

# The Picture Module

We will use the picture module in several labs, including this week's lab 3. To use this module the file `picture.py` must be in the same folder as your program.

The first step in using the picture module is to import it. At the top of your program include the line

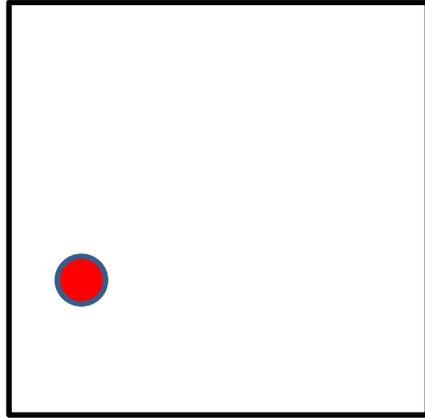
```
import picture
```

The second step is to create a window to draw in.  
The line

```
canvas = picture.Picture(600, 600)
```

creates a 600x600 window. The first argument is the window width, the second argument the height. The window is indexed so horizontal coordinates go from 0 on the left to 600 (or the window width) on the right. Vertical coordinates go from **0 at the top** to 600 (or the window height) at the bottom.

Clicker Question: Consider the following canvas, which is 600x600:



What are the coordinates of the center of the red circle?

- A) (100, 200)
- B) (200, 100)
- C) (100, 400)
- D) (400, 100)

There are two functions for setting colors:

```
canvas.setFillColor(r, g, b)
```

and

```
canvas.setOutlineColor(r, g, b)
```

Both expect red, green and blue coordinates to be integers between 0 (completely off) to 255 (full).

Typical colors:

red: (255, 0, 0)

green: (0, 255, 0)

blue: (0, 0, 255)

yellow: (255, 255, 0)

cyan: (0, 255, 255)

magenta: (255, 0, 255)

black: (0, 0, 0)

white: (255, 255, 255)

medium gray: (128, 128, 128)

pink: (255, 120, 120)

brown: (115, 40, 20)

purple: (190, 40, 180)

You can draw circles and ovals, rectangles and squares, or lines. Each can be either filled or just an outline:

```
canvas.drawCircle(x, y, radius
```

```
canvas.drawCircleFill(x, y, radius)
```

```
canvas.drawSquare(x, y, side)
```

```
canvas.drawSquareFill(x, y, side)
```

```
canvas.drawOval(x, y, h_radius, v_radius)
```

```
canvas.drawOvalFill(x, y, h_radius, v_radius)
```

```
canvas.drawRect(x, y, width, height)
```

```
canvas.drawRectFill(x, y, width, height)
```

```
canvas.drawLine(x1, y1, x2, y2)
```

When drawing a circle or oval, as in  
`canvas.drawCircleFill(x, y, radius)`  
point (x, y) is the center of the circle.

When drawing a square or rectangle, as in  
`canvas.drawSquareFill(x, y, side)`  
point (x, y) is the upper left corner of the square or  
rectangle.

If you are going to divide a drawing program into functions it helps to create the canvas outside of any functions, as in:

```
import picture
canvas = picture.Picture(600,600)
def main():
    blah blah blah

main()
```