

The Perfect Endless Square [SOLUTION]

DEMO: 3pts

```
with Lego;
use Lego;

procedure perfectsquare is

  Left_Wheel : constant Output_Port := Output_A;
  Right_Wheel : constant Output_Port := Output_C;
  Left_Rot    : constant Sensor_Port := Sensor_1;
  Right_Rot   : constant Sensor_Port := Sensor_3;

begin
  -----
  --INITIALIZE THE ROBOT
  -----
  -- Initialize the Wheels
  Output_Power(
    Output => Left_Wheel,
    Power  => Power_High);
  Output_Power(
    Output => Right_Wheel,
    Power  => Power_High);
  -- Initialize the Rotation Sensors
  Config_Sensor(
    Sensor => Left_Rot,
    Config => Config_Rotation);
  Config_Sensor(
    Sensor => Right_Rot,
    Config => Config_Rotation);

  -----
  --THE PERFECT ENDLESS SQUARE!
  -----
  loop
    -- Move Straight
    Output_On_Reverse(Left_Wheel);
    Output_On_Reverse(Right_Wheel);
    Wait(1000);

    -- Turn Corner
    Output_Power(Left_Wheel,7);
    Output_Power(Right_Wheel,7);

    Clear_Sensor(Left_Rot);
    Clear_Sensor(Right_Rot);

    Output_On_Forward(Left_Wheel);
    Output_On_Reverse(Right_Wheel);
```

1pt - Straight Driving Portion

1pt – Wheels Rotate in Opposite Direction

1 pt – Loop exit condition based on rotation sensors

```
while ((Get_Sensor_Value(Left_Rot)+(-1*Get_Sensor_Value(Right_Rot)))<350) loop
  if (Get_Sensor_Value(Left_Rot)>-1*Get_Sensor_Value(Right_Rot)) then
    Output_Float(Left_Wheel);
    Output_On(Right_Wheel);
  else
    Output_Float(Right_Wheel);
    Output_On(Left_Wheel);
  end if;
end loop;

Output_Off(Left_Wheel);
Output_Off(Right_Wheel);

end loop;
end;
```

2 pts – Pulsing of motors based on rotation sensors

Precondition: Rover on ground facing certain direction **(0.5 pts)**

Postcondition: Rover attempts to drive in a square continuously, with controlled turns but not controlled forward movement. **(0.5 pts)**

Input: 2 Rotation Sensors **(0.5 pts)**

Output: 2 Motors **(0.5 pts)**