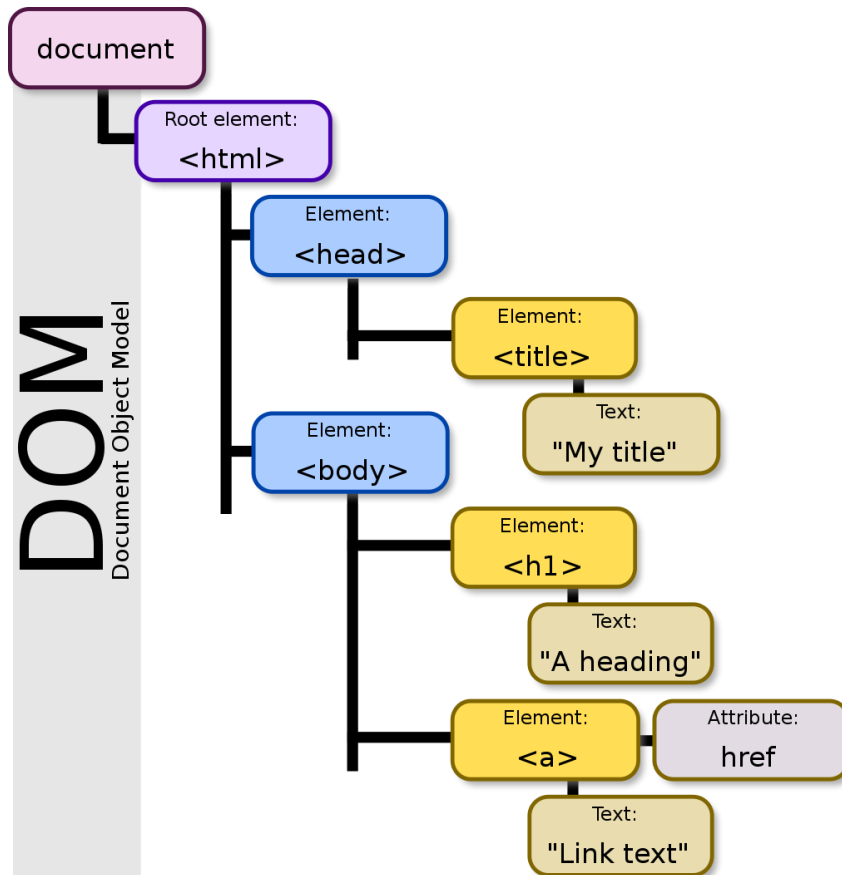


# Introduction to the DOM

## Document Object Model (DOM)

- DOM tree

[https://developer.mozilla.org/en-US/docs/Web/API/Document\\_Object\\_Model](https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model)



```
console.dir(document);  
let val = document.URL;  
console.log(val);  
let ele = document.querySelector('.output');  
console.dir(ele.textContent);  
ele.textContent = "Hello World";  
  
let myDOM = {
```

```
URL : "My URL",
children : [
  {html : {
    "body" : "Content"
  }}
]
}
```

## Element Selection

- Element Selection
- Multiple Elements selection

```
const ele1 = document.getElementById('myEle');
console.log(ele1);

const ele2 = document.querySelector('div.output');
console.log(ele2);

const val1 = 'h1';
const ele3 = document.querySelector(val1);
console.log(ele3);

const ele4 = document.querySelector('#myEle');
console.log(ele4);

console.log(ele1.textContent);
ele1.textContent = 'Laurence Svekis';
console.log(ele4.textContent);

const myObj1 = {
  first : "Laurence"
```

```

}

const my1 = myObj1;
const my2 = myObj1;
my1.first = "Svekis";

console.log(my2);

const eles1 = document.querySelectorAll('.output');
console.log(eles1);
const eles2 = document.querySelectorAll('h1');
console.log(eles2);
console.clear();
eles1.forEach(function(ele, ind) {
    console.log(ele.textContent);
    ele.textContent = 'My Element ' + ind;
})

```

```

<!doctype html>
<html>
<head>
  <title>JavaScript</title>
  <style>
    div.output{
      color:red;
    }
  </style>
</head>
<body>
  <h1 class="output">Hello DOM</h1>
  <div class="output">JavaScript</div>
  <div id="myEle">Hello World</div>
  <script src="dom2.js"></script>

```

```
</body>
</html>
```

## Element Manipulation DOM

- Element Manipulation

```
const outputs = document.querySelectorAll('.output');
let html = '<div style="color:red">Laurence <br> Svekis</div>';
console.dir(outputs[0].tagName);
if(outputs[0].tagName !== 'H1'){
    outputs[0].textContent = html;
}
outputs[1].innerHTML = html;

outputs.forEach(function(el) {
    if(el.tagName !== 'H1'){
        el.innerHTML = html;
    }
})

outputs.forEach((el, ind)=>{
    if(el.tagName !== 'H1'){
        el.innerHTML = html;
    }
    el.innerHTML += ' ' + ind;
})

document.write(html);
```

# Element styling attributes

- Element Manipulation

```
const output = document.querySelector('.output');
console.log(output.style);
output.style.color = 'red';
console.log(output.style.color);

const ele1 = document.querySelector('div.output');
ele1.style.background = '#0000ff';
ele1.style.color = 'rgb(255,255,255)';
ele1.style.padding = '10px';
ele1.style.border = '2px solid black';
ele1.style.borderColor = 'green';
ele1.style.fontSize = '30px';

ele1.setAttribute('style', '');

const eles = document.querySelectorAll('div');
eles.forEach((el, index)=>{
  console.log(el);
  el.style.textTransform = 'uppercase';
  if(el.classList.contains('output')){
    el.innerHTML += '***OUTPUT***';
  }
  el.classList.add('box');
  el.classList.remove('output');
  el.classList.toggle('active');
  el.setAttribute('id', 'id'+(index+1));
})
```

```
<!doctype html>
<html>
<head>
  <title>JavaScript</title>
  <style>
    .box{
      background-color:blueviolet;
      color:white;
      padding:10px;
      margin:10px;
    }
  </style>
</head>
<body>
  <h1 class="output">Hello DOM</h1>
  <div class="output">JavaScript</div>
  <div id="myEle">Hello World</div>
  <div>Hello World 2</div>
  <div class="output">JavaScript</div>
  <script src="dom4.js"></script>
</body>
</html>
```

## DOM and Form Elements

- Input Values

```
const first = document.querySelector('input[name="first"]');
const last = document.querySelector('input[name="last"]');
const chk = document.querySelector('input[type="checkbox"]');
first.setAttribute('placeholder','first name');
last.setAttribute('placeholder','last name');

first.value = 'Laurence';
last.value = 'Svekis';

chk.checked = true;
```

## DOM Element Event Listeners

- Adding event listeners
- onclick vs addEventListener

```
const btn = document.querySelector('button');
let counter = 0;

btn.addEventListener('click',btnClicked);

function btnClicked(e) {
  console.log(e.target.id);
  e.target.id = 'NEW' + counter;
  counter++;
  console.log('clicked '+counter);
  e.target.textContent = 'Clicked ('+counter+')';
  e.target.classList.toggle('box');
}
```

```

const h1 = document.querySelector('h1');
h1.onclick = btnClicked;

const holder = document.querySelector('.holder');
const divs = holder.querySelectorAll('div');
console.log(divs);
console.clear();
divs.forEach((el, ind)=>{
    const val = el.className;
    el.onclick = function(){
        console.log('onclick ' + val);
    }
    el.addEventListener('click', (e)=>{
        console.log('event False ' + val);
    }, false);
    el.addEventListener('click', (e)=>{
        console.log('event True ' + val);
    }, true);
}))

```

```

<!doctype html>
<html>
<head>
  <title>JavaScript</title>
  <style>
    .box{
      background-color:blueviolet;
      color:white;
      padding:10px;
    }
  </style>

```



```
        margin:10px;
    }
</style>
</head>
<body>
    <h1 id="h1" class="output" >Hello DOM</h1>
    <div class="output">JavaScript</div>
    <div id="myEle">Hello World</div>
    <input name="first">
    <input name="last">
    <input type="checkbox">
    <button>Click Me</button>
    <div>Hello World 2</div>
    <div class="output">JavaScript</div>

    <div class="holder">
        <div class="one">One
            <div class="two">Two
                <div class="three">
                    Three
                </div>
            </div>
        </div>
    </div>

    <script src="dom6.js"></script>
</body>
</html>
```

# JavaScript DOM Events

```
const btn = document.querySelector('button');
const holder = document.querySelector('.holder');
const inputs = document.querySelectorAll('input');
const h1 = document.querySelector('h1');
btn.addEventListener('click', adder);
btn.addEventListener('click', (e) => {
    console.log('two');
})

holder.addEventListener('mouseover', (e) => {
    holder.style.background = 'red';
    //holder.classList.toggle('box');
})

holder.addEventListener('mouseout', (e) => {
    holder.style.background = 'white';
    //holder.classList.toggle('box');
})

holder.addEventListener('click', (e) => {
    holder.style.background = 'blue';
})

holder.addEventListener('click', (e) => {
    output('test', e);
});

function output(a, e) {
    console.log(a);
}

function adder(e) {
    const el = e.target;
```

```
el.removeEventListener('click', adder);  
el.style.color = '#ddd';  
console.log('clicked');  
}
```

```
inputs.forEach((el) => {  
  el.addEventListener('change', updater);  
  el.addEventListener('focus', (e) => {  
    console.log(el.textContent);  
    el.style.background = 'red';  
    el.style.color = 'white';  
  })  
  el.addEventListener('blur', (e) => {  
    console.log(el.textContent);  
    el.style.background = 'white';  
    el.style.color = 'black';  
  })  
})
```

```
function updater(e) {  
  const val = e.target.value;  
  h1.textContent = val;  
}
```

```
h1.addEventListener('click', (temp, {once: true})  
  
function temp()  
  console.log('test');  
  h1.style.color = 'red';  
}
```

# Page Events DOM

```
const h1 = document.querySelector('h1');

document.body.onload = ()=>{
  console.log('body loaded');
}

document.addEventListener('DOMContentLoaded', (e)=>{
  console.log('ready');
  const output = document.querySelector('.output');
  console.log(output);
}))

document.addEventListener('keydown', (e)=>{
  console.log(e.key);
  h1.textContent += e.key;
}))

document.addEventListener('keyup', (e)=>{
  console.log(e.key);
}))

console.dir(window);
//window.alert('hello');
window.onresize = ()=>{
  h1.innerText = window.innerHeight + ' ' + window.innerWidth;
}
```

# Create Elements JavaScript

- Create Elements

```
const first = document.querySelector('input');
const btn = document.querySelector('button');
const holder = document.querySelector('.holder');
const div = document.createElement('div');
const output = document.querySelector('div.output');
output.style.border = '1px solid black';
let counter = 0;
output.addEventListener('click', adder);

first.value = "Laurence";
btn.addEventListener('click', (e) => {
    //holder.innerHTML = "";
    console.log(first.value);
    div.textContent = first.value;
    console.log(div);
    const div1 = document.createElement('div');
    holder.append(div1);
    div1.textContent = "HELLO";
    holder.append(div);
    holder.prepend(div);
    div.style.color = 'red';
});

function adder() {
    counter++;
    console.log('clicked');
```

```

const newEle = createEle('div',output,'hi '+counter);
console.log(newEle);
newEle.style.background = 'blue';
}

function createEle(elType,parent,html){
  const ele = document.createElement(elType);
  ele.innerHTML = html;
  return parent.appendChild(ele);
}

```

## Element Movement

```

const holder = document.querySelector('.holder');
holder.style.position = 'absolute';
const ele = {x:holder.offsetLeft,y:holder.offsetTop}
holder.addEventListener('click',(e)=>{
  ele.x += 50;
  ele.y -= 5;
  holder.style.left = ele.x + 'px';
  holder.style.top = ele.y + 'px';
})

document.addEventListener('keydown',(e)=>{
  console.log(e.key);
  if(e.key == 'ArrowLeft'){
    ele.x -= 50;
  }
  if(e.key == 'ArrowRight'){
    ele.x += 50;
  }
})

```

```

    }
    if(e.key == 'ArrowUp'){
        ele.y -= 50;
    }
    if(e.key == 'ArrowDown'){
        ele.y += 50;
    }
    holder.style.left = ele.x + 'px';
    holder.style.top = ele.y + 'px';
  })

```

## Element Animation

<https://developer.mozilla.org/en-US/docs/Web/API/window/requestAnimationFrame>

```

<!doctype html>
<html>
<head>
  <title>JavaScript</title>
</head>
<body>
  <script src="dom11.js"></script>
</body>
</html>

```

```

const output = document.createElement('div');
document.body.prepend(output);
output.textContent = 'JavaScript';
output.style.width = '100px';

```

```

output.style.height = '100px';
output.style.background = 'red';
output.style.textAlign = 'center';
output.style.lineHeight = '100px';
output.style.color = 'white';
output.style.position = 'absolute';

function ran(){
    return Math.floor(Math.random()*255)
}

output.addEventListener('click', (e)=>{
    const col = 'rgb('+ran()+','+ran()+','+ran()+')';
    output.style.background = col;
    console.log(col);
}))

const player = {
    x : 0,
    y : 0,
    speed : 10,
    ani : window.requestAnimationFrame(moveMe)
}

const keyz = {
    ArrowDown : false,
    ArrowUp : false,
    ArrowRight : false,
    ArrowLeft : false
}

window.addEventListener('keydown', (e)=>{
    keyz[e.code] = true;

```



```
  })  
  window.addEventListener('keyup', (e)=>{  
    keyz[e.code] = false;  
  })  
  
  function moveMe() {  
    if(keyz.ArrowRight){player.x += player.speed}  
    if(keyz.ArrowLeft){player.x -= player.speed}  
    if(keyz.ArrowUp){player.y -= player.speed}  
    if(keyz.ArrowDown){player.y += player.speed}  
    output.style.left = player.x + 'px';  
    output.style.top = player.y + 'px';  
    player.ani = window.requestAnimationFrame(moveMe);  
  }  
}
```