Buggy

Design Brief

Design and make an interactive exhibit for the school open day that involves 'state of the art' technology and will attract the attention of visitors
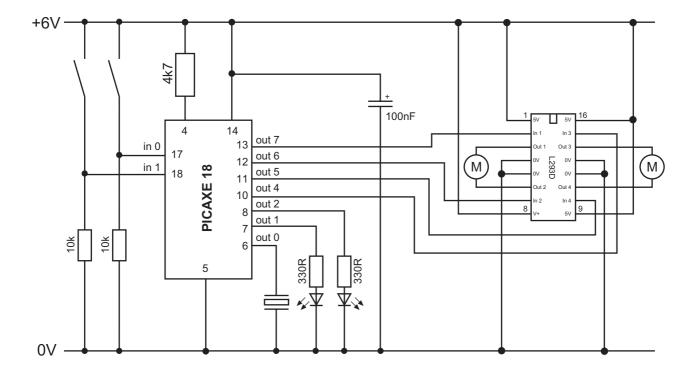
Circuit Explanation

The buggy is powered and steered by two gearboxes. The motors for these gearboxes are controlled by an L293D motor driver IC. This motor driver allows the motors to be turned in either direction, output 4 and 5 controlled motor A and outputs 6 and 7 controlling motor B. The buggy is also fitted with two 'bumper' micro-switches, a piezo sounder and two LED 'eyes'.

Program Explanation

The buggy is set in motion by switching outputs 4 and 6 on to make the buggy move forwards. A loop waiting for the switches to be pressed is then entered.

When a switch press is detected the program jumps to either 'left' or 'right' depending on which switch has been hit. The buggy is then stopped by switching outputs 4 and 6 off, and the appropriate LED 'eye' is lit. Note how the 'let pins' statements allow multiple 'high/low' commands to be carried out on a single line.

A sound is then generated before the buggy moves backwards for two seconds, followed by a turn for 1.5 seconds. The buggy then starts moving forwards again.

Program Listing

```
'Buggy
'For PICAXE-18

'76 = motor B
'54 = motor A
'2  = LED B
'1  = LED A
'0  = piezo sounder

'input pin allocation
'1  = sensor B
'0  = sensor A

'start going forwards
'testing switches as you go

main:
     let pins = %01010000
     if pin0 = 1 then left
     if pin1 = 1 then right
     goto main

'left switch hit
'so stop, light LED, beep, reverse, turn
left:
     let pins =%00000100
     sound 0,(100,150)
     let pins =%10100100
     pause 2000
     let pins =%10010100
     pause 1500
     goto main

'right switch hit
'so stop, light LED, beep, reverse, turn other way
right:
     let pins =%00000010
     sound 0,(50,150)
     let pins =%10100010
     pause 2000
     let pins =%01100010
     pause 1500
     goto main
```