Saving and restoring the context

There are two methods for saving and restoring the context properties: `ctx.save()` and `ctx.restore()`.

What will be saved: `fillStyle` and `strokeStyle`, `lineWidth`, previous coordinate system, etc., that is ALL properties that affect drawing!
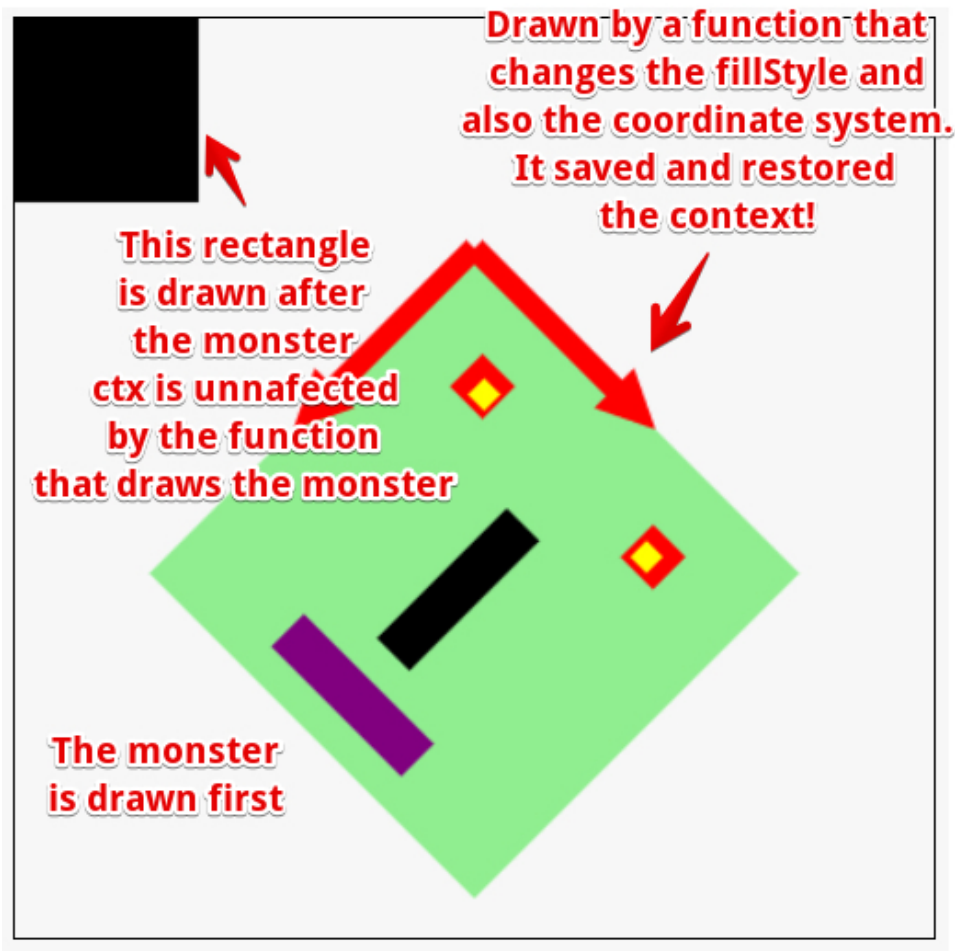
A call to `ctx.save()` will probably save the context property values in a hardware register on your graphics card. Multiple contexts can be saved consecutively and restored.

Contexts saved will be stacked, the last one that has been saved will be restored by the next call to `restore()`, so it is very important to have one restore for each save.

> ***Best practice***: save the context at the beginning of any function
> that changes the context, restore it at the end of the function!

EXAMPLE OF A FUNCTION THAT CHANGES THE CONTEXT AND RESTORES IT AFTER EXECUTION

Online example: http://jsbin.com/moporu/2/edit

Drawn by a function that changes the fillStyle and also the coordinate system. It saved and restored the context!

This rectangle is drawn after the monster, ctx is unnafected by the function that draws the monster

The monster is drawn first

We took the last example we saw (the one with the monster, from the previous page of the course), and slightly modified the function that draws the monster:

- We added parameters for setting the position and orientation of the monster, and added calls to `ctx.translate(x, y)` and `ctx.rotate(angle)` in the function.

- We added parameters for the head's color and eyes' color.

- We saved the context at the beginning of the function (BEST PRACTICE),

- We restored it at the end (BEST PRACTICE).

Source code extract of this function: notice at lines 3 and 26 how we save/restore the context at the beginning/end. Right after saving the context, we modify the coordinate system (lines 7-8). The rest of the code is nearly the same as in the last version of the monster example.

```
function drawMonster(x, y, angle, headColor, eyeColor) {
    // BEST PRACTICE : SAVE CONTEXT AND RESTORE IT AT THE END
    ctx.save();
    // Moves the coordinate system so that the monster is drawn
```

```
      // at position (x, y)
      ctx.translate(x, y);
      ctx.rotate(angle)
10.   // head
      ctx.fillStyle=headColor;
      ctx.fillRect(0,0,200,200);
      // eyes
      ctx.fillStyle='red';
      ctx.fillRect(35,30,20,20);
      ctx.fillRect(140,30,20,20);
      // interior of eye
20.   ctx.fillStyle=eyeColor;
      ctx.fillRect(43,37,10,10);
      ctx.fillRect(143,37,10,10);


      ...
      // BEST PRACTICE !
      ctx.restore();
   }
```

KNOWLEDGE CHECK 3.2.9

```
function drawShape(x, y) {
    ctx.translate(x, y)
    ctx.strokeStyle='red';
    ctx.lineWidth=10;
    ctx.strokeRect(0,0,200,200);
}
```

Is the above code well written?

○ Yes, I don't see any error in it!

○ Yes, but this function changes the context: it should save/restore the context at the beginning/end of its body.