

Smart Home Automation System (Dart)

Below is the complete Dart program that meets all the requirements outlined in the assignment.

```
import 'dart:io';

void main() {
  // ===== Constants =====
  const int minTemp = 15;
  const int maxTemp = 30;

  // ===== Default Device Status =====
  bool lightsOn = false;
  int thermostat = 20;
  bool securityArmed = false;

  // ===== Main Menu Loop =====
  while (true) {
    print('\nWelcome to the Smart Home System!');
    print('Please choose an action:');
    print('1. Toggle lights');
    print('2. Set thermostat temperature');
    print('3. Arm/disarm security system');
    print('4. View system status');
    print('5. Exit');

    stdout.write('\nEnter your choice: ');
    String? choice = stdin.readLineSync();

    if (choice == null) continue;

    switch (choice) {
      case '1':
        // Toggle lights
        lightsOn = !lightsOn;
        print('Lights are now ${lightsOn ? "ON" : "OFF"}');
        break;

      case '2':
        // Set thermostat
        stdout.write('Set thermostat temperature ($minTemp°C - $maxTemp°C): ');
        String? input = stdin.readLineSync();
        if (input == null) break;

        int? newTemp = int.tryParse(input);
        if (newTemp == null) {
          print('Invalid input! Please enter a number');
          break;
        }

        if (newTemp < minTemp || newTemp > maxTemp) {
          print('Temperature must be between $minTemp°C and $maxTemp°C');
        } else {
          thermostat = newTemp;
          print('Thermostat set to ${thermostat}°C');
        }
        break;

      case '3':
        // Arm/disarm security system
        securityArmed = !securityArmed;
        print('Security system is now ${securityArmed ? "ARMED" : "DISARMED"}');
        break;

      case '4':
        // View system status
        String tempStatus = '';
        if (thermostat % 3 == 0 && thermostat % 5 == 0) {
          tempStatus = 'Perfect Day';
        } else if (thermostat % 3 == 0) {
          tempStatus = 'Cool Day';
        } else if (thermostat % 5 == 0) {
          tempStatus = 'Warm Day';
        }
        break;
    }
  }
}
```

```

    }

    print('\nSystem Status:');
    print('- Lights: ${lightsOn ? "ON" : "OFF"}');
    print('- Thermostat: ${thermostat}°C'
        '${tempStatus.isNotEmpty ? " - $tempStatus" : ""}');
    print('- Security System: ${securityArmed ? "ARMED" : "DISARMED"}');
    break;

case '5':
    print('Exiting the system. Goodbye!');
    return;

default:
    print('Invalid choice! Please try again.');
```