

Auditory exercise 3

Internet programming

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Events

- Example of event?
 - The user clicks on the field
 - The mouse cursor goes through a picture
 - The user leaves the field
- The user causes an event with his interaction with a web page
- Events associate action on the objects from the page
- In JavaScript is supported the event handling system
 - Can specify commands that should be executed when an event occurs
- Example:

```
<!DOCTYPE html>
```

```
<html>
```

```
<body>
```

```
    <button onclick="getElementById('demo').innerHTML=Date()">The time is?</button>
```

```
    <p id="demo"></p>
```

```
</body>
```

```
</html>
```



Events (2)

- Some of the most used events in JavaScript

Event	Description
onchange	An HTML element has been changed
onclick	The user clicks an HTML element
onmouseover	The user moves the mouse over an HTML element
onmouseout	The user moves the mouse away from an HTML element
onkeydown	The user pushes a keyboard key
onload	The browser has finished loading the page

- More specific list with events
 - http://www.w3schools.com/jsref/dom_obj_event.asp

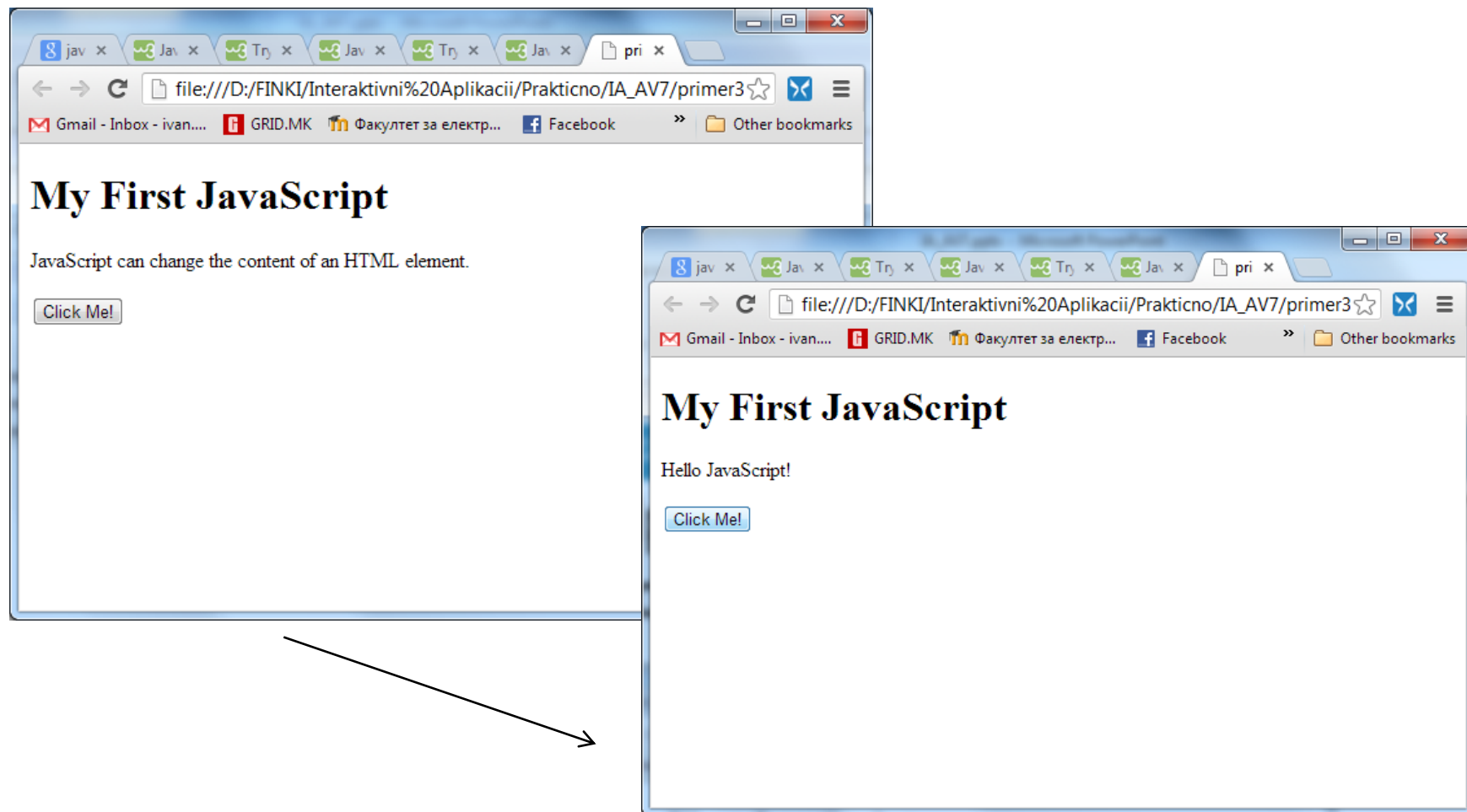
Changing HTML elements

- JavaScript can manipulate with DOM (changing of html content)
- JavaScript can use for:
 - ☐ Changing HTML elements
 - ☐ Deleting HTML elements
 - ☐ Creating new HTML elements
 - ☐ Copying or cloning HTML elements

Changing of HTML content - example

```
<html>
<head>
<script language="JavaScript">
<!-- hide
function change() {
    x=document.getElementById("demo");
    x.innerHTML="Hello JavaScript!";
} -->
</script>
</head>
<body>
<form>
<input type="button" value="Change the paragraph" onClick="change()">
<p id="demo">
    JavaScript can change the HTML content
</p>
</form>
</body>
</html>
```

Changing of HTML content - example

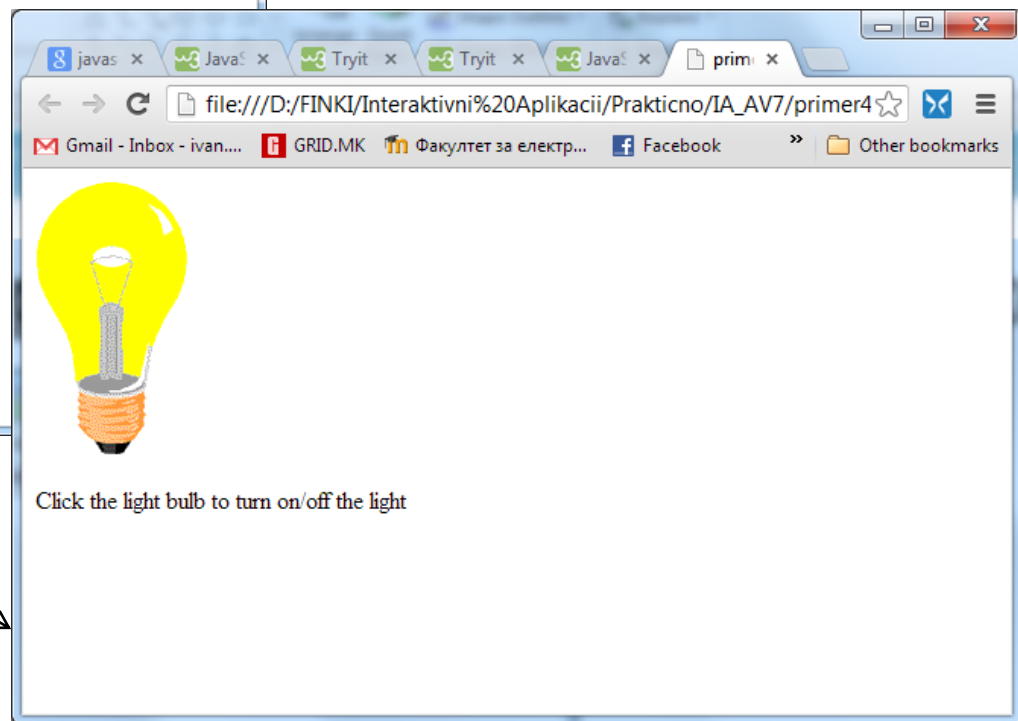
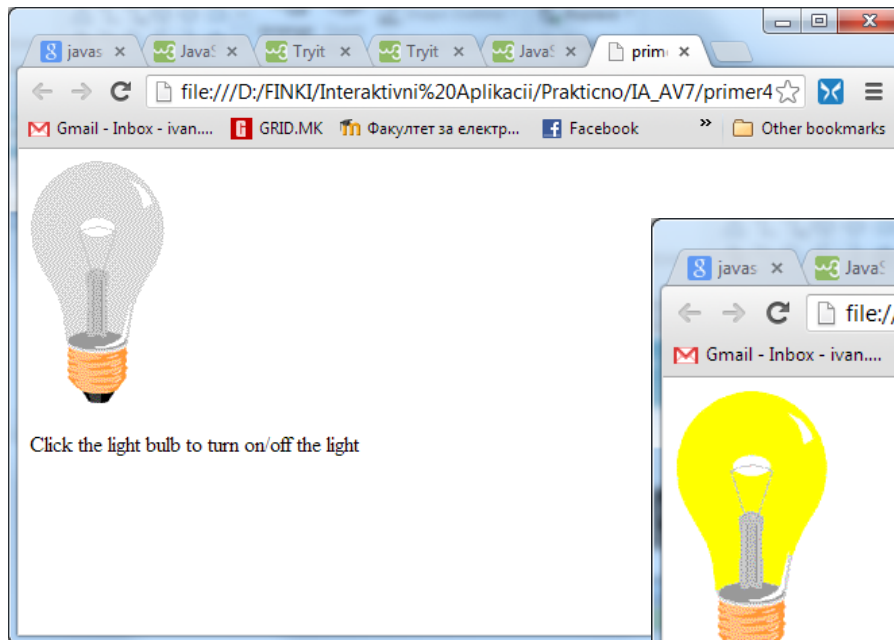


Changing the attributes of HTML elements

- JavaScript can be use for changing the attributes of HTML elements.

```
<!DOCTYPE html>
<html>
  <body>
    <script>
      function changeImage()
      {
        element=document.getElementById('myimage')
        if (element.src.match("bulbon"))
        {
          element.src="pic_bulboff.gif";
        }
        else
        {
          element.src="pic_bulbon.gif";
        }
      }
    </script>
    
    <p>Click the light bulb to turn on/off the light</p>
  </body>
</html>
```

Changing the attributes of HTML elements



Changing styles

- JavaScript can be use for changing the attributes of HTML elements.

```
<!DOCTYPE html>
<html>
  <body>

    <h1>JavaScript example</h1>

    <p id="demo">
      JavaScript can change the style of an HTML element.
    </p>

    <script>
      function myFunction()
      {
        x=document.getElementById("demo") // Find the element
        x.style.color="#ff0000"; // Change the style
      }
    </script>

    <button type="button" onclick="myFunction()">Click Me!</button>
  </body>
</html>
```

Changing styles (2)

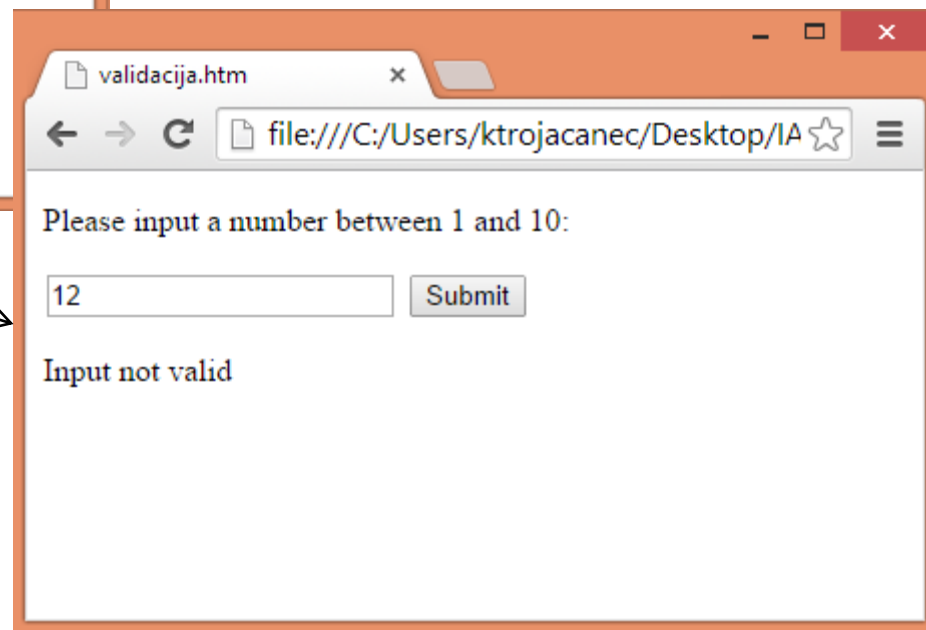
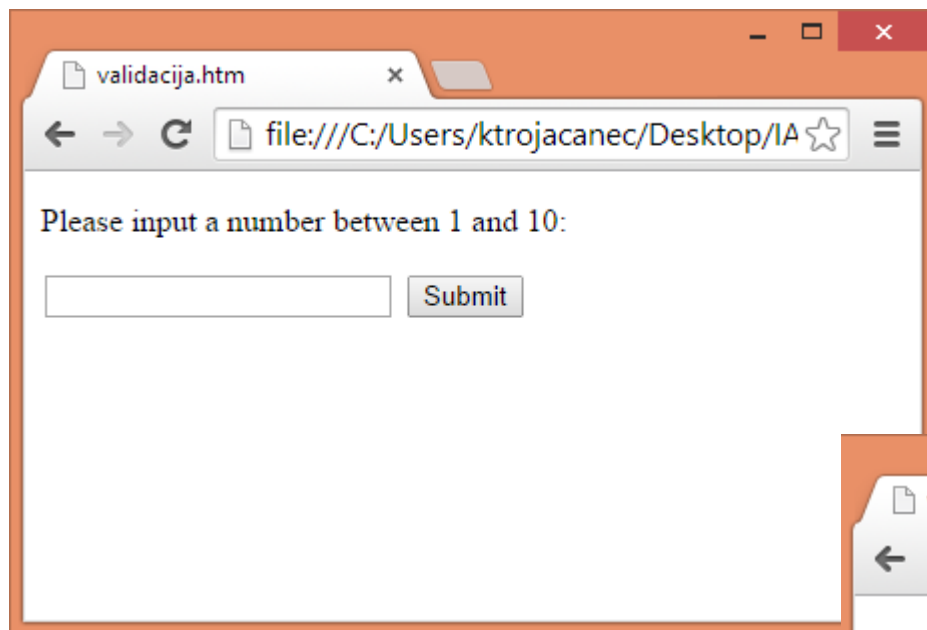


Validation

- JavaScript can be use for validate user input data.

```
<!DOCTYPE html>
<html>
<body>
  <p>Please input a number between 1 and 10:</p>
  <input id="numb" type="text">
  <button type="button" onclick="myFunction()">Submit</button>
<p id="demo"></p>
<script>
  function myFunction() {
    var x, text;
    //Get the value of input field with id="numb"
    x = document.getElementById("numb").value;
    // If x is Not a Number or less than one or greater than 10
    if (isNaN(x) || x < 1 || x > 10) {
      text = "Input not valid";
    } else {
      text = "Input OK";
    }
    document.getElementById("demo").innerHTML = text;
  }
</script>
</body>
</html>
```

Validation



Problem 1

- Write a function style() which will change the font, size and color of the text in the paragraph.

```
<!DOCTYPE html>
<html><head>
<meta charset=utf-8 />
<title>Title</title>
</head>
<body>
<p id ='text'>Change my style</p>
<div>
<button id="jsstyle"
onclick="style()">Style</button>
</div>
</body>
</html>
```

Solution

```
function style()  
{  
  text.style.fontSize = "14pt";  
  text.style.fontFamily = "Comic Sans MS";  
  text.style.color = "green";  
}
```

Problem 2

- Write a function background() which will set red background on the paragraphs.

```
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>Title</title>
</head>
<body>
<input type="button" value="Click to set paragraph back
ground color" onclick="background()">
<p>Paragraph 1</p>
<p>Paragraph 2</p>
</body>
</html>
```

Solution

```
function set_background() {  
  docBody = document.getElementsByTagName("body")[0];  
  // take all the paragraphs in the body tag  
  myBodyElements = docBody.getElementsByTagName("p");  
  // take the first paragraph  
  myp1 = myBodyElements[0];  
  myp1.style.background = "rgb(255,0,0)";  
  // take the second paragraph  
  myp2 = myBodyElements[1];  
  myp2.style.background = "rgb(255,255,0)";  
}
```

Exercise for home: Make function that will work with arbitrary numbers of paragraphs

Problem 3

- Write a function `getAttributes ()` which in the console will print `href`, `hreflang`, `rel`, `target` and `type` attributes on the link.

```
<!DOCTYPE html>
<html><head>
<meta charset=utf-8 />
</head>
<body>
<p><a id="finki" type="text/html" hreflang="en-
us" rel="nofollow" target="_self" href="http://www.w3
resource.com/">finki</a></p>
<button onclick="getAttributes()">Click here to get
attributes value</button>
</body>
</html>
```

Solution

```
function getAttributes()
{
  var u = document.getElementById("finki").href;
  console.log('The value of the href attribute of the link is : '+u);
  var v = document.getElementById("finki").hreflang;
  console.log ('The value of the hreflang attribute of the link is : '+v);
  var w = document.getElementById("finki").rel;
  console.log('The value of the rel attribute of the link is : '+w);
  var x = document.getElementById("finki").target;
  console.log('The value of the taget attribute of the link is : '+x);
  var y = document.getElementById("finki").type;
  console.log('The value of the type attribute of the link is : '+y);
}
```

Problem 4

- Write a function isPrime() which will check if randomly generated number n (from 1 to 100) is a prime number.

```
<!DOCTYPE html>
<html>
<head>
<meta charset=utf-8 />
<title>Check a number is prime or not</title>
<script>
// Math.random() -generate accidentally number from 1 to 100
// Math.floor() - takes the lowest minor integer
var n = Math.floor((Math.random() * 100) + 1);
console.log(n + ', ' + isPrime(n));
</script>
</head>
<body>
</body>
</html>
```

Solution

```
function isPrime(n)
{
    if (n===1)
    {
        return false;
    }
    else if(n === 2)
    {
        return true;
    }else
    {
        for(var x = 2; x < n; x++)
        {
            if(n % x === 0)
            {
                return false;
            }
        }
        return true;
    }
}
```

Problem 5

- Write a program in JavaScript that will set green color on the bold text when the mouse is over

[On mouse over here bold words of the following paragraph will be highlighted]

We have just started **this** section for the users (**beginner** to intermediate) who **want** to work with **various** JavaScript **problems** and write scripts online to **test** their JavaScript **skill**.

Solution

```
<!doctype html>
<html>
<head>
<meta charset="UTF-8">
<title>Get And Style All Tags</title>
</head>
<body>
<p>[<a href="#" onMouseOver="highlight()"
onMouseOut="returnToNormal()">On mouse over
here bold words of the following paragraph w
ill be highlighted</a>]</p>
<p><strong>We</strong> have just started <st
rong>this</strong> section for the users (<s
trong>beginner</strong> to intermediate) who
<strong>want</strong> to work with <strong>
various</strong> JavaScript <strong>problems
</strong> and write scripts online to <stron
g>test</strong> their JavaScript <strong>ski
ll</strong>.</p>
</body>
</html>
```

```
//First create a list of all bold items
var boldItems;
window.onload = getBoldItems();

// Collect all <strong> tags
function getBoldItems()
{
    boldItems = document.getElementsByTagName('strong');
}

// iterate all bold tags and change color
function highlight()
{
    for (var i=0; i<bold_Items.length; i++)
    {
        boldItems[i].style.color = "green";
    }
}

// On mouse out highlighted words become black
function returnToNormal()
{
    for (var i=0; i<bold_Items.length; i++)
    {
        boldItems[i].style.color = "black";
    }
}
```

Problem 6

- Write the function `getOptions()` which will count and print all the elements on the list.

```
<!DOCTYPE html>
<html><head>
<meta charset=utf-8 />
<style type="text/css">
body {margin: 30px;}
</style>
<title>Count and display items of a dropdown list</title>
</head><body><form>
Select your favorite Color :
<select id="mySelect">
<option>Red</option>
<option>Green</option>
<option>Blue</option>
<option>White</option>
</select>
<input type="button" onclick="getOptions()" value="Count and Output all
items">
</form></body></html>
```

Solution

```
function getOptions()
{
    var x=document.getElementById("mySelect");
    var txt1 = "No. of items : ";
    var i;
    l=document.getElementById("mySelect").length;
    txt1 = txt1+l;
    for (i=0;i<x.length;i++) {
        txt1 = txt1 + "\n" + x.options[i].text;
    }
    alert(txt1);
}
```


Problem 7

- Make a web page that will calculate the volume of a sphere for given radius.

Input radius value and get the volume of a sphere.

Radius

Volume

Calculate

Solution

```
<!doctype html>
<html lang="en">
<head>
<meta charset="utf-8">
<title>Volume of a Sphere</title>
<style>
body{padding-top:30px;}
label,input{display:block;}
</style>
</head>
<body>
<p>Input radius value and get the volume of a sphere.</p>
<form action="" method="post" id="MyForm">
<label for="radius">Radius</label><input type="text" name="radius" id="radius" required>
<label for="volume">Volume</label><input type="text" name="volume" id="volume">
<input type="submit" value="Calculate" id="submit">
</form>
</body>
</html>
```

```
function volumeSphere()
{
    var volume;
    var radius = document.getElementById('radius').value;
    radius = Math.abs(radius);
    volume = (4/3) * Math.PI * Math.pow(radius, 3);
    volume = volume.toFixed(4);
    document.getElementById('volume').value = volume;
    return false;
}
window.onload = document.getElementById('MyForm').onsubmit
                = volumeSphere;
```