Introduction to the HTML5 Canvas

In this exercise, we will create an image using HTML canvas tags and the JavaScript canvas API.

Exercises

Save each exercise as a separate source file:

1. Below is an example of the typical layout of a HTML file. In Moodle, the file canvas.html has a similar layout. Download the file to a folder called "GraphicsAssignment1" and open in Notepad++ (or a text editor of your choosing)

```
1.  <!DOCTYPE html>
2.  <html>
3.    <head>
4.      <meta charset="UTF-8">
5.      <title></title>
6.      <style type="text/css">
7.        ...
8.      </style>
9.    </head>
10.   <body>
11.     ...
12.     <script type="text/javascript"></script>
13.   </body>
    </html>
```

2. Open canvas.html in Chrome, and open the JavaScript console.

3. Draw a black border around the canvas, using CSS.

```css
canvas {
  border: ...
}
```

4. Change the size of the canvas to enlarge it. Make sure to change the canvas size in either the HTML or JavaScript (but not the CSS).

5. The following line changes the fill colour of the context to red. Change canvas.html to make the rectangle another colour of your choosing.

```javascript
// Set the fill colour to bright red.
ctx.fillStyle = "rgb(255, 0, 0)";
```

6. The fillRect method takes four arguments, as below. Change the dimensions of the square in canvas.html to change it to a rectangle. (You may need to consult API docs to do this)

```
ctx.fillRect(a, b, c, d);
```

7. Modify the HTML file to draw a second rectangle of a different colour.

8. Instead of using RGB to set colour values, we can use RGBA to also use an alpha channel, as below. Add some transparency (40%) to the squares. Note: Ensure that the shapes are partially overlapping (so that the transparency is visible)

9. Add two circles of 2 different colours to canvas.html

10. For each of the shapes above, make sure that the outline of the shape is different to the fill colour. Look at the API documentation, in particular the ".stroke()" method to achieve this.

11. Draw a square with a circle perfectly fitting inside it (i.e. the circle just touches all the edges of the square).

Advanced exercises

1. Pick one of the shapes on your Canvas and after three seconds move the shape 50px to the right.

2. Draw Pac-Man on a Canvas using JavaScript. Make sure to have a stroke outline on your Pac-man