OBSTACLE

FORWARD

Pulse

Count=Count+1

Sensor=?(Datreg) AND 192

Is Sensor
=192?

STOP

COUNT

BACKWARD

For K=Count TO Count+1

Pulse

Next K

STOP

STARTPOINT

PULSES MEASURED THEORY

PULSES	MEASURED	THEORY
500	160	157
600	195	188.4
700	225	219.9
800	258	251.3
900	293	282.7
1000	324	214.1
1100	352	345.5
1200	390	376.9
1300	421	408.4
1400	452	439.8
1500	488	471.2
1600	522	502.6
1700	553	534

PULSE TO DISTANCE RATIO: 3.34767511

Table Theory
The robot calibration program produces this calibration table, which should be checked to ensure that each measured distance bears a reasonable relation to the corresponding theoretical distance. An overall p/d ratio is calculated as the mean of the p/d ratios from the 12 tests. This number should be recorded as it will be needed in future Workshop programs

Off The Wall

Forward movement is effected by setting the forward direction bits of the stepper motor drivers and sending a pulse to the motors. A pulse counter is incremented — giving a measure of distance travelled — and the sensor bits of the data register are tested for collision sensor input. This process is repeated until a collision is detected, when the motor direction bits are reversed and a FOR...NEXT loop sends sufficient motor pulses to return the robot to its start point. Because BASIC executes this return loop much faster than the forward pulse-and-test loop, the robot's forward movement is slow and slightly jerky by comparison with the return

KEVIN JONES

this loop, until the wheels of your robot align exactly with the other perpendicular line drawn on the paper. Further checks can be made. Replace the direction 'right' (RT) with 'left' (LF) in line 60 and ensure that the robot also turns through 90° in an anticlockwise direction. Doubling the upper value in the FOR...NEXT loop should cause a 180° turn. Ensure that the wheels finish at the same points on which they started. If this is not the case, a slight adjustment of the wheels is necessary to ensure that they lie symmetrically on either side of the central axis. When you are happy with the position of the wheels, mark their positions on the axles and glue them in place.

```
10 REM **** CBM 64 TURN ****
20 DDR=56579:DATREG=56577
30 POKE DDR,15:REM LINES 0-3 OUTPUT
40 LF=6:RT=0
50 POKE DATREG,0
60 POKE DATREG,(PEEK(DATREG)OR 1)OR RT
70 FOR I=1 TO 371:GOSUB 90:NEXT I
80 POKE DATREG,0:END
90 REM **** PULSE S/R ****
100 POKE DATREG,PEEK(DATREG)OR 8
```

```
110 POKE DATREG,PEEK(DATREG)AND 247
120 RETURN
```

```
10 REM **** BBC TURN ****
20 DDR=&FE62:DATREG=&FE60
30 ?DDR=15:REM LINES 0-3 OUTPUT
40 left=6:right=0
50 ?DATREG=0
60 ?DATREG=(?DATREG OR 1)OR right
70 FOR I=1 TO 371:PROCpulse:NEXT
80 ?DATREG=0:END
90 DEF PROCpulse
100 ?DATREG=(?DATREG OR 8)
110 ?DATREG=(?DATREG AND 247)
120 ENDPROC
```

```
10 REM **** CBM BUMPERS ****
20 DDR=56579:DATREG=56577
30 POKE DDR,15:REM LINES 0-3 OUTPUT
40 FW=4:BW=2
50 POKE DATREG,(PEEK(DATREG)OR 1)OR FW
60 REM **** PULSE FORWARDS ****
65 CC=0
70 GOSUB 1000:CC=CC+1:REM PULSE
80 IF (PEEK(DATREG)AND 192)=192 THEN 70
90 REM **** GO BACK TO START ****
95 POKE DATREG,(PEEK(DATREG)AND 1)OR BW
100 FOR I=1 TO CC
110 GOSUB 1000:REM PULSE
120 NEXT I
130 POKE DATREG,0:END
1000 REM **** PULSE S/R ****
1010 POKE DATREG,(PEEK(DATREG)OR 8)
1020 POKE DATREG,(PEEK(DATREG)AND 247)
1030 RETURN
```