

```
#include <iostream>
```

```
#include <string>
```

```
class SmartLight {
```

```
public:
```

```
    void turnOn() {
```

```
        std::cout << "Light is turned ON." << std::endl;
```

```
    }
```

```
    void turnOff() {
```

```
        std::cout << "Light is turned OFF." << std::endl;
```

```
    }
```

```
    void dim(int level) {
```

```
        std::cout << "Light dimmed to " << level << "%" << std::endl;
```

```
    }
```

```
};
```

```
class SmartThermostat {
```

```
private:
```

```
    int temperature;
```

```
public:
```

```
    SmartThermostat() : temperature(22) {} // Default temperature
```

```
    void setTemperature(int temp) {
```

```
        temperature = temp;
```

```
        std::cout << "Temperature set to " << temperature << "°C" << std::endl;
```

```
    }
```

```
    int getTemperature() {
```

```
        return temperature;
    }
};
```

```
class SmartSecurity {
private:
    bool isLocked;

public:
    SmartSecurity() : isLocked(true) {} // Default state is locked

    void lock() {
        isLocked = true;
        std::cout << "Door is locked." << std::endl;
    }

    void unlock() {
        isLocked = false;
        std::cout << "Door is unlocked." << std::endl;
    }

    bool checkStatus() {
        return isLocked;
    }
};
```

```
class SmartHome {
private:
    SmartLight light;
    SmartThermostat thermostat;
    SmartSecurity security;
```

public:

```
void controllLight(bool turnOn, int dimLevel = 100) {
```

```
    if (turnOn) {
```

```
        light.turnOn();
```

```
        light.dim(dimLevel);
```

```
    } else {
```

```
        light.turnOff();
```

```
    }
```

```
}
```

```
void controlThermostat(int temp) {
```

```
    thermostat.setTemperature(temp);
```

```
}
```

```
void controlSecurity(bool lock) {
```

```
    if (lock) {
```

```
        security.lock();
```

```
    } else {
```

```
        security.unlock();
```

```
    }
```

```
}
```

```
void getSecurityStatus() {
```

```
    if (security.checkStatus()) {
```

```
        std::cout << "The door is currently LOCKED." << std::endl;
```

```
    } else {
```

```
        std::cout << "The door is currently UNLOCKED." << std::endl;
```

```
    }
```

```
}
```

```
};
```

```
int main() {  
    SmartHome myHome;  
  
    myHome.controlLight(true, 75); // Turn on light and dim to 75%  
    myHome.controlThermostat(20); // Set temperature to 20°C  
    myHome.controlSecurity(false); // Unlock the door  
    myHome.getSecurityStatus();    // Check security status  
  
    return 0;  
}
```