FESTO

Coding Activity
Carnivorous Plant (Level I)

Information: The material supplied in the „Bionic Flower" kit is sufficient. No further sensors are required. The steps can be programmed one after the other in the Open Roberta Lab and do not have to follow each other, but each new step continues working on the previous step. Further helpful information can be found in the right margin - tab „Question mark".

Step 1 : Flashing of the LED
Objective: Create a flashing of the LED.

Hint: Think to add delays between turn off and turn on the LED.

Step 2 : Touch sensor implementation
Objective: Create a danger situation with the LED.
The flower is green. And if a touch is detected, the flower blink in red.

Hint: Think to add the touch sensor to the bionic flower.

Step 3 : Using of the motor
Objective: Create a danger situation the LED and the motor.
The flower is green and opened. And if a touch is detected, the flower is in red and the flower closes. After a delay, the flower opens again.

Hint: Look into the "Question mark" to find the data for the position of the motor.

Step 4 : Create a danger situation for the carnivorous plant
Objective: Create a danger situation the flashing with the LED and the motor.
The flower is green and opened. And if a touch is detected, the flower is flashing in red and the flower closes. After a delay, the flower opens again.

HInt: Use a variable "Step_motor" to store the number of the step of the motor, and use a math function to increase or decrease it.

FESTO

Coding Activity

Day of the Flower (Level II)

Information: The material supplied in the „Bionic Flower" kit is sufficient. No further sensors are required. The steps can be programmed one after the other in the Open Roberta Lab and do not have to follow each other, but each new step continues working on the previous step. Further helpful information can be found in the right margin - tab „Question mark".

Step 1: Turn on the LED
Objective: Turn on the LED in blue and yellow.

Hint: Think to add delays (1000 ms for example) between each color change so that you can see its changes, otherwise it would be too fast for your eyes.

Step 2: Light sensor implementation
Objective: Define the day and the night depending on the luminosity value.
Store the brightness value in a variable. If the luminosity is higher than 10, it is the day, the flower must then light up in yellow.
Otherwise, it is night and the flower should light up blue.

Hint: Think to add the light sensor to the bionic flower.

Step 3: Using of the motor
Objective: Open and close the motor.
Store the brightness value in a variable. If the luminosity is higher than 10, it is the day, the flower must then light up in yellow and the flower opens.
Otherwise, it is night and the flower should light up blue and the flower closes.

Step 4: Create the day of the flower
Objective: Create the day of the flower: the flower is opened on the day and is closed on the night.
Store the brightness value in a variable. If the luminosity is higher than 10, it is the day, the flower must then light up in yellow and the motor opens step by step.
Otherwise, it is night and the flower should light up blue and the motor closes step by step.

HInt: Use a variable "Step_motor" to store the number of the step of the motor, and use a math function to increase or decrease it.

FESTO

Coding Activity

Photosynthesis (Level III)

Information: The material supplied in the „Bionic Flower" kit is sufficient. No further sensors are required. The steps can be programmed one after the other in the Open Roberta Lab and do not have to follow each other, but each new step continues working on the previous step. Further helpful information can be found in the right margin - tab „Question mark".

Step 1: Turn on a random color
Objective: Turn on the LED in random color.
Define a random color between 4 colors (red, green, blue, and yellow) and turn on the LED in this color.

Hint: Use the random function to have a random number between 1 and 4.

Step 2: Touch sensor implementation
Objective: Using the touch sensor for change the color of the flower.
Define a random color between 4 colors (red , green, blue, and yellow) and turn on the LED in this color.
In indefinitely way, if a touch is detected, the color change for the next color.

Hint: Think to add the touch sensor to the bionic flower. Use a variable "Color" to store the number of the color and use a math function to increase or decrease it.

Step 3: Light sensor implementation
Objective: Define the day and the night depending on the luminosity value.
Store the brightness value in a variable. If the luminosity is higher than 10, it is the day. Otherwise, it is night.
If it is the day and the color is green, so the flower is blinking 5 times with a new color (purple). After a delay, the flower lights up in random color again.

Hint: Think to add the light sensor to the bionic flower.

Step 4: Create the photosynthesis
Objective: Create the photosynthesis: you need to have a chlorophyll cells and a light to that the flower growth well.
Define a random color. You can change the color with the touch sensor. If the color is green and the luminosity is enough, the flower opens and turn on a new color. And after a delay, the flower closes and lights up in a new random color.