Command pattern

PRACTICE – REMOTE CONTROLLER

TV Remote Controller

◆ Remote controller has four buttons. Each button provides an action. The action needs to be configured for the controller to be more reusable

	Button1	Button2	Button3	Button4
RC1	Power	Mute	Channel Up	Channel Down
RC2	Power	Channel Up	Mute	Channel Down

Source Code: TV

```
public class TV {
 private boolean powerOn = false, muteOn = false ;
 private int channel = CHANNEL_MIN ;
 private static final int CHANNEL_MIN = 10, CHANNEL_MAX = 35 ;
 public void power() {
  powerOn = ! powerOn ;
  if ( powerOn ) System.out.println("Power On") ;
  else System.out.println("Power Off") ;
 }
 public void mute() {
  if ( ! powerOn ) return ;
  muteOn = ! muteOn ;
  if ( muteOn ) System.out.println("Mute On") ;
  else System.out.println("Mute Off") ;
 }
 public void channelUp() {
  if ( ! powerOn ) return ;
  channel ++ ;
  if ( channel > CHANNEL_MAX ) channel = CHANNEL_MIN ;
  System.out.println("Channel: " + channel) ;
 }
 public void channelDown() {
  if ( ! powerOn ) return ;
  channel -- ;
  if ( channel < CHANNEL_MIN ) channel = CHANNEL_MAX ;
  System.out.println("Channel: " + channel) ;
 }
}
```

Initial Design

```
public class RemoteController {
 private TV tv ;
 public RemoteController(TV tv) {
  this.tv = tv ;
 }
 public void button1Pressed() {
  tv.power();
 }
 public void button2Pressed() {
  tv.mute() ;
 }
 public void button3Pressed() {
  tv.channelUp() ;
 }
 public void button4Pressed() {
  tv.channelDown() ;
 }
}
```

```
TV tv = new TV() ;
RemoteController rc =
  new RemoteController(tv) ;
rc.button1Pressed() ;
rc.button2Pressed() ;
rc.button3Pressed() ;
rc.button4Pressed() ;
```
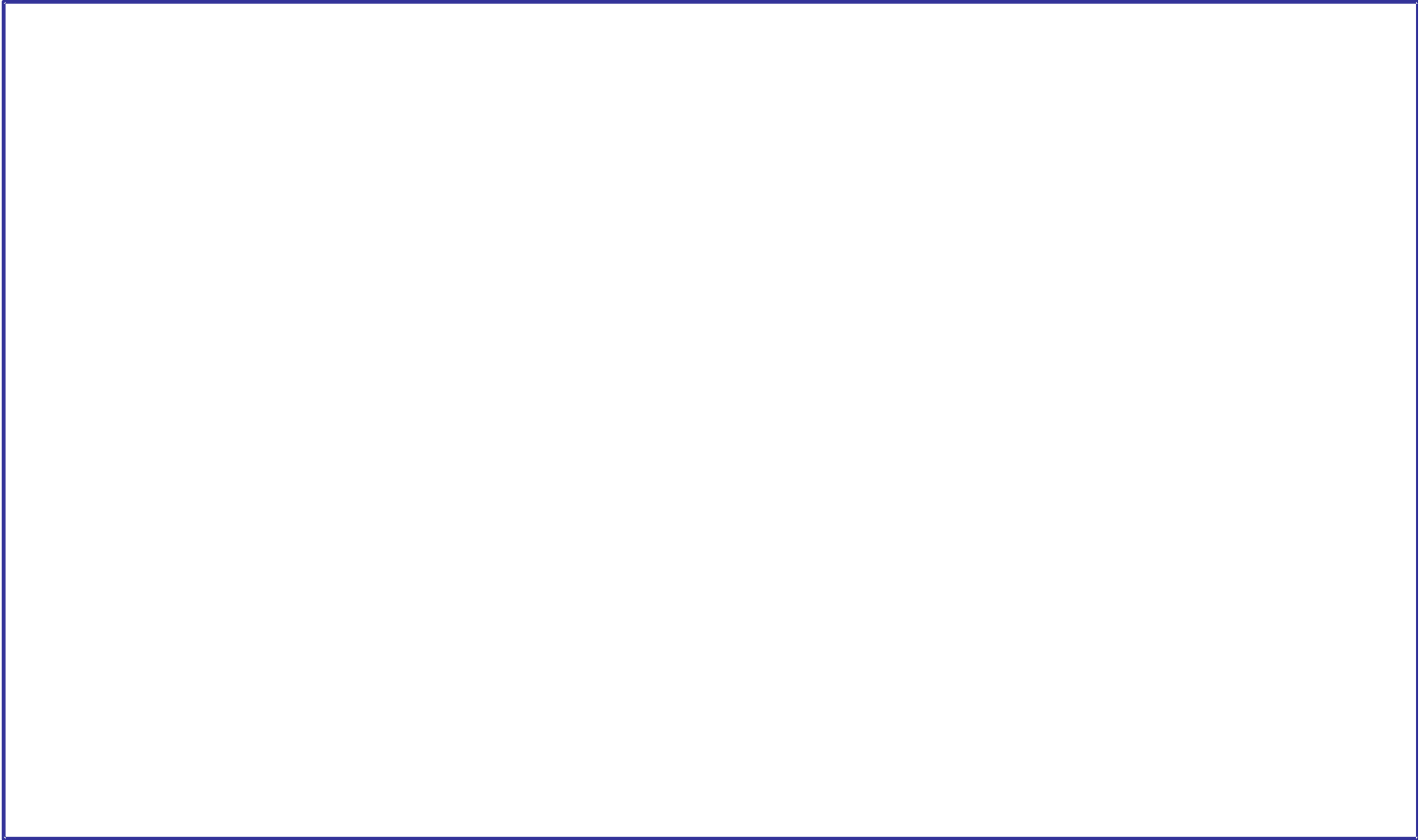
```
Power On
Mute On
Channel: 11
Channel: 10
```

Violation of OOD Principle

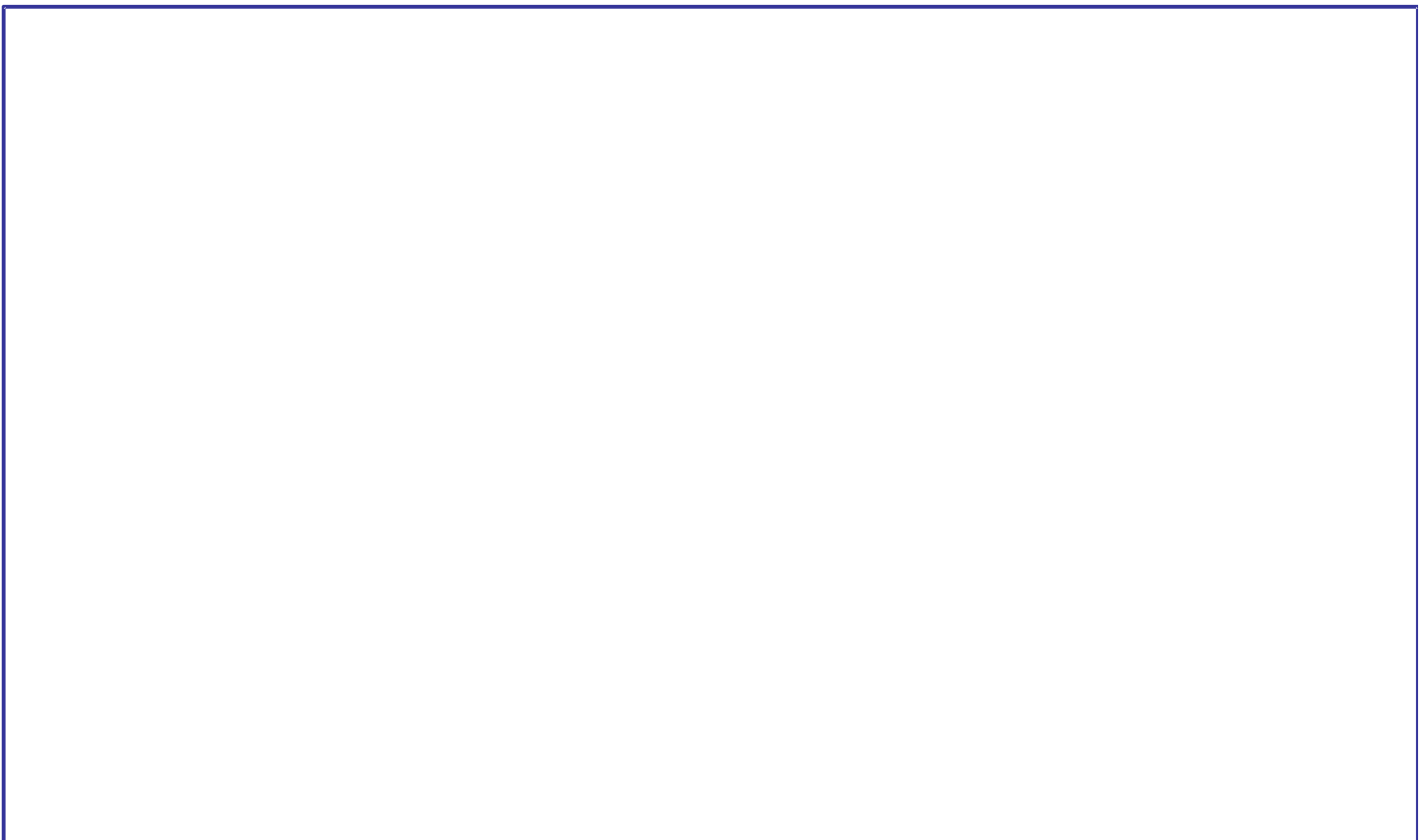| Principle	Codes(class/method) that violate the principle
SRP	
OCP	
LSP	
ISP	
DIP	

Use Command Pattern – Class Diagram

Source Code: Commands

Source Code: Remote Controller

Source Code: Client