Assignment 3

```
//DigitalClock
package ccoew.it.businesslogic;

public class DigitalClock {

	private State state;
	private boolean buttonA;
	private boolean buttonB;
	private String hour;
	private String minute;

	public boolean isButtonA() {
		return buttonA;
	}

	public void setButtonA(boolean buttonA) {
		this.buttonA = buttonA;
		if(this.isButtonA())
			request();
	}

	public boolean isButtonB() {
		return buttonB;
	}

	public void setButtonB(boolean buttonB) {
		this.buttonB = buttonB;
		if(this.isButtonB())
			request();
	}

	public String getHour() {
		return hour;
	}

	public void setHour(String hour) {
		this.hour = hour;
	}

	public String getMinute() {
		return minute;
	}

	public void setMinute(String minute) {
		this.minute = minute;
	}

	public State getState() {
		return state;
	}
```

```
	public void setState(State state) {
		this.state = state;
	}

	public DigitalClock(State state) {
		this.state = state;
		this.setHour("00");
		this.setMinute("00");
		this.setButtonA(false);
		this.setButtonB(false);
	}

	public void request(){
		state.handleState(this);
	}

	public String display(){
		String time;
		if(Integer.parseInt(this.getHour()) >= 12)
			time = "PM";
		else
			time = "AM";
		return(this.getHour() + ":" + this.getMinute() + time);
	}
}
```

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//DisplayTime

```
package ccoew.it.businesslogic;

public class DisplayTime extends State{

	@Override
	public void handleState(DigitalClock dc) {

		if(dc.isButtonB()){
			System.out.println("Digital Clock's State : DISPLAY_TIME");
			System.out.println("Button B is pressed....");
			System.out.println("Current Time : " + dc.display() + "\n");
			dc.setButtonB(false);
			return;
		}

		if(dc.isButtonA()){
			System.out.println("Digital Clock's State : DISPLAY_TIME");
			System.out.println("Button A is pressed....");
			dc.setState(new SetHours());
			dc.setButtonA(false);
			return;
```

```
		}

		System.out.println("Digital Clock's State : DISPLAY_TIME");
		System.out.println("Current Time : " + dc.display() + "\n");
	}

}
```

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//SetHours

```
package ccoew.it.businesslogic;

public class SetHours extends State {

	@Override
	public void handleState(DigitalClock dc) {
		if(dc.isButtonB()){
			System.out.println("Digital Clock's State : SET_HOURS");
			System.out.println("Button B is pressed, hour value advances by 1.");
			System.out.println("Previous Time : " + dc.display());
			int hour = (Integer.parseInt(dc.getHour()) + 1) % 24;
			dc.setHour(String.valueOf(hour));
			System.out.println("Current Time : " + dc.display() + "\n");
			dc.setButtonB(false);
			return;
		}
		if(dc.isButtonA()){
			System.out.println("Digital Clock's State : SET_HOURS");
			System.out.println("Button A is pressed....");
			dc.setState(new SetMinutes());
			dc.setButtonA(false);
			return;
		}

		System.out.println("Digital Clock's State : SET_HOURS\n");
	}

}
```

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//SetMinutes

```
package ccoew.it.businesslogic;

public class SetMinutes extends State {

	@Override
	public void handleState(DigitalClock dc) {
		if(dc.isButtonB()){
```

```
                        System.out.println("Digital Clock's State : SET_MINUTES");
                        System.out.println("Button B is pressed, hour value advances by 1.");
                        System.out.println("Previous Time : " + dc.display());
                        int minute = (Integer.parseInt(dc.getMinute()) + 1) % 60;
                        if(minute < 10)
                                dc.setMinute("0" + (String.valueOf(minute)));
                        else
                                dc.setMinute(String.valueOf(minute));
                        System.out.println("Current Time : " + dc.display() + "\n");
                        dc.setButtonB(false);
                        return;
                }

                System.out.println("Digital Clock's State : SET_MINUTES\n");
        }

}
```

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//State

```
package ccoew.it.businesslogic;

public abstract class State {

        public abstract void handleState(DigitalClock dc);
}
```

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//Test

```
package ccoew.it.client;

import ccoew.it.businesslogic.*;

public class Test {

        public static void main(String []args){

                DigitalClock dc = new DigitalClock(new DisplayTime());
                dc.request();
                                        //State : Display Time
                dc.setButtonB(true);
                                //State : Display Time
                dc.setButtonA(true);
                                //State changes to Set Hours
                dc.request();
                dc.setButtonB(true);
                                //State : Set Hours
                dc.setButtonA(true);
```

```
                dc.request();
                                        //State changes to Set Minutes
                dc.setButtonB(true);
        }

}
```

Output:

```
Digital Clock's State : DISPLAY_TIME
Current Time : 00:00AM

Digital Clock's State : DISPLAY_TIME
Button B is pressed....
Current Time : 00:00AM

Digital Clock's State : DISPLAY_TIME
Button A is pressed....
Digital Clock's State : SET_HOURS

Digital Clock's State : SET_HOURS
Button B is pressed, hour value advances by 1.
Previous Time : 00:00AM
Current Time : 1:00AM

Digital Clock's State : SET_HOURS
Button A is pressed....
Digital Clock's State : SET_MINUTES

Digital Clock's State : SET_MINUTES
Button B is pressed, hour value advances by 1.
Previous Time : 1:00AM
Current Time : 1:01AM
```