

```
//////////////////////////////////// Smart_E_Wheel_Chair
////////////////////////////////////
```

```
char data = 'S';
```

```
// for right motor
```

```
#define R_R_En 4
```

```
#define R_L_En 5
```

```
#define R_R_PWM 6 //forward PWM
```

```
#define R_L_PWM 7 //reverse PWM
```

```
// for left motor
```

```
#define L_R_En 8
```

```
#define L_L_En 9
```

```
#define L_R_PWM 10 //forward PWM
```

```
#define L_L_PWM 11 //reverse PWM
```

```
void setup() {
```

```
    pinMode(R_R_En, OUTPUT);
```

```
    pinMode(R_L_En, OUTPUT);
```

```
    pinMode(R_R_PWM, OUTPUT);
```

```
    pinMode(R_L_PWM, OUTPUT);
```

```
    pinMode(L_R_En, OUTPUT);
```

```
pinMode(L_L_En, OUTPUT);  
pinMode(L_R_PWM, OUTPUT);  
pinMode(L_L_PWM, OUTPUT);
```

```
Serial.begin(9600);
```

```
}
```

```
//motor_controlling_function
```

```
void forward( int a, int b)
```

```
{
```

```
digitalWrite(R_R_En, HIGH);
```

```
digitalWrite(R_L_En, HIGH);
```

```
digitalWrite(L_R_En, HIGH);
```

```
digitalWrite(L_L_En, HIGH);
```

```
analogWrite(R_R_PWM, a );
```

```
analogWrite(R_L_PWM, 0 );
```

```
analogWrite(L_R_PWM, b );
```

```
analogWrite(L_L_PWM, 0 );
```

```
}
```

```
void backward( int a, int b)
```

```
{
```

```
    digitalWrite(R_R_En, HIGH);
```

```
    digitalWrite(R_L_En, HIGH);
```

```
    digitalWrite(L_R_En, HIGH);
```

```
    digitalWrite(L_L_En, HIGH);
```

```
    analogWrite(R_R_PWM, 0 );
```

```
    analogWrite(R_L_PWM, a );
```

```
    analogWrite(L_R_PWM, 0 );
```

```
    analogWrite(L_L_PWM, b );
```

```
}
```

```
void left( int a, int b)
```

```
{
```

```
    digitalWrite(R_R_En, HIGH);
```

```
digitalWrite(R_L_En, HIGH);
```

```
digitalWrite(L_R_En, HIGH);
```

```
digitalWrite(L_L_En, HIGH);
```

```
analogWrite(R_R_PWM, a );
```

```
analogWrite(R_L_PWM, 0 );
```

```
analogWrite(L_R_PWM, 0 );
```

```
analogWrite(L_L_PWM, b );
```

```
}
```

```
void left_forward( int a, int b)
```

```
{
```

```
digitalWrite(R_R_En, HIGH);
```

```
digitalWrite(R_L_En, HIGH);
```

```
digitalWrite(L_R_En, LOW);
```

```
digitalWrite(L_L_En, LOW);
```

```
analogWrite(R_R_PWM, a );
```

```
analogWrite(R_L_PWM, 0 );
```

```
analogWrite(L_R_PWM, 0 );
```

```
analogWrite(L_L_PWM, b );
```

```
}
```

```
void left_backward( int a, int b)
```

```
{
```

```
digitalWrite(R_R_En, HIGH);
```

```
digitalWrite(R_L_En, HIGH);
```

```
digitalWrite(L_R_En, LOW);
```

```
digitalWrite(L_L_En, LOW);
```

```
analogWrite(R_R_PWM, 0 );
```

```
analogWrite(R_L_PWM, a );
```

```
analogWrite(L_R_PWM, 0 );
```

```
analogWrite(L_L_PWM, b );
```

```
}
```

```
void right( int a, int b)
{
    digitalWrite(R_R_En, HIGH);
    digitalWrite(R_L_En, HIGH);
    digitalWrite(L_R_En, HIGH);
    digitalWrite(L_L_En, HIGH);
```

```
    analogWrite(R_R_PWM, 0 );
    analogWrite(R_L_PWM, a );
```

```
    analogWrite(L_R_PWM, b );
    analogWrite(L_L_PWM, 0 );
}
```

```
void right_forward( int a, int b)
{
    digitalWrite(R_R_En, LOW);
    digitalWrite(R_L_En, LOW);
    digitalWrite(L_R_En, HIGH);
    digitalWrite(L_L_En, HIGH);
```

```
analogWrite(R_R_PWM, 0 );
```

```
analogWrite(R_L_PWM, a );
```

```
analogWrite(L_R_PWM, b );
```

```
analogWrite(L_L_PWM, 0 );
```

```
}
```

```
void right_backward( int a, int b)
```

```
{
```

```
digitalWrite(R_R_En, LOW);
```

```
digitalWrite(R_L_En, LOW);
```

```
digitalWrite(L_R_En, HIGH);
```

```
digitalWrite(L_L_En, HIGH);
```

```
analogWrite(R_R_PWM, 0 );
```

```
analogWrite(R_L_PWM, a );
```

```
analogWrite(L_R_PWM, 0 );
```

```
analogWrite(L_L_PWM, b );
```

```
}
```

```
void stop()
{
    digitalWrite(R_R_En, LOW);
    digitalWrite(R_L_En, LOW);
    digitalWrite(L_R_En, LOW);
    digitalWrite(L_L_En, LOW);
```

```
    analogWrite(R_R_PWM, 0 );
    analogWrite(R_L_PWM, 0 );
```

```
    analogWrite(L_R_PWM, 0 );
    analogWrite(L_L_PWM, 0 );
```

```
}
```

```
void loop() {
```

```
    if (Serial.available() > 0)
```



```
{ data = Serial.read();

  if (data == 'F') {

    forward(200, 200); //change the speed according to your comfort

  }

  else if (data == 'B') {

    backward(200, 200); //change the speed according to your comfort

  }

  else if (data == 'R') {

    right(200, 200); //change the speed according to your comfort

  }

  else if (data == 'L') {

    left(200, 200); //change the speed according to your comfort

  }


  //can be ignored


  else if (data == 'I') {

    right_forward(200, 0); //change the speed according to your comfort except 0

  }


  //can be ignored


  else if (data == 'G') {

    left_forward(0, 200); //change the speed according to your comfort except 0

  }
```

```
//can be ignored
```

```
else if (data == 'J') {
```

```
    right_backward(200, 0); //change the speed according to your comfort except 0
```

```
}
```

```
//can be ignored
```

```
else if (data == 'H') {
```

```
    left_backward(0, 200); //change the speed according to your comfort except 0
```

```
}
```

```
else if (data == 'S') {
```

```
    stop();
```

```
}
```

```
}
```

```
}
```