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public class PencilB {
    private int defaultColor = 0;
    private int color; /*one of 0,1,2 for "black", "red", or "blue"*/
    private int length;

    private boolean isValid (String colorToCheck) {
        return (colorToCheck.equals("black") ||
                colorToCheck.equals("red") ||
                colorToCheck.equals("blue") );
    }

    private int encode (String c) {
        int result;
        if (c.equals("black")) {
            result = 0;
        }
        else if (c.equals("red")) {
            result = 1;
        }
        else if (c.equals("blue")) {
            result = 2;
        }
        else {
            result = 3; //this code should never execute
        }
        return result;
    }

    private String decode (int c) {
        String result;
        switch (c) {
            case (0):
                result = "black";
                break;
            case (1):
                result = "red";
                break;
            case (2):
                result = "blue";
                break;
            default:
                result = "error"; //this code should never execute
        }
        return result;
    }

    public PencilB (String c, int l) {
        if (isValid(c)) {
            color = encode(c);
        }
        else {
            color = defaultColor;
        }
        length = l;
    }

    public String toString () {
        return (length + ": " + decode(color));
    }

    public void setColor (String newColor) {
        if (isValid(newColor)) {
            color = encode(newColor);
        }
    }
}
```

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}  
}
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