Lab 5: OOP

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Submission:

- Using templates: https://drive.google.com/drive/folders/1qTLYES8WC0TCjI9KZdaoNZh9TkqEhj33?usp=drive_link
- Update project name: `<StudentNameCode>Lab5`. Ex: `NguyenCTCE172070Lab5`
- Zip this project: `NguyenCTCE172070Lab5.zip`

Problem Context:

Build a system to manage smart devices such as SmartLight and SmartThermostat. The system should use a common interface SmartDevice, allowing each device to be turned on/off, updated, and queried for its status.

Create an interface SmartDevice with the following methods:

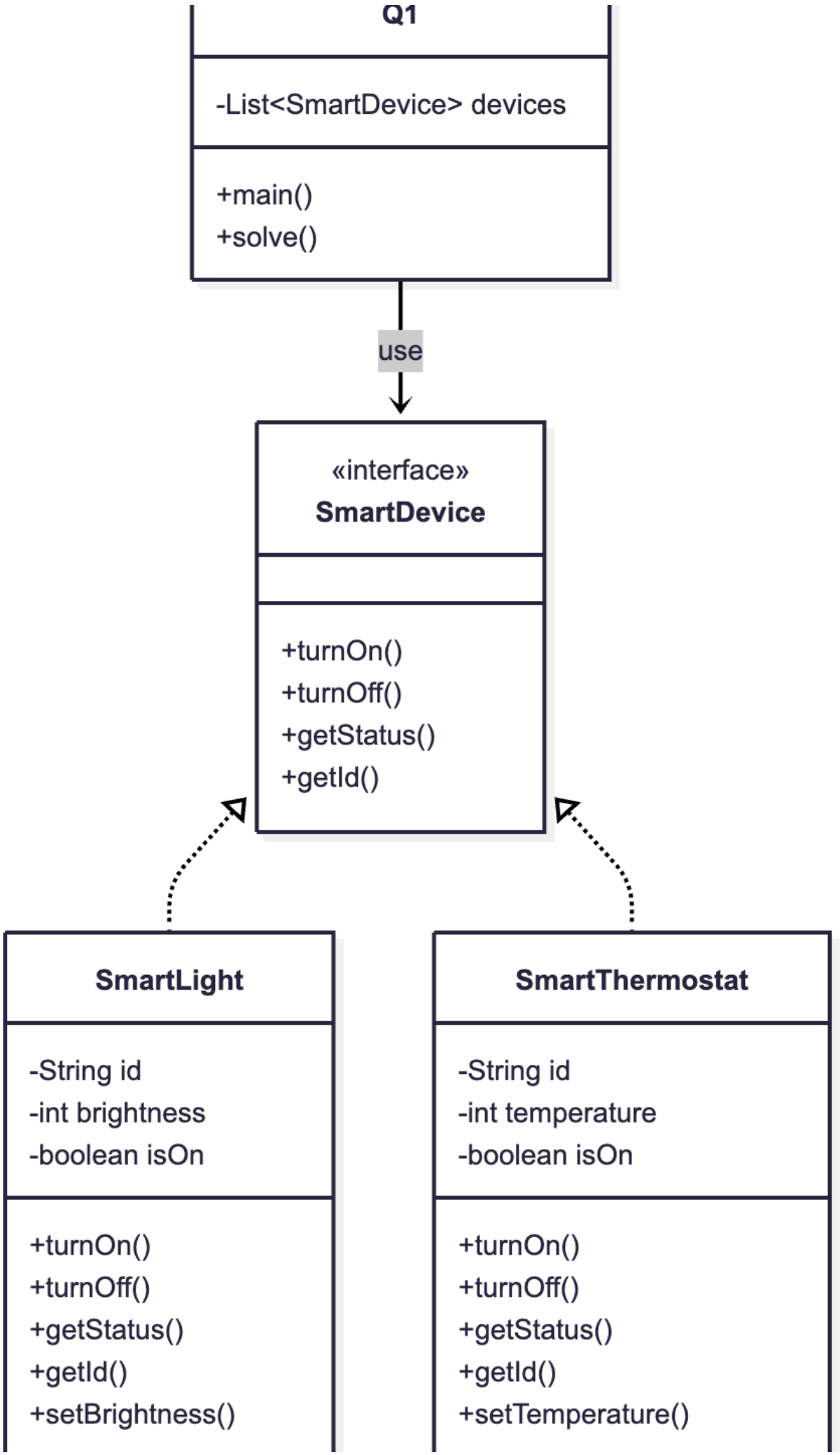
```
void turnOn();
void turnOff();
String getStatus();
String getId();
```

Implement two concrete classes:

- SmartLight
  - Attributes: id, brightness, isOn
  - Methods:
    - Adjust brightness
    - Turn on/off
    - Return current status
- SmartThermostat
  - Attributes: id, temperature, isOn
  - Methods:
    - Adjust temperature
    - Turn on/off
    - Return current status

Create a Q1 class with:

- A list of SmartDevice objects.
- A main method to read commands, execute actions, and print results.


Q1
-List<SmartDevice> devices
+main()
+solve()
use
«interface»
SmartDevice
+turnOn()
+turnOff()
+getStatus()
+getId()
SmartLight
-String id
-int brightness
-boolean isOn
+turnOn()
+turnOff()
+getStatus()
+getId()
+setBrightness()
SmartThermostat
-String id
-int temperature
-boolean isOn
+turnOn()
+turnOff()
+getStatus()
+getId()
+setTemperature()

Resolve problems:

New input file format

```
n
<command 1 of question>
<command 2 of question>
...
```

Test Case 1:

Input

```
2
Light L1 50
Status
```

Output

```
Add light: L1
-- Device Status --
L1 - Light - OFF - Brightness: 50
```

Test Case 2:

Input

```
3
Thermostat T1 25
TurnOn T1
Status
```

Output

```
Add thermostat: T1
Turn on: T1
-- Device Status --
T1 - Thermostat - ON - Temperature: 25
```

Test Case 3:

Input

```
5
Light L1 60
TurnOn L1
AdjustBrightness L1 90
TurnOff L1
Status
```

Output

```
Add light: L1
Turn on: L1
Adjust brightness L1 to 90
Turn off: L1
-- Device Status --
L1 - Light - OFF - Brightness: 90
```

Test Case 4:

Input

```
6
Light L1 30
Thermostat T1 22
TurnOn L1
AdjustTemp T1 18
TurnOn T1
Status
```

```
Add light: L1
Add thermostat: T1
Turn on: L1
Adjust temperature T1 to 18
Turn on: T1
-- Device Status --
L1 - Light - ON - Brightness: 30
T1 - Thermostat - ON - Temperature: 18
```