Part A

This project is a speed limit sign that changes based on weather conditions in real time. Depending on the temperature and humidity, the speed limit will be raised in warm, dry conditions, or lowered when water or ice may be present on the road surface. This project is in the “Safety” area. This can help to reduce accidents caused by loss of control on icy, wet, or snowy roads, since especially when a driver is new, or inexperienced with snow or ice, they can easily underestimate the danger posed by slippery road surfaces and drive at a speed that may be at or under the posted speed limit, but still too fast for the conditions, and lose control of their vehicle.

Part B

Constraints

- Must produce a useable speed limit for all temperature and humidity conditions the sensor can tolerate
    - 0-50℃
    - 20%-90% relative humidity
- Speed limit should never exceed what the posted speed limit on a standard sign would be
- Speed limit should never be so slow as to impede the flow of traffic
- If the temperature or humidity values are outside the range tolerated by the sensor, the display should default to a safe speed limit value

Specifications

- 7-segment display for speed limit
- Display is surrounded by LEDs
- 7 Segment display shows the current speed limit
- LEDs flash when the speed limit is more than 5 MPH (or KPH) below the usual posted speed limit

Part C

Purpose

Create a speed limit sign that adapts to road conditions, and alters the posted speed limit depending on the temperature and humidity

Inputs

- DHT11 temperature and humidity sensor

Outputs

- 7-segment display
- LEDs

Constraints

Part D

- Breadboard
- Jumper wires
- DHT11 temperature and humidity sensor
- 7 segment display
- Nucleo L4R5ZI
- LEDs