What: Establish familiarity with the components within Arduino Nano along with the terminology.

Why: If I do not establish familiarity of the components of the Arduino Nano, then I will not be able to create the connections needed for the project when the Arduino Nano is going to be integrated with the capacitive touch sensors.

How: I solved this issue by doing additional research on the purpose of each component in regard to our project.

Reference: https://components101.com/microcontrollers/arduino-nano

Arduino Nano:

NOTE: The table from the above reference explains the definition of each component which is helpful for meaning. Additional notes were made for further understanding of the terminology and abbreviations connected to the board.

Arduino Nano Pinout Configuration

Pin Category	Pin Name	Details
Power	**Vin, 3.3V, 5V, GND**	**Vin:** Input voltage to Arduino when using an external power source (6-12V). **5V:** Regulated power supply used to power microcontroller and other components on the board. **3.3V:** 3.3V supply generated by on-board voltage regulator. Maximum current draw is 50mA. **GND:** Ground pins.
Reset	**Reset**	Resets the microcontroller.

Analog Pins	**A0 – A7**	Used to measure analog voltage in the range of 0-5V
Input/Output Pins	**Digital Pins D0 - D13**	Can be used as input or output pins. 0V (low) and 5V (high)
Serial	Rx, **Tx**	Used to receive and transmit TTL serial data.
External Interrupts	2, 3	To trigger an interrupt.
PWM	3, 5, 6, 9, 11	Provides 8-bit PWM output.
SPI	10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK)	Used for SPI communication.
Inbuilt LED	**13**	To turn on the inbuilt LED.
IIC	A4 (SDA), A5 (SCA)	Used for TWI communication.
AREF	**AREF**	To provide a reference voltage for input voltage.

Additional notes:

Interface – A device or system that unrelated components use to interact.

PWM (Pulse Width Modulation) - Powerful technique for controlling analog circuits with a microprocessor's digital outputs.

Communication Protocols

SPI (Serial Peripheral Interface)

- An interface bus commonly used to send data between microcontrollers and small peripherals such as shift registers, sensors, and SD cards.
- It uses separate clock and data lines, along with a select line to choose the device you wish to talk to.
- IIC or I2C (Inter-Integrated Circuit Communication)
    - I2C is a way of allowing multiple electronic devices (most often low-speed, peripheral integrated circuits) to communicate with each other over a single pair of wires. These wires are also called data lines, or buses.
- TWI Communication (Two Wire Interface Communication)
    - Identical to I2C