```
#include <reg52.h>

#include <intrins.h>

// Define pin assignments for various components

sbit servo_pin = P2^0;

sbit trig = P3^0;

sbit echo = P3^1;

sbit m1p1 = P1^0;

sbit m1p2 = P1^1;

sbit m2p1 = P1^2;

sbit m2p2 = P1^3;

// Global variables to store distances and readings

int distance;

int distanceright = 0;

int distanceleft = 0;

// Function prototypes

int get_distance();

void Delay_servo(unsigned int);

void Delay_servo1(unsigned int);

void delay(unsigned int);

void forward();

void stop();

void backward();

void left();

void right();

void servo_return();

int scanright();
int scanleft();
// Function to generate microsecond delay
void delay(unsigned int time)
{
 unsigned int i, j;
 for (i = 0; i < time; i++)
 {
 for (j = 0; j < 1275; j++);
 }
}
// Function to generate millisecond delay
void Delay_servo(unsigned int ms)
{
 unsigned long int us = ms * 1000;
 while (us--)
 {
 _nop_();
 }
}
// Function to generate microsecond delay
void Delay_servo1(unsigned int us)
{
 while (us--)
 {
 _nop_();
 }}
```

```
// Function to move the robot forward
void forward()
{
 m1p1 = 1;
m1p2 = 0;
 m2p1 = 1;
 m2p2 = 0;
}
// Function to stop the robot
void stop()
{
 m1p1 = 0;
 m1p2 = 0;
 m2p1 = 0;
 m2p2 = 0;
}
// Function to move the robot backward
void backward()
{
 m1p1 = 0;
 m1p2 = 1;
 m2p1 = 0;
 m2p2 = 1;
}
```

```
// Function to make the robot turn left
void left()
{
 m1p1 = 0;
 m1p2 = 1;
 m2p1 = 1;
 m2p2 = 0;
}
// Function to make the robot turn right
void right()
{
 m1p1 = 1;
 m1p2 = 0;
 m2p1 = 0;
 m2p2 = 1;
}
// Function to return the servo to its initial position
void servo_return()
{
 servo_pin = 1;
 Delay_servo1(115);
 servo_pin = 0;
 Delay_servo(2);
}
```

```
// Function to scan to the right and get the distance
int scanright()
{
 servo_pin = 1;
 Delay_servo1(50);
 servo_pin = 0;
 distance = get_distance();
 Delay_servo(20);
 Delay_servo1(115);
 return distance;
}
// Function to scan to the left and get the distance
int scanleft()
{
 servo_pin = 1;
 Delay_servo1(170);
servo_pin = 0;
 Delay_servo(20);
 distance = get_distance();
 Delay_servo1(115);
 return distance;
}
// Function to get the distance from the ultrasonic sensor
int get_distance()
{
 int distance;
 trig = 1;
 delay(2);
 trig = 0;
while (!echo);
TH0 = 0x00;
 TL0 = 0x00;
 TR0 = 1;
while (echo);
 TR0 = 0;
 distance = (TH0 << 8) + TL0;
 distance = distance / 58;
 return distance;
}
// Main function
void main() {
 while (1)
 {
 unsigned int distance;
 TMOD = 0x01;
 TH0 = 0;
TL0 = 0;
 distance = get_distance();
// Check if an object is too close
 if (distance <= 20){
 stop();
 delay(50);
 backward();
 delay(5);
 stop();
 delay(5);
 distanceright = scanright();
 delay(2);
 distanceleft = scanleft();
 delay(5);
// Determine whether to turn right or left based on distances
 if (distance >= distanceleft)
 {
 right();
 stop();
 }
 else
 {
 left();
 stop();
 }
 }
 else{
 forward();
 servo_return();
 }}
```