DOM – LAB

GETTING TO KNOW THE DOM

Open the file *index.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 *calculator.html*.
6. Centre the 'pop up' in the middle of the page both vertically and horizontally.

Tip: Make use of `getElementsByTagName`, `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.toDateString();

	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);

	}

}
```