

sample_module.html -- A Complete Module



This module uses a new Java applet **Color_Transformation**, Javascript, and forms to produce a complete module exploring transformation in the context of colors. The module begins with a discussion of how colors and images are represented on computers. The image used as an example shows scenery at Bryce Canyon in Utah but can easily be changed. To use a different image change the three lines below.

```
var width           = 422
var height          = 285
var picture_filename = "bryce.gif"
```

using the width, height, and file name of the image that you want to use.

The module is based on a form that enables students to control a Java applet, **Color_Transformation** that transforms the colors of an image. The form is shown below.

New color	constant	multiplier for original red	multiplier for original green	multiplier for original blue
Red	Enter red constant	Enter red from red	Enter red from green	Enter red from blue
Green	Enter green constant	Enter green from red	Enter green from green	Enter green from blue
Blue	Enter blue constant	Enter blue from red	Enter blue from green	Enter blue from blue

The html code for this form is shown below, although there is probably no need to change it.

```
<form name = "response">
<table cellpadding = 10>
<tr>
<td><b><center>New color</center></b></td>
<td><b><center>constant</center></b></td>
<td><b><center>multiplier for original red</center></b></td>
<td><b><center>multiplier for original green</center></b></td>
<td><b><center>multiplier for original blue</center></b></td>
</tr>
<tr>
<td><b>Red</b>
<td><input type = "textfield" cols = "10" name = "red_constant"
value = "Enter red constant"></td>
<td><input type = "textfield" cols = "10" name = "red_from_red"
value = "Enter red from red"></td>
<td><input type = "textfield" cols = "10" name = "red_from_green"
value = "Enter red from green"></td>
<td><input type = "textfield" cols = "10" name = "red_from_blue"
value = "Enter red from blue"></td>
</tr>
<tr>
<td><b>Green</b>
<td><input type = "textfield" cols = "10" name = "green_constant"
value = "Enter green constant"></td>
<td><input type = "textfield" cols = "10" name = "green_from_red"
value = "Enter green from red"></td>
<td><input type = "textfield" cols = "10" name = "green_from_green"
value = "Enter green from green"></td>
<td><input type = "textfield" cols = "10" name = "green_from_blue"
value = "Enter green from blue"></td>
</tr>
<tr>
<td><b>Blue</b>
<td><input type = "textfield" cols = "10" name = "blue_constant"
value = "Enter blue constant"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_red"
value = "Enter blue from red"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_green"
value = "Enter blue from green"></td>
<td><input type = "textfield" cols = "10" name = "blue_from_blue"
value = "Enter blue from blue"></td>
```

```

</tr>
</table>
<p><center>
<input type = "button" value = "Make new picture with transformed colors"
onclick = "respond()">
</center></p>
</form>

```

The Javascript code that opens a new window using the **Color_Transformation** applet to transform the colors according to the student's instructions is shown below, although there is probably no need to make any changes except the changes discussed above to use a different image.

```

<script language="JavaScript">
function respond()
{
    var width          = 422
    var height         = 285
    var picture_filename = "bryce.gif"

    var red_constant   = document.response.red_constant.value
    var red_from_red    = document.response.red_from_red.value
    var red_from_green  = document.response.red_from_green.value
    var red_from_blue   = document.response.red_from_blue.value

    var green_constant  = document.response.green_constant.value
    var green_from_red  = document.response.green_from_red.value
    var green_from_green = document.response.green_from_green.value
    var green_from_blue = document.response.green_from_blue.value

    var blue_constant   = document.response.blue_constant.value
    var blue_from_red    = document.response.blue_from_red.value
    var blue_from_green  = document.response.blue_from_green.value
    var blue_from_blue   = document.response.blue_from_blue.value

    var win              = open("", "unusedname")

    win.document.clear()
    win.document.writeln("<html><head><title>Colors Transformed</title></head><body>")
    win.document.write("<p><center><applet code = 'Color_Transformation.class' width = ")
    win.document.write(width)
    win.document.write(" height = ")
    win.document.write(height)
    win.document.writeln(">")

    win.document.write("<param name = 'picture_filename' value = ")
    win.document.write(picture_filename)
    win.document.writeln(">")

    win.document.write("<param name = 'width' value = ")
    win.document.write(width)
    win.document.writeln(">")

    win.document.write("<param name = 'height' value = ")
    win.document.write(height)

```

```

win.document.writeln(">")

win.document.write("<param name = 'red_constant' value = ")
win.document.write(red_constant)
win.document.writeln(">")
win.document.write("<param name = 'red_from_red' value = ")
win.document.write(red_from_red)
win.document.writeln(">")
win.document.write("<param name = 'red_from_green' value = ")
win.document.write(red_from_green)
win.document.writeln(">")
win.document.write("<param name = 'red_from_blue' value = ")
win.document.write(red_from_blue)
win.document.writeln(">")

win.document.write("<param name = 'green_constant' value = ")
win.document.write(green_constant)
win.document.writeln(">")
win.document.write("<param name = 'green_from_red' value = ")
win.document.write(green_from_red)
win.document.writeln(">")
win.document.write("<param name = 'green_from_green' value = ")
win.document.write(green_from_green)
win.document.writeln(">")
win.document.write("<param name = 'green_from_blue' value = ")
win.document.write(green_from_blue)
win.document.writeln(">")

win.document.write("<param name = 'blue_constant' value = ")
win.document.write(blue_constant)
win.document.writeln(">")
win.document.write("<param name = 'blue_from_red' value = ")
win.document.write(blue_from_red)
win.document.writeln(">")
win.document.write("<param name = 'blue_from_green' value = ")
win.document.write(blue_from_green)
win.document.writeln(">")
win.document.write("<param name = 'blue_from_blue' value = ")
win.document.write(blue_from_blue)
win.document.writeln(">")

win.document.writeln("</applet>")
win.document.writeln("<br>")
win.document.writeln("</body></html>")
}
</script>

```

The real content of this module is in the ordinary html code introducing the topic and posing questions. We suggest that you experiment with `sample_module.html` and then modify the content. You may also want to change the image used.