

JavaScript & DOM

ଟେକ୍ନୋ-ଫୁଲମାର୍ଗିଣୀ

Part-II

ଶ୍ରୀନାଥ ନାଯକ ପାତା
element ଯେଉଁ

DOM

ក្រុមប៊ូតិ៍សាស្ត្រ, នៃ ក្រុង

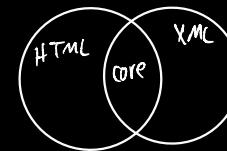
គ្នា រក្សាទុយណាប់ = browser និង render engine

សម្រាប់ការការពារទីផ្សារ និង event ដើម្បី Doc ទិន្នន័យអាមេរិកអាមេរិក

- DOM: Document Object Model ឈ្មោះនៅលើ Doc

- DOM represents a document as a family tree
Web browser នឹងនូវការ រួម

11/21/2023 (Over.)



What is DOM?

- A programming interface for HTML or XML
- DOM represents the document as nodes and objects
 - Nodes and objects can be created or changed or removed
- 3 different parts
 - Core DOM
 - XML DOM
 - HTML DOM

The Levels of DOM

ក្នុងនេះ នឹងមិនអាច ធ្វើបន្ថែមទៅជាបន្ទាន់ទេ

- Level 0: Supports an interface DOM and refers to what existed before the standard
 - node, tag, content
- Level 1: allows Navigation of DOM, content manipulation
 - information
- Level 2: Support namespace, filtered views and event XML
 - XML
 - event
- Level 3: has many specifications:
 - Core
 - Load and Save
 - XPath
 - Views and formatting
 - Requirements
 - Validation

(further reading: <https://www.sharpcorner.com/UploadFile/79037b/let%E2%80%99s-understand-the-levels-of-dom-document-object-model/>)

Fundamental Data Types

- Document object

- Represent web page

- Node : basic object within document

- Element : type of node

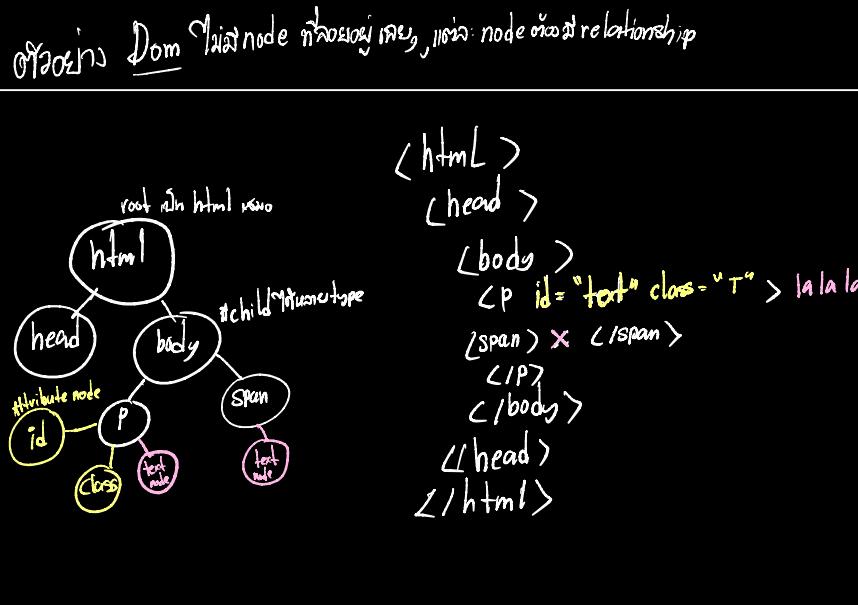
- NodeList : Array of elements

- Attribute : type of node

- Text [In parent element] [In child node]

- Comment

- etc.



Example

```
<html xmlns="http://www.w3.org/1999/xhtml"
xml:lang="en">
<head>
    <meta http-equiv="content-type"
content="text/html; charset=utf-8" />
    <title>Shopping list</title>
</head>
<body>
    <h1>What to buy</h1>
    <p title="a gentle reminder">Don't forget to buy
this stuff.</p>
    <ul id="purchases">
        <li>A tin of beans</li>
        <li>Cheese</li>
        <li>Milk</li>
    </ul>
</body>
</html>
```

Joining element nodes

html

head

body

meta

Joining element nodes

title

"a gentle reminder" node

h1

p

ul

li

li

li

p

Element node

title="a gentle reminder"
attribute node

Don't forget to buy this stuff
text node

```
<p title="a gentle reminder">Don't forget to buy this stuff.</p>
```

DOM accessing

- As of now, every web browser uses DOM as a gateway to the document for scripting language (e.g. JavaScript)

Working with Document Object

ເລີມຕະຫຼອດ (ຕາມກິ່າວົງໄວ້)

- Properties of Document Object
 - Image property
 - Form property
 - Etc.
- Method of Document Object
 - Selecting elements
 - Traversing elements
 - Manipulating elements
 - Attributes
 - Manipulating Styles

Selecting elements

id
name

- Method of Document Object

- **getElementById** ("Text") กຳເຊີຍ id ອາດ tag id ສະໝັກໄວ້ / null
- **getElementByName** ("X") ອາດພົບເວົ້າໂຄນາໃນ Array
- **getElementsByClassName** ("mean") ອາດມານຸ່ານຳ
- **getElementsByTagName** (p) ອາດມານຸ່ານຳ
- **querySelector** (...) ອະນຸມານຳ
 ↓
 ນິກົມ ເສັງເກົ່າ CSS
 * ກຳນົມ
 div p p ນິກົມ ດiv

The getElementById() method

- Allow access to an element by the value of its id attribute

Example

```
<div id="some_text">This is some text.</div>
```

```
var text_element =  
    document.getElementById("some_text");
```

^ ~~Obj Attr~~ ~~In id Obj~~ ↗

The getElementByName() method

- Allow access to an element by the value of its name attribute

Example

```
<input type="radio" name="color" value="violet">
```

```
var text_element = document.getElementsByName("color");
```

^
Name Attribute with Name of the

**if there are elements with the name specified,
text_element var. will be array filled with matched elements.

ofoAll v ↓ dYs

The `getElementsByClassName()` method

The `getElementsByTagName()` method

ofoAll tag ↓ ofo

- Get an array filled with all the elements in the document that have specified class/tag name

querySelector

- Select element(s) by using CSS selector
 - querySelector() : select only first element that matched
 - querySelectorAll : select all elements that matched

- Example:

pointer 1.5 : return 1 នៃ សម្រាប់អក្សរក្នុងការបង្កើតនូវការ

```
Let items=document.querySelector('*');
Let items=document.querySelectorAll('*');
Let items=document.querySelector('div');
Let items=document.querySelectorAll('div');
Let items=document.querySelector('div p');
Let items=document.querySelectorAll('div p');
```

Traversing elements

- Get parent node
 - `node.parentNode` //the returned parent node is read-only
- Get child nodes
 - `node.firstChild` ດາວໂຫຼນ ອາລກວິນ element , Attribute , text node ,comment
 - `node.firstElementChild` ດາວໂຫຼນວິນ element ມີກຳ
 - `node.lastChild` ລົກສອນກຳ
 - `node.lastElementChild` ລົກສອນກຳວິນ element ມີກຳ
 - `node.childNodes` ^{node ຖະໜາ} ອາລກວິນ element , Attribute , text node ,comment
 - `node.children` ລົກສິນວິນ element
- Get sibling
 - `node.nextSibling` parent ຕື່ອງກຳ(ວິໄລທານີຕື່ອງກຳ)
 - `node.previousElementSibling`

Example

- HTML

```
<div>
    <p id="firstchild">test
        <span>Hello</span>
    </p>
    <a href="www.kmitl.ac.th">Click</a>
    </img>
</div>
```

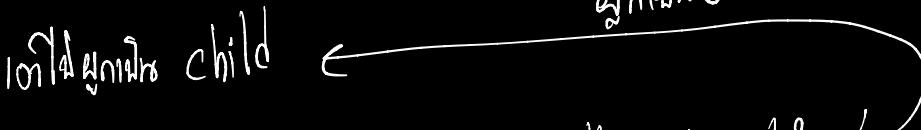
. = class
= id

- DOM

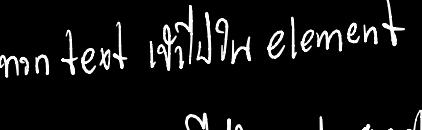
```
let n = document.querySelector('#firstchild');
let parent = n.parentNode
let child = n.children[0]
let next = n.nextElementSibling
```

ក្រុងការអនុវត្តន៍ element

Manipulating elements

- createElement
- appendChild 

លើកដូចជាខ្លួន child
- createTextNode 

នឹង text node នឹង លើកដូចជាខ្លួន child នឹង element ឡាយ
- .textContent 

នឹង text នឹង element
- .innerHTML 

នឹង tag នឹង element
- .removeChild 

នឹង child នៃ

Document node creation

```
<body>
    <div id="div1" title="All about me!">
        This page is about me, me, and... me!
    </div>
</body>
```

③

div

inner-div.innerHTML = "More...";

```
var me_div = document.getElementById("div1"); me-div = div #div1
var inner_div = document.createElement("div"); //<div><div>
var inner_div_text = document.createTextNode("More..."); text node containing
③ inner_div.appendChild(inner_div_text); //<div>More...</div>
me_div.appendChild(inner_div);
```

in browser render ရေးကိစ္စ မြတ်နာရီ 2-3 စုစုပေါင်းလျဉ်သူ၏ html အား ပြန်လည်

Result

```
<body>
<div id="div1" title="All about me!">
This page is about me, me, and... me!
<div>


---


More...


---


</div>
</div>
</body>
```

getAttribute() method

- Get the values of attribute of an element

Example

```

```

```
var i_id = document.getElementById("i1");  
var i_src = i_id.getAttribute("src");  
i_src = "images/pr.gif"
```

setAttribute() method

- Set the values of attribute of an element

Example

```

```

```
var i_id = document.getElementById("i1");  
i_id.setAttribute("src", "images/xx.jpg");
```

ມາຈັດວຽກ

Manipulating Style

- Style property** ຜົນກໍາເພີ້ມກ່ອນ
- getComputedStyle
- className
- classList
- width & height

Example

```
let item = getElementById('i1');
```

```
item.style.color = 'blue';
```

```
item.style.backgroundColor = 'yellow';
```

background • color must match CSS

Events

- Normally used in combination with functions
 ກວດປົງ
- Examples of DOM event:
 - abort: loading of a media is aborted
 - blur: element loses focus
 - change: content of element has changed
 - click: mouse clicks on element
 - focus: element gets focus
 - etc.

(further reading: https://www.w3schools.com/jsref/dom_obj_event.asp)

Example

```
<div>
    <button id="id01">Click here</button>
</div>
var d = document.getElementById("id01");
d.setAttribute("onclick", "()=>{return
false; }");
Or
d.addEventListener('click', ()=>{return
false; });

```

↑ add event handler នៃ គណនី
តាមរយៈលក្ខណៈ មានតម្លៃ ពីរបៀវត្ស នៅក្នុងការសែន្យាតាមការកំណត់តម្លៃ

Navigator Object

- Contains information about the browser
- Examples:

- appName: name of the browser
- appVersion: version of the browser
- cookieEnabled: cookies are enabled or not
- etc.

↳ ສຳເນົາໄດ້ໃຊ້ເກມໄວ້ແລ້ວ ກ່ອນນີ້ຈະໄດ້ກຳລັງ
ມີລາຍລະອຽດກ່ອນນີ້ໃຫຍ່ ໃນນັ້ນມີກຳລັງການ

(further reading: https://www.w3schools.com/jsref/obj_screen.asp)

Further reading

- reference:

<https://www.javascripttutorial.net/javascript-dom/>

Js_event_01.js

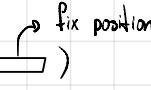
window និង pop up អាជីវកម្ម
button

```
function test(v) {  
    window.alert(v.getAttribute("type"));  
}
```

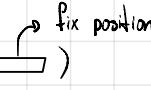
```
<body>  
    <form>  
        <input type="button" value="Click Me!"  
              onclick="test(this);"/>  
    </form>  
    <script type="text/javascript"  
          src="js_event_01.js"></script>  
</body>
```

ການຝຶກ

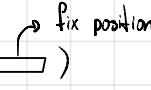
ດີເລີມໂອງໃນ video

- click ນັ້ນ web worker ນັ້ນ (ອັດຕິ click ແລະ ສໍາງໄປມານັ້ນ )
↳ ເຊື່ອມກຳນົດເວັບໄວ້ ເຊື່ອມກຳນົດເວັບໄວ້ good practice (web worker ອອກຈາກ main thread)

key : ດີເລີມໂອງໃນ video ດີເລີມໂອງໃນ web worker ດີເລີມໂອງໃນ main thread

- ເພີ້ມ  btn ລູກຄ່າ by font color  fix position event handler

- click ທີ່ ... ດັ່ງນີ້ ມີຄວາມ ກຳນົດ ອັດຕິການເປັນດອດດອນ (click ນີ້ນີ້)
↳ click ອີ່ ຂໍມີມົນ

- snapshot click ທີ່ ສົ່ງ ມີການທັງໝົດ  ກຳນົດ reload ນີ້ນີ້ ດີເລີມໂອງໃນ img ນີ້ນີ້