**Slip 15: To write a program to sense a finger when it is placed on the board Arduino.**

To create a Proteus simulation with a capacitive touch sensor on Arduino, follow  the steps outlined below. This example uses a simple TTP223 capacitive touch  sensor to trigger an LED when a finger is detected.

**Components:**

1. Arduino Uno (or any other compatible board)

2. TTP223 Capacitive Touch Sensor

3. LED

4. Resistor (220 ohms for the LED)

5. Proteus Simulation Software to create the schematic

**Steps to Create the Proteus Simulation:**

**1. Create a New Project in Proteus:**

- Open Proteus and create a new project.

 - Select Arduino Uno or any other Arduino model as your microcontroller.

**2. Add Components:**

- Arduino Uno (or compatible board).

 - TTP223 Capacitive Touch Sensor (can be found as "TTP223" in Proteus  components).

 - LED.

 - Resistor (220 ohms).

 - Jumper wires.

**3. Circuit Setup:**

- Capacitive Touch Sensor:

 - Connect the VCC pin of the touch sensor to 5V on the Arduino.  - Connect the GND pin of the touch sensor to GND on the Arduino.

 - Connect the OUT pin of the touch sensor to a digital input pin on the Arduino  (e.g., D2).

 - LED:

 - Connect the anode (long leg) of the LED to digital pin 13 of the Arduino.  - Connect the cathode (short leg) of the LED to GND via a 220-ohm resistor.

**4. Arduino Code**

// Pin configuration

const int touchPin = 2; // Pin connected to the capacitive touch sensor const int ledPin = 13; // Pin connected to the LED

void setup() {

 // Initialize the touch sensor pin as an input  pinMode(touchPin, INPUT);

 // Initialize the LED pin as an output  pinMode(ledPin, OUTPUT);

 // Start serial communication for debugging  Serial.begin(9600);

}

void loop() {

 // Read the touch sensor state

 int touchState = digitalRead(touchPin);

 // Print the touch state for debugging  Serial.println(touchState);

 // If a finger is detected (sensor output is HIGH)  if (touchState == HIGH) {

 digitalWrite(ledPin, HIGH); // Turn on the LED  } else {

 digitalWrite(ledPin, LOW); // Turn off the LED

 }

 delay(100); // Small delay to prevent bouncing

}

**How to simulate the Arduino code in Proteus:**

**1. Add the Arduino Code:**

- Right-click on the Arduino Uno in the Proteus schematic and select Edit  Properties.

 - Click on the Program File field, and choose the `.hex` file that you generated  after uploading your code to the Arduino via the Arduino IDE.

**2. Simulation:**

- After adding the code to the Arduino in the simulation, click the play button in  Proteus to start the simulation. - When you touch the capacitive touch sensor, the LED should light up in the  simulation.