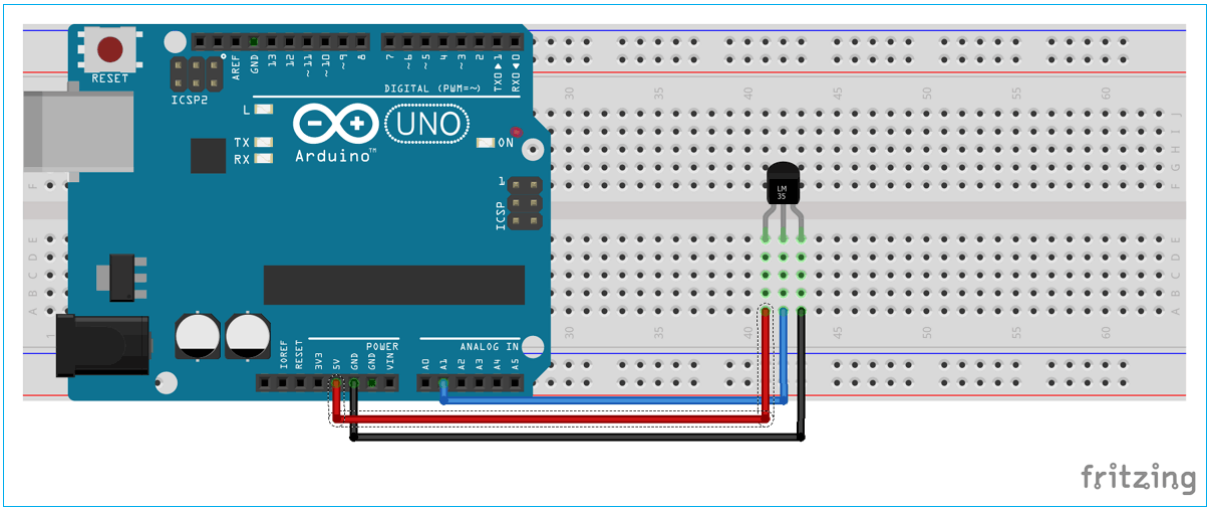
Plotting Real Time Temperature Graph using MATLAB

Aim: To plot real time temperature graph using MATLAB

Material Required:

- MATLAB installed Laptop (Preference: R2016a or above versions)
- Arduino UNO
- LM35 – Temperature Sensor
- Connecting Wires
- Breadboard

Circuit Diagram:



Theory:

Graphs are always helpful to visualize the data and it becomes very easy to find trends and patterns by looking at them. There are many software available to plot graphs based on the input values, but we use MATLAB to plot graph based on the temperature data from LM35 sensor. MATLAB (matrix laboratory) is a multi-paradigm numerical computing environment and proprietary programming language developed by MathWorks. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages. Arduino Uno is used here to get temperature data from LM35 temperature sensor. Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs and turn it into an output and publishing something online. LM35 is a temperature measuring device having an analog output voltage proportional to the temperature. It provides output voltage in Centigrade (Celsius). It does not require any external calibration circuitry. The sensitivity of LM35 is 10 mV/degree Celsius. As temperature increases, output voltage also increases. It is a 3-terminal sensor used to measure surrounding temperature ranging from -55 °C to 150 °C. LM35 gives temperature output which is more precise than thermistor output.