1. **Program it to measure the distance to an object in front of the ultrasonic sensor and display the result on the 7-segment display**.

Program :

```
const int trigPin = 9;                    // Pin Definitions
const int echoPin = 10;
const int segmentA = 2;                   // 7-Segment Pins
const int segmentB = 3;
const int segmentC = 4;
const int segmentD = 5;
const int segmentE = 6;
const int segmentF = 7;
const int segmentG = 8;
// 7-segment display number representation
const int numbers[10][7] = {
  {1, 1, 1, 1, 1, 1, 0},                  // 0
  {0, 1, 0, 0, 0, 0, 0},                   // 1
  {1, 1, 0, 1, 1, 0, 1},                   // 2
  {1, 1, 0, 1, 0, 0, 1},                    // 3
  {0, 1, 1, 0, 0, 0, 1},                    // 4
  {1, 0, 1, 1, 0, 1, 1},                    // 5
  {1, 0, 1, 1, 1, 1, 1},                    // 6
  {0, 1, 0, 0, 0, 0, 0},                    // 7
  {1, 1, 1, 1, 1, 1, 1},                    // 8
  {1, 1, 1, 1, 0, 0, 1}                     // 9
```

```
};
void setup() {
                                        // Setup pins
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

                                    // Setup 7-segment pins
  for (int i = 2; i <= 8; i++) {
    pinMode(i, OUTPUT);
  }
  Serial.begin(9600);
}
void loop() {
  long duration, distance;
                                      // Trigger the sensor
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
                                        // Read the echo
  duration = pulseIn(echoPin, HIGH);
                                    // Calculate distance in cm
  distance = duration * 0.034 / 2;
```

```
                                    // Display distance on the 7-segment
  displayNumber(distance);


  // Print to Serial Monitor for debugging
  Serial.print("measured_Distance: ");
  Serial.println(distance);
  delay(500); // Wait for half a second before next measurement
}
void displayNumber(int num) {
  if (num < 0 || num > 9) return;      // Assuming we're displaying only single-digit
numbers


  // Set segments based on the number
  for (int i = 0; i < 7; i++)
{
    digitalWrite(i + 2, numbers[num][i]);
  }
}
```