Transformations

Transform is an effect that lets an element change shape, size and position. Transformation allows the elements to move, scale, turn, spin, and stretch. You can transform elements using 2D or 3D transformations.

2D transform methods:

1. translate(x,y) / translateX(x) / translateY(y) – x and y can be in em / in / cm…
2. rotate(deg/rad) / rotateX(x) / rotateY(y) - x and y can be rad/deg
3. scale(x,y) / scaleX(x) / scaleY(y) – x and y are in ratio, hence should not have units.
4. skew(x,y) / scewX(x) / scewY(y) - x and y can be rad/deg
5. matrix() – For setting all together.

3D transform methods

1. translate3d(x, y, z) / translateZ(z) – x, y and z can be in em / in / cm…
2. rotate3d(x, y, z, deg) / rotateZ(z) – x, y and z are matric coordinates… and z is in deg/rad
3. scale3d(x,y,z) / scaleZ(z)

Syntax:

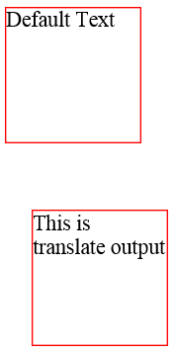
***transform**: translateX(10px) rotate(10deg) translateY(5px)*

Note: one or methods can be mentioned as per the requirement

translate() Method:

With the translate() method, the element moves from its current position, depending on the parameters given for the left (X-axis) and the top (Y-axis) position.

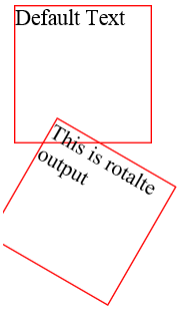
```
<div>Default Text</div>
<div style="transform: translate(20px,50px);">This is translate output</div>
```



rotate() Method:

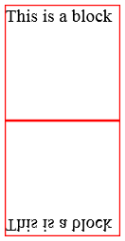
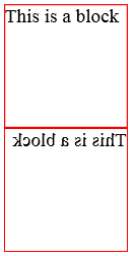
With the rotate() method, the element rotates clockwise at a given degree. Negative values are allowed and rotates the element counter-clockwise.

```
<div style="transform: rotate(30deg);">This is rotate output</div>
```



rotateX() Method:	**rotateY() Method:**
the element rotates around its X-axis at a given degree.	the element rotates around its Y-axis at a given degree.

Example:
`<div>This is a block</div>`
`<div style="transform: rotateX(180deg);"> This is a block</div>`
	Example:
	`<div>This is a block</div>`
	`<div style="transform: rotateY(180deg);"> This is a block</div>`

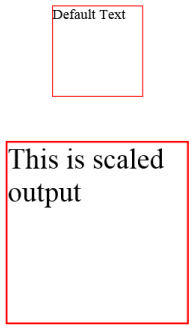
	

scale() Method:

the scale() method, the element increases or decreases the size, depending on the parameters given for the width (X-axis) and the height (Y-axis).

```
<div style="transform: scale(2,2);">This is scaled output</div>
```

Output:



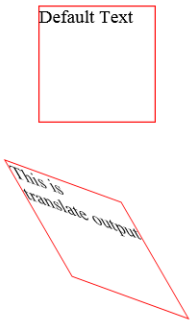
skew() Method:

The skew() method, the element turns in a given angle, depending on the parameters given for the horizontal (X-axis) and the vertical (Y-axis) lines.

Example:

```
<div style="transform: skew(30deg,20deg);">This is skew output</div>
```

Output:



Note: The skew() function was present in early drafts. It has been removed but is still present in some implementations**. Do not use it.**

matrix() Method:

The matrix() method combines all of the 2D transform methods into one. The matrix method take six parameters, containing mathematic functions, which allows you to: rotate, scale, move (translate), and skew elements.

Syntax:

```
matrix(xscale,deg,skew,yscale,xtrans,ytrans)
```

```
<div style="transform: matrix(1,0.5,-0.5,1,100,200)">This is matrix output</div>
```

Output:

Changing Transform using Javascript

```
<html lang="en" xmlns="http://www.w3.org/1999/xhtml">
<head>
  <meta charset="utf-8" />
  <title>Font Demo</title>
  <style type="text/css">
    div {
      width: 100px;
      height: 100px;
      border: 1px solid red;
    }
  </style>
  <script>
    var deg = 0;
    function Rotate()
    {
      deg += 5;
      var b = document.getElementById("div1");
      b.style["transform"] = "rotateY(" + deg + "deg)";
```

```
        setTimeout("Rotate()",100)
    }
  </script>
</head>
<body onload="Rotate()">
  <div>This is a block</div>
  <div id="div1" style="transform: rotateY(180deg);">This is a block</div>
</body>
</html>
```

3D Transformation

translate3d and rotate3d method:

Note: Translating div should be inside another div and both should have the style **perspective**

```
<html lang="en" xmlns="http://www.w3.org/1999/xhtml">
<head>
  <meta charset="utf-8" />
  <title>Transformation Demo</title>
  <style type="text/css">
    div {
      width: 100px;
      height: 100px;
      border: 1px solid red;
      margin: 5px;
      perspective: 800px;
      transform-origin:50% 50%
    }
  </style>
  <script>
    var dz = 0;
    function Animate() {
      var p = document.forms[0].txtP.value;
      var x = document.forms[0].txtX.value;
      var y = document.forms[0].txtY.value;
      var z = document.forms[0].txtZ.value;
```

```
        var rx = document.forms[0].txtRX.value;
        var ry = document.forms[0].txtRY.value;
        var rz = document.forms[0].txtRZ.value;
        var deg = document.forms[0].txtRDeg.value;

        //alert("rotate3d(" + rx + "," + ry + "," + rz + "," + deg + "deg)")
        document.getElementById("inner").style["transform"] = "perspective(" + p + "px) translate3d(" + x + "px," + y + "px," + z + "px) rotate3d(" + rx + "," + ry + "," + rz + "," + deg + "deg)"
        //document.getElementById("inner").style["transform"] += " rotatse3d(";// + rx;//+ "deg," + ry + "deg," + rz + "deg)"
        document.getElementById("values").innerHTML = document.getElementById("inner").style["transform"]
    }
  </script>
</head>
<body onload="Animate()">
  <div style="background-color: yellow;width:200px;height:200px">
    <div id="inner" style="background-color: red;"></div>
  </div>
  <form action="/" method="post">
    Perspective: <input type="range" name="txtP" min="100" max="1000" value="500" onchange="Animate()">
<br />
    Translate X: <input type="range" name="txtX" value="0" onchange="Animate()" > <br />
    Translate Y: <input type="range" name="txtY" value="0" onchange="Animate()" /><br />
    Translate Z: <input type="range" name="txtZ" value="0" min="-100" max="100" onchange="Animate()" /><br
/>
    Rotate X: <input type="range" name="txtRX" value="0" min="0" max="100" onchange="Animate()" /><br />
    Rotate Y: <input type="range" name="txtRY" value="0" min="0" max="100" onchange="Animate()" /><br />
    Rotate Z: <input type="range" name="txtRZ" value="0" min="0" max="100" onchange="Animate()" /><br />
    Rotate Deg: <input type="range" name="txtRDeg" value="0" min="0" max="180" onchange="Animate()" /><br
/>
  </form>
  <span id="values"></span>
</body>
</html>
```