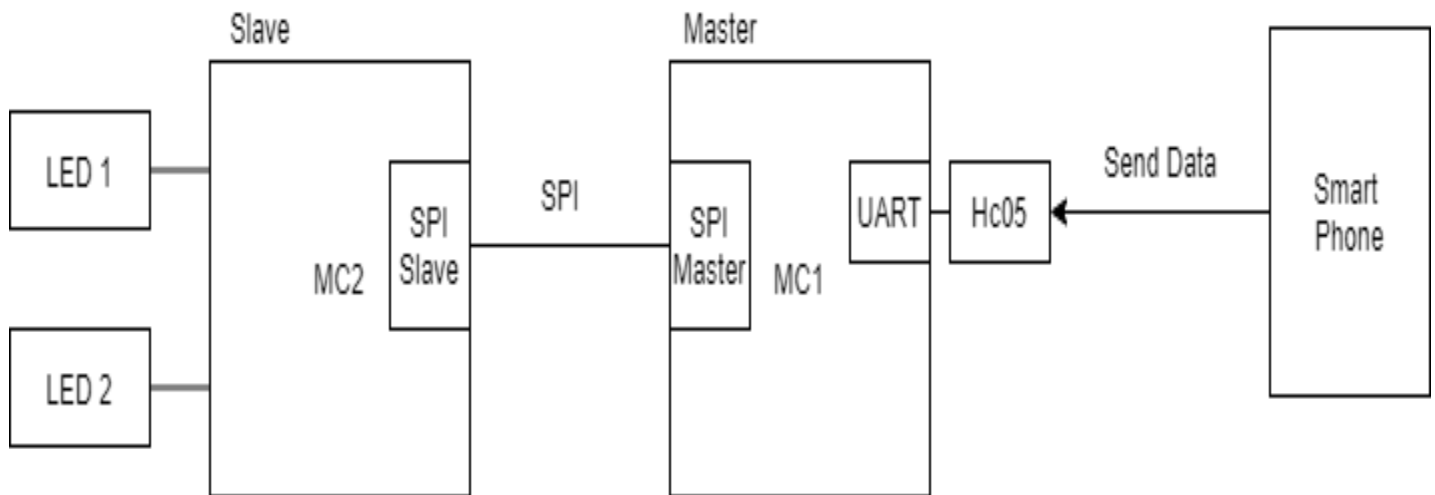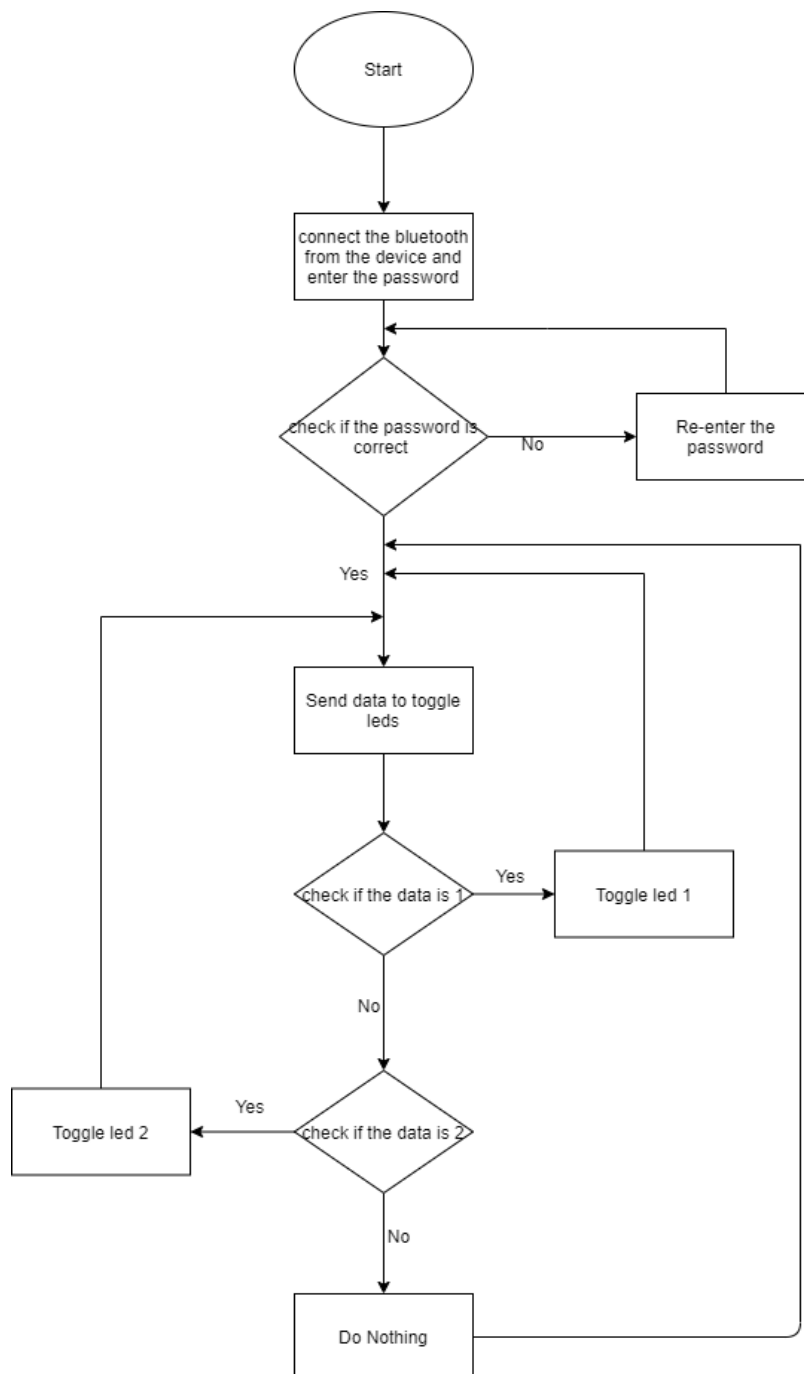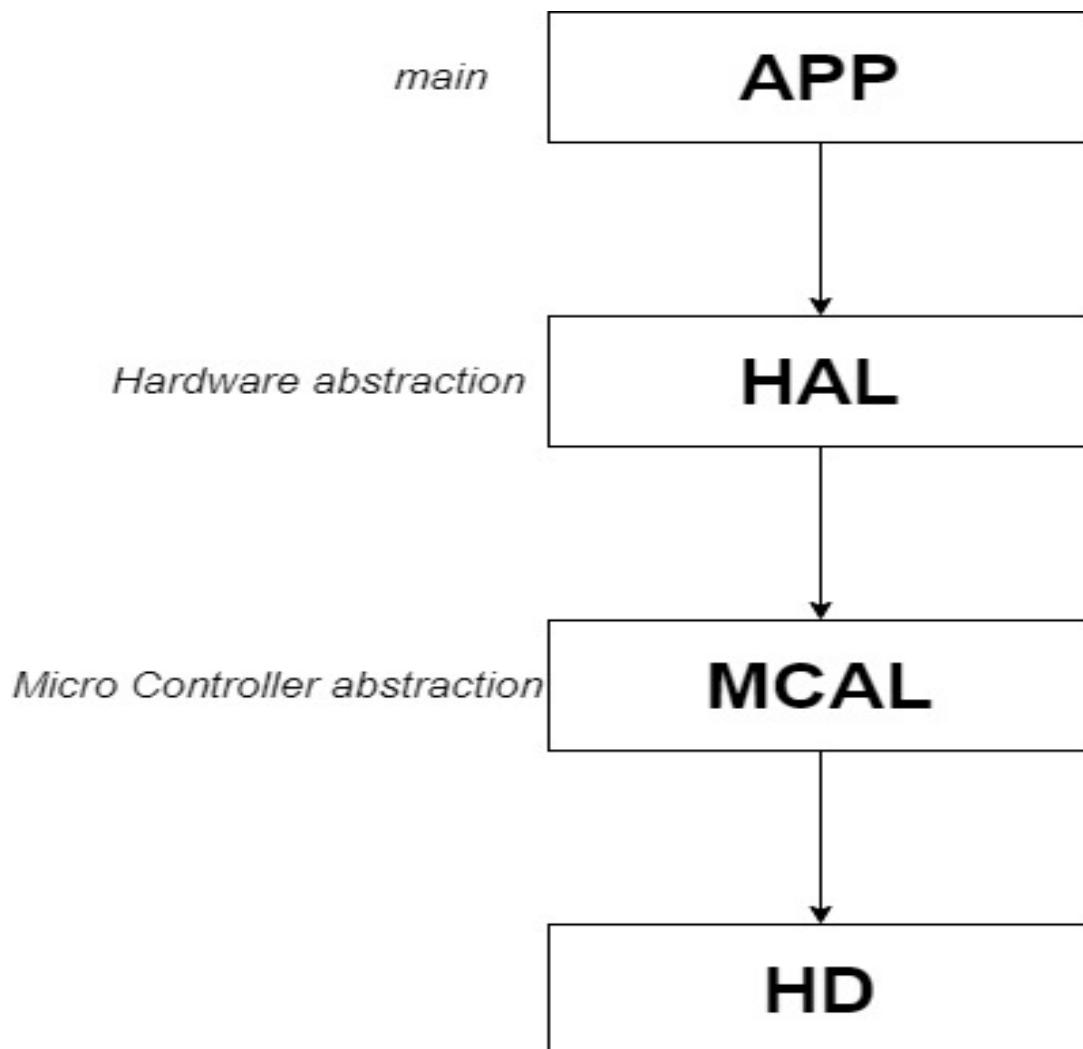# Smart Home Documentation

The Design:

- First, the mobile phone send data to MC1 through the Hc05.
- Then MC1 send the received data to MC2 (which has the two LEDs) through the SPI.
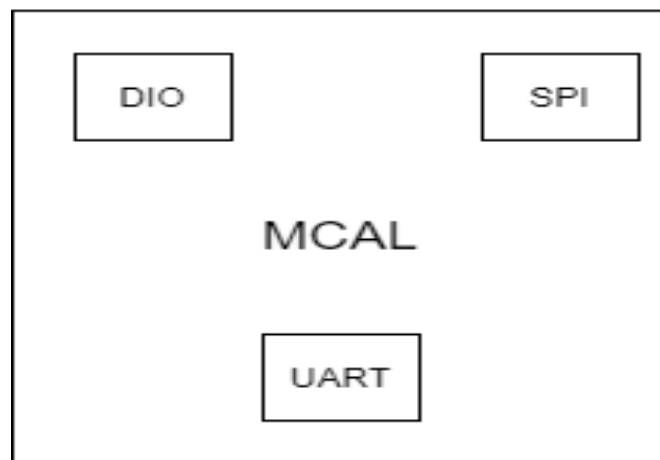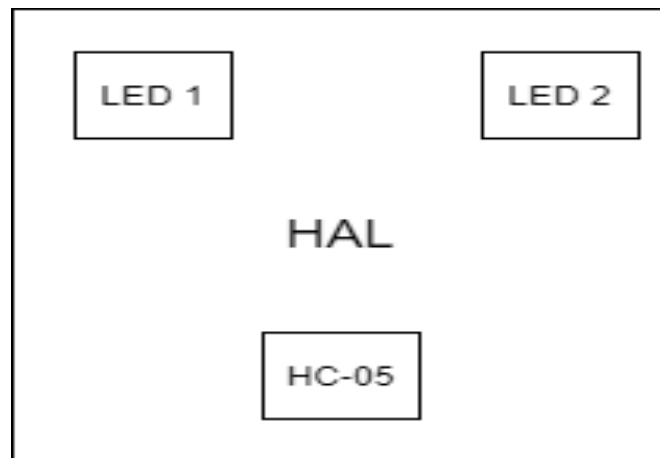- Then MC2 Toggle any of the LEDs according to the received data.

Flowchart for The Project:

```
                        ┌─────────┐
                        │  Start  │
                        └────┬────┘
                             │
                             ▼
                  ┌──────────────────────┐
                  │ connect the bluetooth│
                  │ from the device and  │
                  │  enter the password  │
                  └──────────┬───────────┘
                             │
                             ▼
               ◇ check if the password is ◇ ──No──> ┌──────────────┐
               ◇        correct          ◇          │ Re-enter the │
                             │                       │   password   │
                            Yes                      └──────────────┘
                             │
                             ▼
                  ┌──────────────────────┐
                  │  Send data to toggle │
                  │         leds         │
                  └──────────┬───────────┘
                             │
                             ▼
               ◇ check if the data is 1 ◇ ──Yes──> ┌──────────────┐
                             │                       │ Toggle led 1 │
                            No                       └──────────────┘
                             │
                             ▼
  ┌──────────────┐    ◇ check if the data is 2 ◇
  │ Toggle led 2 │ <──Yes──   
  └──────────────┘            │
                             No
                             │
                             ▼
                  ┌──────────────────────┐
                  │      Do Nothing      │
                  └──────────────────────┘
```

1) connect the mobile with Hc05 using Bluetooth Terminal HC-05.
2) enter the password if the password is wrong re-enter the password again.
3) Send the number of the LED to turn it OFF/ON.
4) If the sent data is 1, the LED 1 will be toggled.
5) If the sent data is 2, the LED 2 will be toggled.
6) If the sent data is neither 1 nor 2 then nothing will happen.

The Architecture:

main	**APP**
Hardware abstraction	**HAL**
Micro Controller abstraction	**MCAL**
	HD

- The LEDs and HC-05 are in the HAL.
- The DIO, SPI and UART are in the MCAL.