**System Construction :**

**1- 2 MCUs :**

**2 microcontrollers used to receive and transmit data via different communication protocols.**

**2- Virtual terminal :**

**Used to send data to the first MCU.**

**3- LM35 Temperature Sensor :**

**Used to measure the temperature.**

**4- LCD :**

**Used to display the temperature value measured by LM35.**

**5- 3 LEDs :**

**3 LEDs simulating 3 doors.**

**System Connection :**

**MCU1**

MCU2 reads the temperature value via ADC

LM35

LED3

LED2

LED1

MCU1 receives data from virtual terminal via UART communication protocol

MCU2 receives data from MCU1 via SPI communication protocol

**LCD**

Virtual terminal

**MCU2**

**Application Explanation :**

**-MCU1 is connected to the virtual terminal and receives data from it as soon as the user send the data from the virtual terminal , This data is sent and received via UART communication protocol.**

**-As soon as the data is received to MCU1 , It is transmitted to MCU2 via SPI communication protocol , and MCU2 take action according to the order (data) received from the user , if the data is 1 , there is LED simulating a door lights up , while if the data is 2 , there is another LED simulating another door lights up , while if the data is 3 , there is another LED simulating another door lights up , and if the data is 4 , the 3 LEDs light up.**

**-LM35 is a temperature sensor connected to MCU2. To read the value of the temperature we should convert the analog value read from the sensor into digital value , so ADC (Analog to Digital Converter) is used as the MCU cannot read analog values , then there is LCD connected to MCU2 which displays this value and displays whether the weather is cold , hot or warm.**