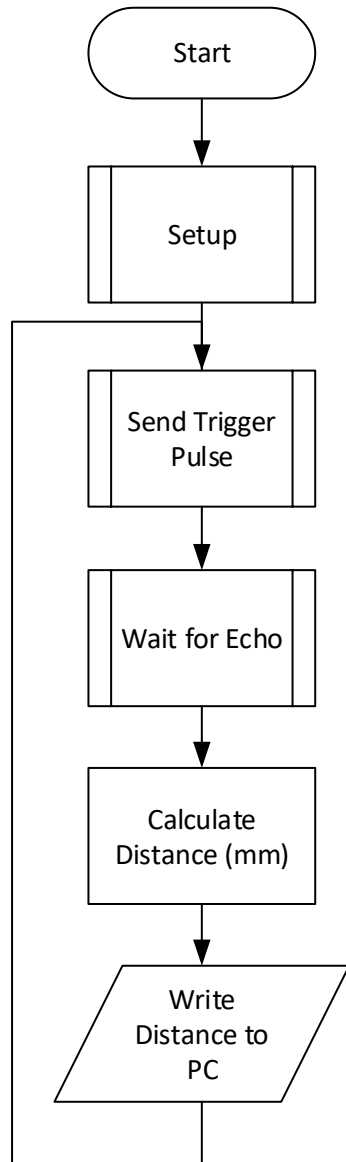


Stage 1: Ultrasonic Sensor



Aim of Stage 1:

To read back distance data from the Ultrasonic sensor and display it on the PC.

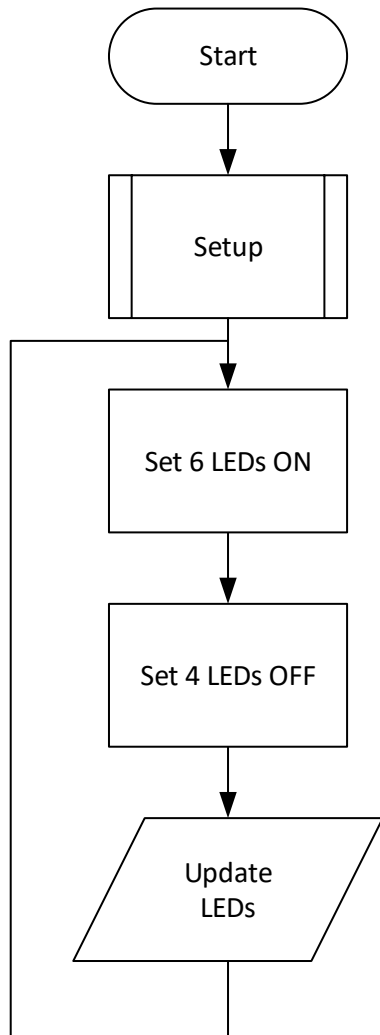
Key Tasks:

- Complete Setup Program.
- Complete Ultrasonic Sub-programs.
- Find a formula to calculate the distance.

See these Provided Documents:

- HC-SR04 Data Sheet
- Ultrasonic Sub-program Flowcharts
- 'Ultrasonic.ino' example arduino code
- Arduino Programming Notes

Stage 2: RGB LEDs



Aim of Stage 2:

To turn ON and OFF RGB LEDs on the strip and set their colour.

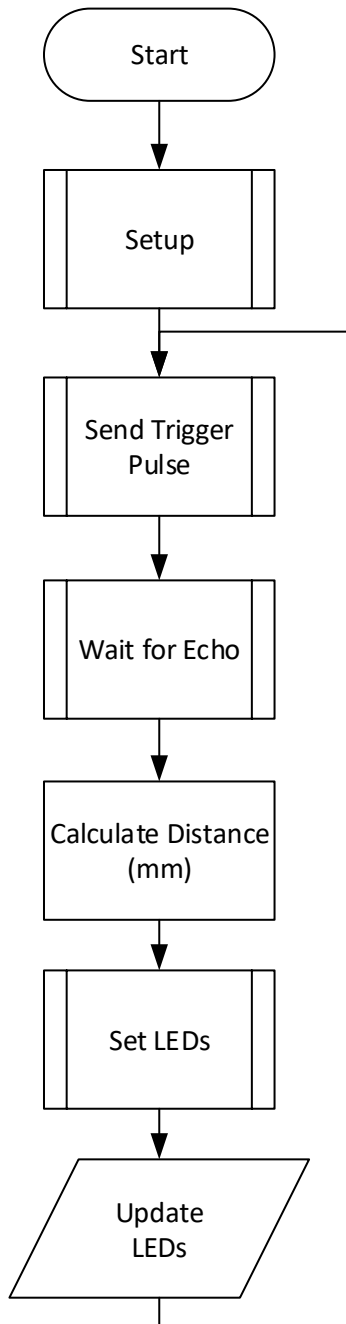
Key Tasks:

- Complete Setup Program.
- Set 6 LEDs ON and 4 LEDs OFF
- Set 3 LEDs to a different colour.

See these Provided Documents:

- Neopixel RGB LED Data Sheet
- 'Neopixel.ino' example arduino code
- Arduino Programming Notes

Stage 3: All together



Aim of Stage 3:

To combine the previous two stages and make the LEDs light up as an object approaches.

Key Tasks:

- Complete Setup Program.
- Complete Set LEDs program using the switch method

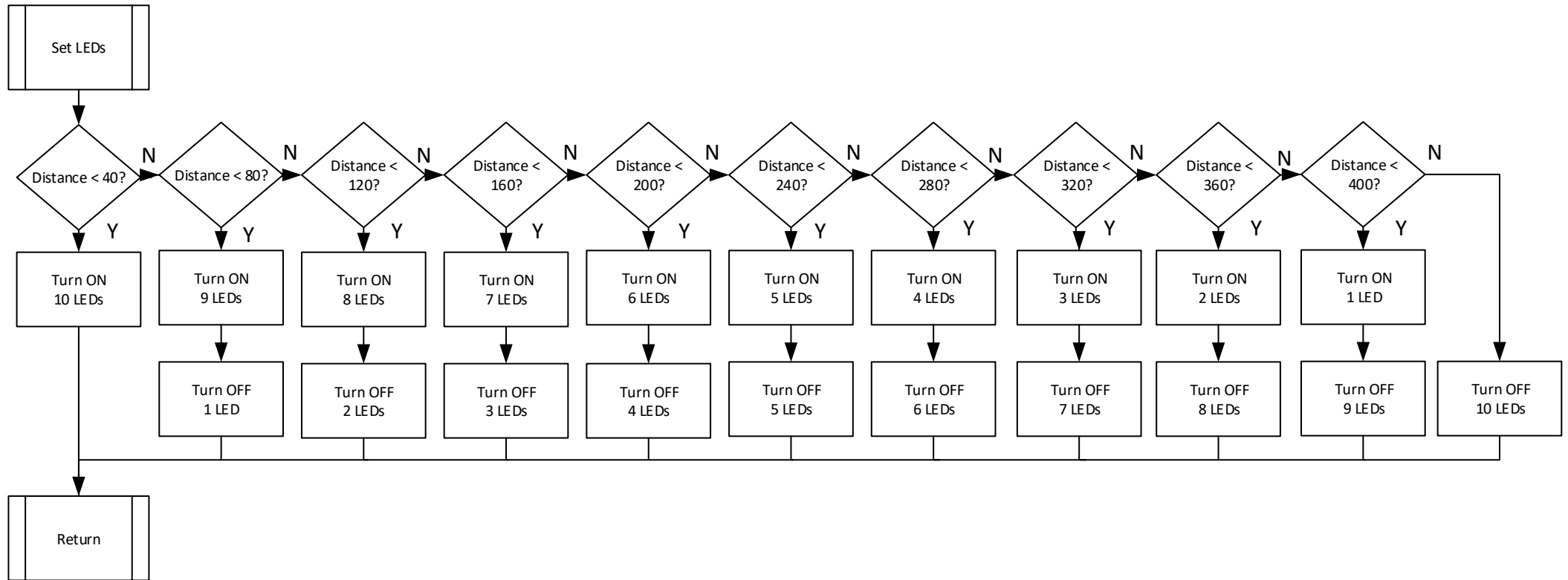
See these Provided Documents:

- 'CombinedSwitch.ino' example arduino code
- Arduino Programming Notes
- 'Set LEDs with Switch()' Flowchart

Extra Tasks:

- Implement an Averaging algorithm (see 'averaging' in maths notes)
- Complete alternative Set LEDs sub program (see 'Set LEDs with proportion' flow chart) for unlimited LEDs
- Progressively change the colours of the LEDs as the illuminate
- Use your imagination!

Set LEDs with 'Switch()' Statement



See arduino programming notes on 'Switch statements'

Set LEDs with Proportion

