Animate Canvas Content

You can create an animation by drawing an object on a canvas repeatedly, each time changing the position of the object. Animations can be used to draw attention to part of a page or to create a game with which the user can interact. This example shows how to make a ball bounce back and forth between the sides of a canvas.

Before HTML5 and the `<canvas>` tag were available, web designers had to resort to animation technologies such as Flash to create this type of content on a web page. To add interactivity to such content, you can add event handlers that react to user behavior. See Chapter 12 for more about event handlers.

Animate Canvas Content

1. Set up the canvas and script on your page.

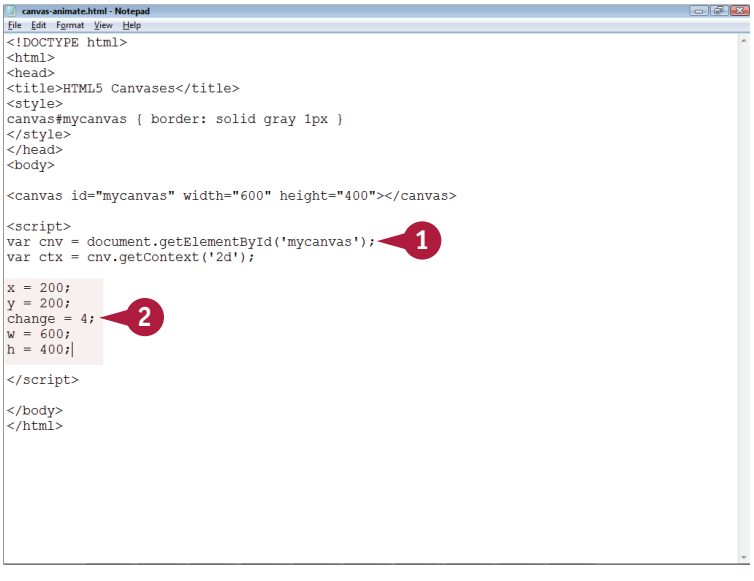
Note: For details, see "Set Up a Canvas."

2. Define variables for the animation.

   The `x` and `y` variables determine the position of the animated ball.

   The `change` variable determines how far the ball moves during a redraw and in which direction.

   The `w` and `h` variables determine the dimensions of the box.



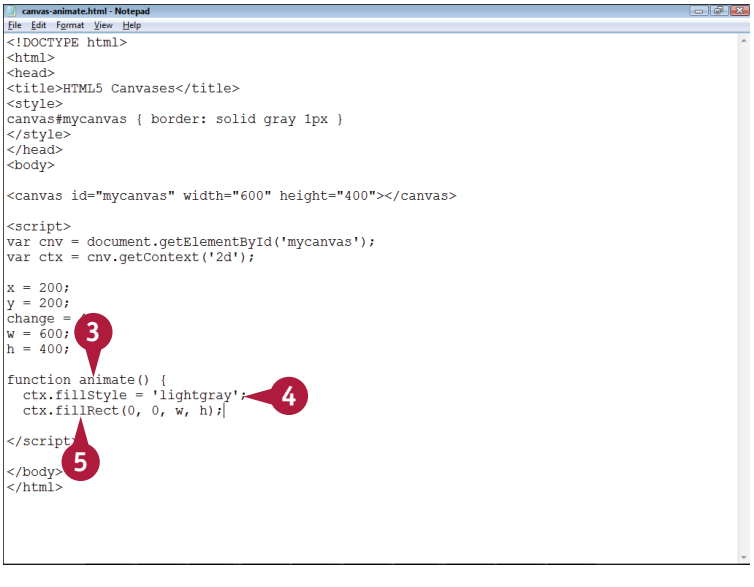
3. Type `function ?() {`, replacing *?* with the name of the animation function. Do not include spaces in the name.

   The function is used to draw the background and animated ball.

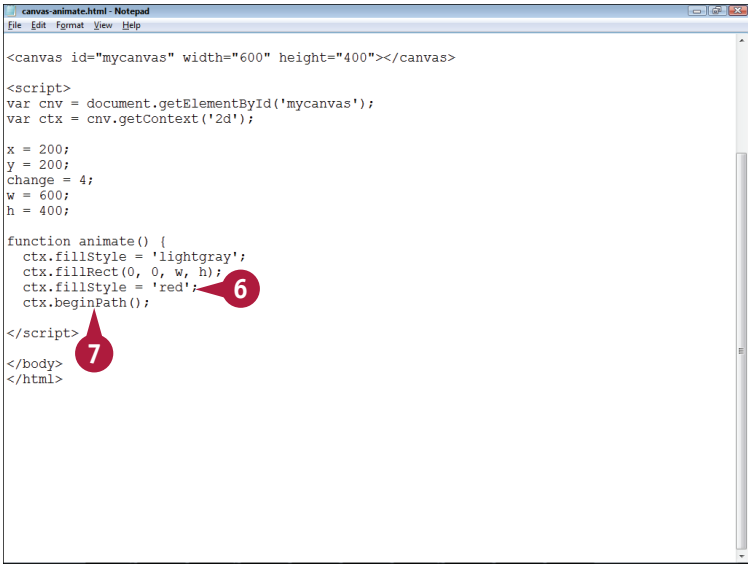
4. Type `ctx.fillStyle = '?';`, replacing *?* with the color of the background.

5. Type `ctx.fillRect(0, 0, w, h);` to draw the rectangular background.

   During a redraw, the background covers any existing content to clear the canvas.

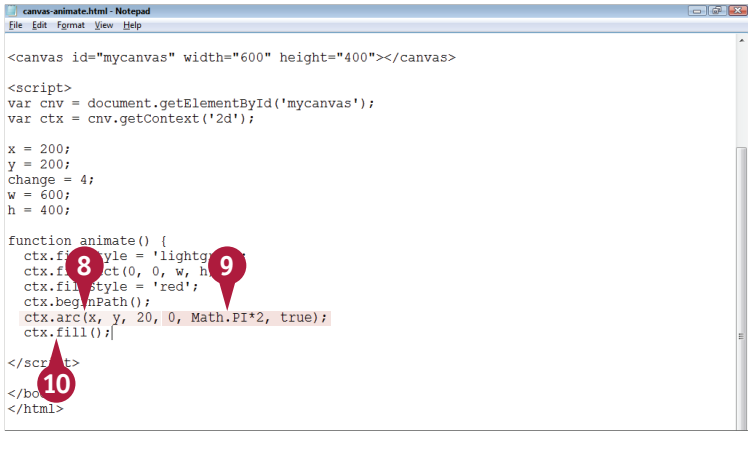


6. Type `ctx.fillStyle = '?';`, replacing *?* with the color of the animated ball.
7. Type `ctx.beginPath();` to begin a new drawing path for drawing the ball.



8. Type `ctx.arc(x, y, ?,,` replacing *?* with the diameter of the ball in pixels.
9. Type `0, Math.PI*2, true);` to complete the ball path.

   For more about drawing circles, see "Draw Circles."
10. Type `ctx.fill();` to fill the path and draw the ball.

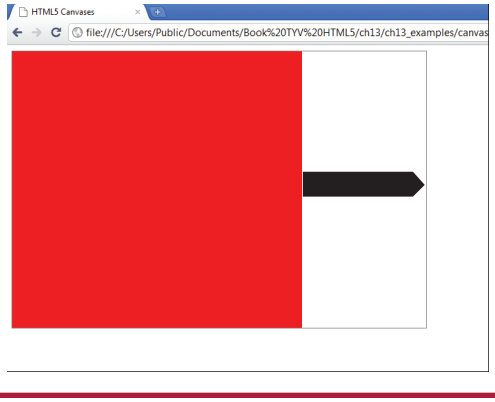


TIP

What other animation can I make?

You can change the bouncing ball animation to display an expanding and shrinking shape. Instead of redrawing a moving ball in the animation function, you redraw a differently sized rectangle. You use the `clearRect` command to reset the canvas each time you draw. To create the animation, change the code in the `animate()` function to the following:

```
ctx.clearRect(0, 0, w, h);
ctx.fillStyle = 'gray';
ctx.fillRect(0, 0, x, h);
if (x >= w || x <= 0) {
  change = -change;
}
x = x + change;
```



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