

```
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);
        }
    }
}
```