# JavaScript Translate

**Summary**: in this tutorial, you'll learn how to use the JavaScript `translate()` API to move the origin of the canvas to the new position.

## Introduction to the JavaScript translate() method.

The `translate()` is a method of a 2D drawing context. The `translate(x,y)` method moves the canvas and its origin `x` units horizontally and `y` units vertically.

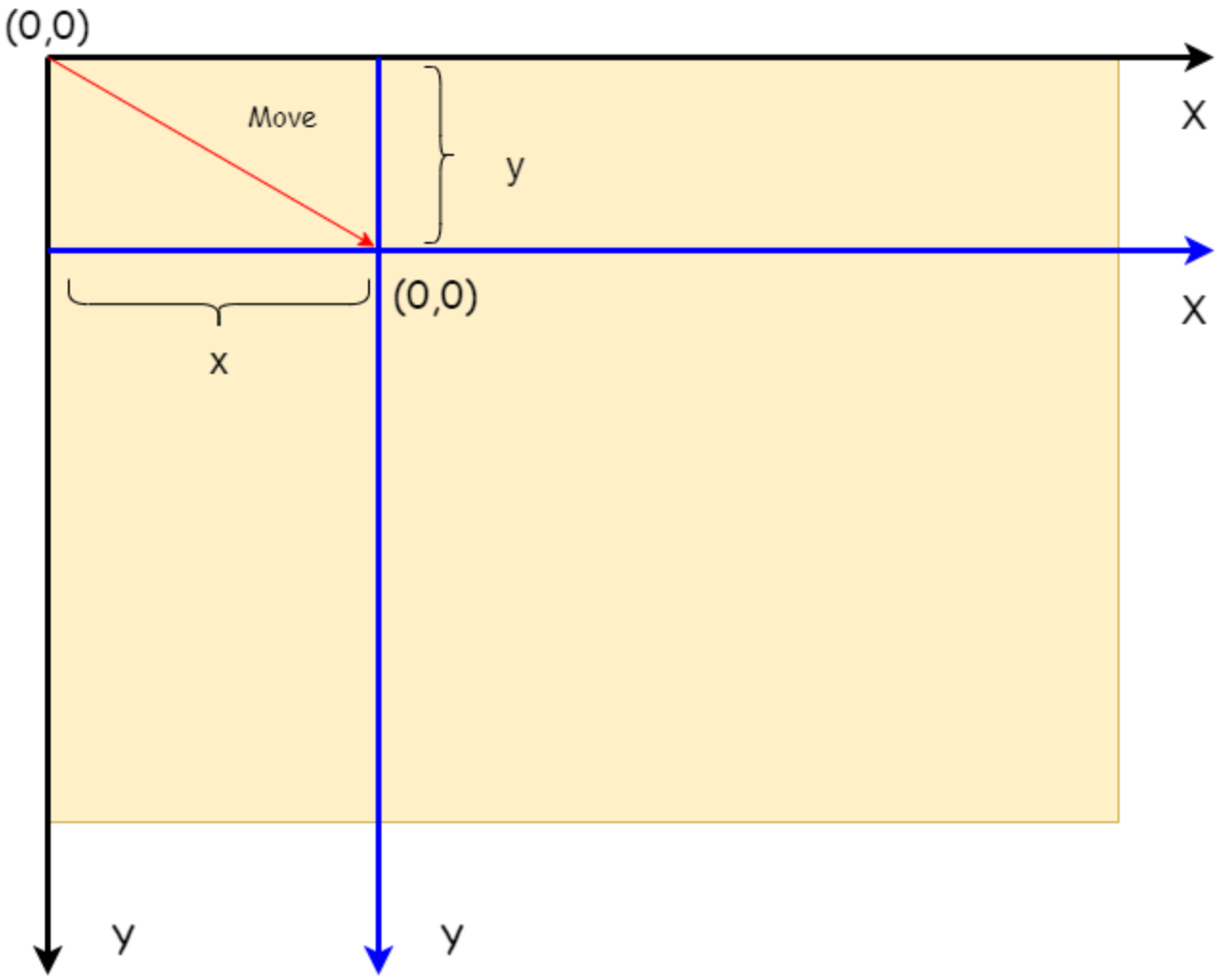
The following illustrates the syntax of the `translate()` method:

```
ctx.translate(x, y);
```

In this syntax:

- `x` represents the distance that you want to move the origin of the canvas in the horizontal direction. The origin moves to the left if `x` is positive and to the right in case `x` is negative.
- y represents the distance that you want to move the origin of the canvas in the vertical direction. The origin moves down if `y` is positive and up if `y` is negative.

By default, the origin of the canvas `(0,0)` is at the top left of the screen. By adding a translation transformation, the whole coordinate system moves so that its new origin locates at (x,y):




The `translate()` can be very useful in drawing. Suppose you want to draw two objects, one is the translation of another.

To do it, you can draw the first object, apply a translation transformation, and draw the second object.

If you don't apply the translation transformation, you need to calculate the new coordinates for the second object.

## JavaScript translate() examples

Let's take some examples of using the JavaScript `translate()` method.

### 1) Simple JavaScript translate() example

The following example draws a square at `(100,100)` and the second square at `(150,150)`. It calls the `translate()` method to move the original origin of the canvas to `(150, 150)` to draw the

second square.

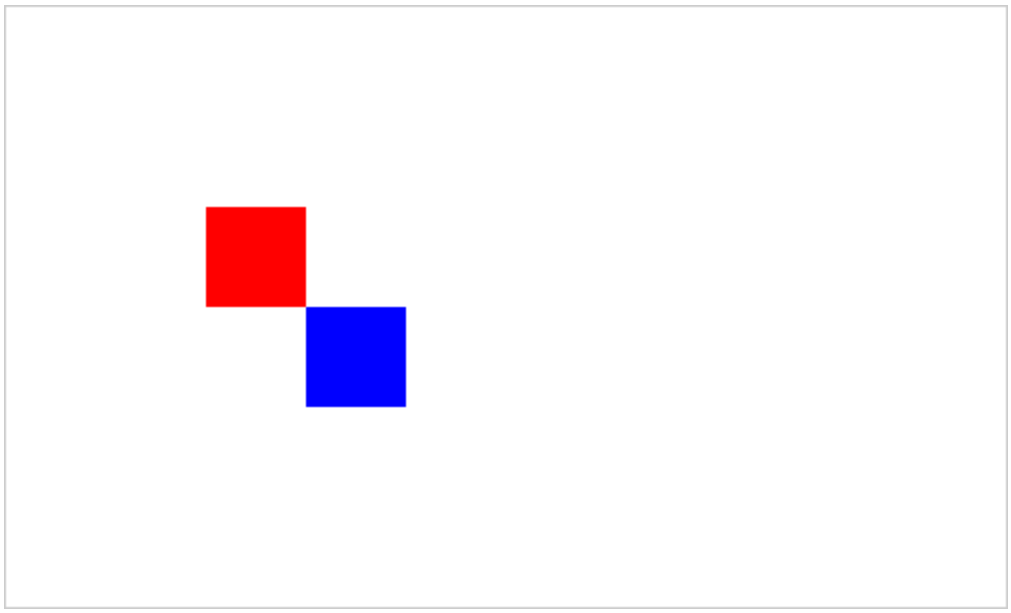
### HTML

```
<canvas id="canvas" height="300" width="500">
</canvas>
```

## JavaScript

```
const canvas = document.querySelector('#canvas');

if (canvas.getContext) {

    const ctx = canvas.getContext('2d');
    // draw the first square
    ctx.fillStyle = 'red';
    ctx.fillRect(100, 100, 50, 50);

    // translate
    ctx.translate(150, 150);

    // draw the second square
    ctx.fillStyle = 'blue';
    ctx.fillRect(0, 0, 50, 50);
}
```

Output:



## 2) Using JavaScript translate() to draw a clock

The following example draws a clock at the center of the canvas. To make it easy to draw the hour and minute hands, it translates the origin of the canvas to the center of the clock.

### HTML

```
<canvas id="canvas" height="300" width="500">
</canvas>
```

### JavaScript

```
const canvas = document.querySelector('#canvas');

if (canvas.getContext) {

    const ctx = canvas.getContext('2d');

    ctx.beginPath();

    const centerX = canvas.width / 2,
        centerY = canvas.height / 2;

    // draw the circle
    ctx.arc(centerX, centerY, 70, 0, 2 * Math.PI, false);
```

```
    // translate to center
    ctx.translate(centerX, centerY);

    // draw the hour hand
    ctx.moveTo(0, 0);
    ctx.lineTo(-30, -20);

    // draw the minute hand
    ctx.moveTo(0, 0);
    ctx.lineTo(0, -55);

    ctx.stroke();

}
```

Here is the demo link.

## Summary

- Use the JavaScript translate() to move the canvas and its origin x units horizontally and y units vertically.