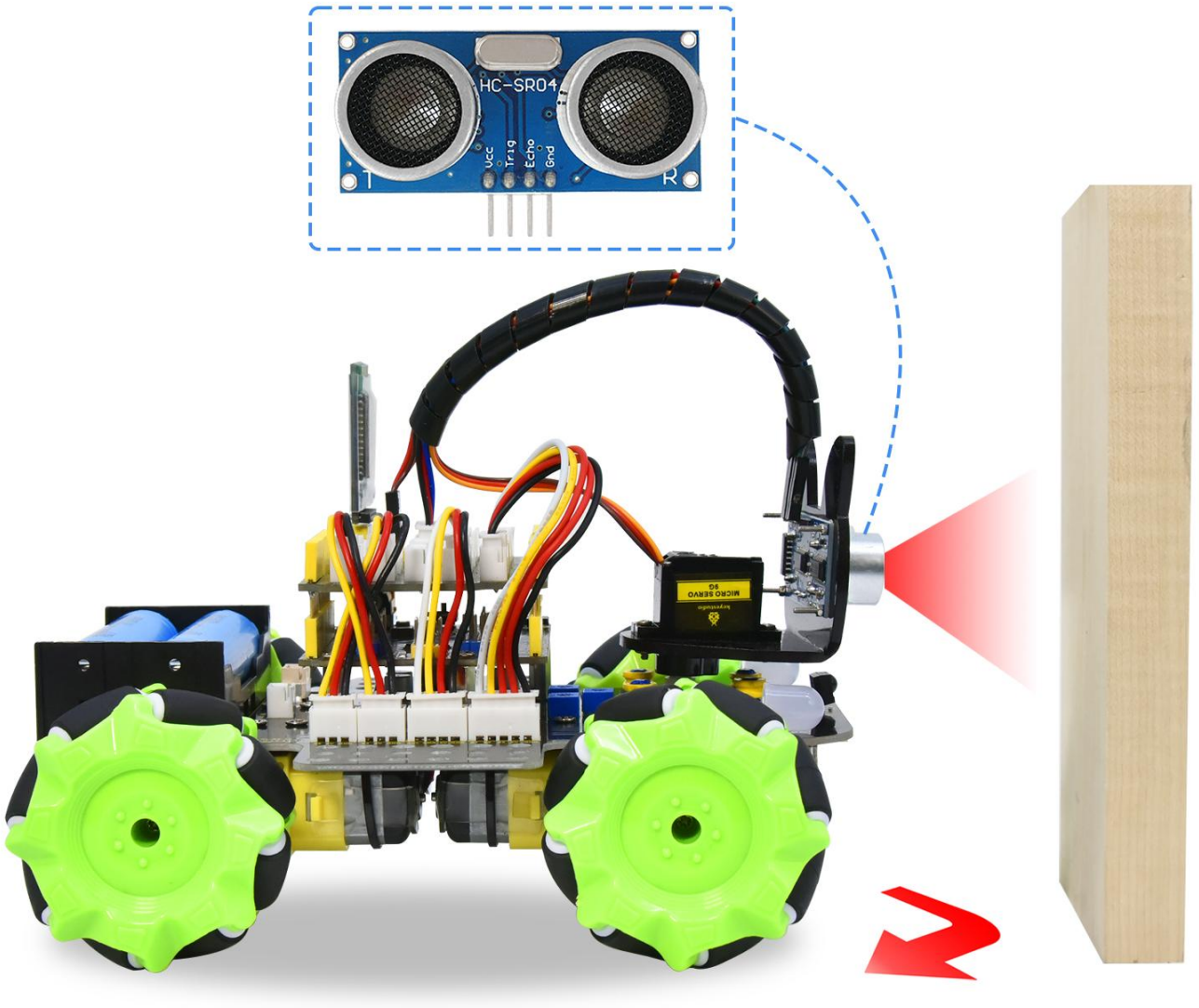
keyestudio

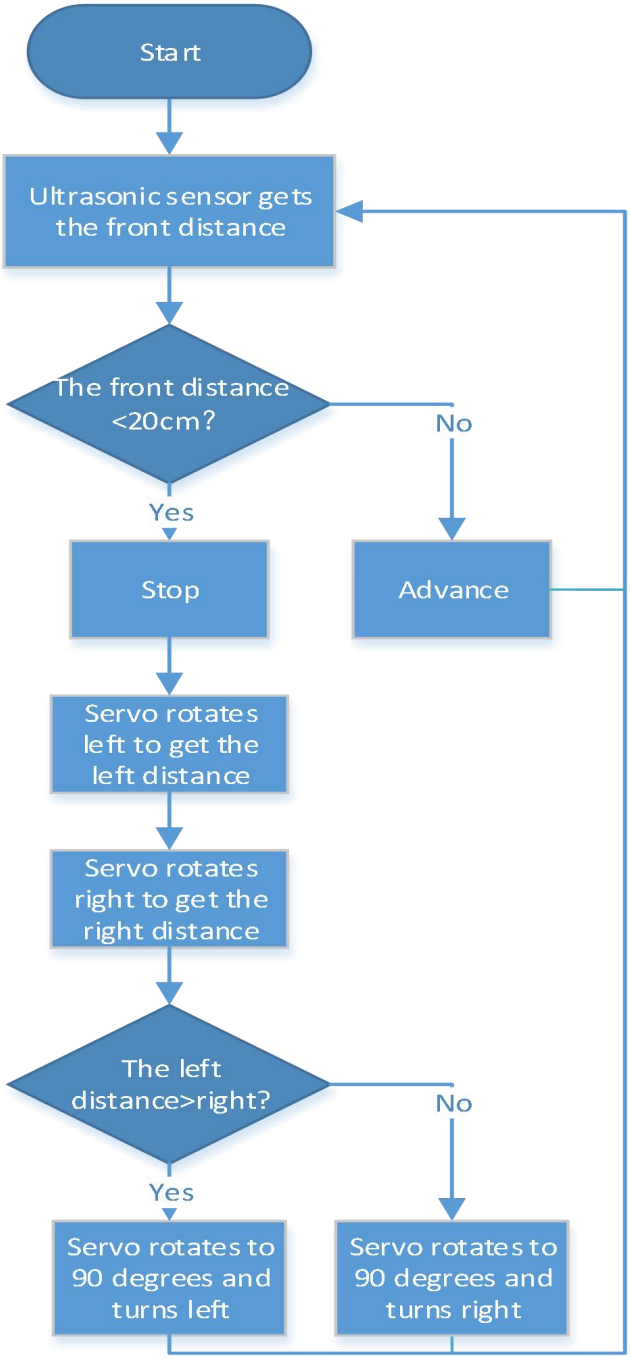
Project 9: Ultrasonic Obstacle Avoidance Smart Car



1. Description

Ultrasonic obstacle avoidance smart car is used to control the car motion state, so as to achieve obstacle avoidance by using the ultrasonic sensor detecting the obstacles distance.

2. Flow Diagram

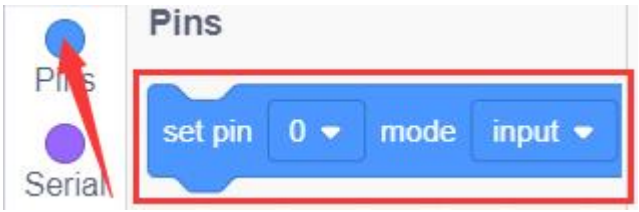


3. Test Code

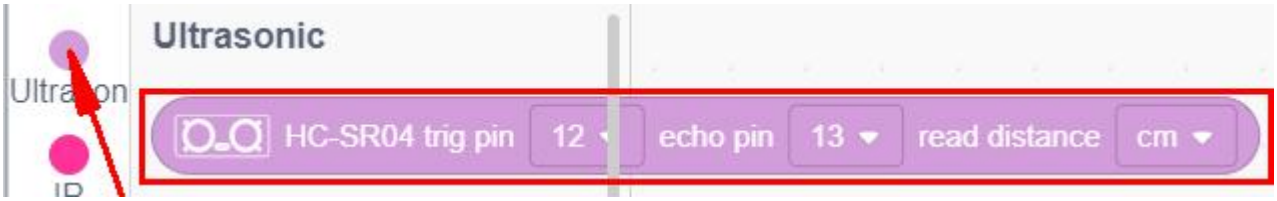
You can drag blocks to edit. Blocks listed below are for your reference

（1）

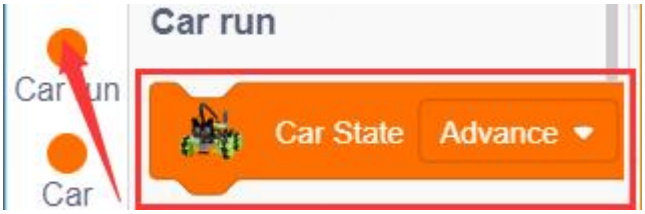
（2）



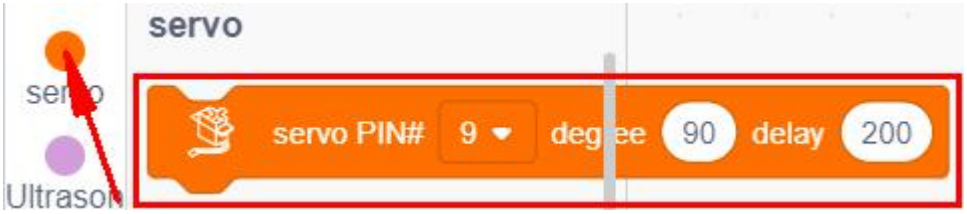
（3）



（4）

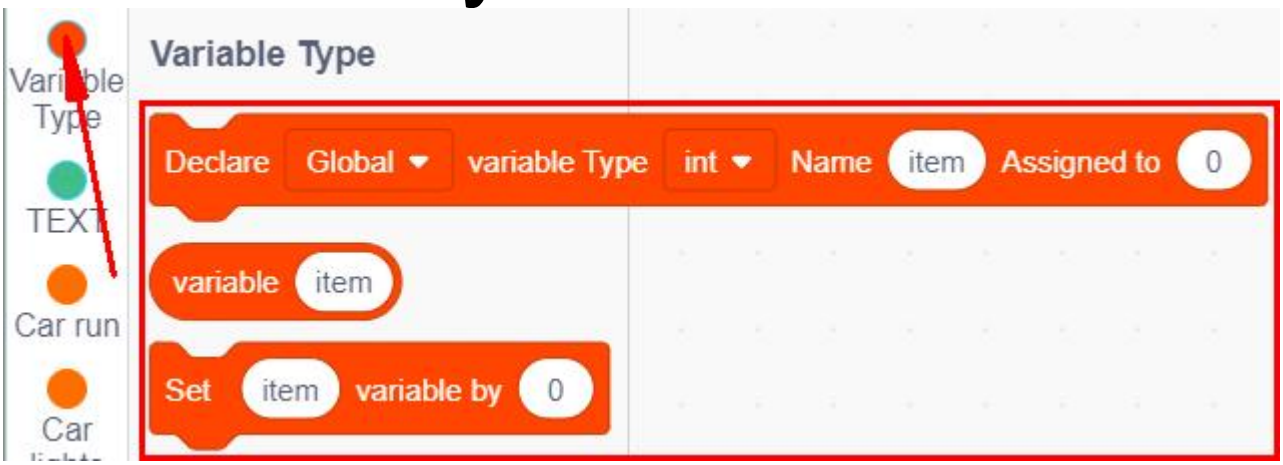


（5）

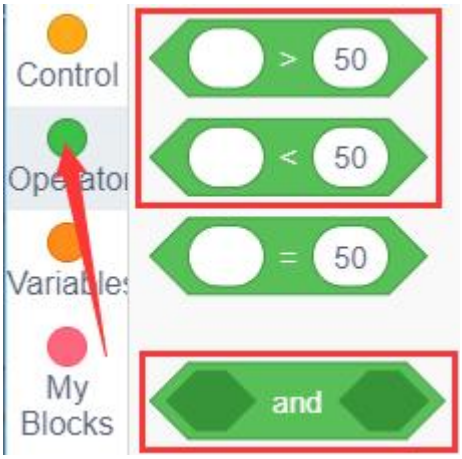


（6）

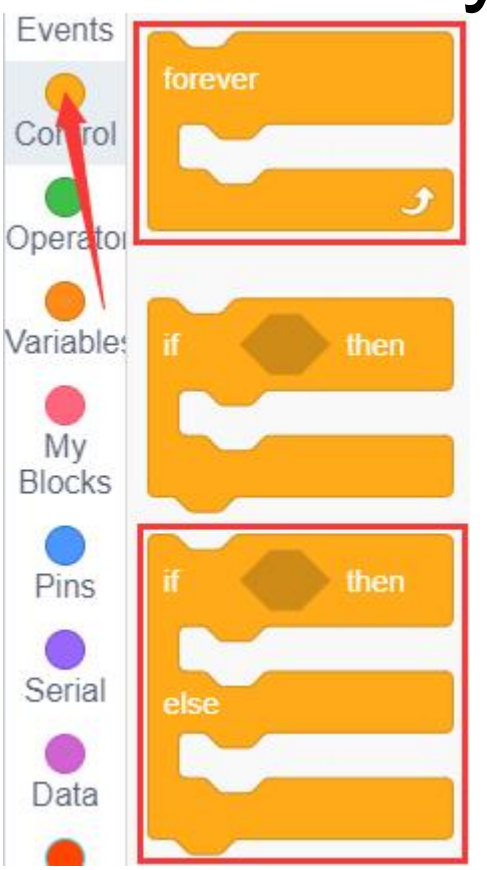
（7）


Variable Type
TEXT
Car run
Car
Variable Type
Declare Global variable Type int Name item Assigned to 0
variable item
Set item variable by 0

（8）


Control
Operator
Variables
My Blocks
> 50
< 50
= 50
and

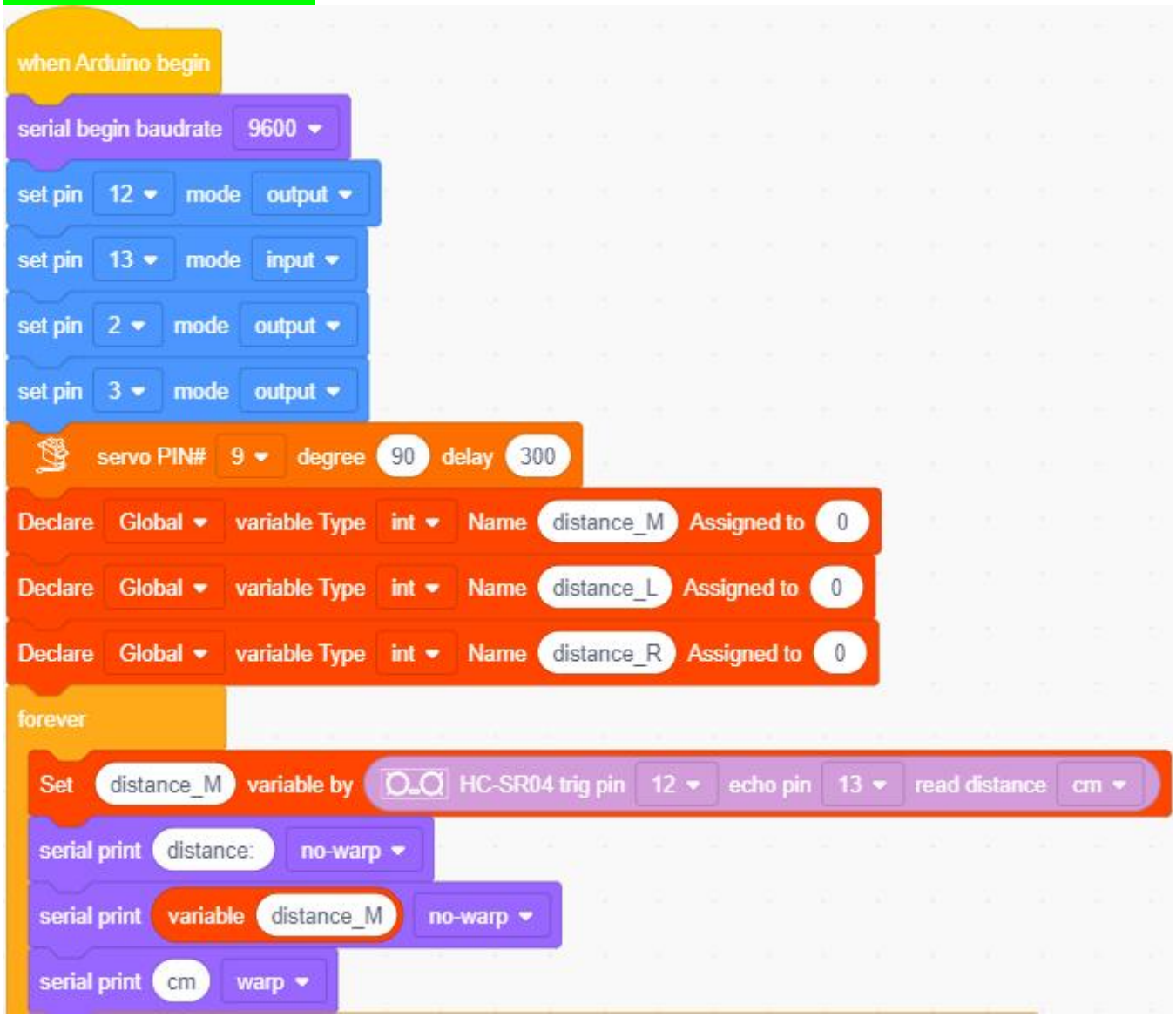
（9）

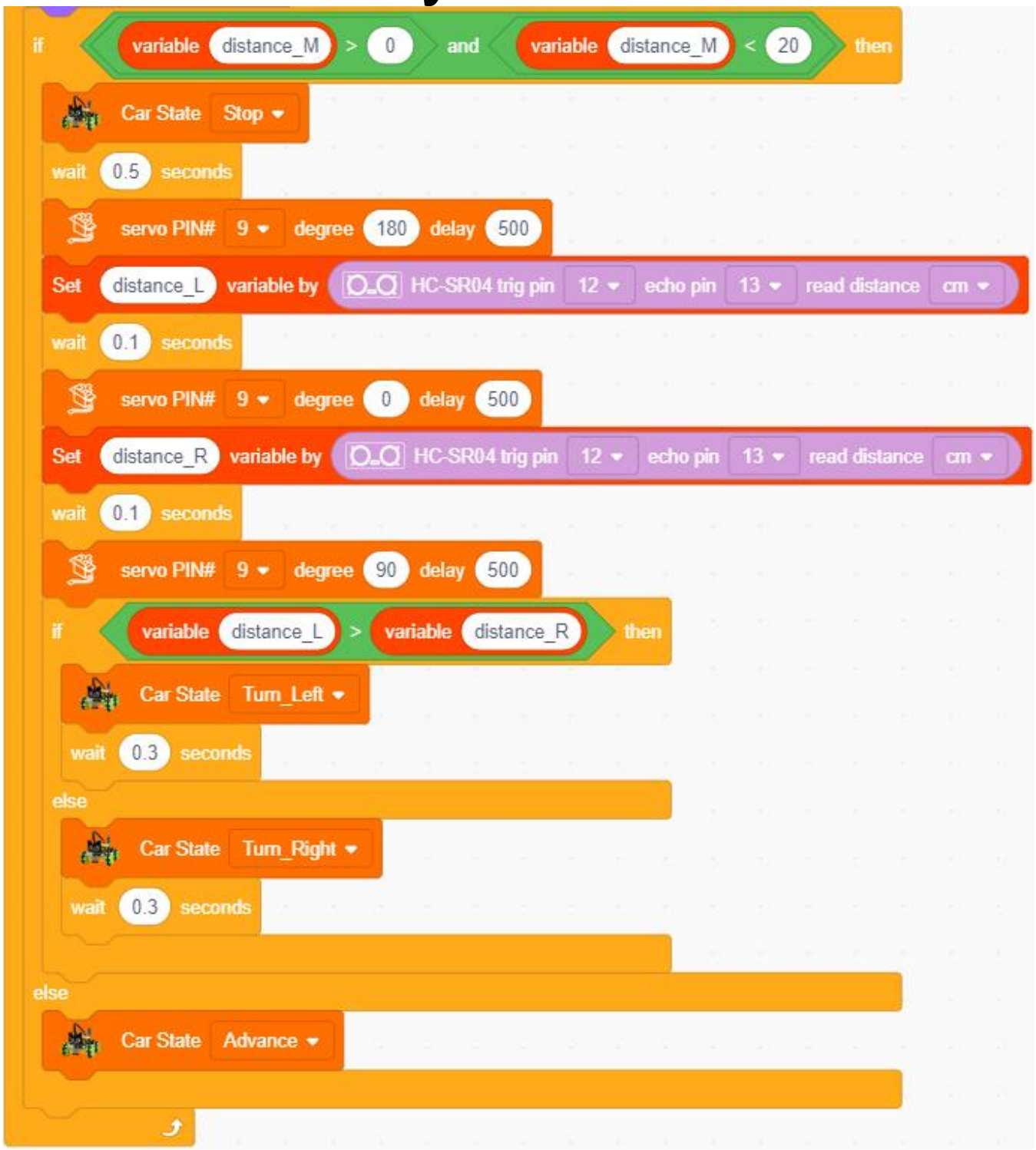

Events
Control
Operators
Variables
My Blocks
Pins
Serial
Data
forever
if then
if then
else

（10）


Control
Control
Operators
wait 1 seconds

Complete Test Code




if variable distance_M > 0 and variable distance_M < 20 then
Car State Stop
wait 0.5 seconds
servo PIN# 9 degree 180 delay 500
Set distance_L variable by HC-SR04 trig pin 12 echo pin 13 read distance cm
wait 0.1 seconds
servo PIN# 9 degree 0 delay 500
Set distance_R variable by HC-SR04 trig pin 12 echo pin 13 read distance cm
wait 0.1 seconds
servo PIN# 9 degree 90 delay 500
if variable distance_L > variable distance_R then
Car State Turn_Left
wait 0.3 seconds
else
Car State Turn_Right
wait 0.3 seconds
else
Car State Advance

4.Test Result

After uploading the code successfully, turn the DIP switch to the ON end and power up, then the car can automatically avoid obstacles. Note that the speed can’ t be too large.

The car will stop when encountering obstacles in front of it and the servo cradle head will rotate left to detect the left distance, then rotate right to detect the right distance. Then judge the distance between the obstacles on the left and the right, the car will turn along the farther side, and then continue to drive.