

Check collision



With the right arrow key, you make a star move: when it hits the box, the box "jumps" to the right.

The work is done by the `update(dt)` function:

- if the right arrow key is pressed, the star moves to the right at the given speed.
- if `isColliding()` is true, the box gets moved by 100 pixels.

The `isColliding()` function is the core of this small program: it compares the corners of both shapes. The two shapes overlap if all the comparisons "match". In this case the function will return `true`. If any of the comparisons fails the function returns `false`.

```
star = {x = 10, y = 200, speed = 150,  
        char = '*', width = 10, height = 5}  
box = {x = 100, y = 200,  
        char = '[ ]', width = 10, height = 5}
```

```
function isColliding(a, b)  
    return  
        a.x < b.x + b.width and  
        b.x < a.x + a.width and  
        a.y < b.y + b.height and  
        b.y < a.y + a.height  
end
```

```
function love.load(arg)  
    love.graphics.setFont(love.graphics.newFont(36))  
end
```

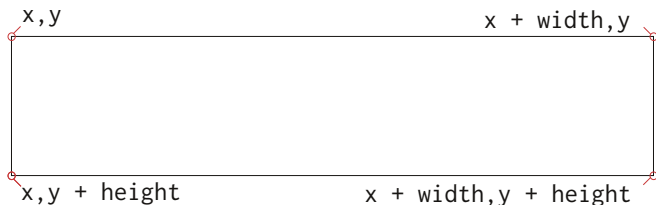
```
function love.update(dt)  
    if isColliding(star, box) then  
        box.x = box.x + 100  
    end  
  
    if love.keyboard.isDown('right', 'd') then  
        star.x = star.x + (star.speed * dt)  
    end  
end
```

```
function love.draw()  
  love.graphics.print(star.char, star.x, star.y)  
  love.graphics.print(box.char, box.x, box.y)  
end
```

How does `isColliding()` work?

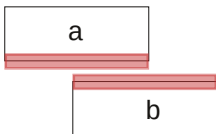
The `isColliding()` function has two arguments `a` and `b` that must have four properties: `x`, `y`, `height` and `width`.

The coordinates (`x`, `y`) and the size (`width`, `height`) are need for calculating the corner points of the shapes:

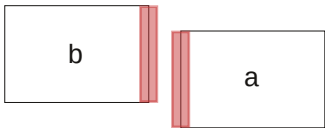


The four equations connected by the `and` conditions compare the corner points of the shapes `a` and `b`. The drawings below show in green the conditions that are met and in red the ones that are not met. The shapes are

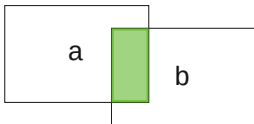
only colliding when all conditions are green:
if even one single one is red, the shapes are
not colliding.



$a.x < b.x + b.width$
 $b.x < a.x + a.width$
 $a.y < b.y + b.height$
 $b.y < a.y + a.height$



$a.x < b.x + b.width$
 $b.x < a.x + a.width$
 $a.y < b.y + b.height$
 $b.y < a.y + a.height$



$a.x < b.x + b.width$
 $b.x < a.x + a.width$
 $a.y < b.y + b.height$
 $b.y < a.y + a.height$

