```
// GENESIS BOARD MINI SUMO ROBOT PROGRAM
//FOR 3 OPPONENT SENSOR, 2 EDGE SENSOR
////////////////////////////////////////

//MOTOR CONTROL
int RPwm = 11;
int RDir = 13;
int LPwm = 3;
int LDir = 12;

//LED & BUZZER
int Buzzer = 9;
int ArduLed = 8;

//EDGE & CONTRAST SENSORS
int Redge = A0;
int Ledge = A1;

//TRIMPOTS
int SPD = A7;
int TRN = A6;

//OPPONENT SENSORS
int LSens = A4;
int RSens = A2;
int MSens = A3;

int LFSens = A5;
int RFSens = 4;

// DIPSWITCH & BUTTON
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int Button = 10; // Can be used as start pin too.
int DS1 = 5;
int DS2 = 6;
int DS3 = 7;

//VALUES
int Speed =50;
int MaxSpeed = 50; // Idle Speed while no sensor giving data.
int TurnSpeed = 55; // Left and Right Forward Turning Speed
int EdgeTurn = 190; // Turning Time variable when minisumo sees white line
int Duration; // Turning Time at minisumo starting.
int LastValue = 5; // Last Value Variable for remembering last Opponent sensor sense.

void setup()
{
pinMode(LSens, INPUT);    // Left Opponent Sensor Input
pinMode(RSens, INPUT);    // Right Opponent Sensor Input
pinMode(MSens, INPUT);    // Middle Opponent Sensor Input

pinMode(Buzzer, OUTPUT);  // Buzzer Declared as Output
pinMode(ArduLed, OUTPUT); // Buzzer Declared as Output
pinMode(Button, INPUT); // Buzzer Declared as Output

pinMode(RPwm, OUTPUT);  // Four PWM Channel Declared as Output
pinMode(RDir, OUTPUT);
pinMode(LPwm, OUTPUT);
pinMode(LDir, OUTPUT);

digitalWrite(Buzzer, LOW); // Buzzer Pin Made Low for Silence :)
digitalWrite(ArduLed, LOW);  // Arduino Mode Led Made Low
digitalWrite(DS1, HIGH); // 3 Dipswitch Pin Pullups Made
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```
digitalWrite(DS2, HIGH);
digitalWrite(DS3, HIGH);



digitalWrite(RFSens, HIGH);
digitalWrite(MSens, HIGH);
Serial.begin(9600);
 tone(9, 523, 300);
  delay(300);
  noTone(9);
}

//Motor Control Function
void Set_Motor (float Lval, float Rval, int timex){
  Lval = Lval*2.5;
  Rval = Rval*2.5;
  if (Lval >=0) {
     analogWrite(LPwm, Lval);
     digitalWrite(LDir, LOW);
     } else {
     Lval=abs(Lval);
     digitalWrite(LDir, HIGH);
     analogWrite(LPwm, Lval);
     }
   if (Rval >=0) {
     analogWrite(RPwm, Rval);
     digitalWrite(RDir, HIGH);
     } else {
     Rval=abs(Rval);
     digitalWrite(RDir, LOW);
     analogWrite(RPwm, Rval);
```

```
     }
    // Serial.print(Rval); Serial.print("-"); Serial.println(Lval);
  delay(timex);
}
void loop() {
 digitalWrite(RPwm, LOW);
 digitalWrite(LPwm, LOW);
 if (digitalRead(Button)==1) { // If button is pressed at the first start.
  tone(Buzzer, 18, 100); // Pin, Frequency, Duration
  while (1) {
   if (digitalRead(DS1)==0 && digitalRead(DS2)==0 && digitalRead(DS3)==0 ) {
            Serial.print("Board Test");
            Set_Motor(10,10,50);  Set_Motor(100,100,1000);
            Set_Motor(0,0,1000);
            Set_Motor(-10,-10,50); Set_Motor(-100,-100,1000);
            Set_Motor(0,0,1000);
            tone(Buzzer, 18, 300); tone(ArduLed, 18, 300);
     }}}
//////////////////////////////////////////////
  tone(Buzzer, 440, 200);
   tone(Buzzer, 494, 500);

Wait:
    Serial.println("Button Press Waited");
 Set_Motor(0,0,1);
 /// Sensor Control While Waiting The Button Press ///
 if ( digitalRead(MSens)==LOW || digitalRead(RSens)==LOW || digitalRead(LSens)== LOW ||
analogRead(Redge)< 500 || analogRead(Ledge)< 500 ) { digitalWrite(ArduLed, HIGH);}
 else { digitalWrite(ArduLed, LOW); }
 //////////////////////////////////////////////
if (digitalRead(Button)==1) {
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  Duration=(analogRead(TRN)/4); // Duration variable based on TRN (A6) trimpot
 Serial.println("5 Sec Routine Started");


//for (int i = 0; i < 5; i++){  Set_Motor(0,0,1); digitalWrite(ArduLed, HIGH); tone(Buzzer, 523, 300); delay(500); noTone(Buzzer); digitalWrite(ArduLed, LOW);  delay(200); }


    if (digitalRead(DS1)==0 && digitalRead(DS2)==1 && digitalRead(DS3)==1){
       Serial.print("LEFT TURN");
       Set_Motor(-100,100,180); //
    }
      else if (digitalRead(DS1)==0 && digitalRead(DS2)==0 && digitalRead(DS3)==0) {
          Serial.print("MIDDLE DIRECT");
          Set_Motor(80,80,2);
    }
       else if (digitalRead(DS1)==1 && digitalRead(DS2)==1 && digitalRead(DS3)==0){
       Serial.print("Sag");
       Set_Motor(100,-100,180);
    }
     else if (digitalRead(DS1)==1 && digitalRead(DS2)==0 && digitalRead(DS3)==0){
        Serial.print("Left Circle");
       Set_Motor(100,36,650);
    }
    else if (digitalRead(DS1)==0 && digitalRead(DS2)==0 && digitalRead(DS3)==1){
       Serial.print("Right Circle");
       Set_Motor(36,100,650);
    }
     else if (digitalRead(DS1)==0 && digitalRead(DS2)==1 && digitalRead(DS3)==0){
       Serial.print("Reverse 180");
       Set_Motor(-100,100,150);
      delay(100);
    }
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      Serial.print("OK");
      digitalWrite(Buzzer, LOW);
     // EdgeTurn=(analogRead(TRN)/5); EdgeTurn=205-EdgeTurn;
      goto Start;
 }
goto Wait;
//Main Loop
Start:
  /// Edge Sensor Control Routine ///
  digitalWrite(ArduLed, LOW);
 if (analogRead(Ledge)<100 && analogRead(Redge)> 100) {
   digitalWrite(Buzzer, LOW);
   digitalWrite(ArduLed, HIGH);
   Set_Motor(-100, -100,35); // Geri
   Set_Motor(-100, 100, EdgeTurn); // Left Backward, Right Forward, Turning Time Based on ETRN
Trimpot
   LastValue=5;
 }
   else  if (analogRead(Ledge)> 100 && analogRead(Redge)< 100) {
     digitalWrite(Buzzer, LOW);
     digitalWrite(ArduLed, HIGH);
   Set_Motor(-100, -100,35); // Back 35 Milliseconds
   Set_Motor(100, -100, EdgeTurn); // Right Backward, Left Forward, Turning Time Based on ETRN
Trimpot
   LastValue=5;
  }
   else  if (analogRead(Ledge)< 100 && analogRead(Redge)< 100) {
     digitalWrite(Buzzer, LOW);
     digitalWrite(ArduLed, HIGH);
   Set_Motor(-100, -100,35); // Back 35 Milliseconds
   Set_Motor(100, -100, EdgeTurn); // Right Backward, Left Forward, Turning Time Based on ETRN
Trimpot
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```
   LastValue=5;


 }else
/// Opponent Sensor Control Routine ///
//while (digitalRead(Button)==LOW) {Set_Motor(0, 0, 20); digitalWrite(Buzzer, LOW); LastValue=3;}
digitalWrite(Buzzer, LOW);
if (digitalRead(MSens)==LOW) {Set_Motor(100, 100,1); digitalWrite(Buzzer, HIGH); LastValue=5;} else
if (digitalRead(LSens)== LOW) {Set_Motor(-100, 100,1); digitalWrite(Buzzer, HIGH); LastValue=7;} else
if (digitalRead(RSens)==LOW) {Set_Motor(100, -100,1); digitalWrite(Buzzer, HIGH); LastValue=3;} else
{
  digitalWrite(Buzzer, LOW);
//Speed=(analogRead(SPD)/10.3); Speed=100-Speed;
if (LastValue==5) { Set_Motor(70, 70,1);} else // Forward, Based on SPD (A7) Trimpot
if (LastValue==7) { Set_Motor(-20, 100,2);} else  // Left Turning Based on SPD (A7) Trimpot
if (LastValue==3) { Set_Motor(100, -20,2);}  // Right Turning Based on SPD (A7) Trimpot
}
goto Start;
}
```