**Smart Home Project Documentation**

**Requirement:**

* **Make a Smart Home that is controller via Bluetooth**
* **This can be done by switching ON and OFF the LED using a Bluetooth device.**

**How did I do it?**

* **In this project I have divided code into several layer, like the HAL and MCAL, just to make the code generic then configure our application (the logic) as I want.**
* **In this project I have configured the first Microcontroller, that will be called Master, to receive an input from a Virtual Terminal through a UART configuration.**
  + **So basically, I had to initialize the device for UART communication.**
  + **Once UART is initialized, I am able to receive data using it**
* **In the main function I have configured it so, that only when a data is received using UART, is to send it to the 2nd Microcontroller (Slave)**
  + **So, I had to Initialize the Microcontroller for SPI communication as a Master.**
* **Once data is received by UART, it will be sent to the Slave Microcontroller.**
* **To validate that the data is received as it is desired, I have configured the Slave Microcontroller to display every single character that is received from the Master controller using SPI.**
  + **I had to Initialize LCD module and write to it that data received from SPI communication.**
  + **Also, I configured the LCD to clear it’s display if it has displayed 16 characters.**
* **Before Data is displayed on the LCD, I have set a Switch/Case to toggle LED\_1 and LED\_2 every time “1” or “2” is sent via Bluetooth, respectively.**