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1 -----
2 --
3 --          GNAT RAVENSCAR for NXT          --
4 --          Copyright (C) 2011, AdaCore    --
5 --
6 -----
7
8 -- Abstract data type representing the NXT light sensor
9
10 pragma Restrictions (No_Streams);
11
12 package NXT.Light_Sensors is
13   pragma Elaborate_Body;
14
15   type Light_Sensor (<>) is tagged limited private;
16   -- An abstract data type representing the Lego light sensor.
17   -- By making the type indefinite, we force an initialization when objects
18   -- are declared, thereby ensuring a call to a constructor function
19
20   function Id (This : Light_Sensor) return Sensor_Id;
21   -- Returns the sensor identifier assigned to this sensor
22
23   function Light_Value (This : Light_Sensor) return Integer;
24   -- Returns the calibrated and normalized brightness of the white light
25   -- detected. The value is between 0 and 100%, with 0 = absolute darkness
26   -- and 100 = intense sunlight
27
28   function Normalized_Light_Value (This : Light_Sensor) return Integer;
29   -- Returns the normalized light reading
30
31   procedure Calibrate_Low (This : in out Light_Sensor);
32   -- Calibrate for lowest light input value
33
34   procedure Calibrate_High (This : in out Light_Sensor);
35   -- Calibrate for highest light input value
36
37   procedure Set_High (This : in out Light_Sensor; Value : Integer);
38   -- Set the normalized value corresponding to reading 100%
39
40   procedure Set_Low (This : in out Light_Sensor; Value : Integer);
```

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41   -- Set the normalized value corresponding to reading 0%
42
43   function Get_High (This : Light_Sensor) return Integer;
44   -- The highest raw light value This sensor returns from intense bright
45   -- light
46
47   function Get_Low (This : Light_Sensor) return Integer;
48   -- The lowest raw light value This sensor returns in total darkness
49
50   function Floodlight_Color (This : Light_Sensor) return Color;
51   -- returns Red when the This.Floodlight is enabled, otherwise No_Color
52
53   procedure Enable_Floodlight (This : in out Light_Sensor; Enabled : Boolean);
54   -- Controls whether This.Floodlight is on or off
55
56   function Floodlight_On (This : Light_Sensor) return Boolean;
57   -- Returns whether or not This.Floodlight is on
58
59 private
60
61   Max_Raw : constant := 1023; -- max reading from A/D converter
62   Min_Raw : constant := 0;    -- min reading from A/D converter
63
64   -- the raw input value varies inversely with the brightness of the light
65
66   type Light_Sensor is tagged limited
67     record
68       Id          : Sensor_Id;
69       Low         : Integer := Max_Raw;
70       High        : Integer := Min_Raw;
71       Floodlight : Boolean := False;
72     end record;
73
74 end NXT.Light_Sensors;
75
```