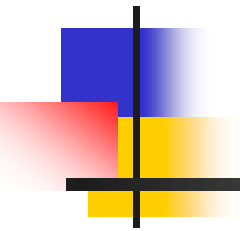

Television

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Television 문제 0

- 다음과 같이 출력하는 프로그램을 만들어보자

우리집 TV는 Samsung에서 만든 2017년형 55 인치 LED TV 입니다

- 관심사항을 파악하자 (Data)
  - 명사 (속성)
- Class를 만들어보자
  - Member 변수

Television 문제 0

- Class 설계

Television
-brand : String -year : int -size : int -type : String
+getBrand() : String +getYear() : int +getSize() : int +getType() : String +setBrand(new_brand : String) +setYear(new_year : int) +setSize(new_size : int) +setType(new_type : String)

Television 문제 0

- Television.JAVA

```
public class Television {
    private String brand;
    private int year;
    private int size;
    private String type;

    public Television(String brand, int year, int size, String type) {
        this.brand = brand;
        this.year = year;
        this.size = size;
        this.type = type;
    }

    public String getBrand() {
        return brand;
    }
```

Television 문제 0

- Television.JAVA

```
    public int getYear() {
        return year;
    }

    public int getSize() {
        return size;
    }

    public String getType() {
        return type;
    }
}
```

Television 문제 0

- Main.JAVA

```
public class Main {

    public static void main(String[] args) {
        Television myTV = new Television("Samsung", 2017, 55, "LED");

        System.out.printf("우리집 TV는 %s에서 만든 %d년형
                                                %d인치 %s TV 입니다₩n",
                myTV.getBrand(), myTV.getYear(), myTV.getSize(), myTV.getType());
    }
}
```

Television 예제 1

- Television의 필드(Field)와 메소드(Method)

TV 객체

상태

- 채널번호
- 볼륨
- 전원상태

동작

- 켜기
- 끄기
- 채널변경하기
- 볼륨변경하기

Television 예제 1

- Television 클래스

```
public class Television {
    private int channel;
    private int volume;
    private boolean onOff;    // powerButton으로 동작

    public Television() {
    }

    public Television(int channel, int volume) {
        this.channel = channel;
        this.volume = volume;
        this.onOff = false;
    }

    public int getChannel() {
        return channel;
    }
```

Television 예제 1

- Television 클래스

```
public void setChannel(int channel) {
    if (onOff)
        this.channel = channel;
}

public int getVolume() {
    return volume;
}

public void setVolume(int volume) {
    if (onOff)
        this.volume = volume;
}

public boolean getOnOff() {
    return onOff;
}
```

Television 예제 1

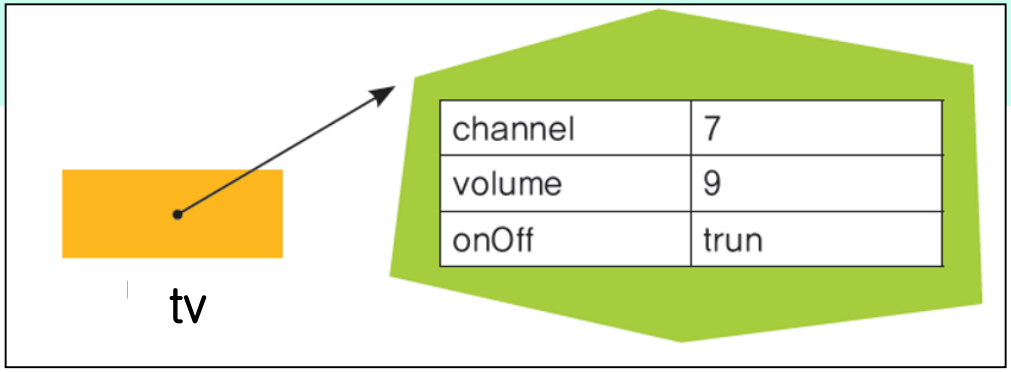
- Television 클래스

```
    public void powerButton() {
        if (onOff)
            onOff = false;
        else
            onOff = true;
    }

    @Override
    public String toString() {
        return "채널 : " + channel +
                ", 볼륨 : " + volume +
                ", onOff = " + onOff;
    }
}
```

Television 예제 1

Object 생성

```
public class Main {
    public static void main(String[] args) {
        Television tv = new Television(6, 6);    // 객체 생성
        tv.powerButton();
        tv.setChannel(7);                        // 객체 멤버변수 접근
        tv.setVolume(9);

        if (tv.getOnOff())
            System.out.println("TV 채널은 " +tv.getChannel() +
                                                    "볼륨은 "+tv.getVolume());
        else
            System.out.println("TV가 꺼져있습니다");
    }
}
```



Television 예제 2

- Television을 보자 (Class와의 상호 작용)

Television 예제 2

- Television Class
  - Channel
  - Volume
  - Power

- Remocon Class
  - Television
  - Battery (0 ~ 100)

  - Power을 켜고/끈다
  - Volume을 조절한다 (0에서 10까지)
  - Channel을 조정한다 (1에서 350개 채널)

Television 예제 2

- Television Class

```
public class Television {
    private int channel;
    private int volume;
    private boolean onOff;

    public Television(int channel, int volume) {
        this.channel = channel;
        this.volume = volume;
        this.onOff = false;
    }

    public int getChannel() {
        return channel;
    }

    public void setChannel(int channel) {
        this.channel = channel;
    }
```

Television 예제 2

- Television Class

```
public int getVolume() {
    return volume;
}

public void setVolume(int volume) {
    this.volume = volume;
}

public boolean isOnOff() {
    return onOff;
}

public void setOnOff(boolean onOff) {
    this.onOff = onOff;
}
```

Television 예제 2

- Television Class

```
    @Override
    public String toString() {
        return  "채널 : " + channel +
                ", 볼륨 : " + volume +
                ", onOff = " + onOff;
    }
}
```

Television 예제 2

Remocon Class

```
public class Remocon {
    private Television television;

    public Remocon(Television television) {
        this.television = television;
    }

    public void powerOn() {
        if (television.isOnOff())
            television.setOnOff(false);
        else
            television.setOnOff(true);
    }
```

Television 예제 2

- Remocon Class

```
public void volumeUp() {
    if (television.isOnOff()) {
        television.setVolume(television.getVolume() + 1);
        if (television.getVolume() > 10)
            television.setVolume(10);
    }
}

public void volumeDown() {
    if (television.isOnOff()) {
        television.setVolume(television.getVolume() - 1);
        if (television.getVolume() < 0)
            television.setVolume(0);
    }
}
```

Television 예제 2

- Remocon Class

```
    public void channelUp() {
        if (television.isOnOff()) {
            television.setChannel(television.getChannel() + 1);
            if (television.getChannel() > 350)
                television.setChannel(television.getChannel() % 350);
        }
    }

    public void channelDown() {
        if (television.isOnOff()) {
            television.setChannel(television.getChannel() - 1);
            if (television.getChannel() < 1)
                television.setChannel(television.getChannel() + 350);
        }
    }
}
```

Television 예제 2

- Main Class

```
public static void main(String[] args) {
    Television myTv = new Television(350, 5);
    Remocon remocon = new Remocon(myTv);

    remocon.channelUp();
    remocon.channelDown();

    if (myTv.getOnOff())
        System.out.println(myTv);
    else
        System.out.println("TV가 꺼져있습니다");
}
```

Television 예제 3

- Remocon은 Battery 상태에 따라 동작을 함 (1에서 10)

```
public class Remocon {
    private Television television;
    private int battery;

    public Remocon(Television television) {
        this.television = television;
        battery = 10;
    }

    public int getBattery() {
        return battery;
    }

    public void setBattery(int battery) {
        this.battery = battery;
    }
```

Television 예제 3

- Remocon은 Battery 상태에 따라 동작을 함 (1에서 10)

```
public void powerOn() {
    if (battery > 0) {
        if (television.getOnOff())
            television.setOnOff(false);
        else
            television.setOnOff(true);
    }
}

public void volumeUp() {
    if (battery > 0) {
        if (television.getOnOff()) {
            television.setVolume(television.getVolume() + 1);
            if (television.getVolume() > 10)
                television.setVolume(10);
        }
    }
}
```

Television 예제 3

- Remocon은 Battery 상태에 따라 동작을 함 (1에서 10)

```
public void volumeDown() {
    if (battery > 0) {
        if (television.getOnOff()) {
            television.setVolume(television.getVolume() - 1);
            if (television.getVolume() < 0)
                television.setVolume(0);
        }
    }
}

public void channelUp() {
    if (battery > 0) {
        if (television.getOnOff()) {
            television.setChannel(television.getChannel() + 1);
            if (television.getChannel() > 350)
                television.setChannel(television.getChannel() % 350);
        }
    }
}
```

Television 예제 3

- Remocon은 Battery 상태에 따라 동작을 함 (1에서 10)

```
    public void channelDown() {
        if (battery > 0) {
            if (television.getOnOff()) {
                television.setChannel(television.getChannel() - 1);
                if (television.getChannel() < 1)
                    television.setChannel(television.getChannel() + 350);
            }
        }
    }
}
```