M Gmail   **Bikash Adhikari <virtual.bikash@gmail.com>**

Task 3.2: Shape and Rectangle Inheritance Create a...
1 message

Bikash <bikash.caim@gmail.com>   Sat, Mar 8, 2025 at 7:02 PM
To: virtual.bikash@gmail.com

JavaScript

Task 2: Shape and Rectangle Inheritance

Create a constructor function Shape that takes color as a parameter and has a method `getColor()` that returns the color.

Create another constructor Rectangle that inherits from Shape and adds properties width and height. Add a method `getArea()` to Rectangle that returns the area of the rectangle.

```javascript
function Shape(color) {
  this.color = color;
}

Shape.prototype.getColor = function() {
  return this.color;
};

function Rectangle(color, width, height) {
  Shape.call(this, color); // Call the Shape constructor
  this.width = width;
  this.height = height;
}

// Inherit from Shape
Rectangle.prototype = Object.create(Shape.prototype);

// Reset constructor
Rectangle.prototype.constructor = Rectangle;

Rectangle.prototype.getArea = function() {
  return this.width * this.height;
};

// Example usage:
const myShape = new Shape("blue");
console.log(myShape.getColor()); // Output: blue

const myRectangle = new Rectangle("red", 5, 10);
console.log(myRectangle.getColor()); // Output: red (inherited from Shape)
console.log(myRectangle.getArea()); // Output: 50
console.log(myRectangle instanceof Shape); //true
console.log(myRectangle instanceof Rectangle); //true
console.log(myShape instanceof Rectangle); //false
```

Explanation:

1. `Shape` **Constructor:**

   - Takes a `color` parameter and sets it as a property.

   - `Shape.prototype.getColor()` returns the `color` of the shape.

2. `Rectangle` **Constructor:**

   - Takes `color`, `width`, and `height` parameters.

   - `Shape.call(this, color);` calls the `Shape` constructor to initialize the `color` property.

   - Sets the `width` and `height` properties.

3. **Inheritance:**

   - `Rectangle.prototype = Object.create(Shape.prototype);` establishes the inheritance relationship, making `Rectangle` inherit from `Shape`.

   - `Rectangle.prototype.constructor = Rectangle;` corrects the constructor property.

4. `Rectangle.prototype.getArea()`:

   - Calculates and returns the area of the rectangle.

5. **Example Usage:**

   - Demonstrates how to create `Shape` and `Rectangle` instances.

   - Shows that `Rectangle` inherits the `getColor()` method from `Shape`.

   - Shows how to use the `getArea()` method of `Rectangle`.

   - Demonstrates the use of `instanceof` to check if an object is an instance of a constructor.

Sources
1. https://github.com/Alexkrasno3333/HW.js