FaceBot - Tangible STEM & Robotics Set

E17.1 Robotics Lessons

This **FaceBot - Tangible STEM & Robotics Set** is specially designed for Preschool students of ages 5-7. It provides a unique coding concept by introducing the new FaceBot, a constructional bot-car that can have click-on different "faces". Through the "faces", kids are engaged more through story telling and real-life scenarios. This buildable robot includes 2 dual sensors (can be used as proximity or colour) along with 2 ENGINO® motors, and the iconic ERP MINI controller. This controller has onboard buttons to allow manual programming as a first step into algorithmic thinking, but is also programable with our KEIRO™ software. The set comes with tangible programming tiles which children can connect like a puzzle and physically see their code. An ingenious board game is included to challenge kids with different decision paths and help them visualize their solutions before transferring the code to the App and drive the robot. The other side of the board game has a line-following track with coloured stations that empower conditional statements! Extra parts are included in the set to create individual models besides the FaceBot.

ENGINO® EDUCATION

5-7

Edition: 04/24

Lesson: FaceBot, the mouse bot

Grid programming and arrow directions

The goal of the robotic activities of this lesson is to introduce students to basic concepts of sequencing, counting, and programming using a simple robotic scenario, based on the story of FaceBot and Trigonoulis. Students will place a mouse and cheese in a grid, sketch a route, create a sequence of arrows representing the path, transfer this sequence to the FaceBot app, and observe the robot follow the programmed path.

Once upon a time in a land not too far away, there lived a little mouse. This little mouse had a bit of a problem – he often got lost because he couldn't help but wander off. One sunny day, a strong gust of wind blew, and the sky turned dark, causing our little mouse to lose his way in the big, scary forest. He couldn't keep up with his brothers, who were in a hurry to scurry into the woods.

As he kept walking, everything around him started to disappear, and he found himself in a very strange valley, filled with cheese! Suddenly, he heard a voice speaking to him.

– Do you want to stay here forever? it asked.

– Who's talking to me in this empty place?, he asked, still chewing a mouthful of cheese.

– I'm Trigonoulis, the voice replied. We can live together, eat as much cheese as you want, and make this place our home.

The little mouse agreed excited. However... The little mouse still had his old habit of getting lost, and on some days, he would wander away from Trigonoulis, needing to search for his cheesy friend...

Engino® "FaceBot" model

Discover:

- the basics of grid navigation
- how to create a route path using arrow directions

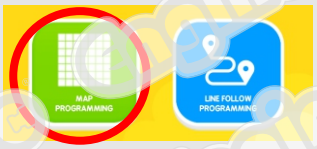
Materials Needed:
- Engino Junior Robotics.
- Tablet or Smart device with FaceBot™ software installed.

Procedure:

1. Build the **FaceBot mouse** model.

2. Create the maps shown in **Exercise 1** in the board game, using the prompts and the game pieces.

3. Connect your model with a tablet or a smart device. Scan and found the FaceBot model through the Facebot app. Press the button 'Programming' and then 'Map Programming'. The first two maps (Year 1 - Module C) are the maps of **Exercise 1.** Enter the arrow sequences into the app to create each one of the two programs. Then, transfer the program to the FaceBot robot, by pressing the green play button.



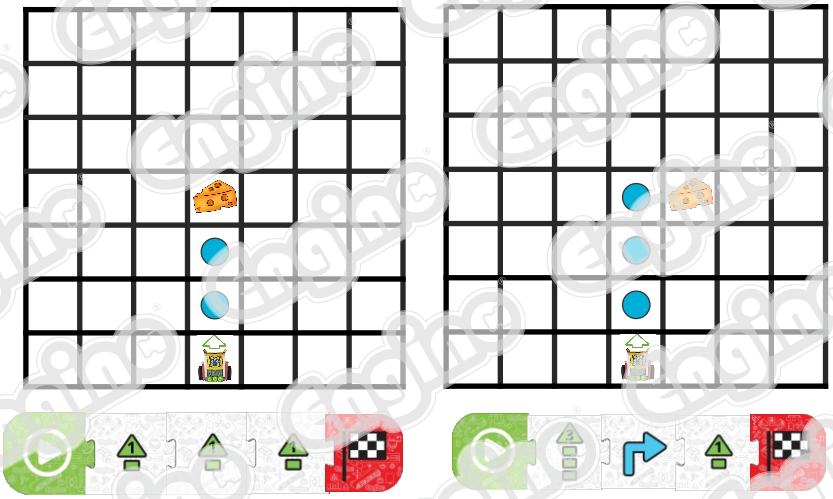
4. Sketch a path with two turns from the mouse to the cheese on the grid in **Exercise 2** and also in the board game. Count the steps (1, 2, or 3) for each movement.

5. Draw the corresponding arrows for your route in the box in **Exercise 3**. Open the third map in the FaceBot app and create your sequence by pressing the corresponding arrows. Send your code to your model.

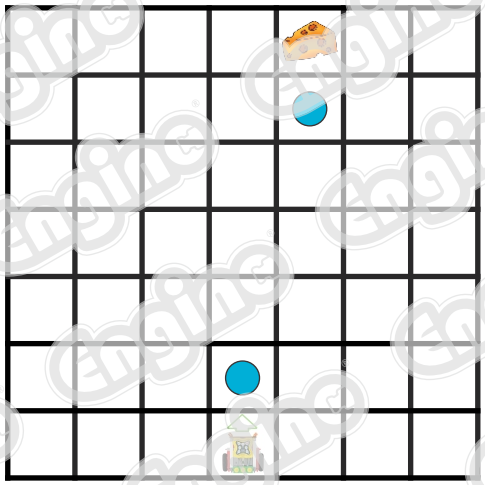
6. Extra exercise: Can you make the same routes with your FaceBot robot moving in reverse?

Engino® "FaceBot" model

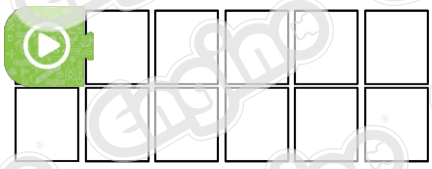
Exercise 1. Create the following grids in the board game. Then, program the robot with the app to move forward to grab the cheese.

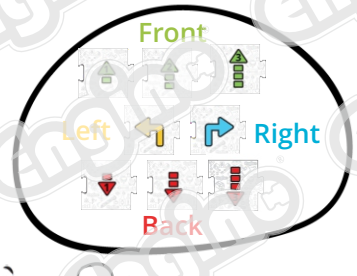


Exercise 2. Program the robot to move forward and turn 2 times to grab the cheese.



Exercise 3. Draw the arrows that you used for your route in exercise 2. Press in the app the arrows that you used.





Lesson: What do mice eat?

Line following programming

Line following programming is an exciting adventure where we teach our robot, "FaceBot," to follow a path on the ground all by itself! To make this happen, we give the FaceBot special instructions called "code." This code tells the robot how to use its sensors to see the line and adjust its wheels to stay on track.

Trigonoulis observed curiously as FaceBot munched away. "What are you munching on there?" FaceBot paused briefly from its feast to respond, "I found some juicy fruits, seeds, and grains to eat. I am very lucky to find my favorite foods here. When I lived in the city, all I could find to chew on was wires, wood, and bed sheets. The humans did not like that."

Trigonoulis raised an eyebrow in surprise, "Really? I thought cheese was your favorite food! I learn something new about you every day, my friend!" FaceBot continued munching, offering an interesting insight, "Mice have a highly developed sense of smell. The smell of cheese is something they usually avoid. Only if they are very hungry will they approach and maybe eat a little!"

We use our noses to sniff out the yummy smells of our favorite foods! It's like following a delicious scent trail that leads us straight to our most-loved treats".

Engino® "FaceBot" model

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