Algoritm for measuring 0 to 100 vdc earth using microcontroller

```
                                         Display
                                     ┌──────────────┐
                                     │  seven seg   │
                                     └──────────────┘
 100V DC ──── ┌──────────┐                    │
              │ resistor │──────┐              │
              │   R1     │      │              │
              └──────────┘      │      ┌───────────────────┐
                                ├──────│   microcontroller │
 GND ──── ┌──────────┐          │      │                   │
          │ resistor │──────────┘      │     ADC pin       │
          │   R2     │                 └───────────────────┘
          └──────────┘
```
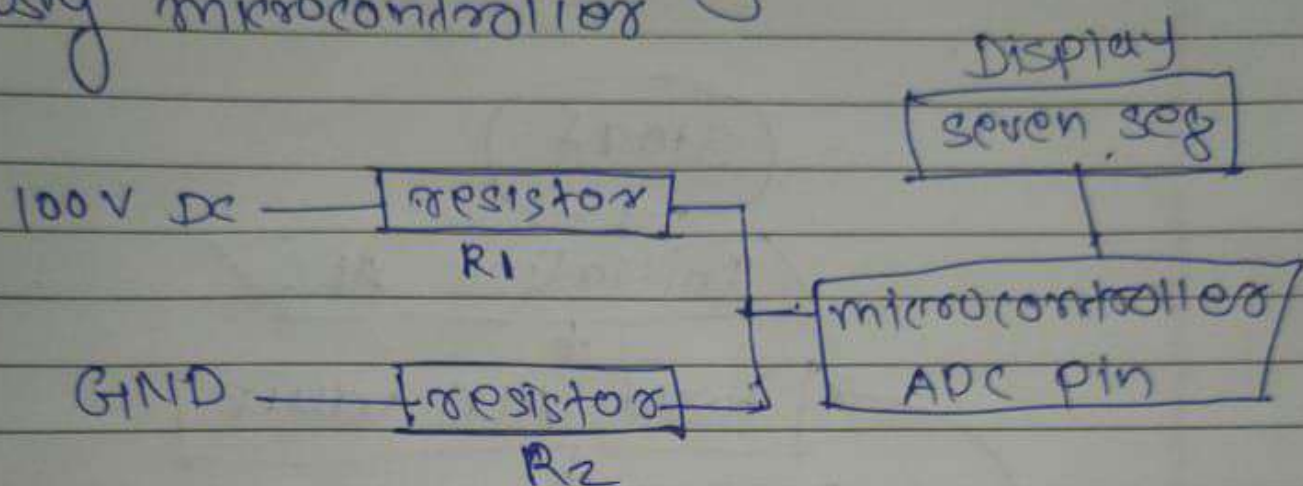
1) we need to need design circuit that safely scales down the voltage to a level that microcontroller ADC can handle which is 0 to 5 V.

2) then microcontroller read scale down value from ADC and convert ADC reading to the actual voltage using resistor.

3) Output the measured voltage to a display or send it to another output showing device, which is seven segment display.

flowchart

```
            ┌─────────┐
            │  Start  │
            └────┬────┘
                 ↓
      ╱─────────────────────╱
     ╱   Initialize ADC    ╱
    ╱─────────────────────╱
                 ↓
      ┌─────────────────────┐
  →   │   Read ADC value    │
      └─────────────────────┘
                 ↓
      ┌─────────────────────┐
      │  Convert ADC value  │
      │    to voltage       │
      └─────────────────────┘
                 ↓
      ┌─────────────────────┐
      │ Calculate input voltage │
      └─────────────────────┘
                 ↓
      ┌─────────────────────┐
      │ Display / output voltage │
      └─────────────────────┘
```