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'copyright Stan Kostecki 07 July 2006 version 06
'*****
'**** ultrasonic 3xSRF05 code *****
'*****
;;;;;;;Revision History;;;;;;;
;Rev 04 swapped head movement from full left and right to right60 \ left60
;Rev 04 Range changed from for 1-4 to make it see nothing
;Rev 04 added swing full left (& right) then move back left60\right60
;Rev 04 changed range to feet intervals of 3ft 5.5ft and 6ft with active area being
0 to 8ft
;Rev 04 added section VoiceEyeGun gControl
;Rev 05 removed debug commands
;Rev 05 added config for portc
;rev 06 reduced distances closec masked to 14 inches
'pin configuration is as follows
'
'reset >1 | | 28> servo location 03
' a0 >2 27> servo location 02
' a1 >3 26> servo location 01
' a2 >4 25> interface motor PCB
' a3 >5 24> interface motor PCB
'0-serin 6 23> u/sonic trigger out 3
'0-serout 7 22> u/sonic trigger out 2
'0-gnd 8 21> u/sonic trigger out 1
'0-xtal 9 20 0-vcc
'0-xtal 10 19 0-gnd
'yellow wire nu pin0 -11 18- pin7 Echo input 3
' nu pin1 -12 17- pin6 Echo input 2
' nu pin2 -13 16- pin5 Echo input 1
' out msb pin3 -14 15- pin4 out lsb

' Notes interacts with Picaxe 08 pin outs below
'
'0-VCC >1 | | 8> 0 -GND
'0-serin >2 7> SERVO CONTROL
' SERVO LOCATION 03 >3 6> EYE LIGHT (OPTIONAL)
' SERVO LOCATION 02 >4 5> SERVO LOCATION 01
;rotation based on
'if pins = %00011100 then center
'if pins = %00000100 then left
'if pins = %00001100 then left60
'if pins = %00010000 then right
'if pins = %00011000 then right60
'
Start: ;set up variables etc
let pins = %00000000 ;set output pins low
let w1 = 0
let W2 = 0
let W3 = 0
let w4 = 0
let W5 = 0
let W6 = 0
let b0 = 0
let b1 = 0
let dirsC= %00011000 ;0 =input 1=output

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loop: ;main loop

pause 1000

'ultra sonic sensor code 01 right
pulsout 0, 2
pulsin 5,1,w1 ' record the length of a pulse on pin 5 into W1
'dividing by 58 will give you the distance in cm, or dividing by 148 will give the
distance in inches. uS/58=cm or uS/148=inches.
let w2 = w1 /15 ;save result in w2 - rounded value
'pause 500

'ultra sonic sensor code 02
pulsout 1, 2
pulsin 6,1,w3 ' record the length of a pulse on pin 6 into W1
'dividing by 58 will give you the distance in cm, or dividing by 148 will give the
distance in inches. uS/58=cm or uS/148=inches.
let w4 = w3 /15 ;save result in w4 - rounded value
'pause 500

'ultra sonic sensor code 03
pulsout 2, 2
pulsin 7,1,w5 ' record the length of a pulse on pin 7 into W1
'dividing by 58 will give you the distance in cm, or dividing by 148 will give the
distance in inches. uS/58=cm or uS/148=inches.
let w6 = w5 /15 ;save result in w6 - rounded value

'pause 500
goto objectR
'set register based on result head based on the result

objectR:

if w2 <=4          then NoR ;;everything off 00
if w2 >=5 and w2 <=26 then closeR ;head moves back and forth bit 8 & 9 11
if w2 >=27 and w2 <=42 then MidR; Dalek speaks and threatens 10
if w2 >=43 and w2<=60 then FarR ;silent gun eyestalk movement movement 01
if w2 >=61          then NoR ;;everything off 00

closeR:
let bit8=1 let bit9=1 let bit2 =1; bits 8 and 9 are for servo board in shoulders
B1
goto objectC
MidR:
let bit8=1 let bit9=0 let bit2 =0 ;bits 0,1 & 2 are the left centre and right
sensors B0
goto objectC
FarR:
let bit8=0 let bit9=1 let bit2 =0
goto objectC
NoR:
let bit8=0 let bit9=0 let bit2 =0
goto objectC
;-----
objectC:
'let bit0 =1

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if w4 <=12          then closeC

if w4 >=12          then NoC

closeC:
let bit8=1  let bit9=1  let bit1 =1
goto objectL
midC:
let bit8=1  let bit9=0  let bit1 =0
goto objectL
farC:
let bit8=0  let bit9=1  let bit1 =0
goto objectL
NoC:
let bit8=0  let bit9=0  let bit1 =0
goto objectL

;-----
objectL:
'let bit0 =1
if w6 <=4          then NoL
if w6 >=5  and w6 <=26 then closeL
if w6 >=27 and w6 <=42 then midL
if w6 >=43 and w6 <=60 then farL
if w6 >=61          then NoL

closeL:
let bit8=1  let bit9=1  let bit0 =1
goto magnatudeOutput
midL:
let bit8=1  let bit9=0  let bit0 =0
goto magnatudeOutput
farL:
let bit8=0  let bit9=1  let bit0 =0
goto magnatudeOutput
NoL:
let bit8=0  let bit9=0  let bit0 =0
goto magnatudeOutput

magnatudeOutput:

if b0 =%00000111  then Mcenter  '7
if b0 =%00000010  then Mcenter  '2
if b0 =%00000000  then Mcenter  '0
if b0 =%00000101  then Mcenter  '5

if b0 =3  then Mleft
if b0 =1  then Mleft60

if b0 =6  then Mright
if b0 =4  then Mright60

Mcenter:
high 7 high 6 high 5

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'let pins = %11100000 ;then center
'pause 1000
goto VEGcontrol

Mleft:
low 7 low 6 high 5
'let pins = %00100000 ;then left
pause 1000
low 7 high 6 high 5
goto VEGcontrol

Mleft60:
low 7 high 6 high 5
'pause 1000
'let pins = %01100000 ;then left60
goto VEGcontrol

Mright:
high 7 low 6 low 5
'pause 1000
'let pins = %10000000 ;then right
high 7 high 6 low 5
goto VEGcontrol

Mright60:
high 7 high 6 low 5
'pause 1000
'let pins = %11000000 ;then right60
goto VEGcontrol

VegControl:

if b1 =%00000000 then NoPlace ;0 ;no
if b1 =%00000001 then FarPlace ;0 ;far
if b1 =%00000010 then MidPlace ;0 ;mid
if b1 =%00000011 then ClosePlace ;0 ;close

Noplace:
low portc 3
low portc 4
goto loop

FarPlace:
low portc 3
high portc 4
goto loop

MidPlace:
high portc 3
low portc 4
goto loop

ClosePlace:
high portc 3
high portc 4

goto loop

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