
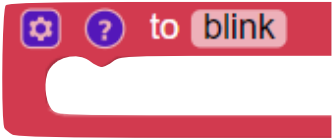

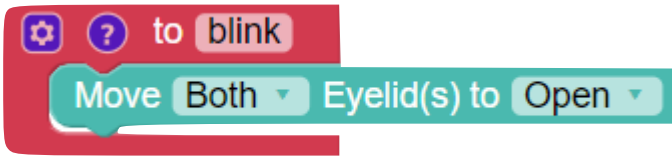



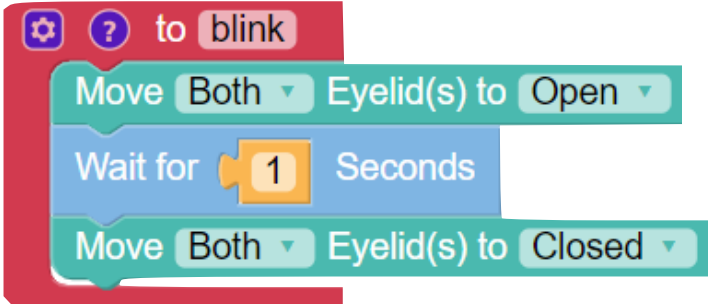

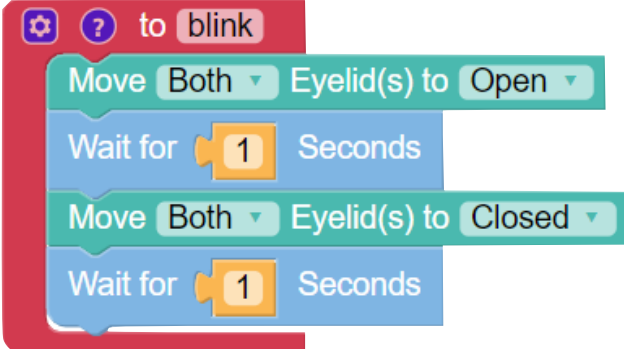




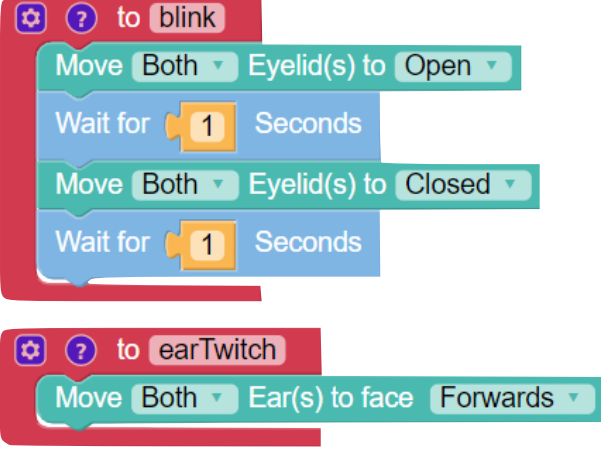



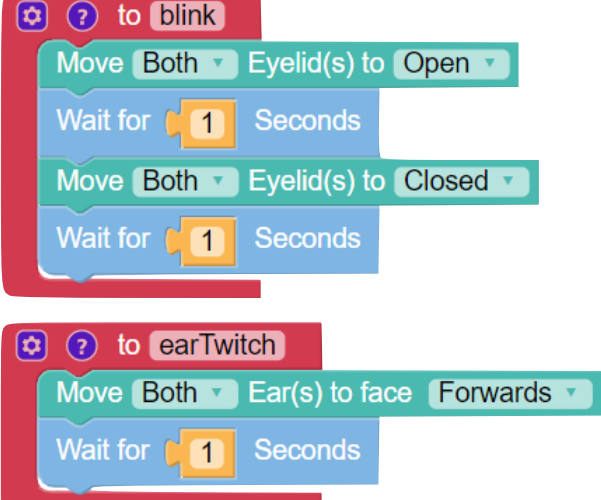






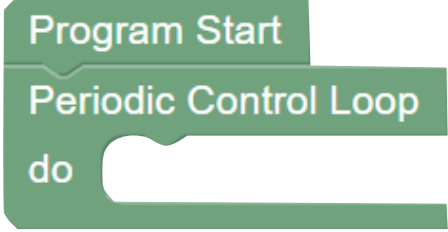

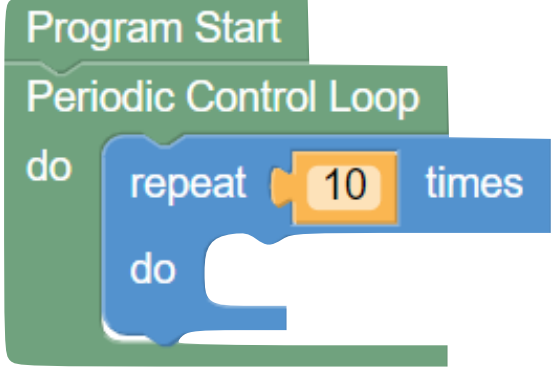


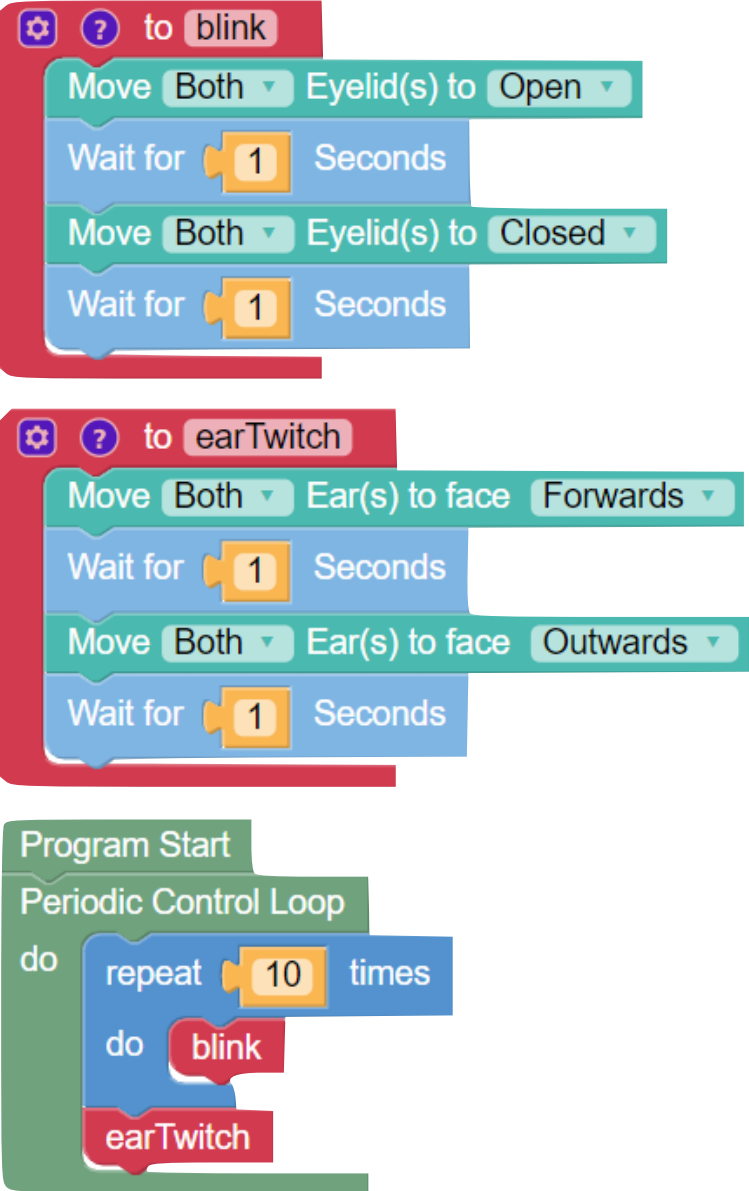
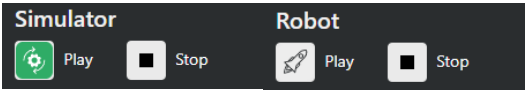
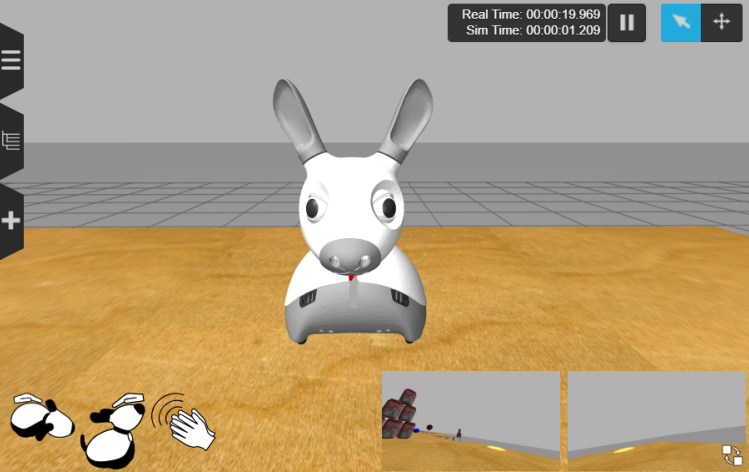


PART 1 Step-by-Step - Create two functions to control MiRo's blinking and ear twitching.

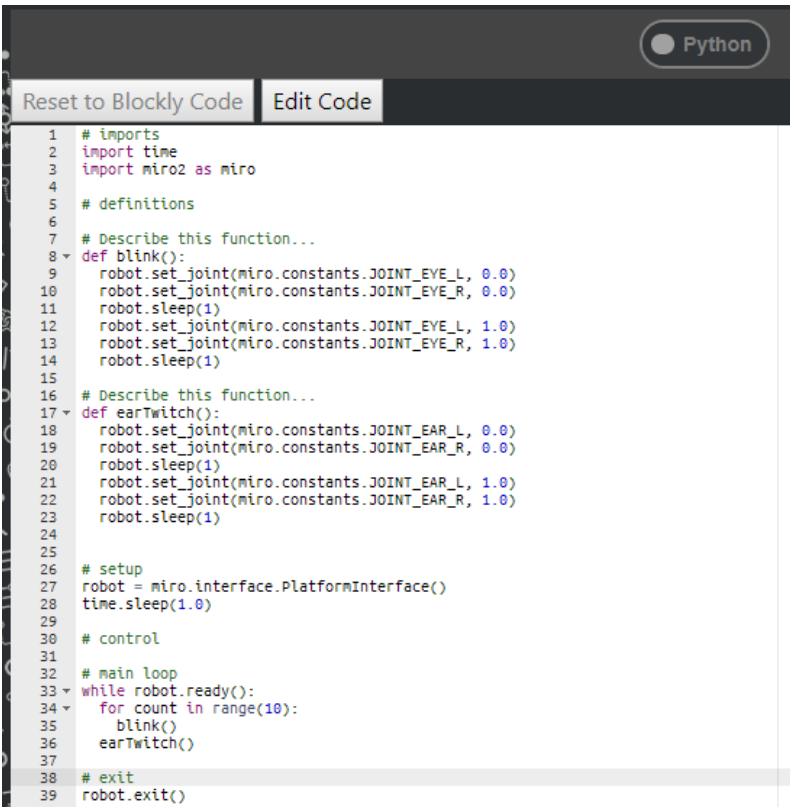
Step	Cat.	Image
1		
2		<ul style="list-style-type: none"> 👉 Set the function name to 'blink'. 👉 Add a comment to state it is a function to make MiRo blink.
3		
4		<ul style="list-style-type: none"> 👉 Connect into 'blink' function. 👉 Set to both eyes.
5		
6		
7		<ul style="list-style-type: none"> 👉 Connect to 'wait for 1 seconds' block 👉 Set to both eyes and closed. <p>** You can right click and duplicate blocks already on workspace.</p>
8		

Step	Cat.	Image
<p>9 Add 'to do something' from 'Functions'</p>		
<p>10  Rename the function to 'earTwitch' ** Remember to add a comment by pressing the question mark.</p>		
<p>11 Add 'move left ear(s) to face forwards' block from 'Simple Motion'.</p>		
<p>12  Connect into 'earTwitch' function.  Set to both ears.</p>		
<p>13 Add 'wait for 1 seconds' block from 'Control'. Connect to 'move both Eyelid(s) to Open' block.</p>		
<p>14  Connect to 'move both Ear(s) to face forwards' block. ** You can right click and duplicate blocks already on workspace.</p>		

Step	Cat.	Image
<p>15 Duplicate both blocks within the function 'earTwitch'</p> <p>Connect in same order to 'wait for 1 seconds' block'.</p>	 	
<p>16  Set to both ears to face outwards.</p>		
<p>17 Add 'Program Start' from 'Setup' and add 'Periodic Control Loop do' and connect.</p>		
<p>18 Add 'repeat 10 times' from 'Loops' and connect into the loop.</p>		
<p>19 Add 'blink' from 'Functions', connect <u>inside</u> the 'repeat' loop.</p> <p>Add 'earTwitch' from 'Functions', connect in <u>after</u> the 'repeat 10 times' block.</p>		

Step	Image
<p>20 Duplicate both blocks within the function 'earTwitch'</p> <p>Connect in same order to 'wait for 1 seconds' block'.</p>	 <p>The image shows three Scratch code blocks. The first is a function block 'to blink' containing: 'Move Both Eyelid(s) to Open', 'Wait for 1 Seconds', 'Move Both Eyelid(s) to Closed', and 'Wait for 1 Seconds'. The second is a function block 'to earTwitch' containing: 'Move Both Ear(s) to face Forwards', 'Wait for 1 Seconds', 'Move Both Ear(s) to face Outwards', and 'Wait for 1 Seconds'. The third is a 'Program Start' block with a 'Periodic Control Loop' containing a 'do' loop that repeats 10 times, with sub-blocks for 'blink' and 'earTwitch'.</p>
<p>21 Click Robot Play OR Simulator Play</p>	 <p>The image shows a control panel with two sections: 'Simulator' and 'Robot'. Each section has a 'Play' button (a green play icon) and a 'Stop' button (a black square icon).</p>
<p>Remember</p> <p>You will need to zoom in on MiRo's face if you are using the simulator.</p>	 <p>The image shows a 3D simulation of a white rabbit-like robot (MiRo) on a wooden floor. The robot has large eyes and ears. In the top right corner, there is a status bar showing 'Real Time: 00:00:19.969' and 'Sim Time: 00:00:01.209'. There are also icons for a menu, a play/pause button, and a zoom-in button. At the bottom, there are two small inset images: one showing a top-down view of the robot and another showing a side view of the robot's internal components.</p>

PART 2 Step-by-Step - Moving into Python

Step	Image
<p>1 Flip to Python code by clicking on the 'Blockly' button.</p>	 <pre> 1 # imports 2 import time 3 import miro2 as miro 4 5 # definitions 6 7 # Describe this function... 8 def blink(): 9 robot.set_joint(miro.constants.JOINT_EYE_L, 0.0) 10 robot.set_joint(miro.constants.JOINT_EYE_R, 0.0) 11 robot.sleep(1) 12 robot.set_joint(miro.constants.JOINT_EYE_L, 1.0) 13 robot.set_joint(miro.constants.JOINT_EYE_R, 1.0) 14 robot.sleep(1) 15 16 # Describe this function... 17 def earTwitch(): 18 robot.set_joint(miro.constants.JOINT_EAR_L, 0.0) 19 robot.set_joint(miro.constants.JOINT_EAR_R, 0.0) 20 robot.sleep(1) 21 robot.set_joint(miro.constants.JOINT_EAR_L, 1.0) 22 robot.set_joint(miro.constants.JOINT_EAR_R, 1.0) 23 robot.sleep(1) 24 25 26 # setup 27 robot = miro.interface.PlatformInterface() 28 time.sleep(1.0) 29 30 # control 31 32 # main loop 33 while robot.ready(): 34 for count in range(10): 35 blink() 36 earTwitch() 37 38 # exit 39 robot.exit() </pre>

Can you find the two functions?

What code defines a function?

<p>2 Locate the lines in each function that control the time between actions.</p>	<p style="text-align: center;"><code>robot.sleep(1)</code></p>
<p>3 Edit the time set within the code from '1' to '0.5'. There are 4 locations to edit, 2 in each function.</p>	<pre> 16 # Describe this function... 17 def earTwitch(): 18 robot.set_joint(miro.constants.JOINT_EAR_L, 0.0) 19 robot.set_joint(miro.constants.JOINT_EAR_R, 0.0) 20 robot.sleep(0.5) 21 robot.set_joint(miro.constants.JOINT_EAR_L, 1.0) 22 robot.set_joint(miro.constants.JOINT_EAR_R, 1.0) 23 robot.sleep(0.5) </pre>
<p>Run your program</p>	
<p>4 Experiment with the settings and investigate:</p>	<p><i>Change the time further up and down to observe the change in output.</i></p>