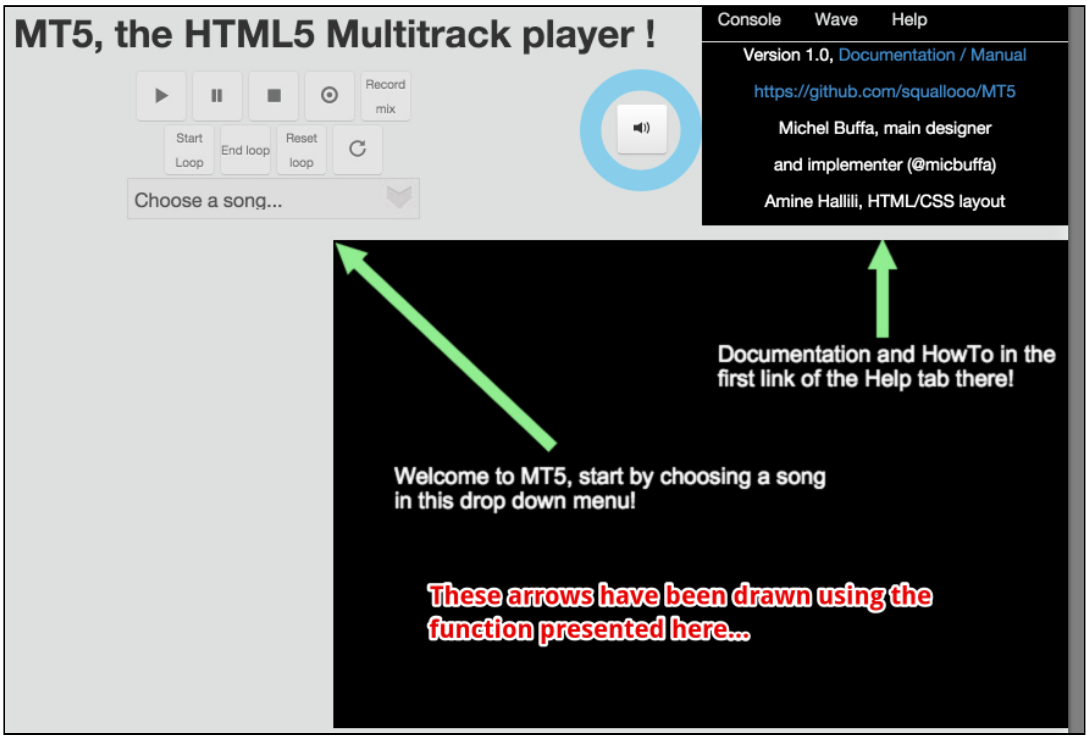
Practical example: drawing arrows

In this section, we present a function that draws arrows in a canvas, such as in the illustration below:



You might find multiple implementations on the Web for drawing arrows in a canvas, but the one we are presenting has the advantage of being rather simple and has the possibility to set the color and line width of the arrows.

Let's see some examples of use:

```
// Adapted from : http://stackoverflow.com/questions/808826/draw-arrow-on-canvas-tag
function drawArrow(ctx, fromx, fromy, tox, toy, arrowWidth, color){
    //variables to be used when creating the arrow
    var headlen = 10;
    var angle = Math.atan2(toy-fromy,tox-fromx);
```

```
    ctx.save();
    ctx.strokeStyle = color;

    //starting path of the arrow from the start square to the end square
    //and drawing the stroke
    ctx.beginPath();
    ctx.moveTo(fromx, fromy);
    ctx.lineTo(tox, toy);
    ctx.lineWidth = arrowWidth;
    ctx.stroke();

    //starting a new path from the head of the arrow to one of the sides
of
    //the point
    ctx.beginPath();
    ctx.moveTo(tox, toy);
    ctx.lineTo(tox-headlen*Math.cos(angle-Math.PI/7),
            toy-headlen*Math.sin(angle-Math.PI/7));

    //path from the side point of the arrow, to the other side point
    ctx.lineTo(tox-headlen*Math.cos(angle+Math.PI/7),
            toy-headlen*Math.sin(angle+Math.PI/7));

    //path from the side point back to the tip of the arrow, and then
    //again to the opposite side point
    ctx.lineTo(tox, toy);
    ctx.lineTo(tox-headlen*Math.cos(angle-Math.PI/7),
            toy-headlen*Math.sin(angle-Math.PI/7));

    //draws the paths created above
    ctx.stroke();

    ctx.restore();
}
```

An arrow is made of one line (the arrow body) and three connected lines (the

arrow head).

As we modify some context properties in that function, we call `save()` and `restore()` at the beginning and at the end of the function.

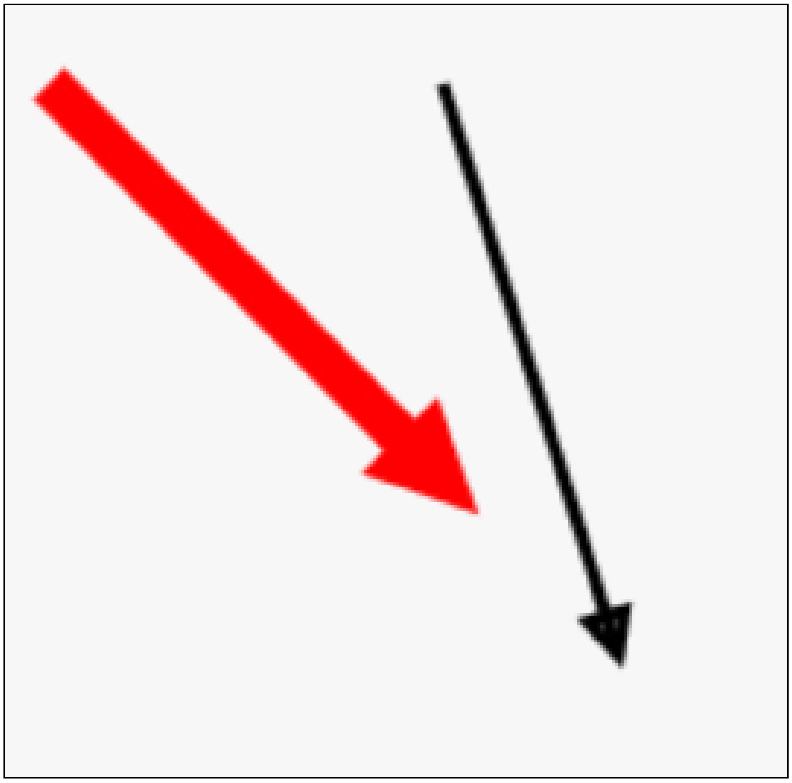
This function can be improved in many ways: adding shadows, using `fill()` instead of `stroke()`, which gives strange results when the width is too big, etc.

EXAMPLES

Online example that uses the above code: http://jsbin.com/qekuqotumu/1/edit

```
drawArrow(ctx, 10, 10, 100, 100, 10, 'red');
drawArrow(ctx, 100, 10, 140, 140, 3, 'black');
```

Result:



DRAW NICER ARROWS?

On the Web, you will find many different ways to draw arrows.

This Web site is worth reading: http://www.dbp-consulting.com/tutorials/canvas/CanvasArrow.html. It details how to draw arrows with curved heads and different styles for the head. Note however that you will need to modify some parts if you want it to support different line widths, etc.

Screenshot from a demo available on the above Web site:

In a next part of the course dedicated to curve drawing in a canvas, we will also show how to draw curved arrows, with very simple code (much simpler than the one used for drawing the clock's arrows above).