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1  '*****
2  ; ***** Sample Header File *****
3  ; *****
4  ;   Filename: Mad Dog Robot.bas
5  ;   Date: May 24, 2011
6  ;   File Version: 1
7  ;   Written by: PGR
8  ;   Function: Operate Minute to Win it Mad Dog Game Playing Robot
9  ;   Target PICAXE: 18M2
10 ; *****
11
12 ' intial setup
13 ' define meaningful names for output pins
14
15 symbol Neck = b.6      ' controls rotation of robot neck [drill motor]
16 symbol Grip = b.5     ' controls robot gripper motor
17 symbol DPDT = b.7     ' controls DPDT relay which determines grip motor
18 rotation direction
19 symbol Platform = b.4 ' controls back and forth movement of robot platform
20 [wiper motor]
21 symbol LED = c.1      ' time out error LED
22 symbol PwmDty = w10   ' setup memory location b0 to store PwmDty value
23
24 ' pin b.0 is rear microswitch to detect table at rear position
25 ' pin b.1 is front switch (embedded in wiper motor) to detect platform at front
26 position
27 ' pin b.2 is switch to detect robot neck at center position as is required to
28 pick up ruler
29 ' pin b.3 is IR sensor to read signals from IR remote control
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31 'define storage variable locations
32 'symbol b2 = infra    ' variable storage location b2 stores data as received by
33 the IR sensor
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main:
  irin b.3,infra 'wait for new signal
  sertxd ("IR value is ",#infra,cr,lf) ' only used for debugging
  pause 200 ; short delay

  if infra = 18 then gosub Forwrdrd ' volume up button
  if infra = 19 then gosub Rearwrdrd ' volume down button

  if infra = 16 then gosub OpenGrip      ' channel up button
  if infra = 17 then gosub CloseGrip    ' channel down button

  if infra = 20 then gosub CenterNeck ' Mute Button

  if infra = 0 then gosub SlowNeck     ' one key on remote
  if infra = 1 then gosub FastNeck    ' two key on remote
  if infra = 2 then gosub Ready       ' three key on remote
  if infra = 3 then gosub Compete     ' four key on remote
goto main

Forwrdrd:
  let time =0 'reset timer to 0, the time variable name (in seconds) is a new
feature of picaxe M2 chips
  Do
  high Platform ' start platform motor
  loop until time => 10 or pinb.1 = 1 'that is run platform motor until front
sensing switch is tripped or times out after 10 seconds
  low Platform ' stop platform motor
  if time => 10 then goto TimeOutError
return

Rearwrdrd:
  let time =0 'reset timer to 0, the time variable name (in seconds) is a new
feature of picaxe M2 chips
  Do
  high Platform ' start platform motor

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63   loop until time => 10 or pinb.0 = 1 'that is run neck motor until rear
    sensing switch is tripped or times out after 10 seconds
64   low Platform ' stop platform motor
65   if time => 10 then goto TimeOutError
66   return
67
68   CenterNeck:
69   gosub Rearwrdr ' always make sure platform is in back position before operating
    neck
70   let time =0 'reset timer to 0, the time variable name (in seconds) is a new
    feature of picaxe M2 chips
71   let PwmDty =60 ' set initial value for pwmout
72
73   ReTry:
74   pwmout B.6, 99, PwmDty ' run neck motor at about 10 percent duty
75   Do
76   loop until time => 15 or pinb.2 = 1 'that is run platform motor until neck
    center sensing switch is tripped or times out after 15 seconds
77   pwmout B.6, OFF ' stop neck motor
78   pause 300
79   if time => 15 then goto TimeOutError
80   if pinb.2 <> 1 then
81   PwmDty = PwmDty - 5 ' if centering did not pass test, then reduce pwmduty by
    5 & try again
82   goto ReTry
83   end if
84   return
85
86
87   FastNeck:
88   gosub Rearwrdr ' always make sure platform is in back position before operating
    neck
89   let PwmDty =100 ' set initial value for pwmout
90   pwmout B.6, 99, PwmDty ' run neck motor at 20 percent duty
91   pause 1000 ' run for 1 second
92
93   for b0 = 1 to 2
94   do
95   pwmduty B.6, PwmDty ' run neck motor at 40 percent duty
96   pause 40 ' pause for 0.04 seconds
97   inc PwmDty
98   'debug PwmDty
99   loop until PwmDty > 140
100  pause 5000
101
102  pwmout B.6, OFF
103  pause 500
104  pwmout B.6, 99, 280
105  pause 4000
106  next
107
108  do
109  pwmduty B.6, PwmDty ' run neck motor at 40 percent duty
110  pause 2 ' pause for 0.002 seconds
111  dec PwmDty
112  'debug PwmDty
113  loop until PwmDty < 80
114
115  pwmout B.6, OFF ' stop neck motor
116  return
117
118   SlowNeck:
119   gosub Rearwrdr ' always make sure platform is in back position before operating
    neck
120   pwmout B.6, 99, 60 ' run neck motor at 10 percent duty
121   pause 1000 ' run for 0.10 seconds
122   pwmout B.6, OFF ' stop neck motor
123   return
124
125   CloseGrip:

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126 low DPDT 'de-energize DPPT relay
127 pause 100 ' let relay settle
128 high Grip ' grip will close - NC microswitch breaks motor circuit at forward
travel limit
129 Return
130
131 OpenGrip:
132 high DPDT ' energize DPDT relay
133 pause 100 ' let relay settle
134 high Grip ' grip will open - NC microswitch breaks motor circuit at rearward
travel limit
135 Return
136
137 Ready:
138 gosub Rearwr
139 gosub CenterNeck
140 gosub OpenGrip
141 Return
142
143 Compete:
144 gosub Forwr
145 gosub CloseGrip
146 Pause 4000
147 gosub Rearwr
148 gosub FastNeck
149 gosub CenterNeck
150 gosub Forwr
151 gosub OpenGrip
152 Pause 4000
153 gosub Rearwr
154 Return
155
156 TimeOutError:
157 high LED
158 pause 1000
159 low Led
160 pause LED
161 goto TimeOutError
162
163 end
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