Manipulating images
Exercise 1: **Internet Meme**

CONTEXT

An *Internet meme* is "an idea, style or action (often as mimicry) that spreads from person to person via the Internet and which may take the form of an image, picture text or video". Memes can evolve and spread extremely rapidly, sometimes reaching worldwide popularity within a few days (e.g. via Facebook).[1]

OBJECTIVES

- Learn to manipulate images using Web tools
- Analyse the advantage and disadvantages of using JPEG and GIF in a particular context

TO DO & TO HAND IN

Memes are built using tools that produce GIF images that may contain some text and/or animations. However, as you know, the GIF format has some drawbacks. In this exercise you will use your technical skills in Web programming for developing an application that uses JPEG images for producing memes. For this purpose you will use the new **<canvas>** functionality offered by HTML5.

- Start by going into this page:
    - http://www.memecenter.com/gifmaker
- Create two kinds of memes using the available tools:
    - One that contains an image with text.
    - A second one that contains several images (i.e., an animated meme) with some text.
- Develop a similar interface that provides means to (i) insert text into the canvas and (ii) control the frequency at which images of an animated meme will change. Use the code at the end of this document as a starting point.

QUESTIONS

1. What are the advantages/disadvantages of using JPEG for creating memes? How can you deal with the disadvantages?
2. How can you obtain a similar result using only classic HTML?
3. Suppose that all your users use images with a 1200x1600 resolution. This can be a problem for small devices (e.g., smartphones, tablets, etc.). How can you deal with this kind of situation so that images can be presented in devices with physical constraints?

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[1] Wikipedia

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```html
<!doctype html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Canvas Hands on </title>
  <script type="text/javascript">

    window.addEventListener('load', onWindowLoaded, false);

    function onWindowLoaded(){
      var img1 = new Image();
      img1.src = "A.png";
      img1.addEventListener('load', onImageLoaded, false);

      function onImageLoaded(){
        var theCanvas = document.getElementById("canvas");
        var context = theCanvas.getContext("2d");
        context.drawImage(img1, 0, 0);
      }
    }
</script>

</head>
<body>
  <div style="position: absolute; top: 50px; left: 50px;">
    <canvas id="canvas" width="500" height="500">
      Your browser does not support HTML5 Canvas.
    </canvas>
  </div>

</body>
</html>
```