**DSA0110 – C++ PROGRAMMING**

**Code:**

#include <iostream>

#include <string>

class SmartSecuritySystem {

private:

bool alarmStatus;

bool cameraStatus;

bool doorStatus; // true for locked, false for unlocked

bool windowStatus; // true for closed, false for open

bool gateStatus; // true for closed, false for open

public:

SmartSecuritySystem()

: alarmStatus(false), cameraStatus(false), doorStatus(false),

windowStatus(true), gateStatus(true) {} // Default: door unlocked, window and gate closed

void turnAlarmOn() {

alarmStatus = true;

std::cout << "Alarm is now ON." << std::endl;

}

void turnAlarmOff() {

alarmStatus = false;

std::cout << "Alarm is now OFF." << std::endl;

}

void turnCameraOn() {

cameraStatus = true;

std::cout << "Camera is now ON." << std::endl;

}

void turnCameraOff() {

cameraStatus = false;

std::cout << "Camera is now OFF." << std::endl;

}

void lockDoor() {

doorStatus = true;

std::cout << "Door is now LOCKED." << std::endl;

}

void unlockDoor() {

doorStatus = false;

std::cout << "Door is now UNLOCKED." << std::endl;

}

void closeWindow() {

windowStatus = true;

std::cout << "Window is now CLOSED." << std::endl;

}

void openWindow() {

windowStatus = false;

std::cout << "Window is now OPEN." << std::endl;

}

void closeGate() {

gateStatus = true;

std::cout << "Gate is now CLOSED." << std::endl;

}

void openGate() {

gateStatus = false;

std::cout << "Gate is now OPEN." << std::endl;

}

void status() {

std::cout << "Current System Status:" << std::endl;

std::cout << "Alarm: " << (alarmStatus ? "ON" : "OFF") << std::endl;

std::cout << "Camera: " << (cameraStatus ? "ON" : "OFF") << std::endl;

std::cout << "Door: " << (doorStatus ? "LOCKED" : "UNLOCKED") << std::endl;

std::cout << "Window: " << (windowStatus ? "CLOSED" : "OPEN") << std::endl;

std::cout << "Gate: " << (gateStatus ? "CLOSED" : "OPEN") << std::endl;

}

};

int main() {

SmartSecuritySystem securitySystem;

std::string command;

std::cout << "Welcome to the Smart Security System!" << std::endl;

while (true) {

std::cout << "\nEnter a command (turn\_alarm\_on, turn\_alarm\_off, turn\_camera\_on, turn\_camera\_off, lock\_door, unlock\_door, close\_window, open\_window, close\_gate, open\_gate, status, exit): ";

std::cin >> command;

if (command == "turn\_alarm\_on") {

securitySystem.turnAlarmOn();

} else if (command == "turn\_alarm\_off") {

securitySystem.turnAlarmOff();

} else if (command == "turn\_camera\_on") {

securitySystem.turnCameraOn();

} else if (command == "turn\_camera\_off") {

securitySystem.turnCameraOff();

} else if (command == "lock\_door") {

securitySystem.lockDoor();

} else if (command == "unlock\_door") {

securitySystem.unlockDoor();

} else if (command == "close\_window") {

securitySystem.closeWindow();

} else if (command == "open\_window") {

securitySystem.openWindow();

} else if (command == "close\_gate") {

securitySystem.closeGate();

} else if (command == "open\_gate") {

securitySystem.openGate();

} else if (command == "status") {

securitySystem.status();

} else if (command == "exit") {

std::cout << "Exiting the Smart Security System. Goodbye!" << std::endl;

break;

} else {

std::cout << "Invalid command. Please try again." << std::endl;

}

}

return 0;

}

**Output:**