Quad Infrared Detector Version 1.2

TARGETED TO MSP430 LANUCHPAD W/MSP430G2553 PROCESSOR

**** PLEASE READ THIS ENTIRE DOCUMENT BEFORE USING THIS PROJECT DESIGN ****

This code is designed to control 4 IR Sensors and light 4 independent indicator LEDS to signal that an object as been detected.

Distance between Tip of Emitter and Tip of Detector has only been tested upto 3.5 Inches under incandescant and floroescant
lighting conditions with no failures. Separation distance may be affected by wire lengths from the Launchpad.

This Project has been designed to be powered by the USB connection. Consult other available instructions on how to connect your MSP430 to external power sources before attempting.

Pin Assignments:

PIN 1.0 = Cathode of IR Receiver #1 > Anode to Ground
PIN 1.1 = UNASSIGNED - UART
PIN 1.2 = UNASSIGNED - UART
PIN 1.3 = Cathode of IR Receiver #2 > Anode to Ground
PIN 1.4 = Cathode of IR Receiver #3 > Anode to Ground
PIN 1.5 = Cathode of IR Receiver #4 > Anode to Ground
PIN 1.6 = Anode of Indicator LED #1 \
PIN 1.7 = Anode of Indicator LED #2 \ Cathodes to ground
PIN 2.0 = Anode of Indicator LED #3 /
PIN 2.1 = Anode of Indicator LED #4 /
PIN 2.2 = UNASSIGNED
PIN 2.3 = UNASSIGNED
PIN 2.4 = UNASSIGNED
PIN 2.5 = Circuit Power Indicator

PINS 1.1, 1.2, 2.2, 2.3, 2.4 are left unused for integration into other projects.

FILES IN THIS PACKAGE:

Quad Infrared Detector Version 1_2_COMPILER_CODE.TXT -- The code of copy and paste into the Code Coposer Studio Software

Quad Infrared Detector Version 1_2_CODE.PDF -- Color separated PDF version of code for easier reading

Quad Infrared Detector Version 1_2_schem.PDF -- The Electrical Schematic for this project

Quad Infrared Detector Version 1_2_Visual.PDF -- A visual representation of how to wire this project to the MSP430 Launchpad

Insructions and Notes.PDF -- This File

COMPONENTS NEEDED FOR THIS PROJECT:

Radio Shack Catalog# 276-142 - Infrared Emitter and Detector LED Set or comparable

Radio Shack Catalog# 276-021 - Yellow 5mm LED or comparable -- OPTIONAL

Wire

appropriate insulating material for connections to LEDS ie. Electrical Tape

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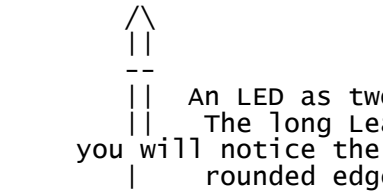
UNDERSTANDING YOUR COMPONENTS:

What is an Anode and a Cathode?

Imagine the image below is an LED



An LED as two leads that come off of it, one long and one short.
The long Lead is the ANODE and the short one is the CATHODE, on many LEDS you will notice the LED has a flat edge on one side and a
rounded edge on the other. The flat side is the CATHODE

What is VCC and GND Mean?

VCC is your (POSITIVE Voltage +) connection

GND is your (NEGATIVE - or GROUND) connection

PREPARING YOUR MSP430 LAUNCHPAD FOR THIS PROJECT:

You will notice many jumpers (Little Black Rectangle Thingys) on the MSP430 launchpad,
beside them you will see white lettering that identifies them.

There are two jumpers located near the edge of the board labeled P1.0, and P1.6 remove these two jumpers. If you are not sure which ones to

remove, connect the launchpad to your computer using the included USB cord. The two jumpers near the Red and Green flashing LEDS are the jumpers

to remove. Unplug the Launchpad from your computer before removing these jumpers.

CONNECTING YOUR MSP430 LAUNCHPAD TO THE LEDS:

Note Anodes for the IR Emitters connect to VCC and Cathodes to GND

**** THE IR DETECTOR LEDS ANODES CONNECT TO GND -- See note below for more detail 1 ****

Please read the packaging or datasheets for the Radio Shack # 276-142 Emitters and Detectors to determine which LED is the Detector and which is

the Emitter.

**** PLEASE TAKE CAREFUL NOTE ****

 1   Normally LEDs are connected Anode to (positive +) symbolized as VCC on the microcontroller and Cathode to (Negative - or GROUND) symbolized

     on the microcontroller as GND. The IR Detectors connect differently. **** THE IR DETECTOR LEDS ANODES CONNECT TO NEGATIVE ****
     Consult the Quad Infrared Detector Version 1_2_Visual.pdf file in this package for a better understanding of these connections.