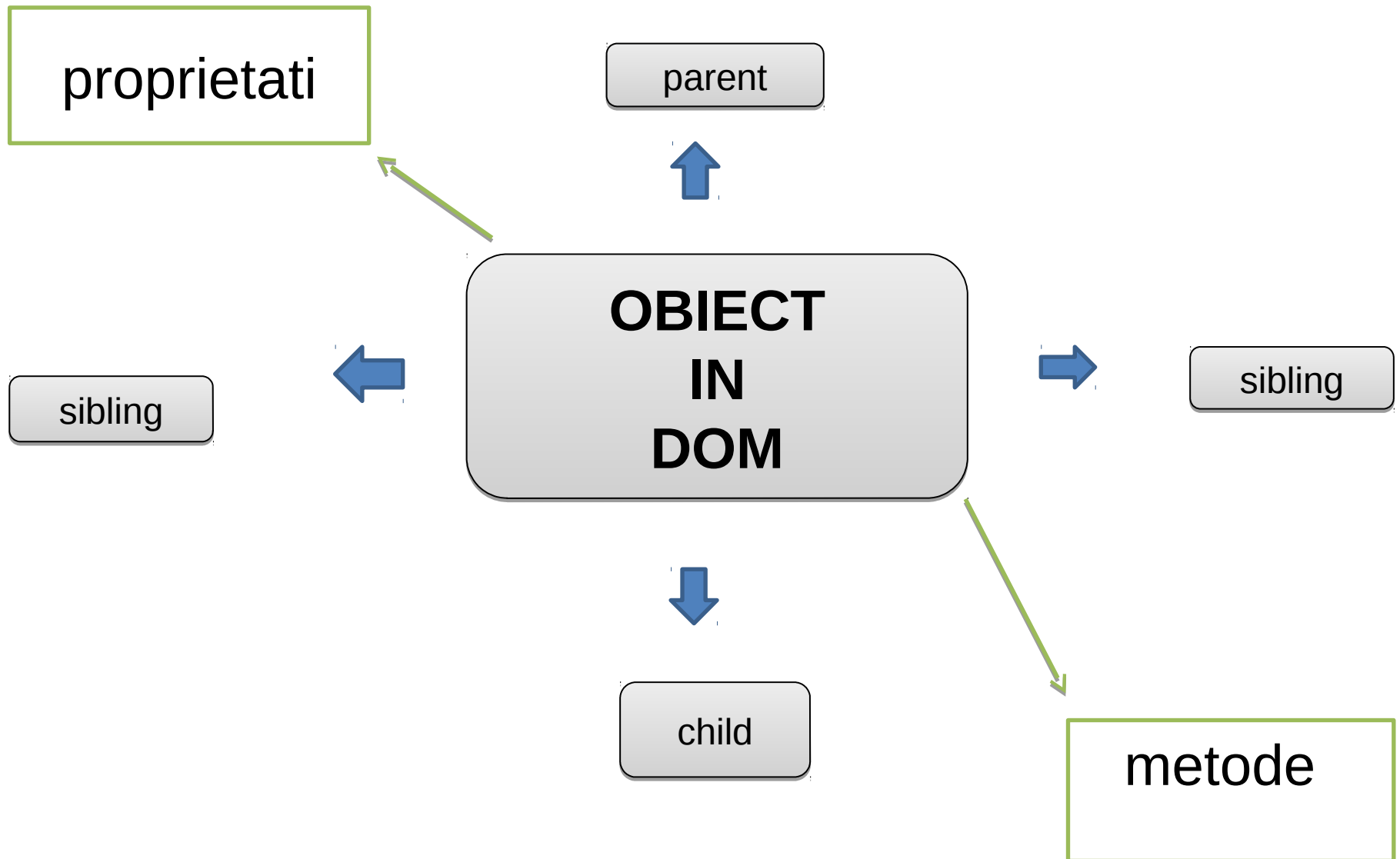
DOM = Document Object Model

JavaScript folosește DOM pentru manipularea documentelor HTML

Orice pagina web este reprezentată în DOM ca un arbore de obiecte și este accesată folosind variabila globală `document`.

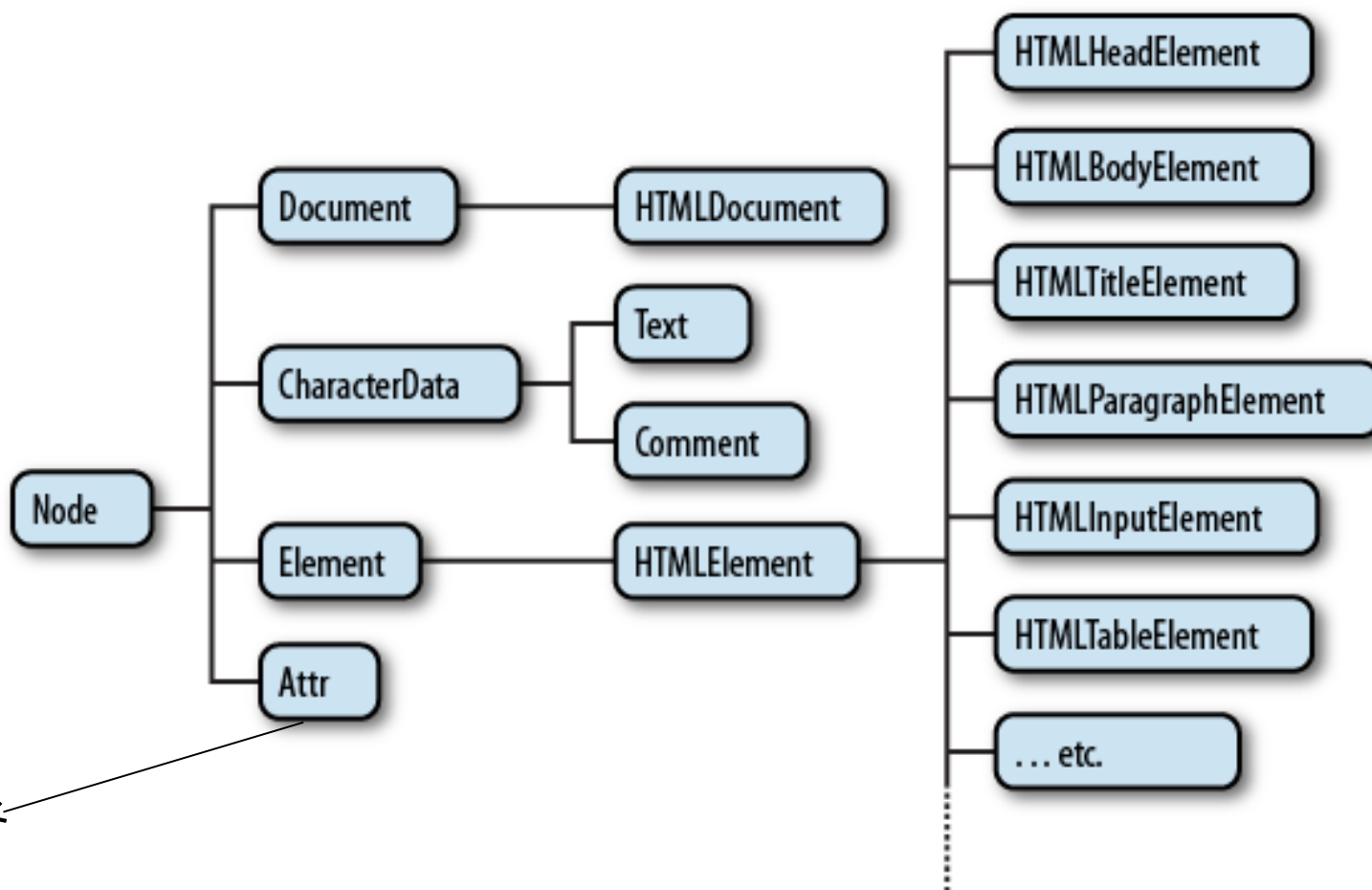
Nodurile conțin taguri HTML sau text.





Orice nod din arborele DOM are un tip (clasa); in functie de elementul pe care il reprezinta, obiectul corespunzator are proprietati si metode specifice.

Ierarhia claselor pentru nodurile din DOM



Atributele sunt manevrate prin proprietati si metode ale clasei Element (nu ca obiecte din clasa Attr)

DOM

unui tag HTML ii corespunde un obiect (derivata din Element)

unui atribut al tag HTML ii corespunde o proprietate a obiectului

atributele(generale) HTML **id, class, style**

corespund

proprietatilor **id, className, style** (ale obiectului corespondent)

proprietatile obiectului style (din clasa Style) asociat atributului style

corespund

proprietatilor de stilizare CSS pentru elementele HTML

element.style.proprietateCSS=valoare

el.style.color="red"

el.style.backgroundColor="blue"

Selectarea elementelor in document

`document.getElementById(numId) // un obiect`
`document.querySelector(selectorCss) //primul obiect`

-colectii “live”:

`document.getElementsByClassName(umeClasa)`

`document.getElementsByTagName(umeTag)`

`document.getElementsByName(ume)`

-colectii “static”

`document.querySelectorAll(selectorCss)`

Ex: colecție live

```
<script>
window.onload=function() {

var c=document.getElementsByClassName("abc");
var v=[];
for(var i=0;i<c.length;i++) v[i]=c[i];
alert("lungimea colectiei: " + c.length + '\n' +
"lungimea vectorului: " + v.length);

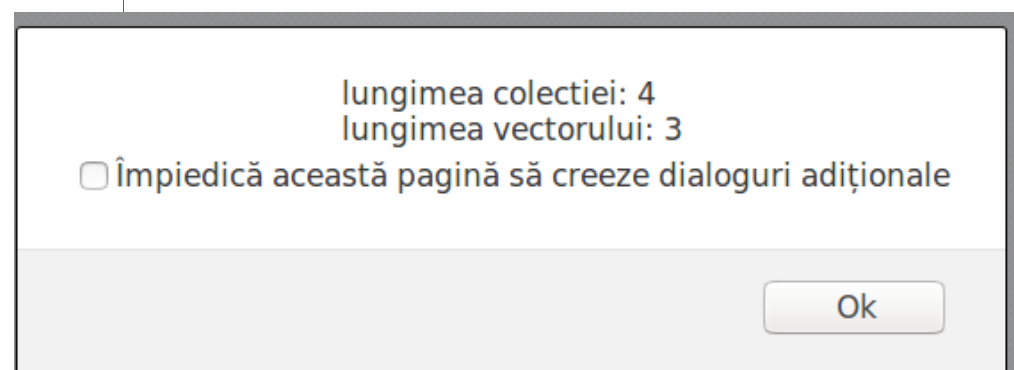
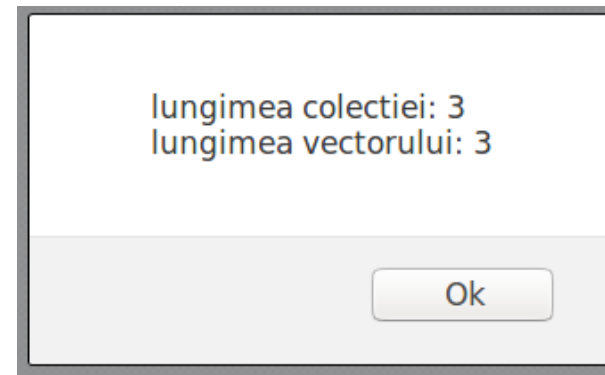
document.getElementById("p1").className="abc";

alert("lungimea colectiei: " + c.length + '\n' +
"lungimea vectorului: " + v.length);

}
</script>
</head>

<body>
<p id="p1">Paragraful 1</p>
<p class="abc">Paragraful 2</p>
<p class="abc">Paragraful 3</p>
<p class="abc">Paragraful 4</p>

</body>
```



Ex: colecție static

```
<script>
window.onload=function() {

var c=document.querySelectorAll(".abc");
var v=[];
for(var i=0;i<c.length;i++) v[i]=c[i];
alert("lungimea colectiei: " + c.length + '\n' +
"lungimea vectorului: " + v.length);

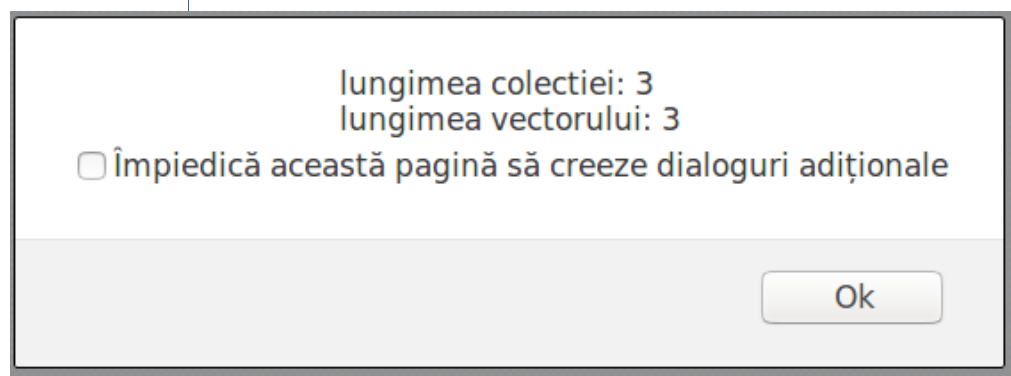
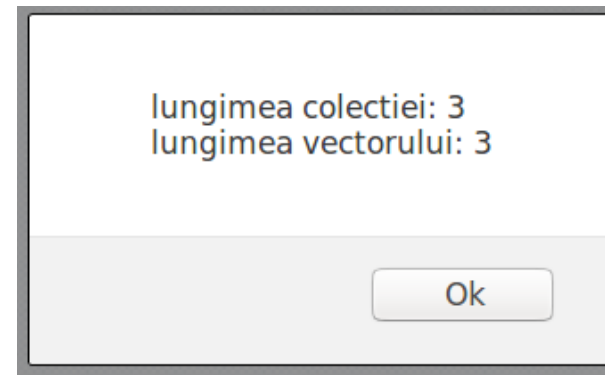
document.getElementById("p1").className="abc";

alert("lungimea colectiei: " + c.length + '\n' +
"lungimea vectorului: " + v.length);

}
</script>
</head>

<body>
<p id="p1">Paragraful 1</p>
<p class="abc">Paragraful 2</p>
<p class="abc">Paragraful 3</p>
<p class="abc">Paragraful 4</p>

</body>
```

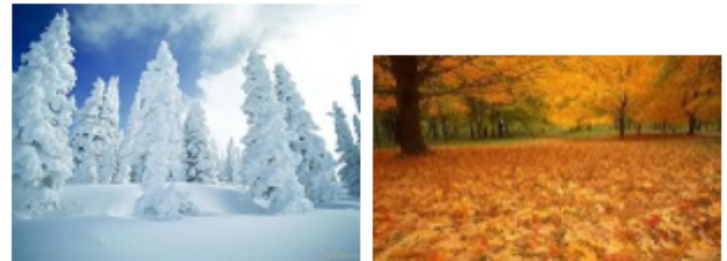


exemplu

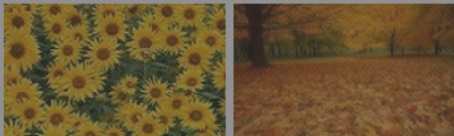
```
<script>
window.onload=function()
{
var x=document.getElementById("imag1");
alert(x.src); //sursa imaginii
x.src="iarna.jpg"; //schimb sursa imaginii
}
</script>
</head>
<body>
<h1>Doua imagini</h1>


</body>
```

Doua imagini



Doua imagini



file:///home/carmen/TEHNICI_WEB_CURSURI/EXEMPLE/vara.jpg

Ok

Colectii = organizare ca Array
au proprietatea – length
nu pot invoca direct – metodele obiectului Array

```
<script>
window.onload=function()
{
var
lista=document.getElementsByTagName("p");
alert("Sunt "+lista.length+" paragrafe");
for(var i=0; i<lista.length;i++)
    {lista[i].style.color="red";}
}
</script>
</head>
<body>
<h1>Colectie</h1>
<p>Primul paragraf</p>
<p>Al doilea paragraf</p>
<p>Al treilea paragraf</p>
<div>Acesta este un div</div>
</body>
```



Colectie

Primul paragraf

Al doilea paragraf

Al treilea paragraf

Acesta este un div

Continutul unui element poate fi accesat si modificat ca String folosind proprietatile:

innerHTML

intoarce un text HTML,
adica un text cu marcate;
la setarea proprietatii
browserul interpreteaza textul;

si **textContent**

intoarce text fara marcate;
are ca rezultat concatenarea
continuturilor descendente de
tip Text.

`<p>Un text <i> simplu </i> si colorat. </p>`

obiect.innerHTML

Un text <i> simplu </i> si colorat.

obiect.textContent

Un text simplu si colorat.

textContent

```
<head>
<script>
  window.onload = function(){

    var el1 = document.getElementById("text1");
    var el2 = document.getElementById("text2");
    var temp = el1.textContent;
    el1.textContent = el2.textContent;
    el2.textContent = temp; }

</script>
</head>
<body>
<p id="text1"> Continutul paragrafului </p>
<div id="text2"> Continutul divului </div>
</body>
```

innerHTML

```
<script>
window.onload=function()
{
var x=document.getElementById("text1");
var continut = [ '<ul class="myclass">',
  '<li class="item">item1</li>',
  '<li class="item">item2</li>',
  '<li class="item">item3</li>',
  '<li class="item">item4</li>',
  '<li class="item">item5</li>',
  '</ul>' ].join("");
x.innerHTML += continut;
}
</script>
</head>
<body>
<p id="text1"> Continutul paragrafului</p>
<div id="text2"> Continutul divului </div>
</body>
```

Continutul paragrafului

- item1
- item2
- item3
- item4
- item5

Continutul divului

Proprietati pentru obiecte de tip Node

nodeValue // pentru noduri Text, Comment,
pentru noduri Element = null

nodeName // numele tagului

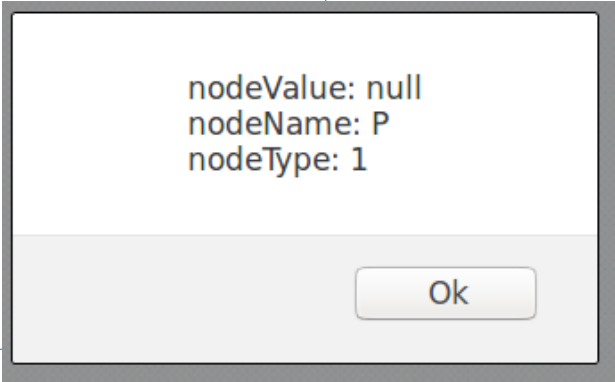
nodeType /* Document=9, Element=1,
Text=3, Comment=8 */

```
<script>
window.onload = function(){

    var p = document.getElementById("par");
    alert("nodeValue: " + p.nodeValue + '\n' + "nodeName: " + p.nodeName
    + '\n' + "nodeType: " + p.nodeType);

}

</script>
</head>
<body>
<p id="par">Continutul paragrafului</p>
</body>
```



nodeValue: null
nodeName: P
nodeType: 1

Ok

Selectarea elementelor in arborele DOM

node.parentNode // un obiect

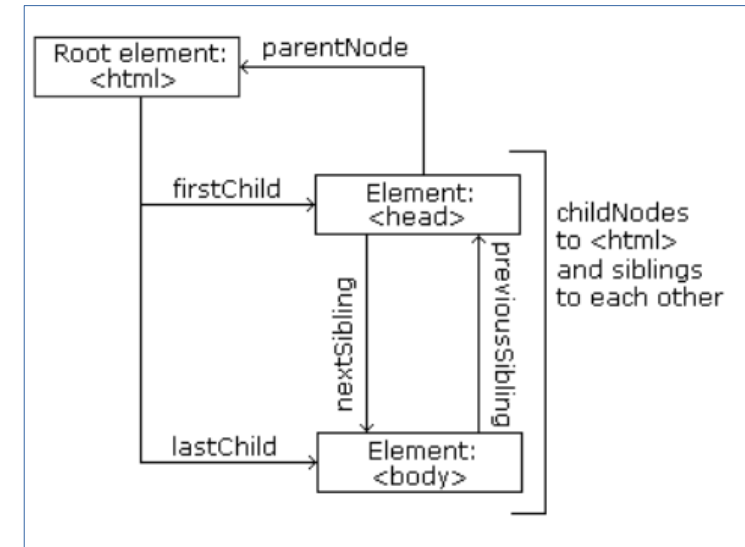
node.childNodes // NodeList obiect

node.firstChild // un obiect

node.lastChild // un obiect

node.nextSibling // un obiect

node.previousSibling // un obiect




```

<script>
window.onload=function() {
    var c = document.body.childNodes;
    var txt = "";
    var i;
    for (i = 0; i < c.length; i++) {
        txt = txt + c[i].nodeName + "<br>";
    }
    document.getElementById("demo").innerHTML += txt;
    alert(document.getElementById("demo").childNodes[0].nodeName);
}
</script>
</head>
<body><!-- Comentariu -->

<p>Un paragraf</p>
<div>Un div</div>
<p>O imagine</p><br>

<p id="demo"><strong>document.body.childNodes:</strong><br>
</p>
</body>

```

Un paragraf

Un div

O imagine



document.body.childNodes:

#comment

#text

P

#text

DIV

#text

P

BR

#text

IMG

#text

P

#text

STRONG

Ok

Se poate parcurge documentul ca arbore de Elemente

node.parentNode / node.parentElement
node.childNodes / node.children
node.firstChild / node.firstElementChild
node.lastChild / node.lastElementChild
node.nextSibling / node.nextElementSibling
node.previousSibling / node.previousElementSibling

se pot defini metode noi

```
function secondChild(e){  
  return e.firstElementChild.nextElementSibling;  
};
```

```

<script>
window.onload=function() {
    var c = document.body.children;
    var txt = "";
    var i;
    for (i = 0; i < c.length; i++) {
        txt = txt + c[i].nodeName + "<br>";
    }

    document.getElementById("demo").innerHTML += txt;
    alert(document.getElementById("demo").children[0].nodeName);
}
</script>
</head>

<body><!-- Comentariu -->

<p>Un paragraf</p>
<div>Un div</div>
<p>O imagine</p><br>

<p id="demo"><strong>document.body.children</strong><br></p>
</body>

```

Un paragraf

Un div

O imagine



document.body.children

P

DIV

P

BR

IMG

P

STRONG

Ok

```
<head>
```

```
<script>
```

```
window.onload = function(){
```

```
var b = document.getElementsByTagName("body");
```

```
var p = b[0].firstElementChild.nextElementSibling.nodeName;
```

```
  alert(p); }
```

```
</script>
```

b este Array-like

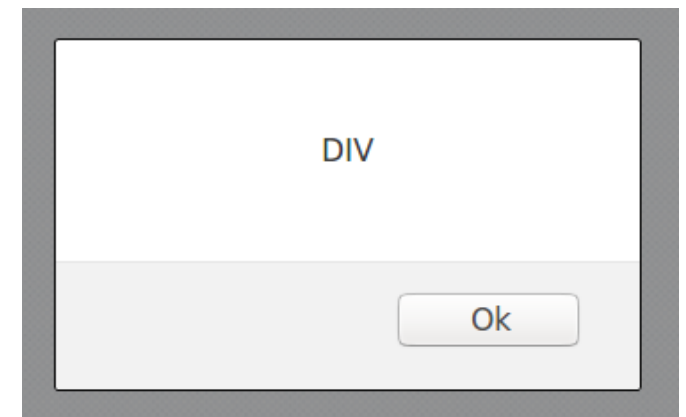
```
</head>
```

```
<body>
```

```
<p class="par"> Continutul paragrafului </p>
```

```
<div class="par"> Continutul paragrafului </div>
```

```
</body>
```



Crearea/inserarea/stergerea elementelor

Crearea unui element

```
document.createElement("tag")  
document.createTextNode("text")
```

Inserarea unui element

```
parinte.appendChild(copil)  
parinte.insertBefore(CopilNou, CopilVechi)
```

Daca nodul copil
exista in arbore
atunci doar muta
nodul (nu face
copie)

Stergerea / Inlocuirea unui element

```
parinte.removeChild(copil)  
parinte.replaceChild(CopilNou, CopilVechi)
```

exemplu

```
<script>
function creare(tag,text)
{
var elnou=document.createElement(tag);
var textnou=document.createTextNode(text);
elnou.appendChild(textnou);
return elnou;
}
window.onload=function()
{var list=document.getElementById("lista");

var el1=creare("li","JavaScript");
list.appendChild(el1);

var el2=creare("h2","Tehnici Web");
document.body.insertBefore(el2,list);
}
</script>
</head>
<body>
<ul id="lista">
<li id="item1">HTML</li>
<li id="item2">CSS</li>
</ul>
</body>
```

Tehnici Web

- HTML
- CSS
- JavaScript

```
var s= document.getElementById("item1");
list.removeChild(s);
```

Tehnici Web

- CSS
- JavaScript

Modificarea atributelor

Atributele elementelor HTML devin proprietati ale obiectelor corespunzatoare

pot fi accesate prin

- numele direct al proprietatii
- metode specifice
- proprietatea `attributes`

Modificarea atributelor

➤ **proprietati:** el.id, el.className, el.alt, el.href, el.src

➤ **metode:**

el.getAttribute() // string = valoarea unui atribut

el.setAttribute("class", "numeclassa")

el.hasAttribute() // boolean

el.removeAttribute() // boolean

Adaugare de proprietati noi:

el.proprietateNoua=valoare

Exemplul 1

```
<style>
.bright{background-color:yellow;}
</style>

<script>
window.onload=function()
{
var link=document.getElementById("pagina");
link.href="https://developer.mozilla.org/bm/docs/Web/JavaScript";
link.setAttribute("class", "bright");
alert(link.getAttribute("href")););
}
</script>
</head>
<body>
<a id="pagina" href="https://www.w3schools.com/js/default.asp">JavaScript</a>
</body>
```

JavaScript

https://developer.mozilla.org/bm/docs/Web/JavaScript

Ok

Modificarea atributelor

- proprietatea `el.attributes` intoarce un obiect array-like cu attributele elementului

```
attrs = element.attributes;  
attrs[i].name  
attrs[i].value  
attrs.length //nr de attribute
```

Exemplul 2 (în contextul exemplului 1)

```
var attrs = link.attributes;  
for (var i = 0; i < attrs.length ; i++)  
{ output += attrs[i].name + " -> " + attrs[i].value + " // ";  
}  
alert(output);  
}
```



id -> pagina // href -> <https://developer.mozilla.org/bm/docs/Web/JavaScript> // class -> bright //

Ok

JavaScript si CSS

Orice obiect asociat unui element HTML (clasa `Element`) are proprietatea `style`, a carei valoare este un obiect din clasa `CSSStyleDeclaration`

Proprietatilor CSS le corespund proprietati ale obiectului `style`.

<code>background-color</code>	→	<code>backgroundColor</code>
<code>color</code>	→	<code>color</code>
<code>text-align</code>	→	<code>textAlign</code>

Schimbarea stilului unui element HTML

```
element.style.proprietate = stil nou
```

Exemplu

```
<script>
function schimbaStil(el)
{
el.style.color = "blue";
el.style.fontFamily = "Arial";
el.style.fontSize = "larger";
}
window.onload=function()
{
schimbaStil(document.getElementById("p2"));
}
</script>
</head>
<body>
<p id="p1">Paragraful 1</p>
<p id="p2">Paragraful 2</p>
<p id="p3">Paragraful 3</p>
</body>
```

Paragraful 1

Paragraful 2

Paragraful 3

JavaScript si CSS

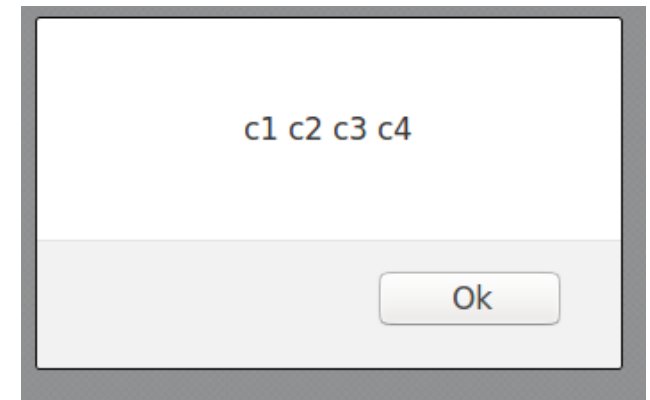
Clasele asociate unui element pot fi accesate folosind proprietatea `classList`, care este un obiect din clasa `DOMTokenList`

Sintaxa: `ecl = element.classList`
(lista claselor elementului)

```
<script>
window.onload = function(){
  var pclas = document.getElementById("par").classList;
  alert(pclas);
}
</script>

</head>
<body>
<p id="par" class="c1 c2 c3 c4"> Continutul paragrafului </p>
</body>
```

`ecl[i]` // read-only



ecl =element.classList

Metode

ecl.length //nr de clase asociate elementului

ecl.item(i) //numele clasei cu indexul i (i=0,..)

ecl.add("clasa1","clasa2",...) //adauga clasa (clasele)

ecl.remove("clasa1","clasa2",...) //sterge clasa (clasele)

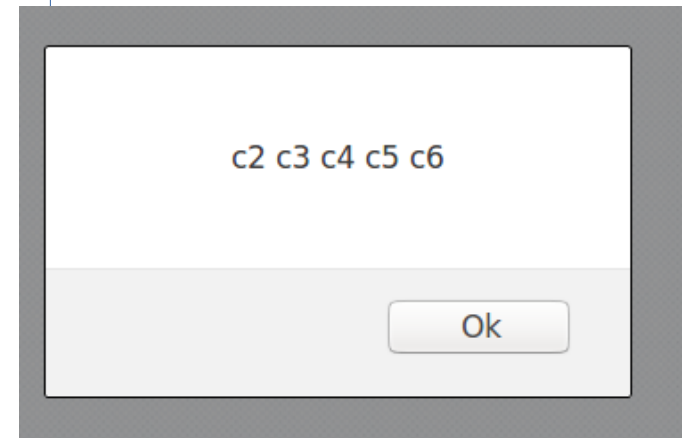
ecl.contains("clasa") // întoarce true sau false

ecl.toggle("clasa", expresie) //sterge clasa dacă
aceasta exista, altfel o adauga

Exemplu: add, remove, toggle, length

```
<script>
window.onload = function(){
var pclas = document.getElementById("par").classList;
  pclas.add("c5","c6");
  pclas.add("c3");
  pclas.remove("c1");
  var l=pclas.length;
  pclas.toggle("c4",l==5);
  alert(pclas);
}
</script>

</head>
<body>
<p id="par" class="c1 c2 c3 c4"> Continutul paragrafului </p>
</body>
```



Elementul HTML **button**

```
<button> continut </button>
```



Summary

The HTML `<button>` Element represents a clickable button.

Content categories	Flow content, phrasing content, Interactive content, listed, labelable, and submittable form-associated element, palpable content.
Permitted content	Phrasing content.
Tag omission	None, both the starting and ending tag are mandatory.
Permitted parent elements	Any element that accepts phrasing content.
DOM interface	<code>HTMLButtonElement</code>
Element type	Inline

HTML: atributul onclick

Sintaxa: `<tag atribut="cod JavaScript">`

Exemplu: la click pe button se va afisa un mesaj

```
<button onclick="alert('Hello world!')">Click Me!</button>
```

A rectangular button with rounded corners, a light gray background, and a thin orange border. The text "Click Me!" is centered on the button in a dark gray font.

An alert dialog box with a white background and a gray border. It has a title bar at the top. The text "Hello world!" is centered in the main area. At the bottom right, there is a button labeled "Ok".

```
<!DOCTYPE html>
<html lang="ro">
<head>
<script type="text/javascript" >
function suma(x) {
var s = 0;
for (var i=1; i<= x ; i++) s=s+i;
alert(s);
return s;}
</script>
```

```
</head>
<body>
<button id="calcs" onclick="suma( 10) "> Trimite </button>
</body>
</html>
```

atribut HTML

Event Handler

Trimite

45

Ok

JavaScript: proprietatea **onclick**

Sintaxa: `object.onclick = function(){cod JavaScript};`
`object.onclick = nume-functie;`

```
<script type="text/javascript" >

window.onload=myMain;
function myMain()
{
document.getElementById("calcs").onclick=function(){ suma(10);}
}
function suma(x) {
var s = 0;
for (var i=1; i< x ; i++) s=s+i;
alert(s);
return s; }

</script>
```

```
<body>
<button id="calcs" > Trimite </button>
</body>
</html>
```

Evenimente

Un eveniment nu este un element JavaScript.
Browserul sesizeaza evenimentul si il anunta programului.
Unui eveniment ii sunt asociate unele
elemente JavaScript specifice: name, target, handler



Tipuri de evenimente: form events, window events,
mouse events, key events, ...

mouse events: onmouseover, onmouseout,...

Evenimente care schimba stilul unui element html

la hover pe buton, paragraful cu id-ul "schimb" sa apara cu text albastru pe background galben

```
window.onload = myMain;

//selectez target-ul si setez handler-ul
function myMain() {
  document.getElementById('buton').onmouseover = schimbaStil;
}
function schimbaStil() {
  document.getElementById('schimb').style.color = "blue";
  document.getElementById('schimb').style.backgroundColor = "yellow";
}
```

```
<body >
<p id="schimb">
Lorem ipsum
</p>

<button id="buton">
Hover me
</button>
</body>
```

Lorem ipsum

Hover me

Lorem ipsum

Hover me

Evenimente care schimba stilul unui element html

```
window.onload = myMain;
```

```
function myMain() {
    document.getElementById('buton').onmouseover = stil1;
    document.getElementById('buton').onmouseout = stil2;
}
```

```
function stil1() {  
    document.getElementById('schimb').style.backgroundColor =  
        "yellow";  
}
```

```
function stil2() {  
    document.getElementById('schimb').style.backgroundColor =  
        "white";  
}
```

Evenimente care schimba stilul unui element html

```
window.onload = myMain;
```

```
function myMain() {  
  document.getElementById('buton').onmouseover = stil1;  
  document.getElementById('buton').onmouseout = stil2;  
}
```

```
function stil1() {  
  document.getElementById('schimb').className = "s1";  
}
```

```
function stil2() {  
  document.getElementById('schimb').className = "s2";  
}
```

```
.s1 {background-color:yellow;}  
.s2{color:red;}
```

stil.css