Serial Peripheral Interface (SPI) and I2C

Serial Peripheral Interface (SPI) is a synchronous serial data protocol used by Microcontrollers for communicating with one or more peripheral devices quickly over short distances.

SPI connection there is always one master device (usually a microcontroller) which controls the peripheral device

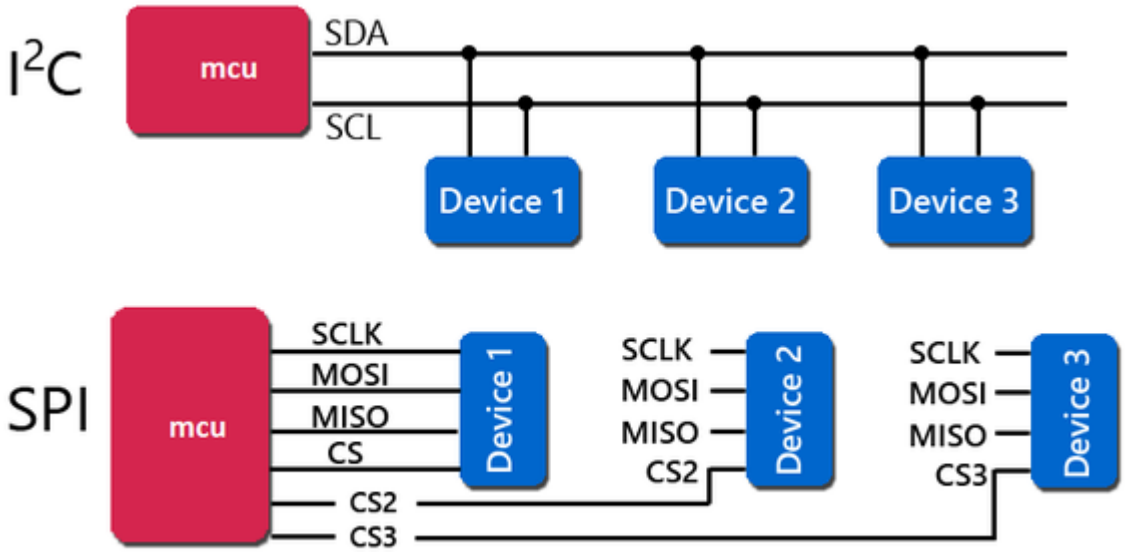
SPI required at least 4 wire Clock (SPI CLK, SCLK), Chip select (CS), Master out, slave in (MOSI) and Master in, slave out (MISO).

The chip select signal from the master is used to select the slave. MOSI and MISO are the data lines. MOSI transmits data from the master to the slave and MISO transmits data from the slave to the master.

ADVANTAGES: - NO of Sensor interfacing possible on same line as compare to ADC.

LIMITATION: - When no of device increase chip select line also increase.

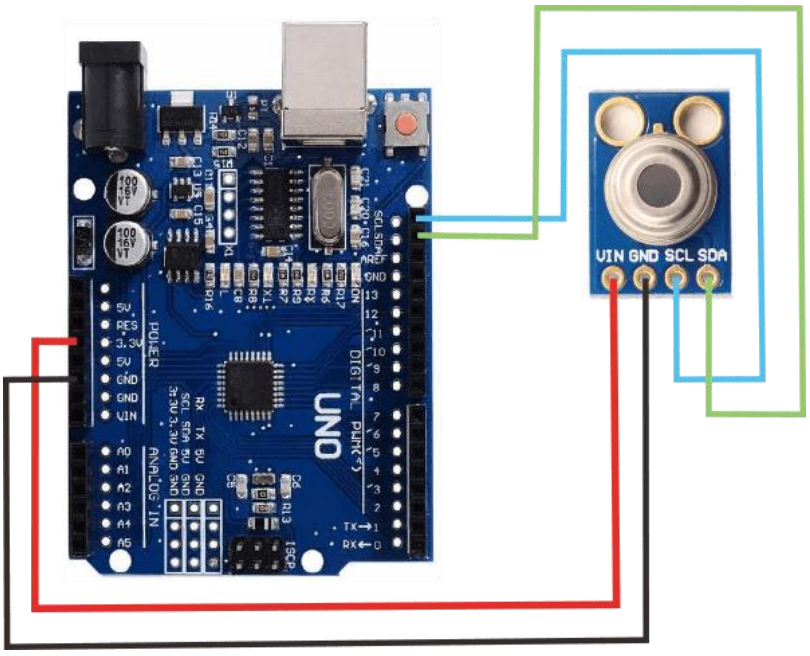
I2C:- It is only 2 wire protocol. One is serial clock (SCL) and serial data (SDA). Each device on bus having unique address.



https://www.analog.com/en/analog-dialogue/articles/introduction-to-spi-interface.html

https://www.nn-digital.com/en/blog/2019/11/09/interfacing-gy-906-mlx90614-non-contact-ir-infra-red-temperature-sensor-with-arduino/

GY 906 TEMPRATURE SENSOR WITH ARDUINO:-



SAMPAL CODE:

```
#include <Wire.h>
#include <Adafruit_MLX90614.h>

Adafruit_MLX90614 mlx = Adafruit_MLX90614();

void setup() {
  Serial.begin(9600);

  Serial.println("Adafruit MLX90614 test");

  mlx.begin();
}

void loop() {
  Serial.print("Ambient = "); Serial.print(mlx.readAmbientTempC());
  Serial.print("*C\tObject = "); Serial.print(mlx.readObjectTempC());
Serial.println("*C");
  Serial.print("Ambient = "); Serial.print(mlx.readAmbientTempF());
  Serial.print("*F\tObject = "); Serial.print(mlx.readObjectTempF());
Serial.println("*F");

  Serial.println();
  delay(500);
}
```