

## PRACTICE 3: LIGHTHOUSE



**Copyright (c) 2007 Bizintek Innova, S.L.**

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.2 or any later version published by the Free Software Foundation; with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts. A copy of the license is included in the section entitled "GNU Free Documentation License".

## 1. Description

The purpose of this document is to assist users in programming the Moway and perform the various practices.

In this third practice denominated “Lighthouse”, the Moway must follow a source of light.

## 2. Strategy

In this practice the robot must make decisions based on the values sent by the light sensor. The strategy will be to pitch until the value of the light sensor is higher than the set point value.

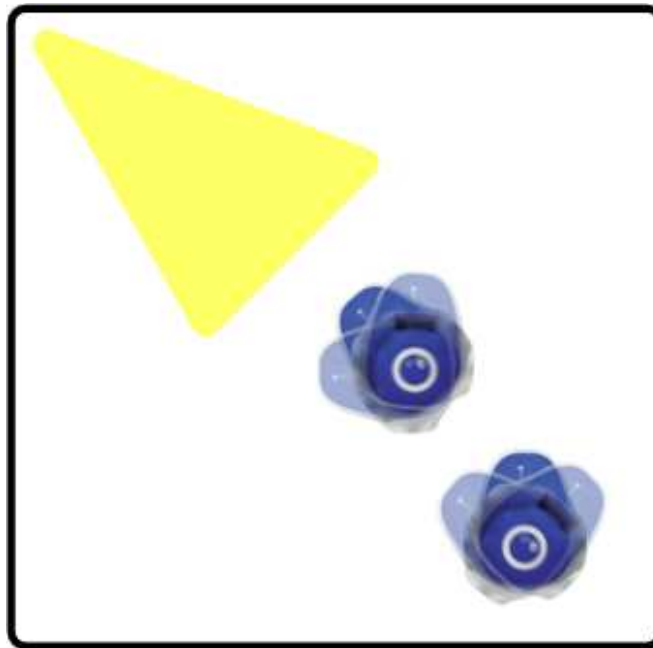
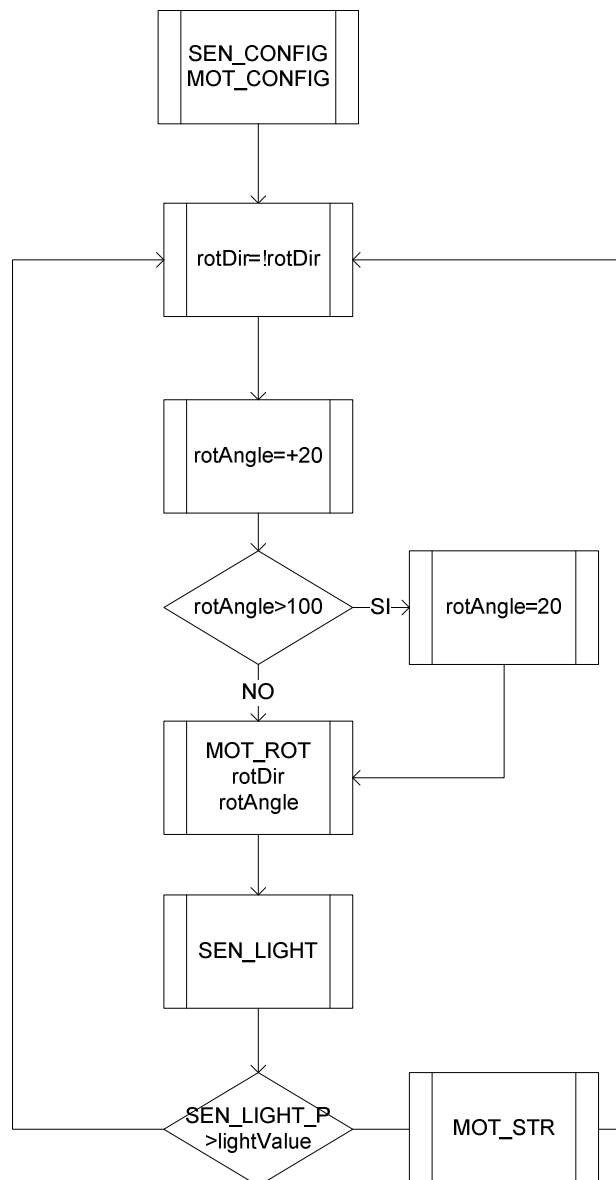


Image 1. Lighthouse

## 3. Solution

The complete practice code may be downloaded from Moway’s Website: the assembly, the CCS and the MowayGUI versions. The image displays the program’s flow diagram.

1. First configure the Moway's microcontroller to enable the use of the sensors and the motor unit.
2. The main movement of the program comprises a pitch that is attained by changing the turning direction step by step through the main loop of the program (left and right) and increasing the turning angle.
3. Each time a command is sent to the motor unit so that it may rotate, the value of the light sensor (analog sensor) is verified to see if it exceeds a value that depends on the luminous intensity of the light beam (lighthouse).
4. If the light beam is detected, a straight forward command is given.



**Image 2. Flow Diagram**

The image below displays the diagram in MowayGUI.

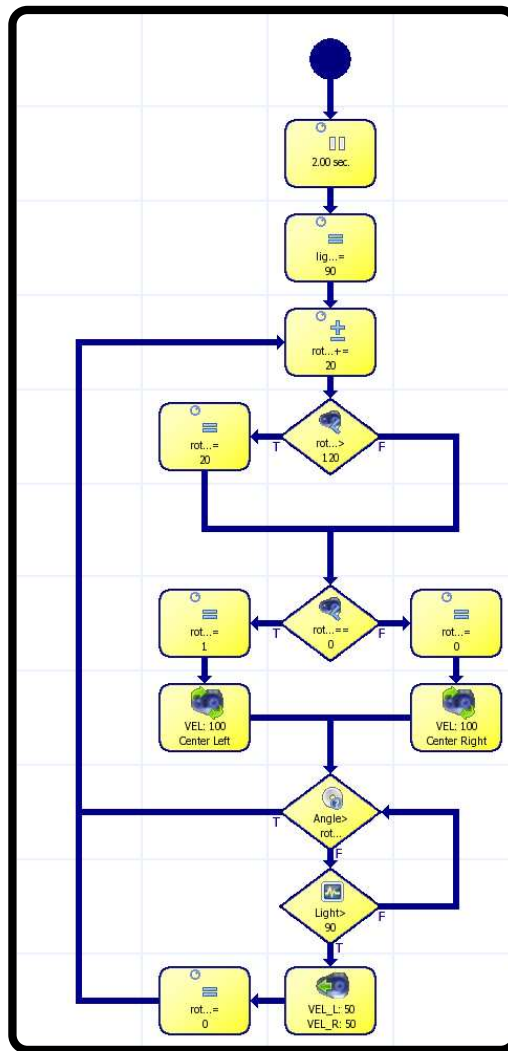


Image 3. MowayGUI Diagram

## 4. Improvements

Improvements may be introduced on the project in order to become acquainted with the robot programming:

- Change the speed of the movements.
- Modify the set value with which the light sensor value is compared.
- Modify the program so that Moway may transit a determined area searching for the light.
- Send the values to the PC via RF (radio frequency).
- Prepare a luminous intensity map of an area and send it to the PC.

## 5. Documentation

All the documentation required is available in Moway's Website [www.moway-robot.com](http://www.moway-robot.com).

### **Moway Manual**

Moway User Manual.pdf

### **Source Code**

mOway\_light\_track\_ASM

mOway\_light\_track\_CCS

mOway\_light\_track\_GUI

### **User Manual for the Radio Frequency Module RF BZI-RF2GH4**

Manual RF.pdf