

## DOM - LAB

### GETTING TO KNOW THE DOM

Open the file *dom-selection.html*. Here is a standard HTML document with the usual mix of images and text.

Things to try:

1. Change the `<h1>` with content of 'Browser Based Applications' to read 'Web Applications Development'.
2. Add the class 'currentPage' to the first `<li>` in the menu.
3. Change the link on 'home' to point to *http://www.google.co.uk*.
4. Insert a new HTML `<div>` element after the `<h1>` and include in the `<div>` today's date.
5. Use the red 'Calculator' button to launch a new window to view the calculator app file *js-dom-start.html*.
6. Centre the 'pop up' in the middle of the page both vertically and horizontally.

Tip: Make use of `getElementsByName`, `getElementById`, `date`, `screen.width`, `screen.height`, `window.open`, `setAttribute`.

### TIPS FOR EXTENDING THE CALCULATOR

Things to do:

- Create code as external file
- Place at bottom of file

Try adding one event handler ie:

```
document.getElementById('b4').onclick = function() {  
    console.info(this);  
}
```

Now pass the event object through to it like so and investigate the event object via the console.

```
document.getElementById('b4').onclick = function(ev) {  
    console.info(ev);  
    console.info(ev.target);  
}
```

Alternatively use `addEventListener()` ie:

```
document.getElementById('b5').addEventListener('click', function(ev) {  
    console.info(ev);  
    console.info(ev.target);  
});
```

Reduce repetitive code by caching ie:

```
var displayScreen = document.getElementById('display');  
document.getElementById('b4').addEventListener('click', function(ev) {  
    //console.info(displayScreen);  
    displayScreen.innerHTML = ev.target.innerHTML;  
});
```

## QUERYSELECTORALL

Add an event to all the buttons. The code is as follow:

```
var myNoButtons = document.querySelectorAll(".button");

    var totalNoButtons = myNoButtons.length;

    for (var i=0;i<totalNoButtons;i++) {

        myNoButtons[i].onclick = update;

    }
```

Then update is:

```
var calcType;
function update(ev) {

    var pickedVal = ev.target.innerHTML;

    var currentDisplay = document.getElementById("display").innerHTML;

    if(currentDisplay == '0' || calcType == 'none'){

        currentDisplay = '';

    }

    if(calcType == 'none'){

        calcType = 'newStart';

    }

    document.getElementById("display").innerHTML = String(currentDisplay
+ pickedVal);

}
```

Same technique for the Maths buttons:

```
var myMathButtons = document.querySelectorAll(".buttonMath");  
var totalMathButtons = myMathButtons.length;  
for (var i=0;i<totalMathButtons;i++) {  
    myMathButtons[i].onclick = calc;  
}
```

To call the function:

```
function calc(ev){  
    calcType = ev.target.getAttribute('id');  
    console.info(calcType);  
    value1 = document.getElementById("display").innerHTML;  
    document.getElementById("display").innerHTML = "0"  
    if(calcType == 'clear'){  
        value1 = 0;  
        document.getElementById("display").innerHTML = "0"  
    }  
    console.info('calc: '+calcType);  
    console.info('value1: '+value1);  
}
```

Add the event listener for the 'equals' sign:

```
document.getElementById("buttonFinish").onclick = finish;
```

and then the function `finish()`

```
function finish(){

    console.info('Finish calc: '+calcType);
    console.info('Finish value1: '+value1);
    var currentDisplay = document.getElementById("display").innerHTML;
    var newDisplay = 0;

    switch(calcType){

        case 'multiply' :
            newDisplay = Number(value1) * Number(currentDisplay);
            break;

        case 'minus' :
            newDisplay = Number(value1) - Number(currentDisplay);
            break;

        case 'add' :
            newDisplay = Number(value1) + Number(currentDisplay);
            break;

        case 'divide' :
            newDisplay = Number(value1) / Number(currentDisplay);
            break;

    }

    console.info('Finish calc: '+calcType);
    console.info('Finish value1: '+value1);
    console.info('Finish currentDisplay: '+currentDisplay);
    console.info('Finish newDisplay: '+newDisplay);

    calcType = 'none';

    value1 = 0;

    document.getElementById("display").innerHTML = String(newDisplay);

}
```

There is more to do to tidy this up (ie the handling of decimal places) but you have the basis of the calculator.

## JQUERY VERSION

Amend your code to use jQuery. Add the library to the page.

The jQuery `each()` method loops around every matching element to attach the Javascript event.

```
$(".button").each(function(i) {  
    $(this).on('click', update);  
});  
  
$(".buttonMath").each(function(i) {  
    $(this).on('click', calc);  
});
```

## MAKING THE APPLICATION MOBILE FRIENDLY

Change the `click` events to `touchstart` to make them more responsive.

```
$(".button").each(function(i) {  
    $(this).on('touchstart', update);  
});  
  
$(".buttonMath").each(function(i) {  
    $(this).on('touchstart', calc);  
});
```

To make the calculator fit in a mobile browser window add a meta viewport tag.

```
<meta name="viewport" content="width=device-width, initial-scale=1,  
maximum-scale=1">
```

**SOLUTIONS**

The simple DOM page tasks 1-5.

```
function init(){

    document.getElementsByTagName('h1').item(0).innerHTML = "Web
Application Development";

    var myNode = document.createElement('div');

    var myDate = new Date();

    myDate = myDate.toString();

    document.getElementById('logo').appendChild(myNode);

    myNode.innerHTML = myDate;

    document.getElementsByTagName('li').item(0).setAttribute('class',
'currentPage');

    document.getElementById('showCalc').onclick = function(){

        var x = (screen.width/2) - 360/2;

        var y = (screen.height/2) - 480/2;

        var myOptions =
'resizable=yes,scrollbars=yes,height=480,width=360,left='+x+',top='+y;

        window.open('js-calc-dom.html', 'MyCalc', myOptions);

    }

}
```