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The Robot Program Episode 021: Detect Face and Wave - Blockly

This lesson will demonstrate how to use [b]Blockly[/b] to have the robot wave once it detects a face. At the end of this lesson, readers will be able to enable facial detection and code a basic script using [b]Blockly[/b]. Follow along with The Robot Program Episode 021: Detect Face and Wave - Blockly. View the video episode here: https://www.ez-robot.com/Tutorials/Lesson/95

Last Updated: 6/12/2018

Professor E's Overview

This lesson demonstrated how to enable facial detection and how to trigger an action using a **Blockly** script.

Always start with a fully charged, disconnected robot. **Load EZ-Builder** and connect to the robot. Open the bare robot project, which provides a clean workspace without unnecessary controls. Add the control for the camera and test the camera view. The camera will provide peripheral information (external input/output that can be used to provide information).

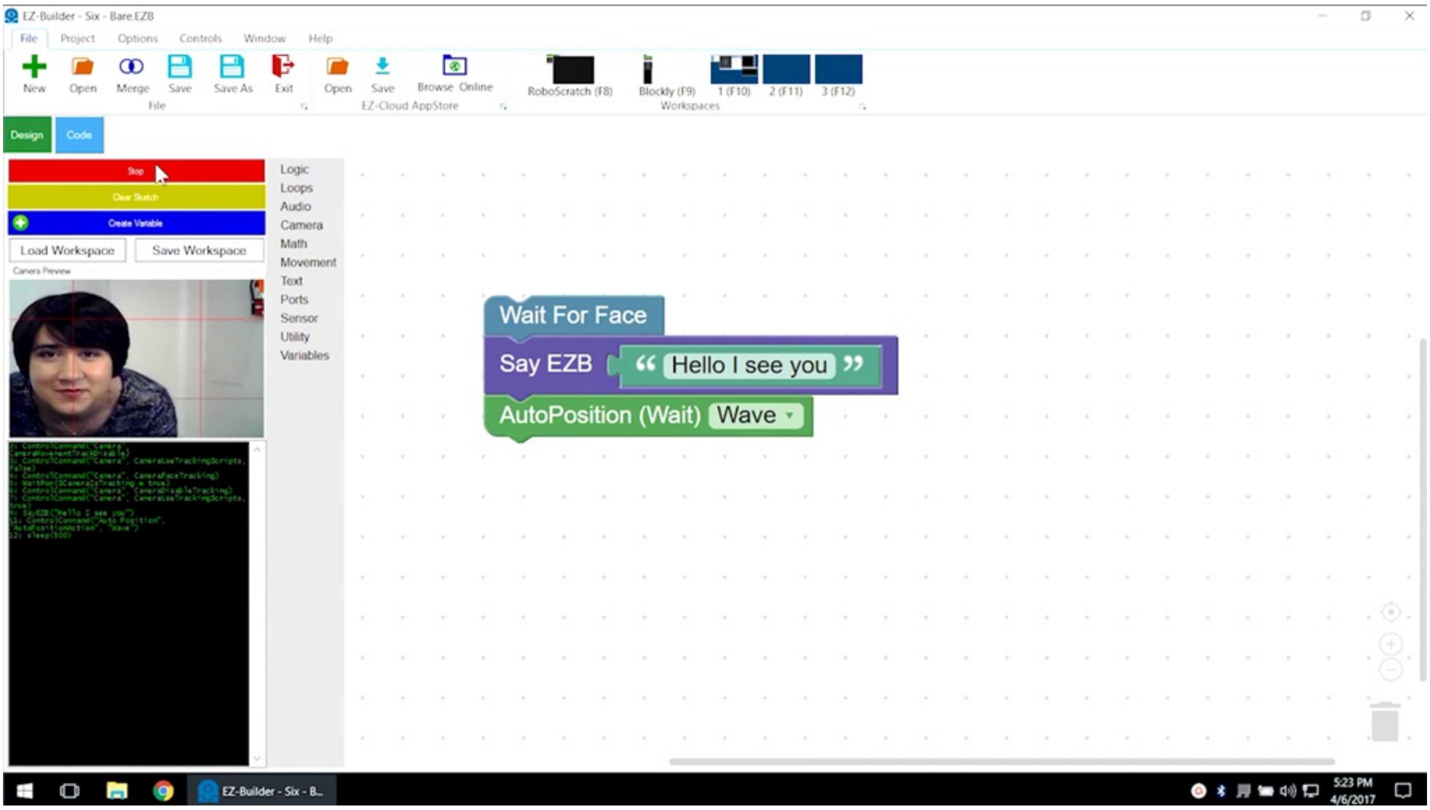
Open the **Blockly** workspace. Add the **Wait For Face** command. This command tells the robot to wait until it detects a face before moving on to the next line of code.

Add **Say EZB** and type in the desired speech. This command does not include a **Wait**, so it will execute and move immediately to the next command while the robot is still speaking. The audio will be output through the **EZ-B Robot Controller**.

Add **AutoPosition (Wait)** and choose an action, such as **Wave**. The use of **Wait** means that the action will be fully completed before moving on to the next line of code.

Click on **Start** to begin execution. Use the **Code** tab to view the **EZ-Script** code that was generated by the **Blockly** commands.

Remember to disconnect, power off, and charge the robot when finished.



Wait For Face

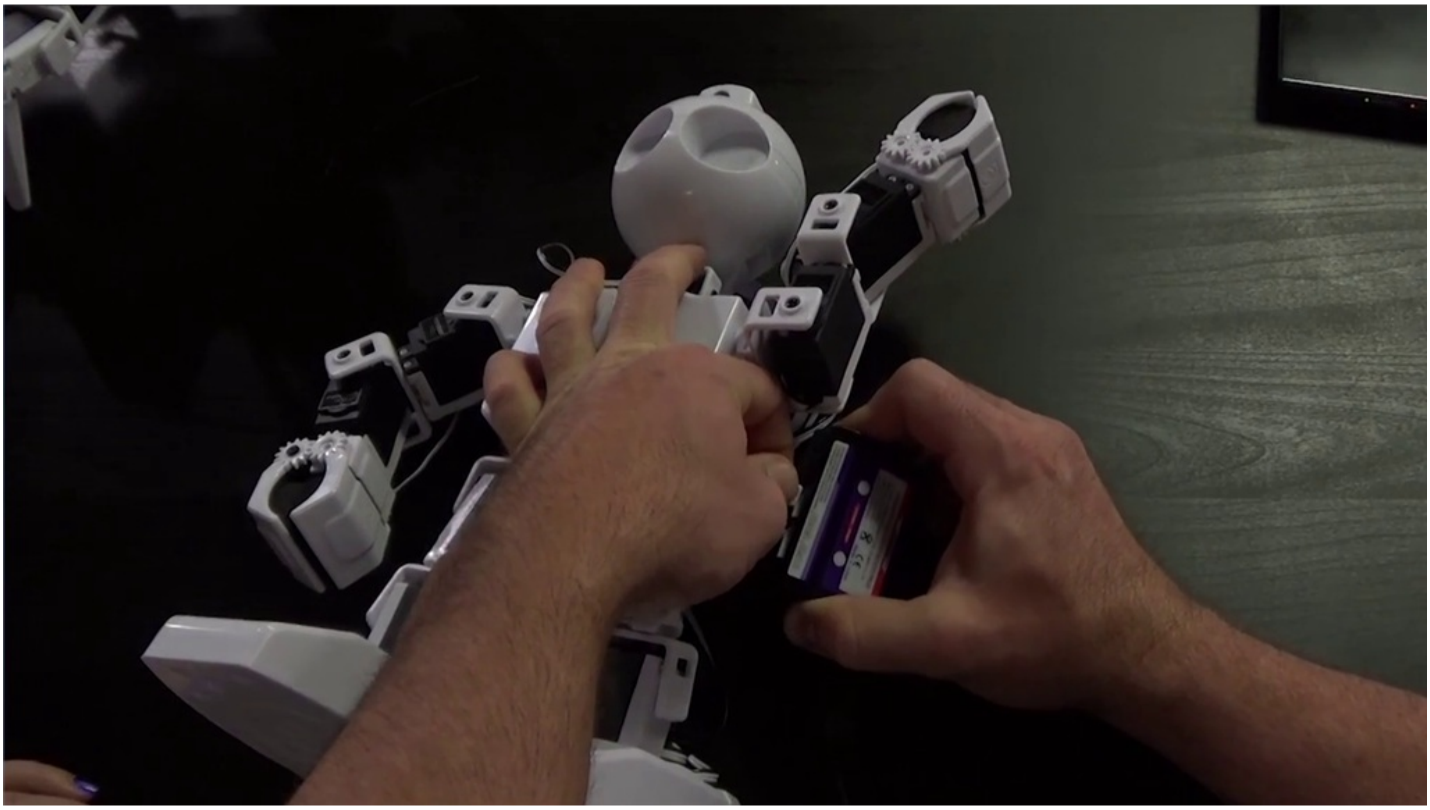
Say EZB “ Hello I see you ”

AutoPosition (Wait) Wave

```
ControlCommand("Camera",
CameraMovementTrackDisable)
ControlCommand("Camera", CameraUseTrackingScripts,
false)
ControlCommand("Camera", CameraFaceTracking)
WaitFor($CameraIsTracking = true)
ControlCommand("Camera", CameraDisableTracking)
ControlCommand("Camera", CameraUseTrackingScripts,
true)
SayEZB("Hello I see you")
ControlCommand("Auto Position",
"AutoPositionAction", "Wave")
sleep(500)
```

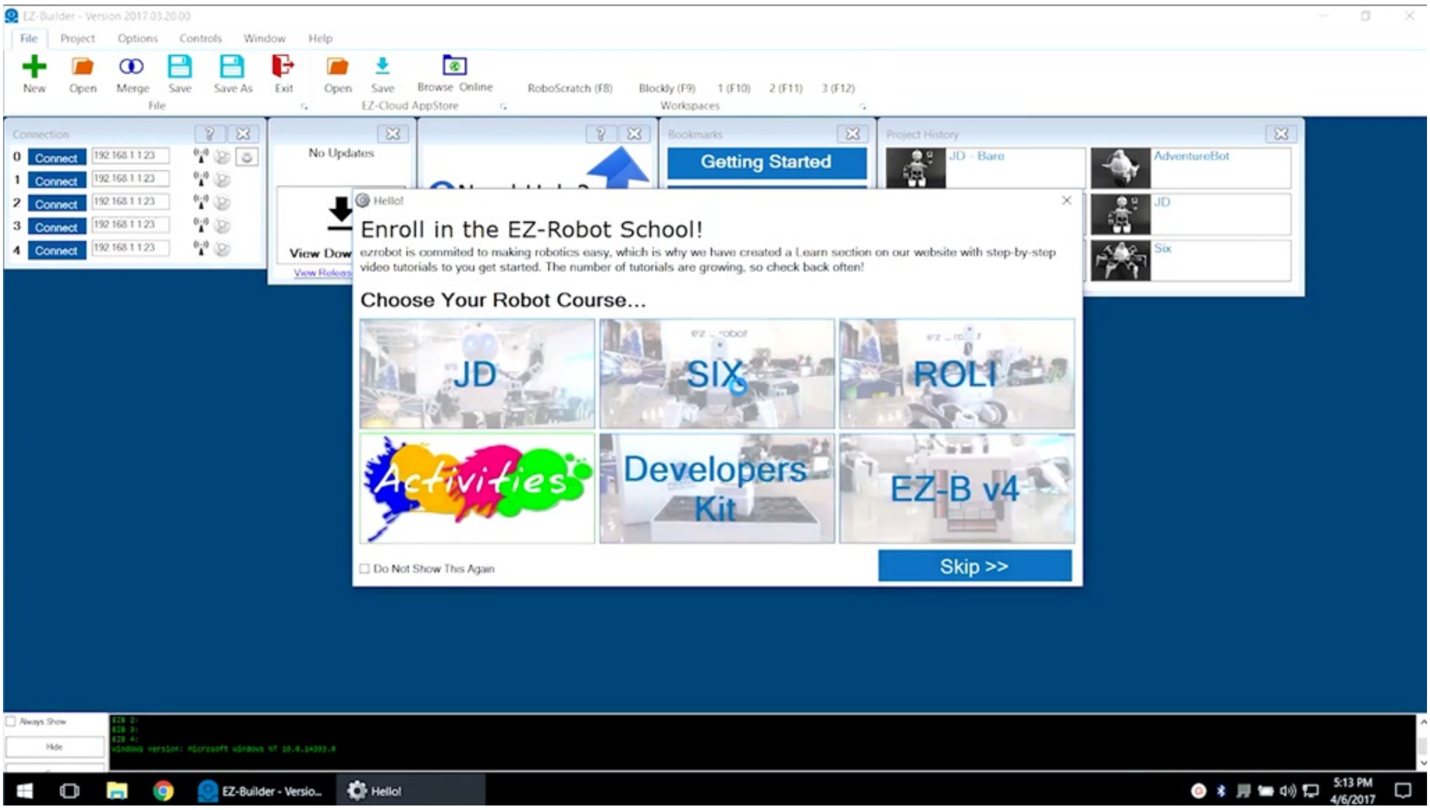
Step 1

Learn how to use **RoboScratch** to make the robot wave when it recognizes a face. Always begin with a fully charged robot. This example will use **Revolution JD**.



Step 2

Load the **EZ-Builder** software.



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ezrobot is commited to making robotics easy, which is why we have created a Learn section on our website with step-by-step video tutorials to you get started. The number of tutorials are growing, so check back often!

Choose Your Robot Course...

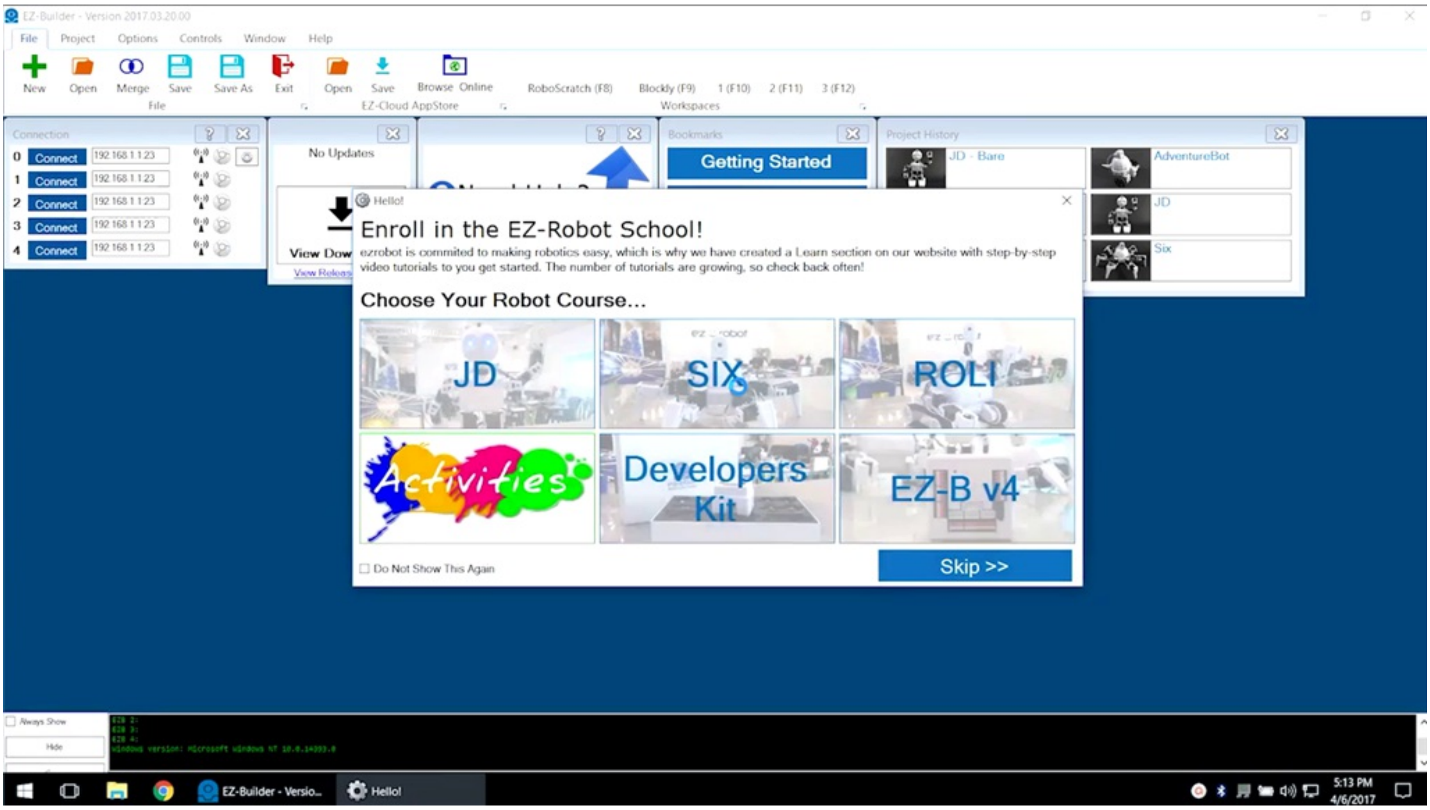
□ Do Not Show This Again

Skip >>

```
EZB 2:
EZB 3:
EZB 4:
Windows version: Microsoft Windows NT 10.0.14393.0
```

Step 3

From **Example Projects**, open the bare project for the desired robot.



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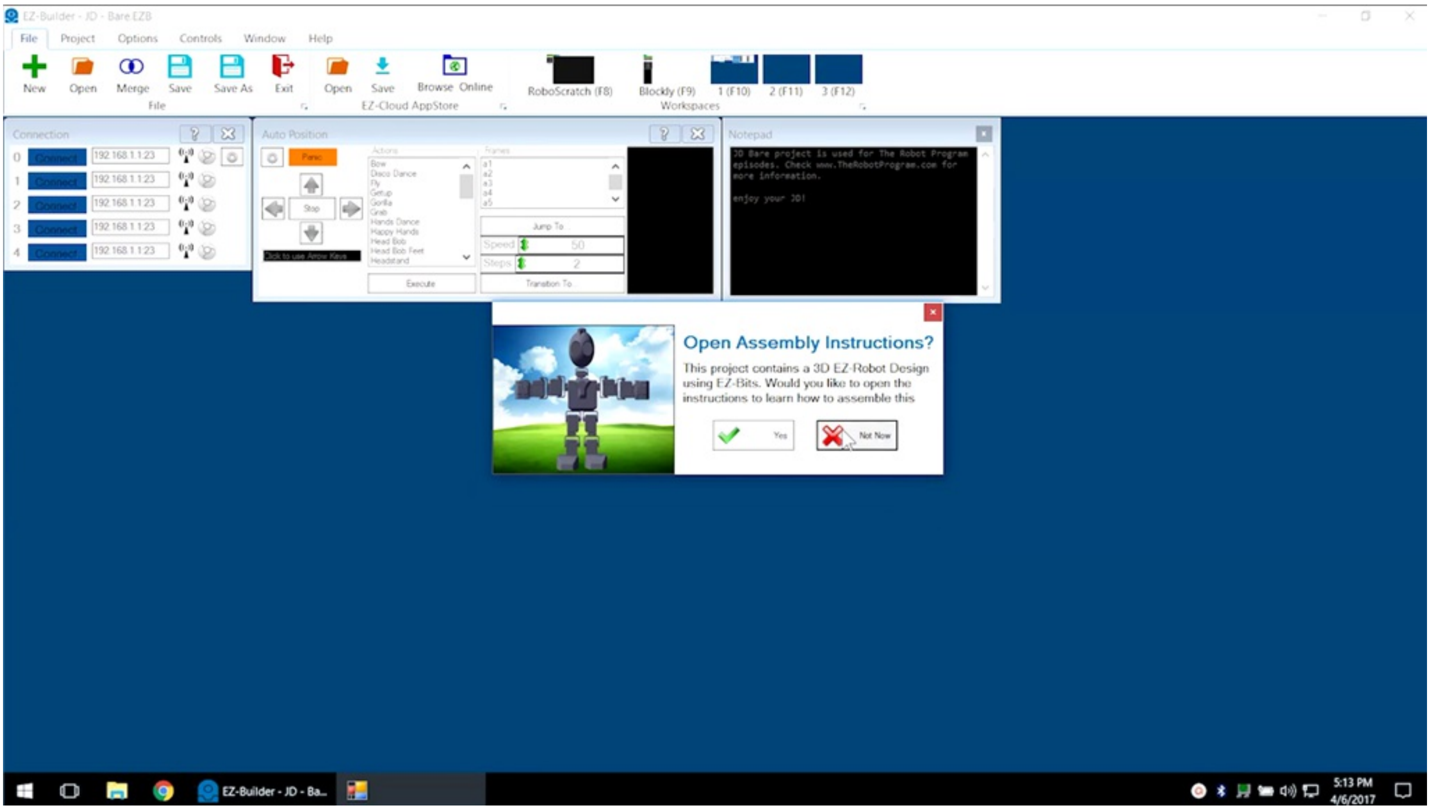
Step 4

Skip the build instructions. View past episodes for more build information.



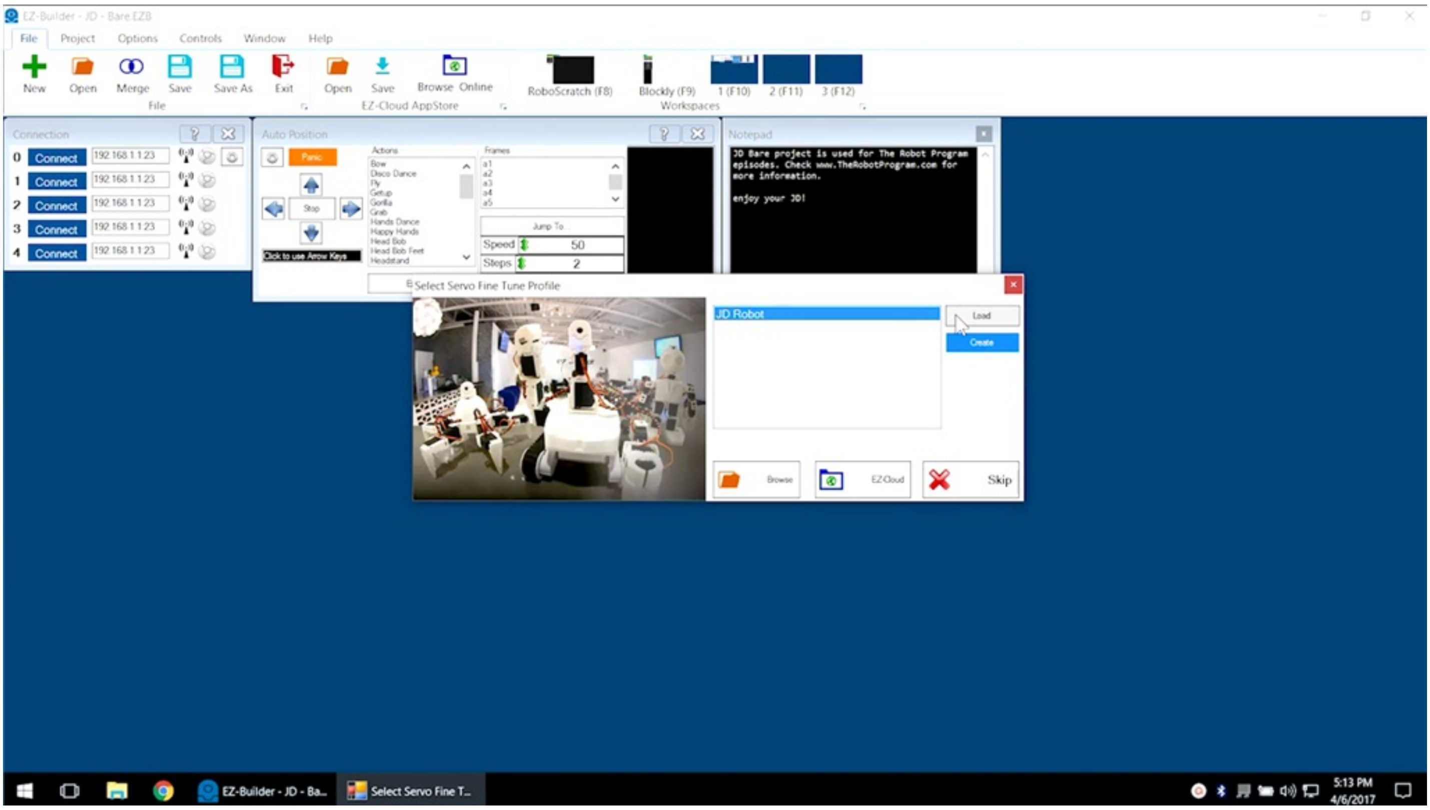
```
JD Bare project is used for The Robot Program
episodes. Check www.TheRobotProgram.com for
more information.

enjoy your JD!
```

Open Assembly Instructions?

This project contains a 3D EZ-Robot Design using EZ-Bits. Would you like to open the instructions to learn how to assemble this

Step 5

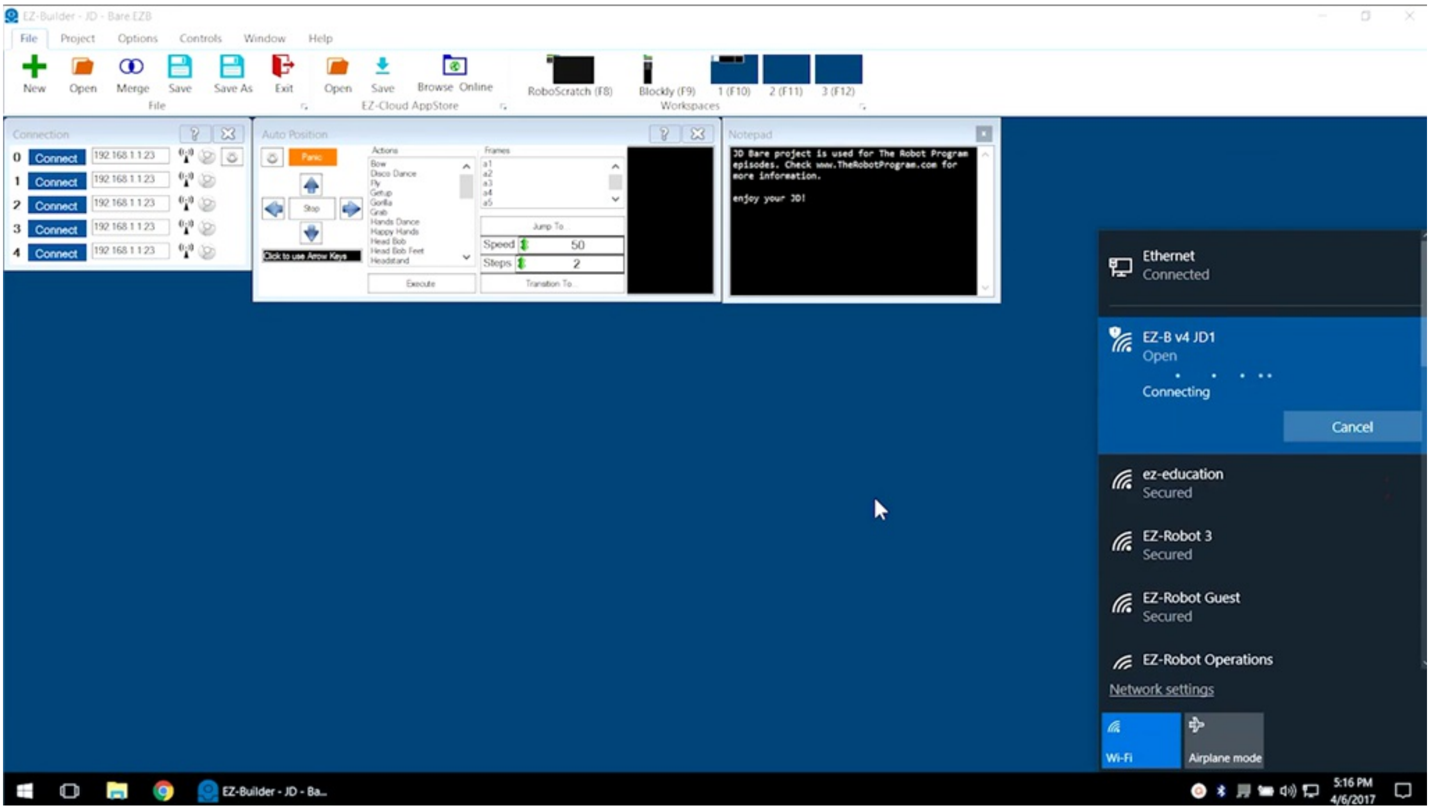
If using **Revolution JD**, load the calibrated servo profile.



```
JD Bare project is used for The Robot Program
episodes. Check www.TheRobotProgram.com for
more information.

enjoy your JD!
```

Step 6

Power on the fully charged robot. Use Wi-Fi to connect to the EZ-B and click on the blue **Connect** button.

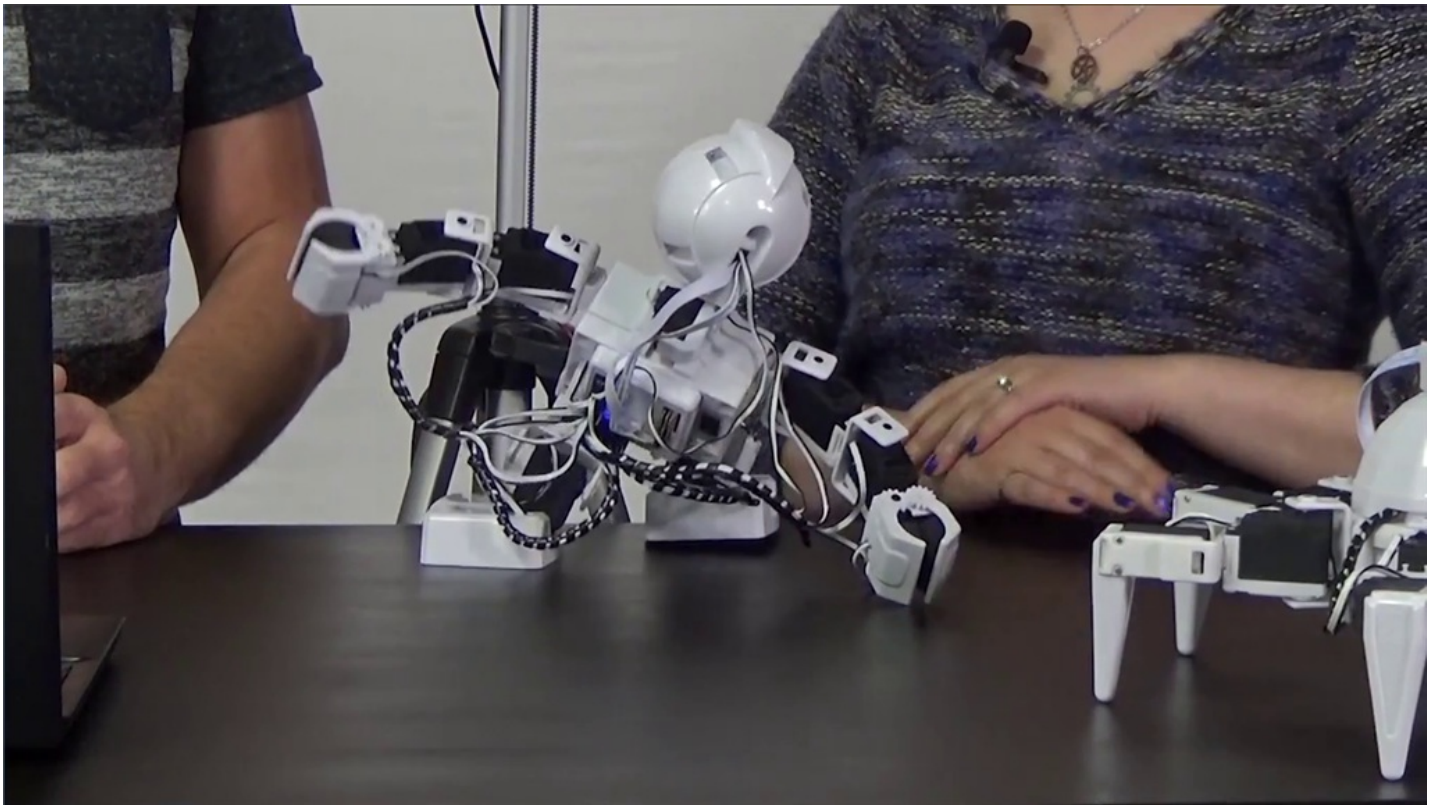


JD Bare project is used for The Robot Program episodes. Check www.TheRobotProgram.com for more information.

enjoy your JD!

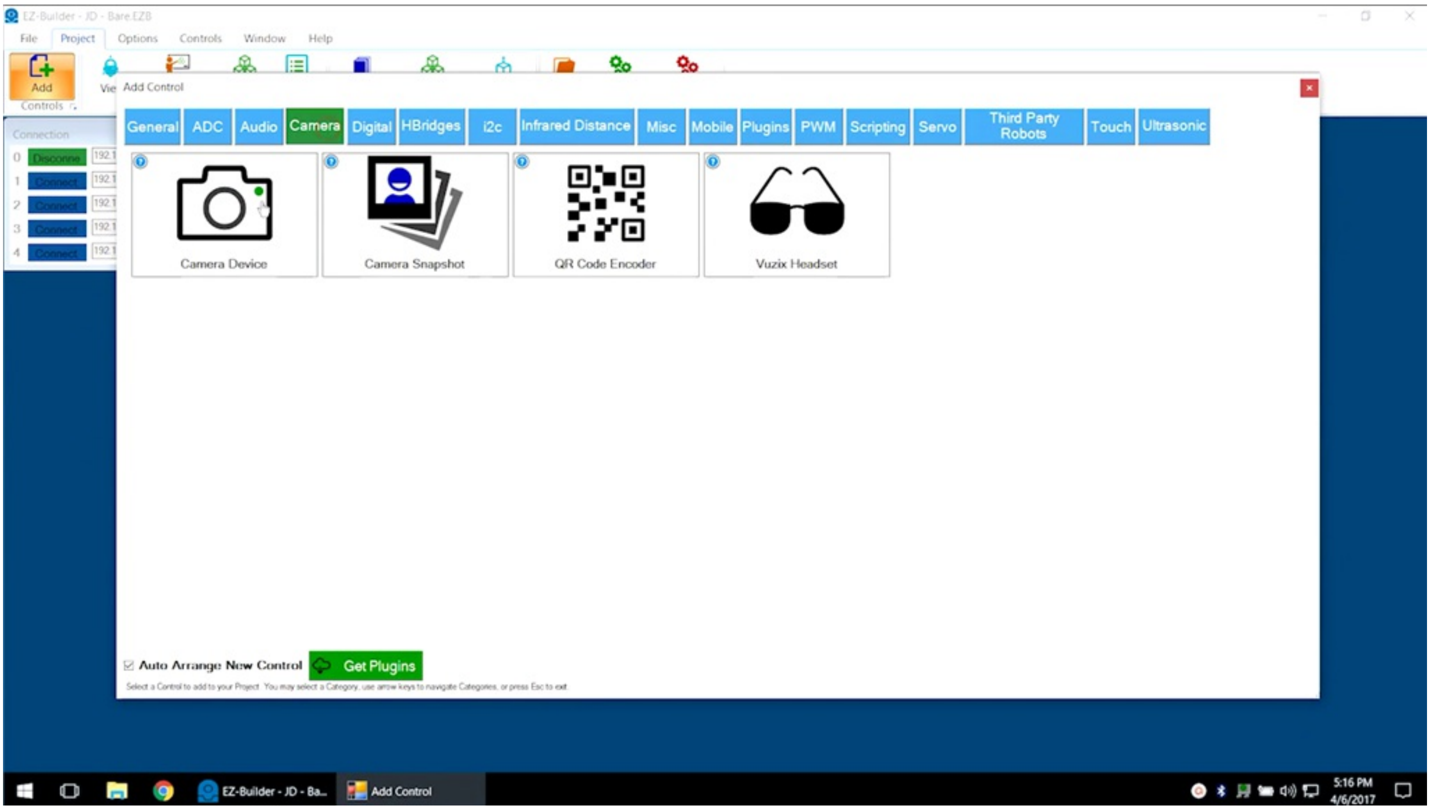
Step 7

If using **Revolution JD**, execute **Stand From Sit** in the **Auto Position** control window to bring the robot to a standing position.



Step 8

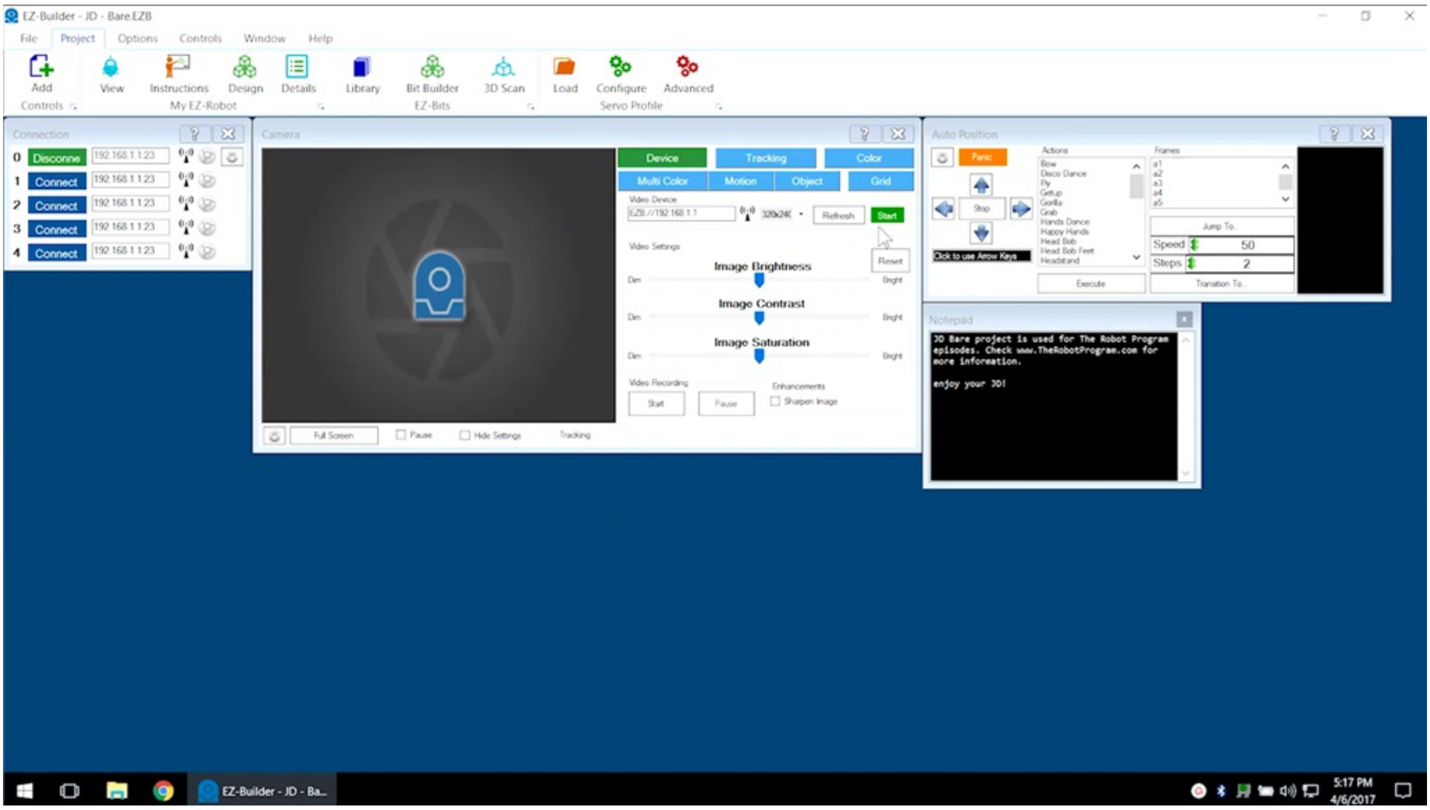
Select **Project** -> **Add Controls** -> **Camera** -> **Camera Device** to add the camera controls.



Select a Control to add to your Project. You may select a Category, use arrow keys to navigate Categories, or press Esc to exit.

Step 9

Push the green **Start** button to connect to the camera. The camera will provide peripheral information that will be used within the program.

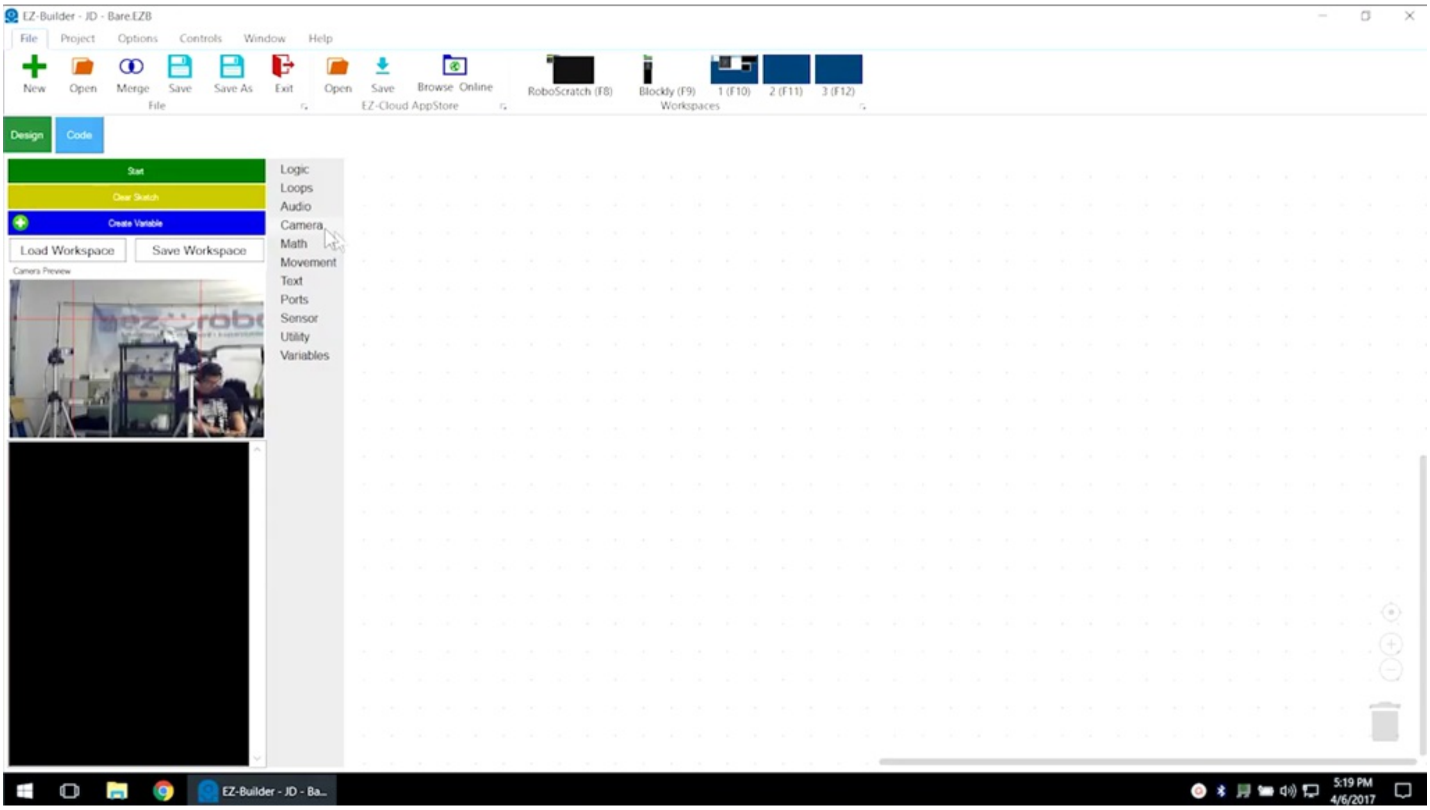


JD Bare project is used for The Robot Program episodes. Check www.TheRobotProgram.com for more information.

enjoy your JD!

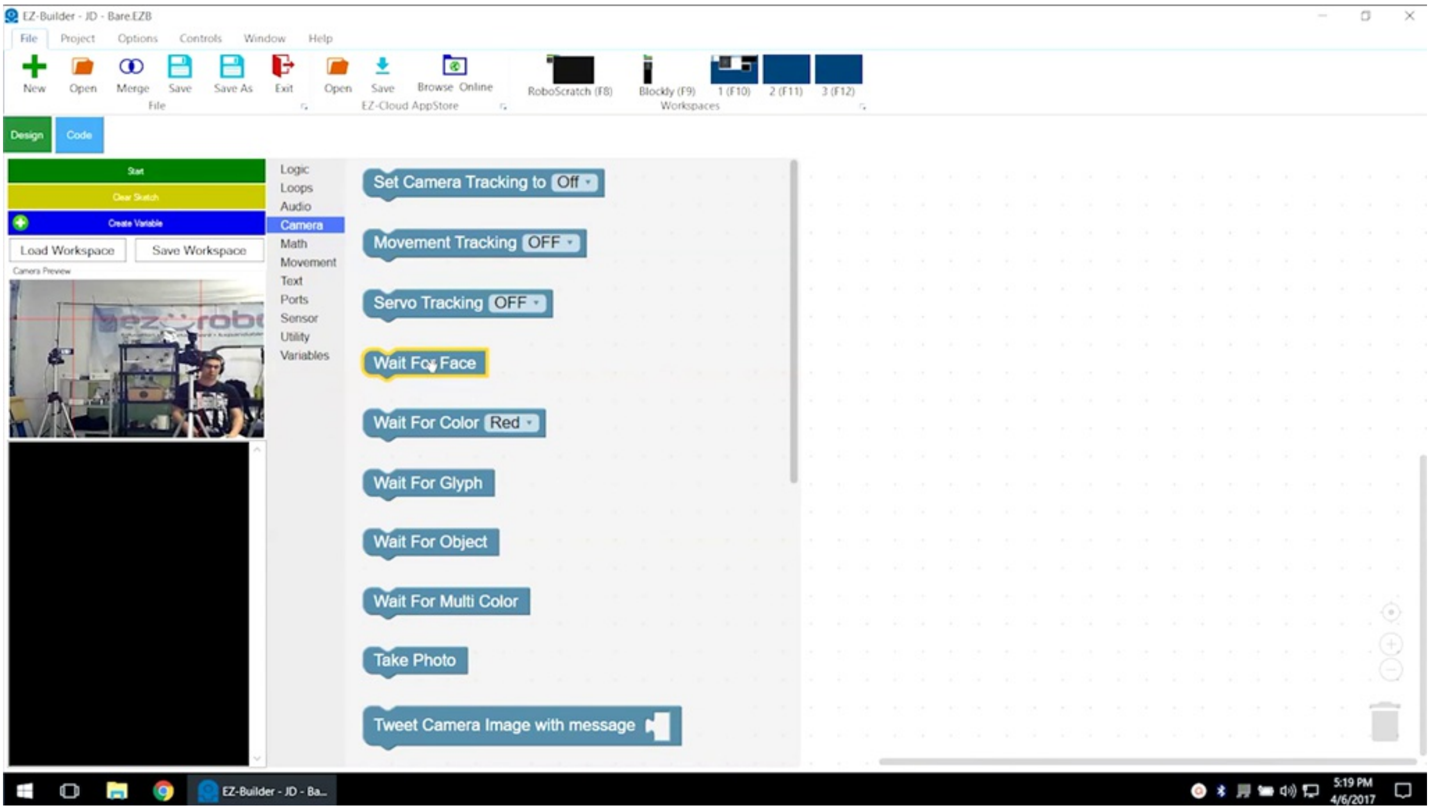
Step 10

Select **File** -> **Blockly** to enter the **Blocky** workspace for graphical programming.



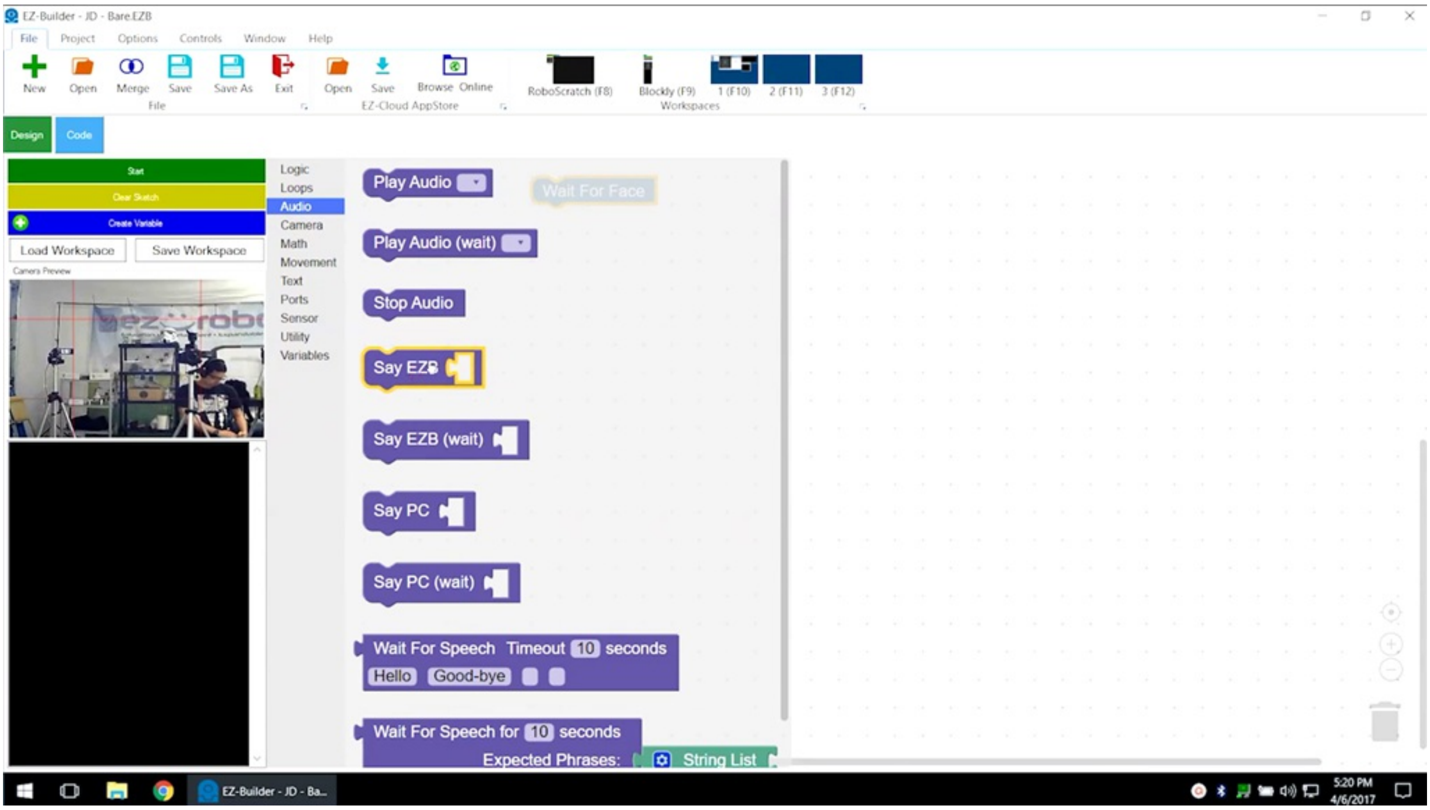
Step 11

Select **Camera** from the menu, then click and drag **WaitForFace** into the editing space.



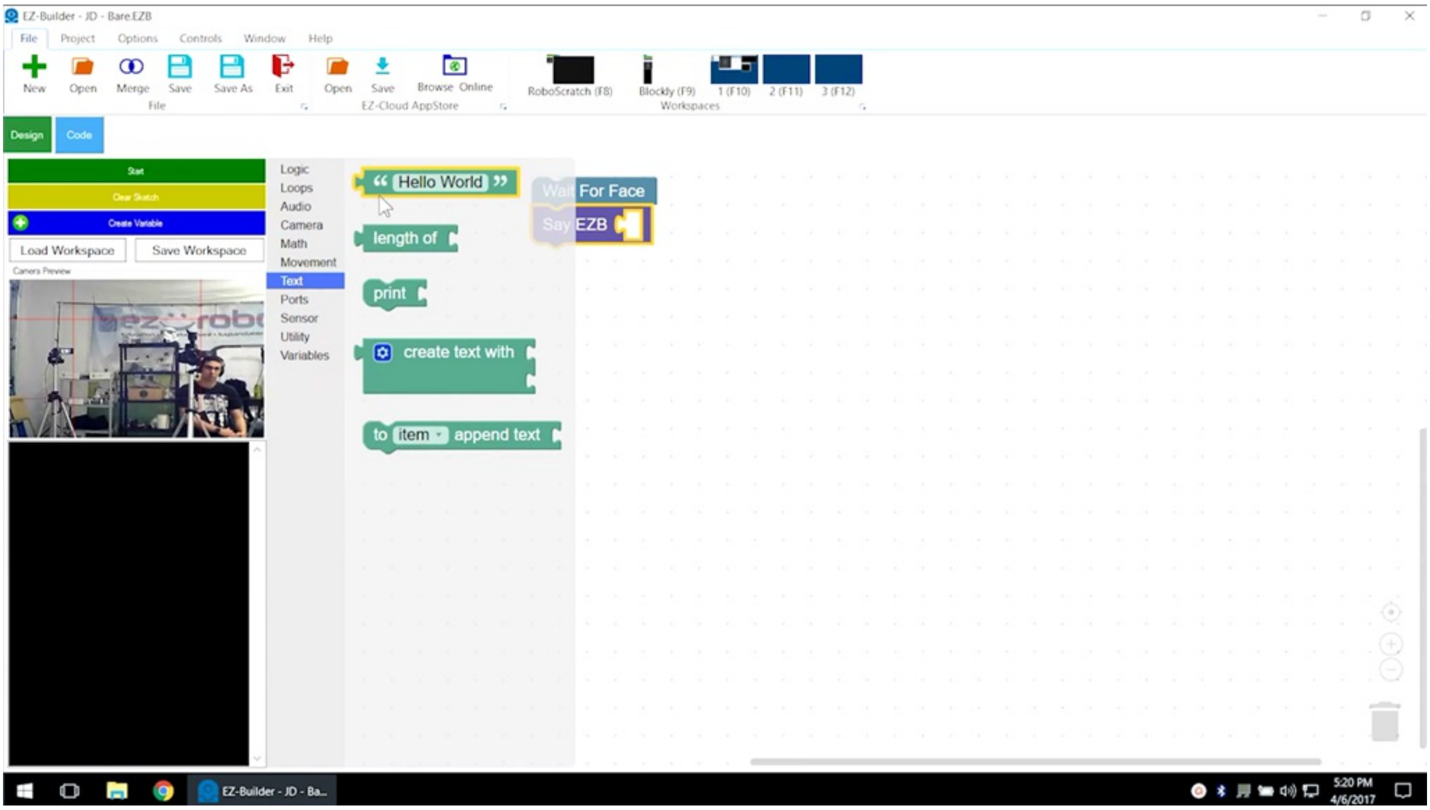
Step 12

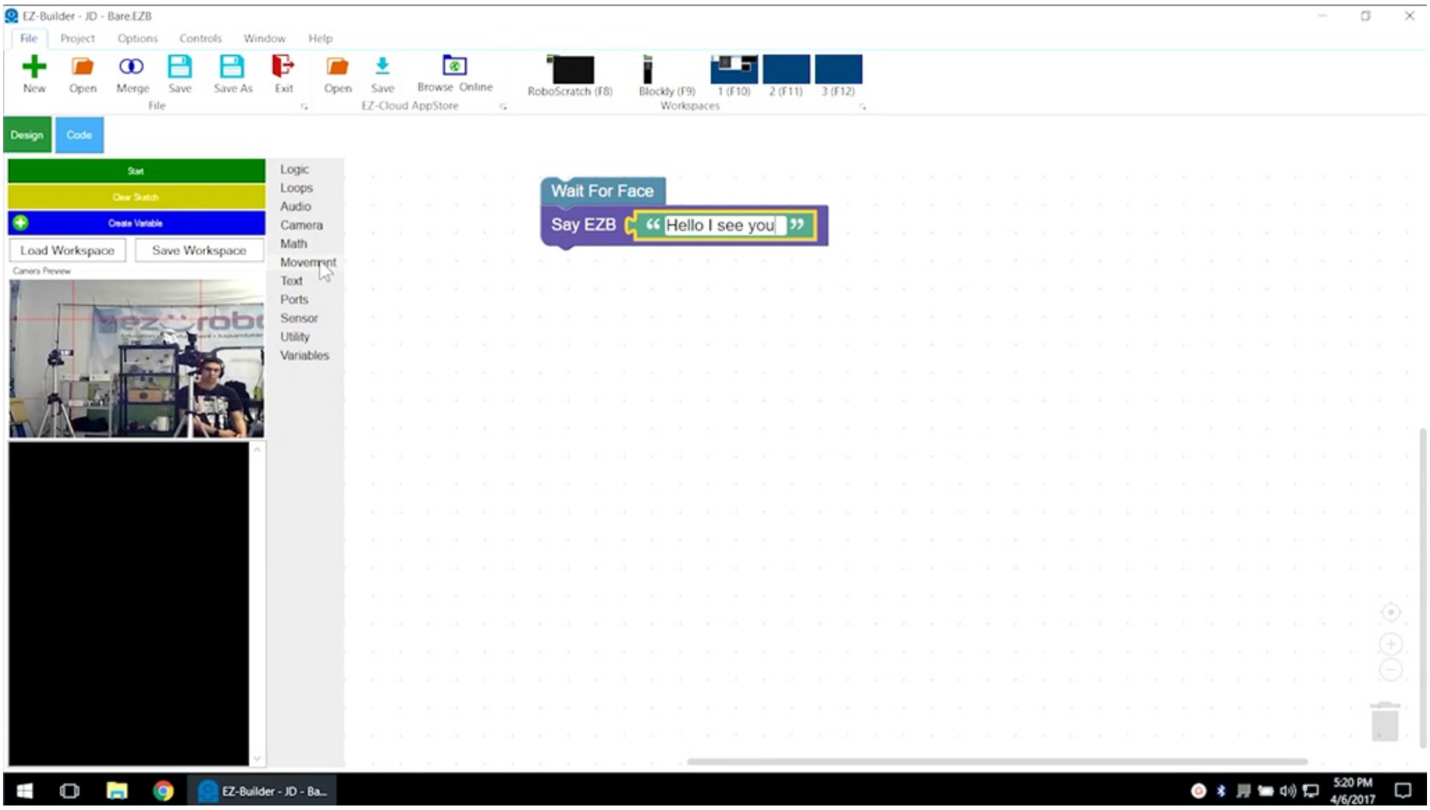
From the **Audio** tab, click and drag **Say EZB** underneath the previous command.



Step 13

From the **Text** tab, add blank text to the audio command. Type **Hello I see you** between the quotation marks.

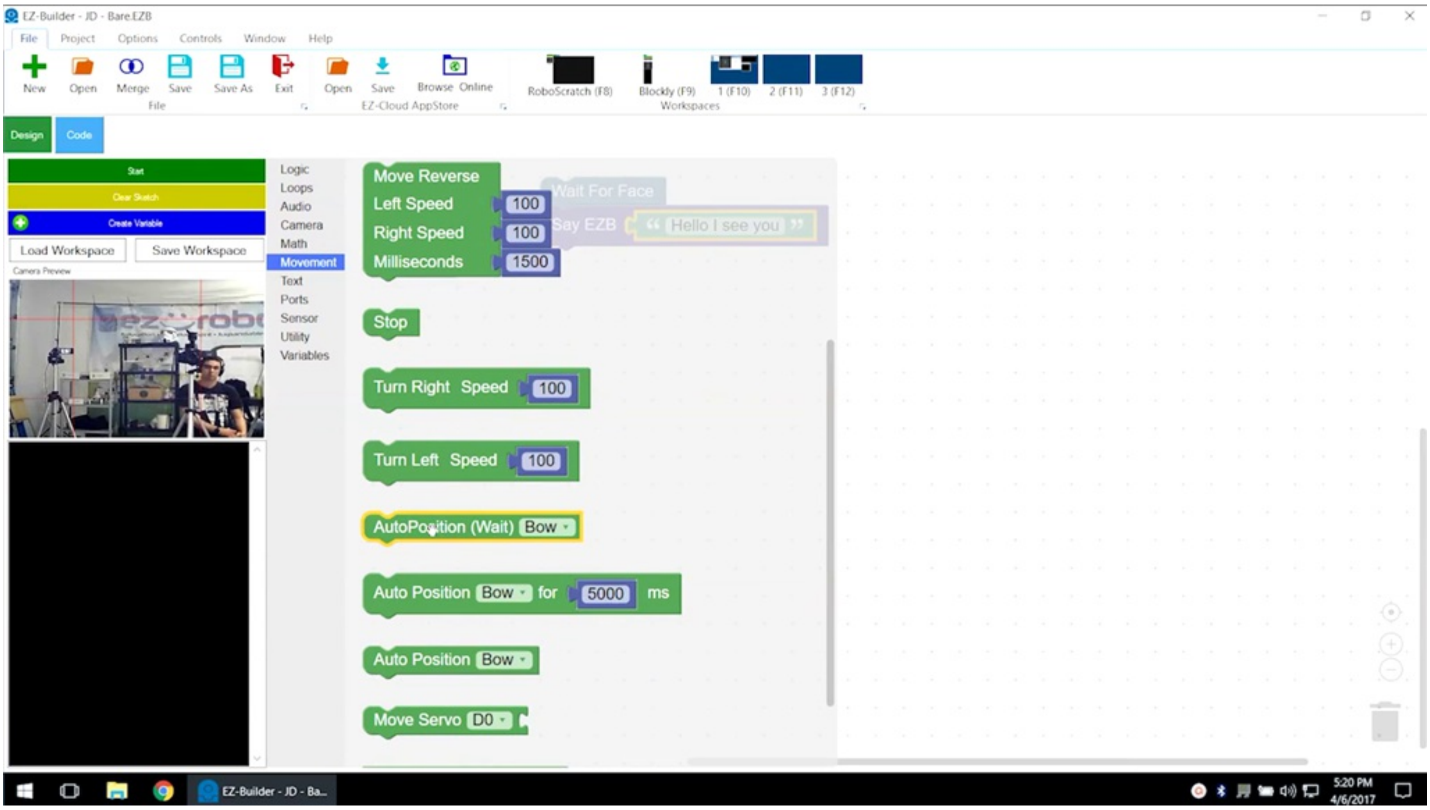

EZ-Builder - JD - Bare.EZB
File Project Options Controls Window Help
New Open Merge Save Save As Exit Open Save Browse Online RoboScratch (F8) Blockly (F9) 1 (F10) 2 (F11) 3 (F12)
Design Code
Logic Loops Audio Camera Math Movement Text Ports Sensor Utility Variables
Hello World
length of
print
create text with
to item append text
Wait For Face
Say EZB


EZ-Builder - JD - Bare.EZB
Design Code
Logic Loops Audio Camera Math Movement Text Ports Sensor Utility Variables
Wait For Face
Say EZB " Hello I see you "

Step 14

Select **Movement** from the menu, then click and drag **AutoPosition (Wait)** underneath the previous command.

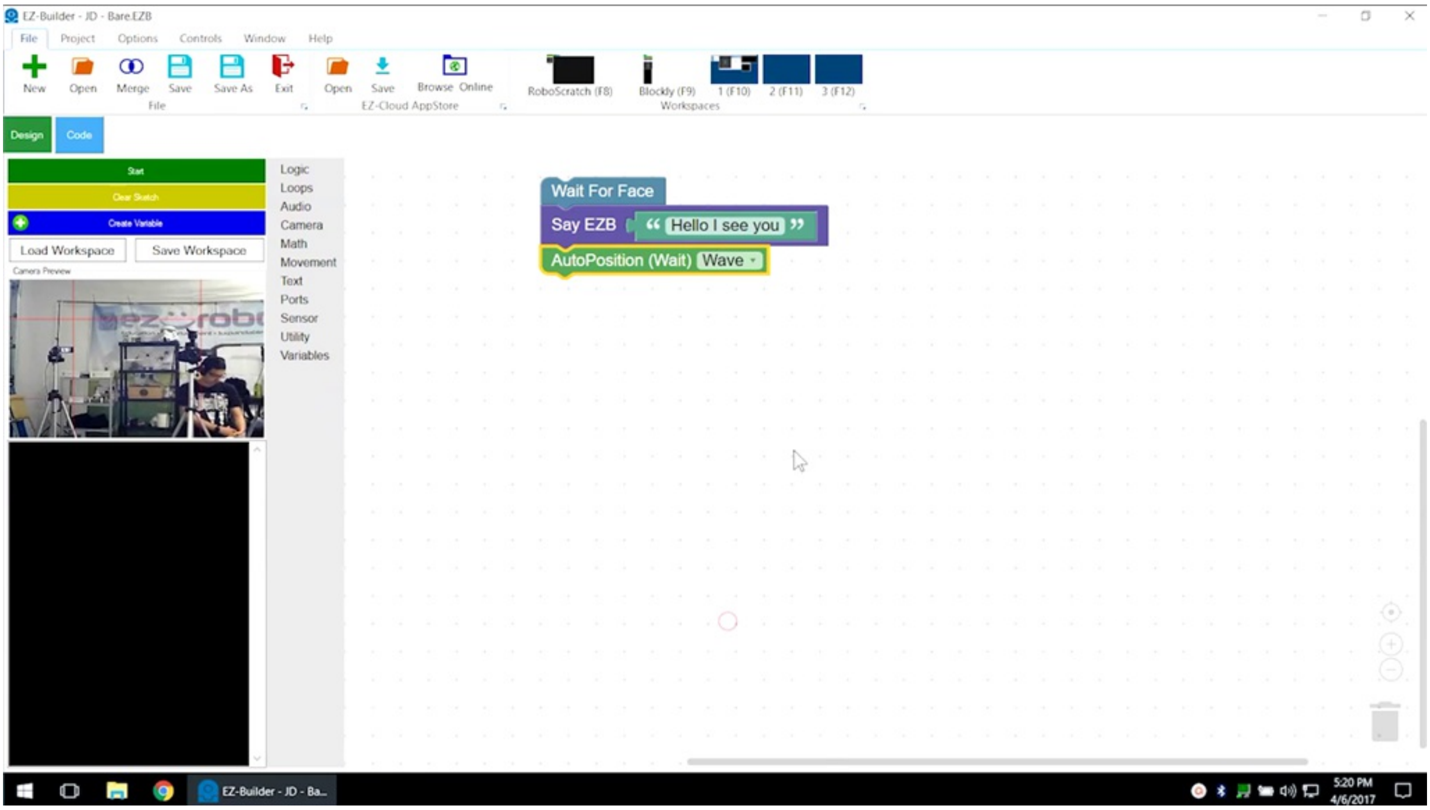
Functions that have **(Wait)** in their name will run completely before moving on to the next command.



Step 15

Choose **Wave** from the list of action options.

These three components will cause the robot to speak and wave once a face is detected.



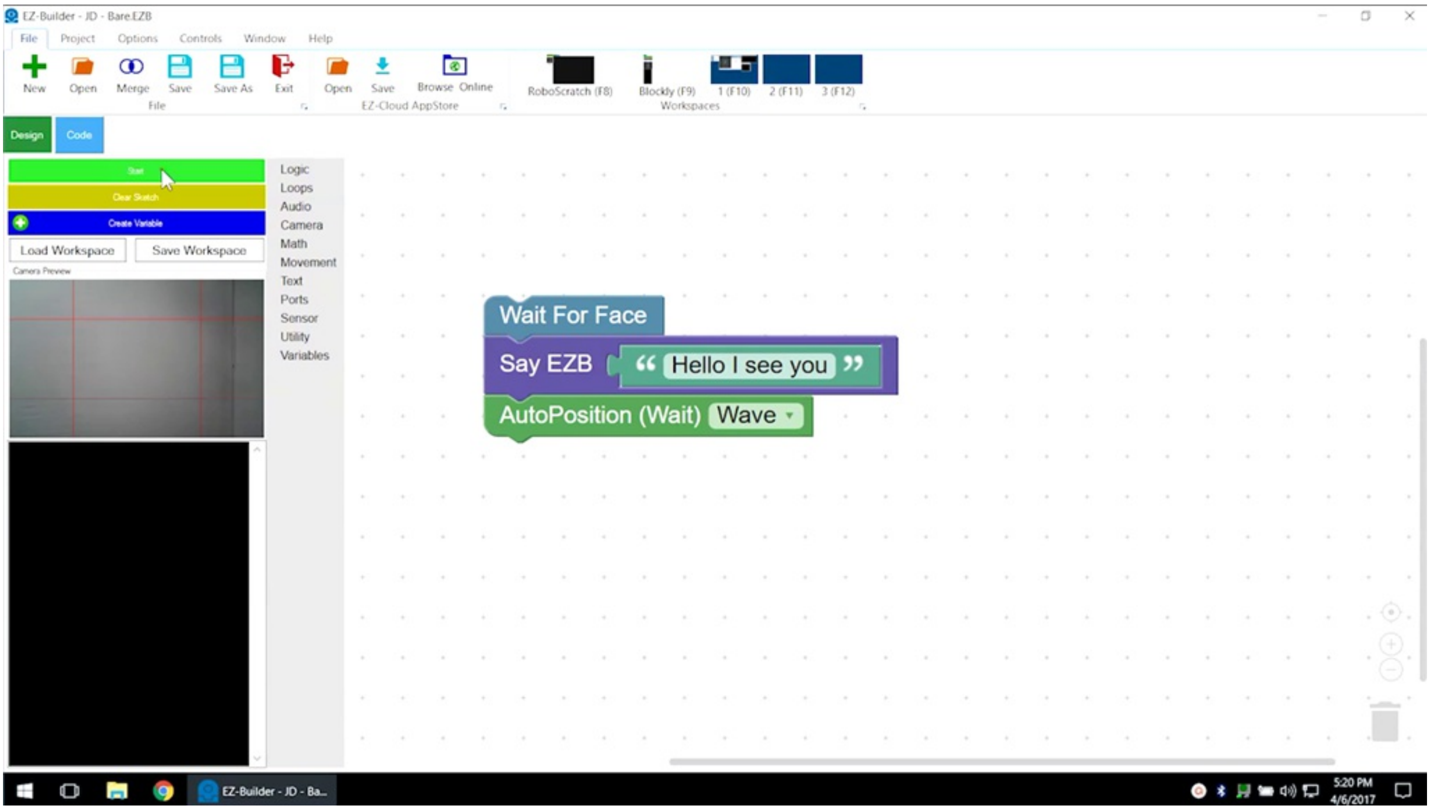
Wait For Face

Say EZB “ Hello I see you ”

AutoPosition (Wait) Wave

Step 16

Execute the program using the green **Start** button. Follow the green line and highlighting as the program runs.



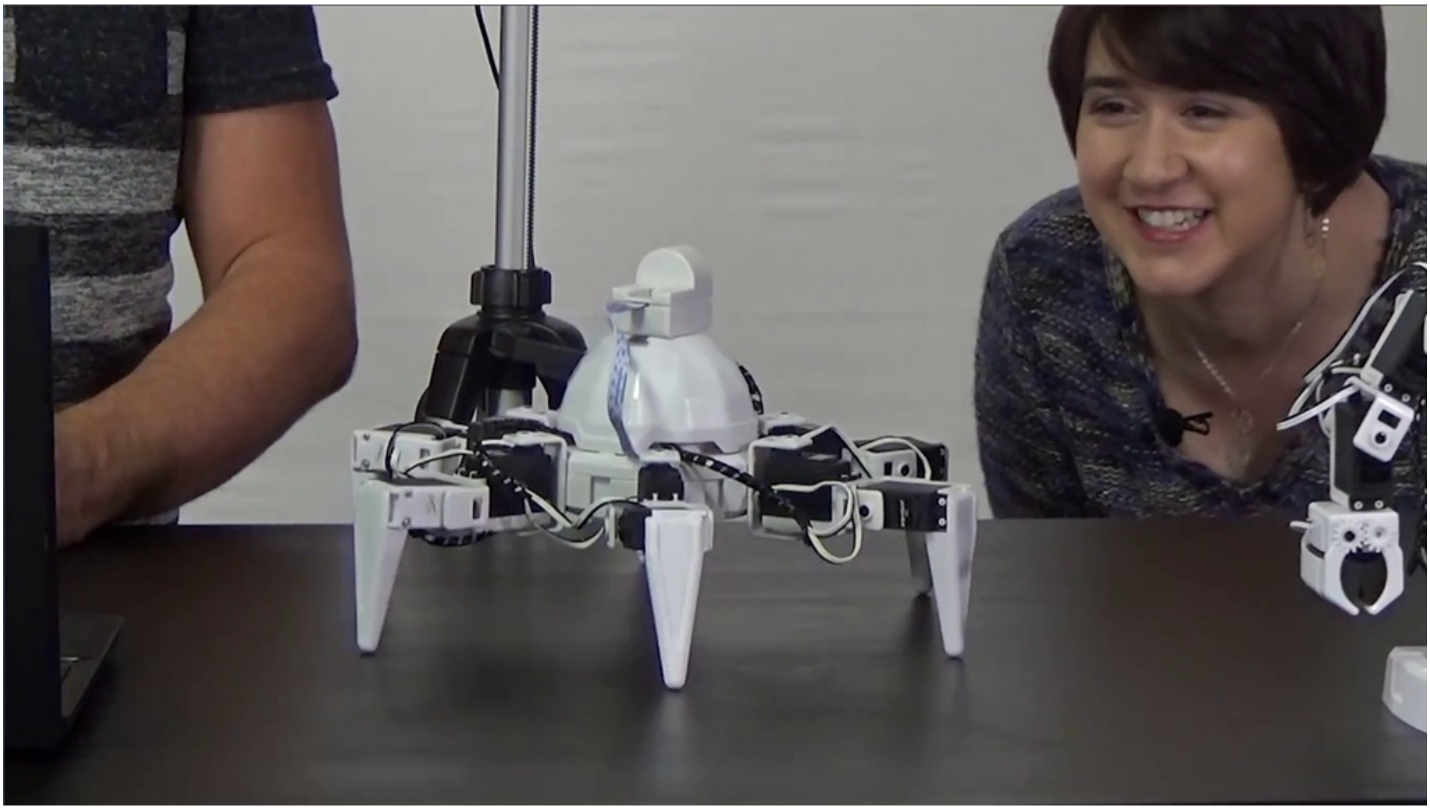
```
Wait For Face
Say EZB “ Hello I see you ”
AutoPosition (Wait) Wave
```

Step 17

Once the robot detects a face, it will speak and complete the wave action.

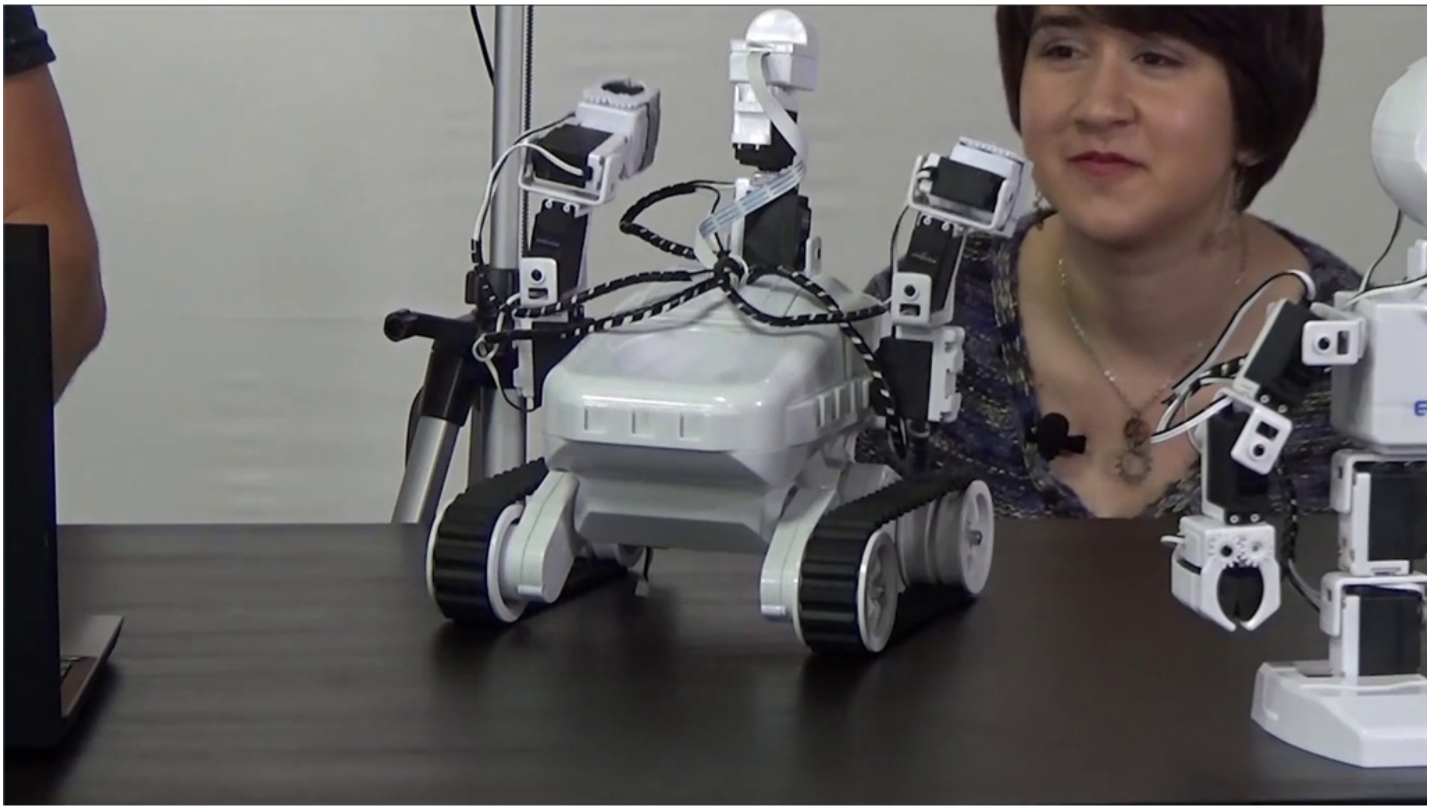
Step 18

Revolution Six will execute the same steps.



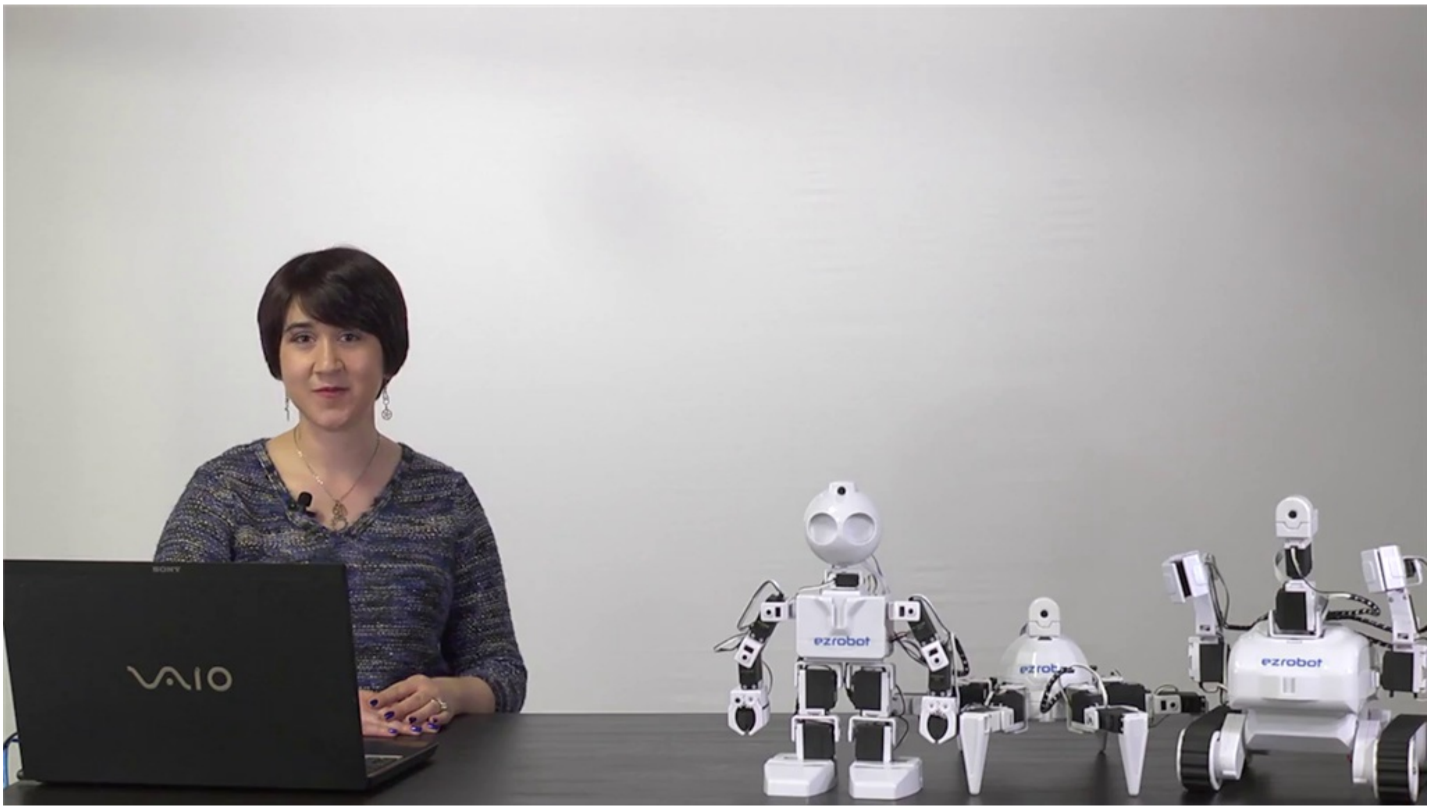
Step 19

Revolution Roli will execute the same steps.



Step 20

Save the project for future use.



Quiz

Question #1
Why is a camera a peripheral device?

Question #2
Which command was used to convert text to robot audio output?

Question #3
What does AutoPosition (Wait) mean?

View the answers to this quiz at www.ez-robot.com/Tutorials/Lesson/95.

Visit www.TheRobotProgram.com for more episodes.