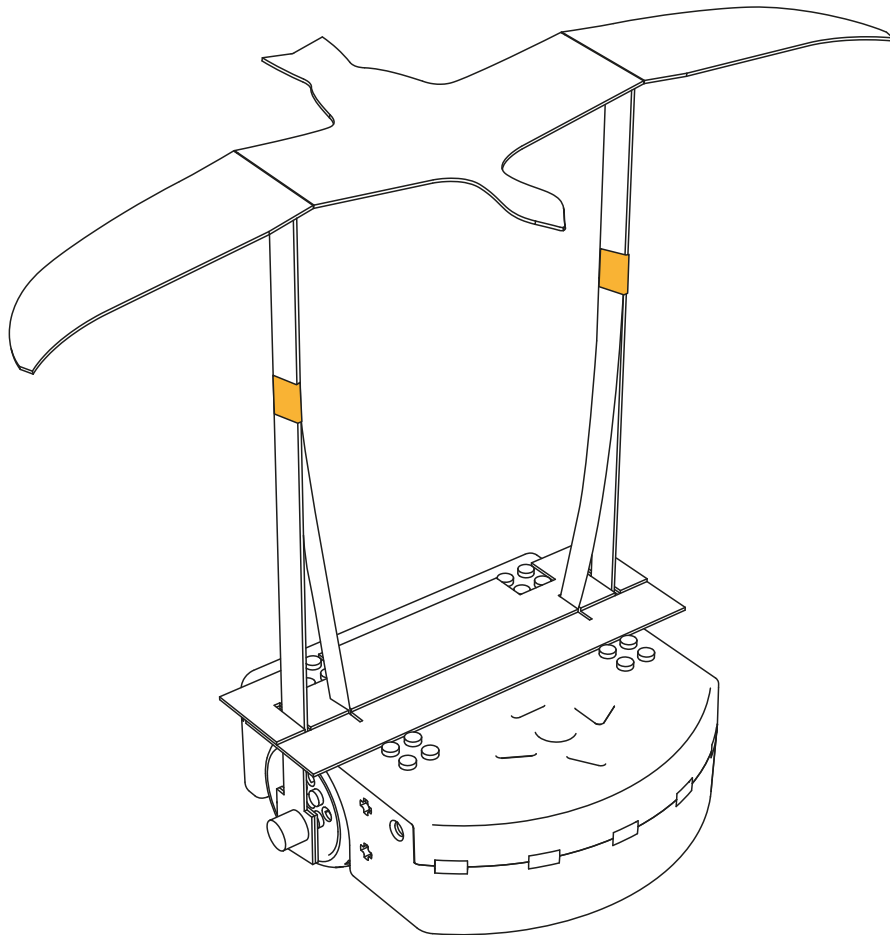


THE SNOW GOOSE MIGRATION

PROGRAMMING ACTIVITY



SUPPLIES FOR EACH PARTICIPANT OR GROUP

- 1x computer or tablet with the program «Thymio Suite» installed
- 1x Thymio wireless with connection cable or dangle equipped with the paper structure and its bird
- 3x clouds
- 1x participant worksheet
- 1x paper hole punch
- 1x scissors
- 1x glue stick
- 1x pencil
- 1x A3 map «Greenland to Mexico»
- 1x A3 map of the river

INTRODUCTION AND OBJECTIVES

This activity invites participants to explore robotics through storytelling, creativity and nature. Before beginning, the paper structure that transforms the Thymio into a bird must be built - either by the participants, or by the organiser.

The story of the snow geese guides the activity. In the first phase, participants observe and interact with Thymio's pre-programmed modes, drawing parallels between its behaviours and those of migrating geese. In the second phase, participants use VPL3 to program Thymio. Using a printed map, they simulate migration patterns and geese behaviours, deepening their engagement through imaginative play and hands-on programming.

Objectives, based on the *Plan d'Etudes Romand*:

- EN 22 - Acquire the basic concepts of computer science
 - > Create and compare programs with sequences, conditional tests and loops using a visual programming language to solve simple problems
- EN 23 - Use of various digital devices (computer, tablet, robot, etc.) adapted to the task
 - > Discover and use software adapted to the task
- A 22 AV - Develop and enrich sensory perceptions
 - > Observations and free descriptions of the environment, images and objects
- A 23 AC&M - Experiment with various plastic and craft techniques (if the construction part is carried out by the participant)
 - > Create an object in volume by following different steps, assembling different surfaces, separating, tearing, perforating different thicknesses of paper (with hands, scissors, cutter...).

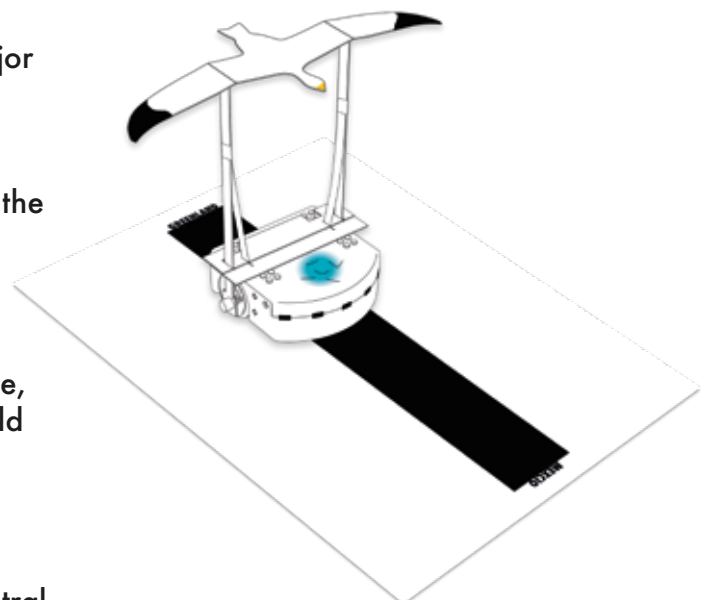
This activity is recommended for Cycle 2.

OBSERVATION I

The Snow Geese tend to migrate along the same major flyways year after year, from Greenland to Mexico!

We will observe this behaviour using the Thymio:

- Turn ON the robot by pressing a few seconds on the central tactile button
- Press on one of the arrow until you reach the light blue color
- Take the Greenland to Mexico map
- Place the Thymio at the beginning of the black line, on the Mexico side. The two bottom sensors should be placed on the black line
- Press on the central tactile button
- Observe and describe in a few words what the Thymio does
- In order to stop the robot, press again on the central tactile button.

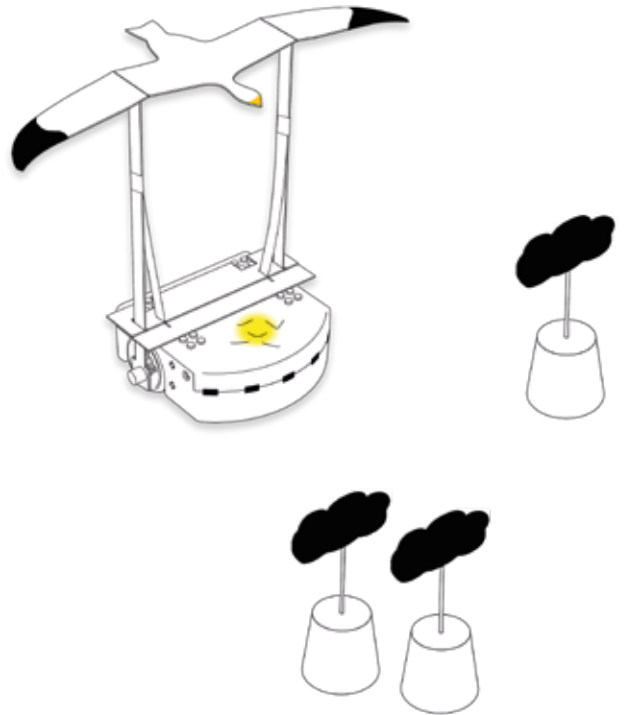


OBSERVATION II

However, Snow Geese will always face weather or environmental factors that can change their route.

We will observe this behaviour using the Thymio:

- Turn ON the robot by pressing a few seconds on the central tactile button
- Press on one of the arrow until you reach the yellow color
- Place the Thymio on a white surface (table), and display the 3 clouds around and in front of the Thymio
- Press on the central tactile button
- Observe and describe in a few words what the Thymio does
- In order to stop the robot, press again on the central tactile button.



DESCRIBE BEHAVIOUR I

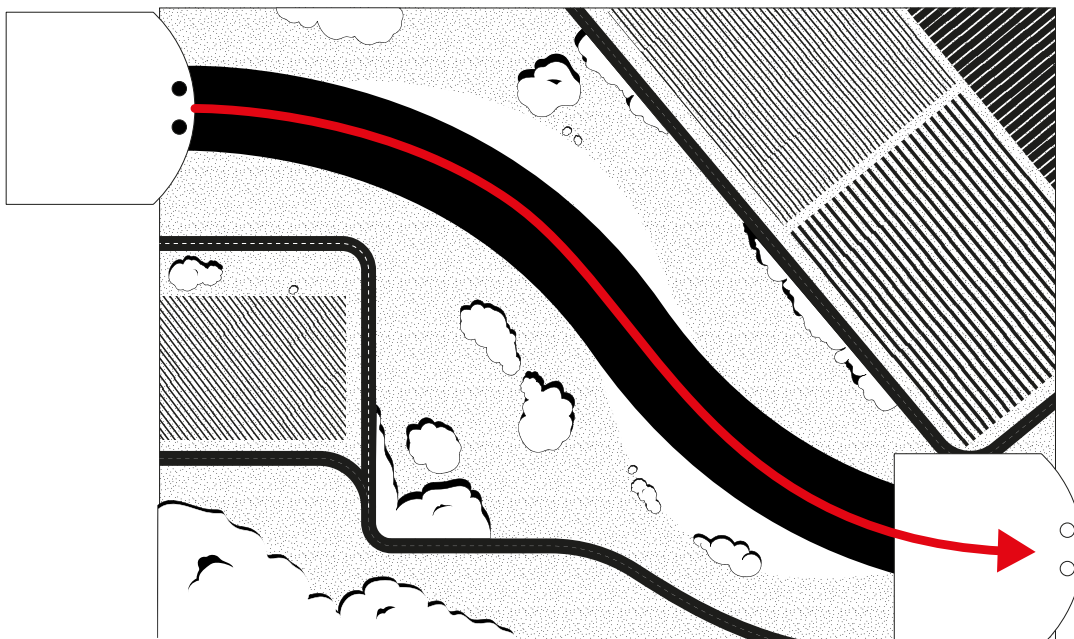
Using the river map, we want to program the following behaviour:

- Thymio starts at the beginning of the river, the bottom sensors are placed on the black line
- Thymio follows the river until it reaches the other side of the map
- Thymio stops once it has reached the other side of the map.

On the worksheet, the participants should describe the Thymio's behaviour in a few sentences:

«When the left bottom sensor detects... then Thymio moves...»

For this part, they can use the Thymio's chablon in order to visualize better the bottom sensors position (the chablon can be cut with scissors and using a paper hole punch to cut-out the sensors holes).



DESCRIBE BEHAVIOUR II

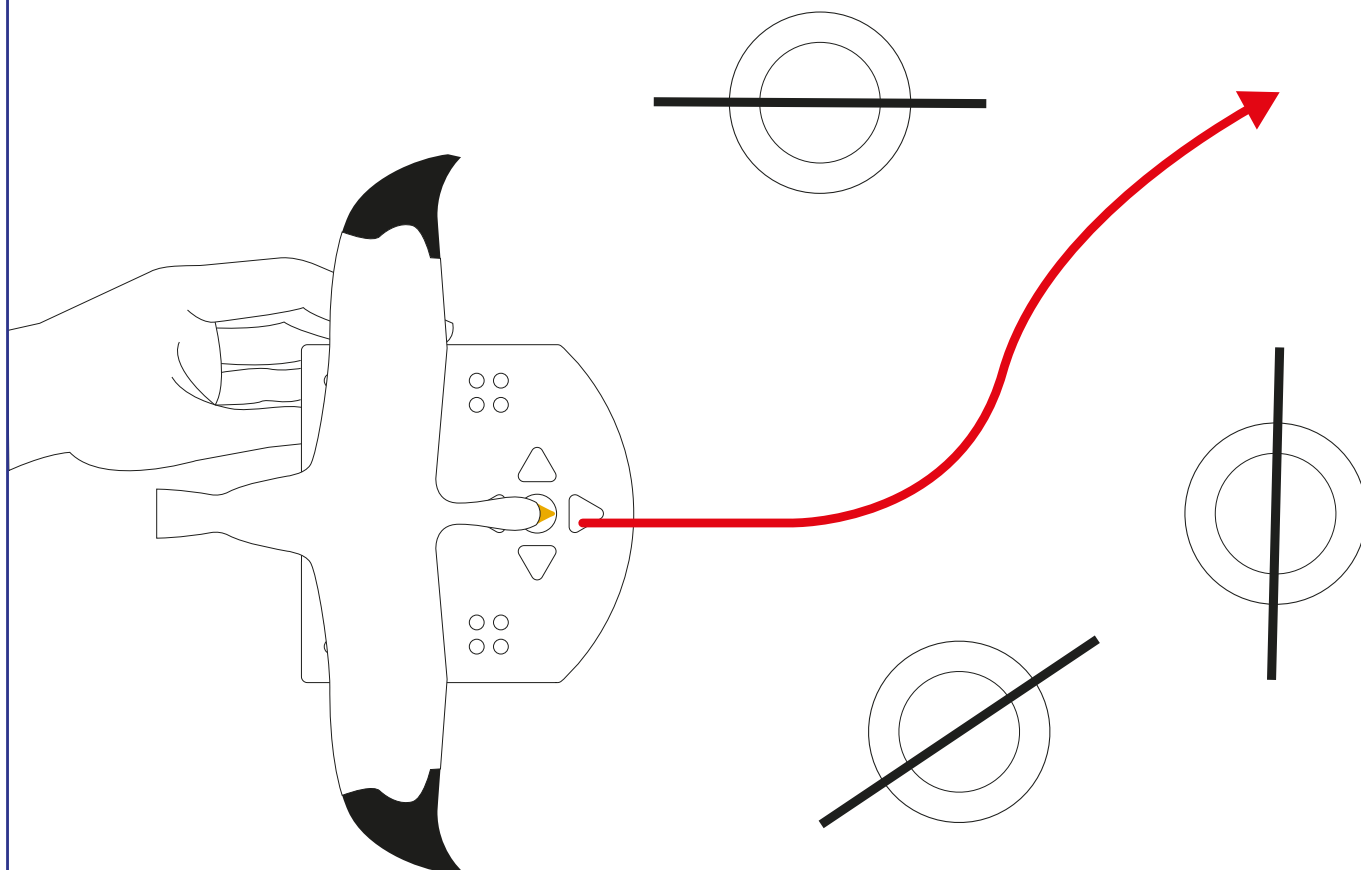
Using the clouds, we want to program the following behaviour:

- When there is no cloud, Thymio moves forward
- When Thymio encounters a cloud, it avoids it by moving backward or turning left or right.

On the worksheet, the participants should describe the Thymio's behaviour in a few sentences.

«When the central front sensor... then Thymio moves...»

They can move by hand the Thymio equipped with the paper structure through the clouds in order to visualize better the behaviour.



PROGRAM BEHAVIOUR I

We now want to program behaviour I using VPL3.

For this part, the participants are invited to:

1. Cut the associated blocks of VPL3 on their worksheet
2. Place the blocks in the dedicated spaces, and fill in the states informations (sensors and directions) taking into account the description they have made before
3. Validate with the animator their program.

Once approve, the participants can jump to the next steps in order to program with their device (computer or tablet):

1. Open Thymio Suite application on the computer or tablet, and select VPL3 icon
2. Turn ON the Thymio and connect it with the dungle or cable to the computer or tablet
3. Place the Thymio on the river map, so that the bottom sensors can see the beginning of the black line
4. Reproduce the program on VPL3 and launch it.

PROGRAM BEHAVIOUR II

We now want to program behaviour II using VPL3.

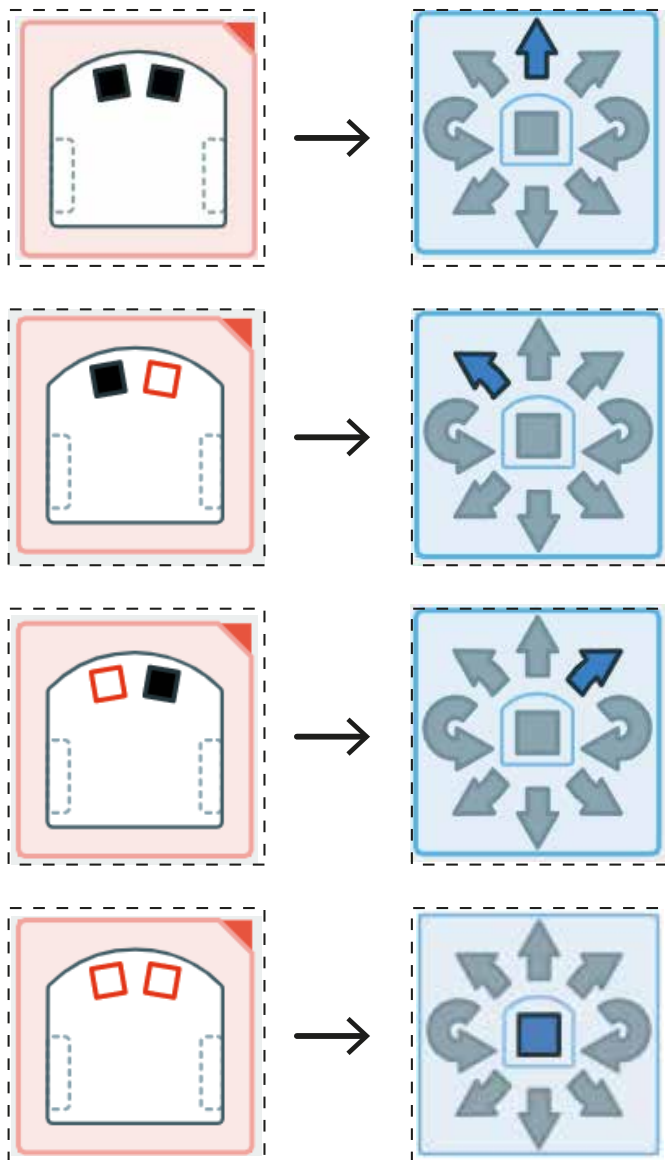
For this part, the participants are invited to:

1. Cut the associated blocks of VPL3 on their worksheet
2. Place the blocks in the dedicated spaces, and fill in the states informations (sensors and directions) taking into account the description they have made before
3. Validate with the animator their program.

Once approve, the participants can jump to the next steps in order to program with their device (computer or tablet):

1. Open Thymio Suite application on the computer or tablet, and select VPL3 icon
2. Turn ON the Thymio and connect it with the dungle or cable to the computer or tablet
3. Place the Thymio on the table and display the 3 clouds on the bird's path
4. Reproduce the program on VPL3 and launch it.

ANSWER FOR BEHAVIOUR I



ANSWER FOR BEHAVIOUR II

