

## 10 Classes and Methods IV: Static Methods and Variables

### 10.1

1.

```
import CSLib.*;
import java.awt.*;

public class Clock {
    // Maintain a 24 hour clock.
    // Author: Courtney Mickunas, November 21, 2000

    private static boolean useMilitaryTime = false;
    private int hour,
        minute;
    private DrawingBox d;

    public Clock () {
        this(12, 0);
    }

    public Clock (int hour, int minute) {
        d = new DrawingBox("Internal Clock");
        d.setDrawableSize(300, 300);
        set(hour, minute);
        d.setVisible(false);
    }
    ...

    // Toggle between military and civilian time formats.
    public void toggleTimeFormat () {
        useMilitaryTime = !useMilitaryTime;
    }

    // Return the current time as a string.
    public String toString () {
        if (useMilitaryTime) {
            String h, m;
            if (hour < 10)
                h = "0" + hour;
            else
                h = "" + hour;
            if (minute < 10)
                m = "0" + minute;
            else
                m = "" + minute;
            return (h + m + " hours");
        }
    }
}
```

```

    } else {
        // reduce 13,...,23 hours to 1,...,11
        int h = hour % 12;
        if (h==0) h=12;
        if (minute<10)
            return (h + ":0" + minute);
        else
            return (h + ":" + minute);
    }
}
...
}

```

with client

```

import CSLib.*;

public class ClockClient {
    public static void main (String[] args) {
        Clock c1 = new Clock(5, 30);
        OutputBox out = new OutputBox();
        out.println("Civilian: " + c1.toString());
        c1.toggleTimeFormat();
        out.println("Military: " + c1.toString());
        c1.set(15, 35);
        out.println("Military: " + c1.toString());
        c1.toggleTimeFormat();
        out.println("Civilian: " + c1.toString());
    }
}

```

2.

```

import CSLib.*;
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    d = new DrawingBox("Internal Clock");
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}
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// Return the current time as a string.
public String toString () {
    if (useMilitaryTime) {
        String h, m;
        if (hour < 10)
            h = "0" + hour;
        else
            h = "" + hour;
        if (minute < 10)
            m = "0" + minute;
        else
            m = "" + minute;
        return (h + m + " hours");
    } else {
        // reduce 13,...,23 hours to 1,...,11
        int h = hour % 12;
        if (h==0) h=12;
        if (minute<10)
            return (h + ":0" + minute);
        else
            return (h + ":" + minute);
    }
}
...
}

```

with client

```

import CSLib.*;

public class ClockClient {
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        Clock c1 = new Clock(5, 30);
        OutputBox out = new OutputBox();
        out.println("Civilian: " + c1.toString());
        c1.useMilitaryTime = true;
        out.println("Military: " + c1.toString());
        c1.set(15, 35);
        out.println("Military: " + c1.toString());
        c1.useMilitaryTime = false;
        out.println("Civilian: " + c1.toString());
    }
}

```

