SVG Introduction

Outline

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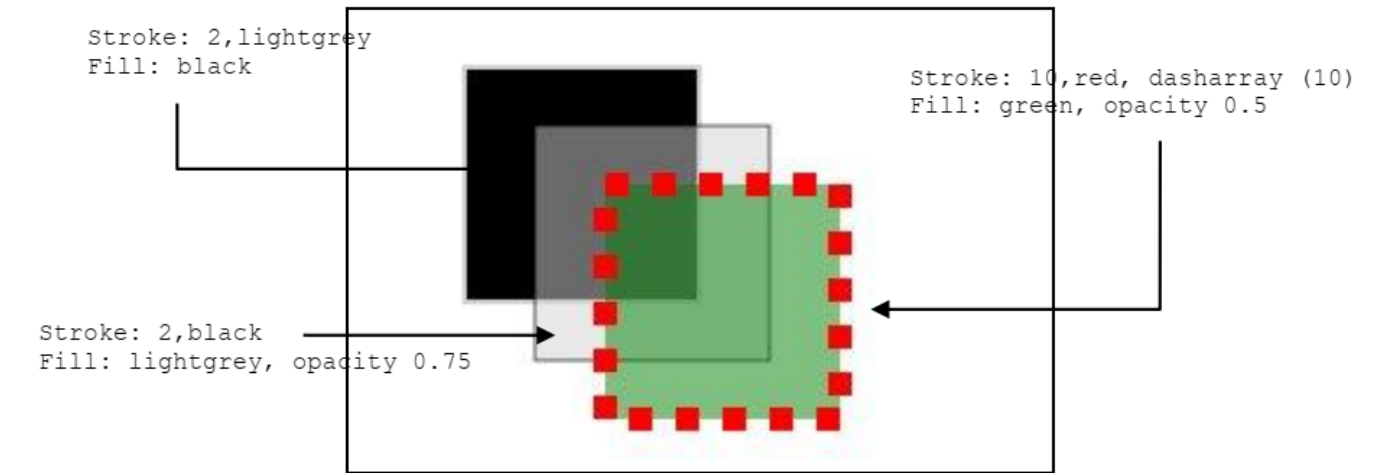
fill and *stroke*

Save the code below in a `html` file and load it.

```
<!DOCTYPE html>
<html>
<head>
</head>
<body>

<svg width="300" height="200">
    <title> Exercise 1.1 </title>
    <desc> SVG First Example </desc>
    <rect x="80" y="50" width="100" height="150"/>
</svg>

</body>
<html>
```

Add the attributes `stroke="black"` and `fill="lightgrey"` and see the changes. Try to modify the example to obtain the results of the image below, manipulating *fill* and *stroke* options (fill, fill-opacity, fill-rule, stroke, stroke-width, stroke-opacity, strokedasharray). More here.

Stroke: 2,lightgrey
Fill: black

Stroke: 10,red, dasharray (10)
Fill: green, opacity 0.5

Stroke: 2,black
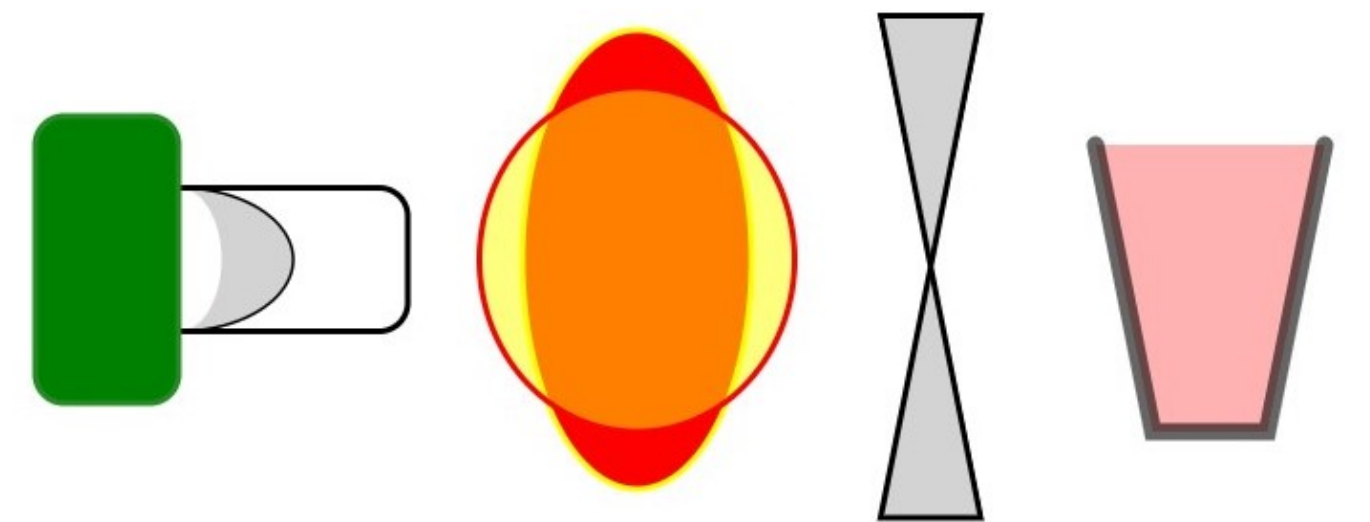Fill: lightgrey, opacity 0.75

Basic shapes

Create a new SVG file with four shapes of the following table (between them a polyline and a polygon).
Experiment with zoom-in and zoom-out, observe what happens compared with raster images. More here

Shape	Tag	Mandatory attribute	Optional attribute
Line	`<line>`	(none)	`x1, x2, y1, y2`
Rectangle	`<rect>`	`width, height`	`x, y, rx, ry`
Circle	`<circle>`	`r`	`cx, cy`
Ellipse	`<ellipse>`	`rx, ry`	`cx, cy`
Polyline	`<polyline>`	points	-
Polygon	`<polygon>`	points	-

Optional

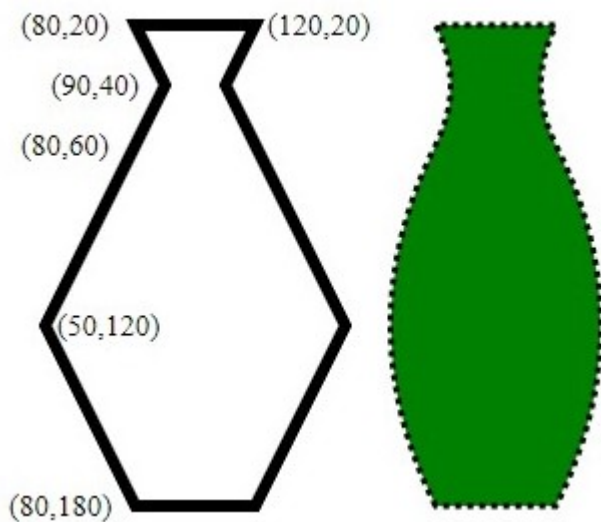Replicate the figures of the image below using SVG.

Transforms

Use the `transform` attribute to apply a 1/2 scale factor to one of the rects created, rotate it by 45 degrees and apply a translation of `(-20,10)`. More here

Images

Modify an example to load and show an image inside the SVG area. More here

Path and curves

Use the `path` element with the `L` option to get the jar of figure below. More here.

Modify the jar using the `Q` (Quadratic Bézier) to obtain the curved jar. Visualize it side by side.

Optional

Create a figure that shows simplified flags of four countries in a table two by two. Add countries images to show it side by side with its flag.

Text

Save the excerpt below in a `html` file and load it.

```
<title> Exercicio 1.1</title>
<desc> Exemplo de texto </desc>
<svg width="350" height="200">
<text x="30" y="50" font-size="10">
 Hello World
</text>
</svg>
```

Try to get a red text with size 12 and a Verdana font.

Now create a red circular annoucement with a text that shows: "SVG is to graphics what HTML is to text" like the image below:

is to graphic WHAT HTML is to text

Enrich the example using some properties of the element, like `tspan` to increase the characters spacing difference to put the second character lower. More here.

Animation

Modify the example to change the text size in the center of the circle alternating on two sizes, simulating a pulsating heart, using the animation like this:

```
<animate attributeName="x" values="10;20;10" dur="3"
repeatCount="indefinite"/>
```

Transform the circle in a heart using a cubic bézier spline. Try animating other attributes (color, character position). More here.

Event animation

Use the `begin` element on the animation to allow the animation to start on click (`onclick`) in the text on in the circle. More here

Path and text

Use `textpath` to modify the text below the circle like the following image. More here, here and here

Animating through path

In a `textpath` element, add an animation using the `startOffset` attribute, allowing the text animation through the path. You can use the `animateMotion` to move a element (text, primitive) through a defined path.

Miscellaneous

Hyperlinks

Use the `<a>` tag to link with pages.

Group tag

Use the `<g>` tag to group different elements. They will share some elements and can be changed simultaneously.