

```
// Version 1
public class Time {
    private int hour;
    private int minute;
    private int second;

    public void setTime(int h, int m, int s) {
        // validate hour
        hour = ((h >= 0 && h < 24) ? h : 0);
        // validate minute
        minute = ((m >= 0 && m < 60) ? m : 0);
        // validate second
        second = ((s >= 0 && s < 60) ? s : 0);
    }

    // convert to string in the form H:M:S
    public String toUniversalString() {
        return hour + ":" + minute + ":" + second;
    }

    // convert to string in the form H:M:S AM or PM
    public String toString() {
        return ((hour == 0 || hour == 12) ? 12 : hour % 12)
            + ":" + minute
            + ":" + second
            + " " + (hour < 12 ? "AM" : "PM");
    }
}
```

```
public class TimeTest {
    public static void main( String[] args ) {
        Time time = new Time();

        // output string representations of the time
        System.out.print( "The initial universal time is: " );
        System.out.println( time.toUniversalString() );
        System.out.print( "The initial standard time is: " );
        System.out.println( time.toString() );
        System.out.println();

        // change time and output updated time
        time.setTime( 13, 27, 6 );
        System.out.print( "Universal time after setTime is: " );
        System.out.println( time.toUniversalString() );
        System.out.print( "Standard time after setTime is: " );
        System.out.println( time.toString() );
        System.out.println();
    }
}
```

```

// Version 2
public class Time {
    private int seconds; // # of seconds since midnight

    public void setTime(int h, int m, int s) {
        // validate hour
        int hour = (h >= 0 && h < 24) ? h : 0;
        // validate minute
        int minute = (m >= 0 && m < 60) ? m : 0;
        // validate second
        int second = (s >= 0 && s < 60) ? s : 0;

        seconds = ((hour * 60) + minute) * 60 + second;
    }

    // convert to String in universal-time format (HH:MM:SS)
    public String toUniversalString() {
        int hour = seconds / 60 / 60;
        int minute = (seconds / 60) % 60;
        int second = seconds % 60;
        return hour + ":" + minute + ":" + second;
    }

    // convert to standard-time format (H:MM:SS AM or PM)
    public String toString() {
        int hour = seconds / 60 / 60;
        int minute = (seconds / 60) % 60;
        int second = seconds % 60;
        return ((hour == 0 || hour == 12) ? 12 : hour % 12)
            + ":" + minute
            + ":" + second
            + " " + (hour < 12 ? "AM" : "PM");
    }
}

```