

SYNTHIAM

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The Robot Program Episode 012: Getting AdventureBot to Move

This lesson will demonstrate how to connect to and move the Revolution AdventureBot robot. Follow along with The Robot Program Episode 012: Getting AdventureBot to Move. At the end of this lesson, the reader will have learned how to connect to the robot using Wi-Fi, how to track color, access the the RoboScratch workspace for programming, and how to execute wheeled movement.

View the video episode here: <https://www.ez-robot.com/Tutorials/Lesson/83>

Last Updated: 5/29/2018

⑤ Professor E's Overview

This lesson demonstrated how to connect to **AdventureBot** for the first time.

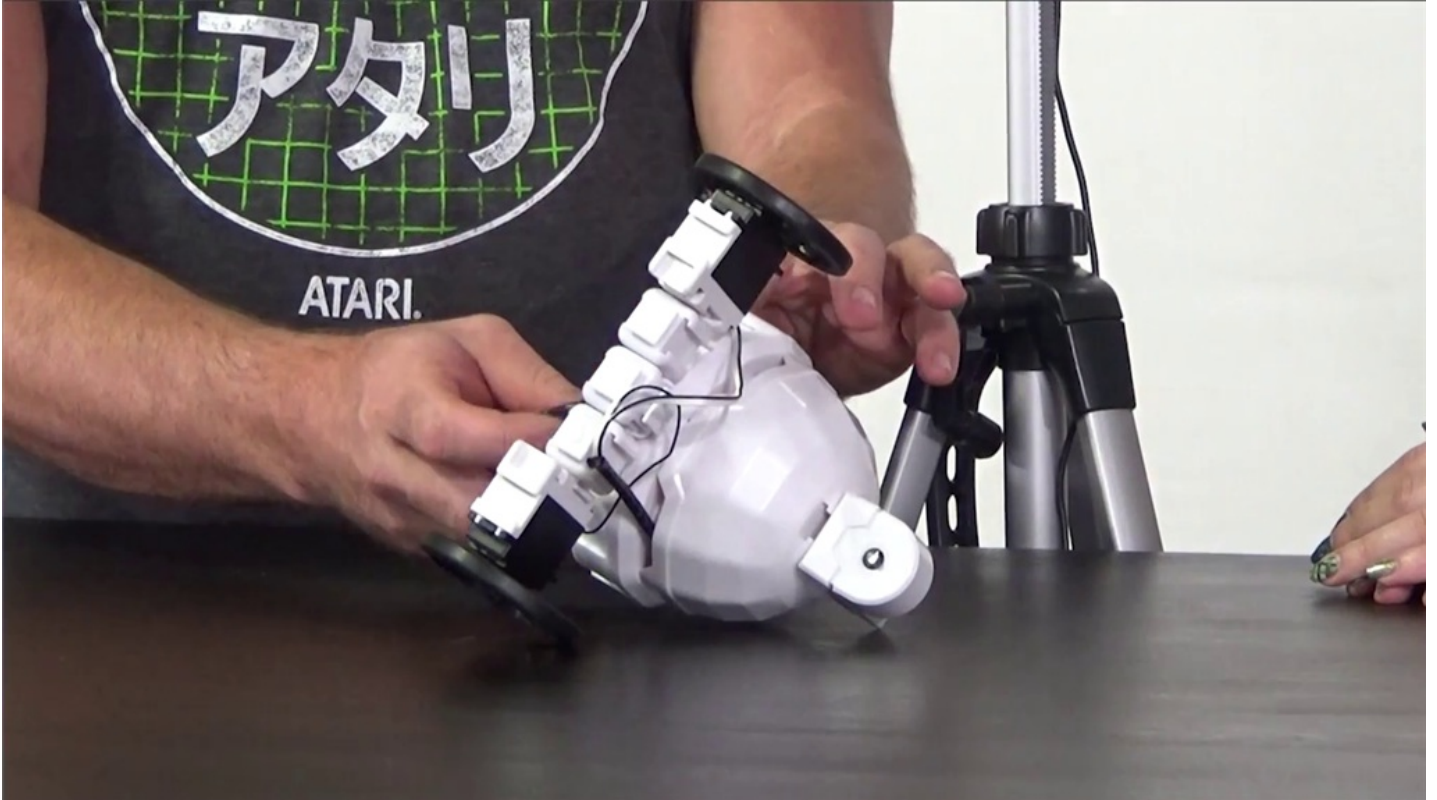
Remember to start with a fully charged robot. Load the **Example Project** for **AdventureBot** and connect to the robot using Wi-Fi.

AdventureBot is a wheeled robot. Use the arrow keys and sliders within the **Servo Movement Panel** to move the robot. Color tracking can be enabled using the **Camera** control. The **RoboScratch** workspace can be used to create custom programs. Remember to disconnect, power off, and charge the robot when finished.



Step 1

Learn how to connect to **AdventureBot** for the first time. Disconnect from the battery charger.



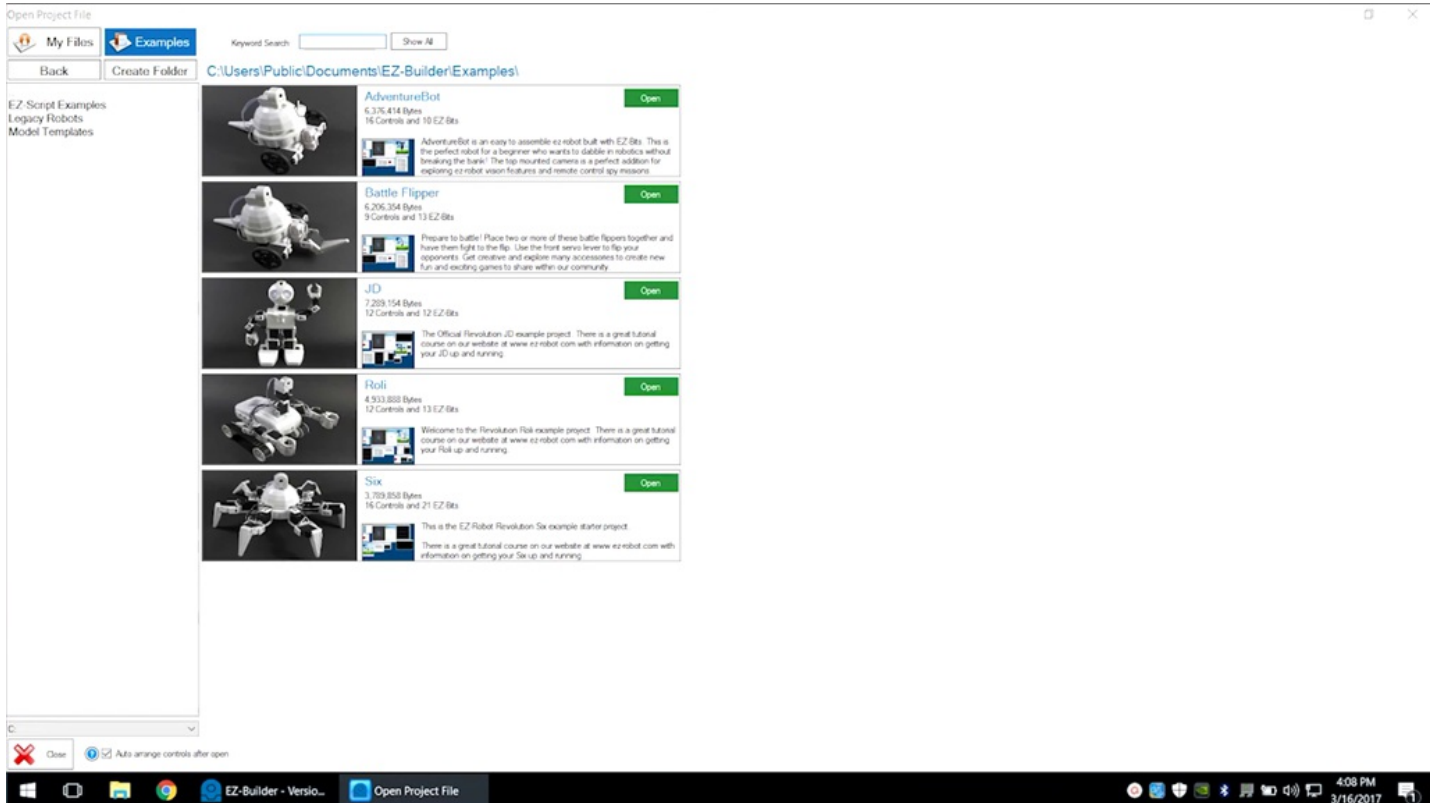
Step 2

Power on the robot. Select the **EZ-B v4** Wi-Fi connection.



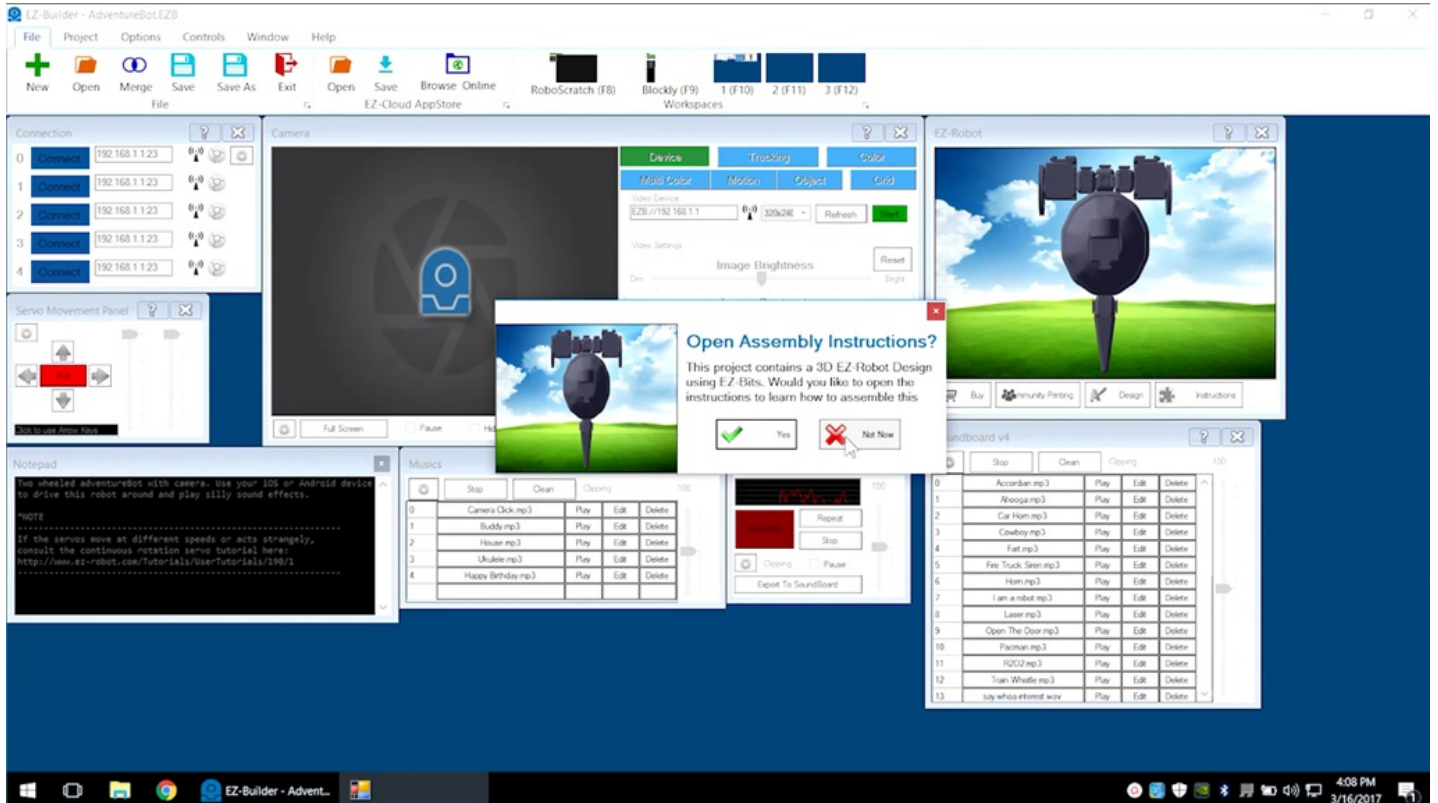
Step 3

Open **EZ-Builder**. Select **Example Projects** and load the **AdventureBot** project.



Step 4

See how to build **AdventureBot** in **Episode 010**.



Step 5

Select **Connect to EZ-B** and listen for the chime.

The screenshot displays the EZ-Builder software interface for an AdventureBot. The main window is titled "EZ-Builder - AdventureBot.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, EZ-Cloud AppStore, RoboScratch (F8), Blockly (F9), and Workspaces (1 (F10), 2 (F11), 3 (F12)).

The interface is divided into several panels:

- Connection Panel:** Shows a list of connection attempts. The first entry is selected, and the "Connect" button is highlighted.
- Servo Movement Panel:** Contains a diagram of a servo motor and a "Click to use Arrow Keys" button.
- Camera Panel:** Displays a camera feed with a blue robot head icon. Below the feed are sliders for "Image Brightness", "Image Contrast", and "Image Saturation", each with a "Reset" button. There are also "Video Recording" (Start, Pause) and "Enhancements" (Sharpen Image) controls.
- EZ-Robot Panel:** Shows a 3D model of a robot on a green field under a blue sky. Below the model are buttons for "Buy", "Community Printing", "Design", and "Instructions".
- Notepad:** Contains text instructions: "Two wheeled adventurebot with camera. Use your iOS or Android device to drive this robot around and play silly sound effects." and a note about servo speeds with a URL: <http://www.ez-robot.com/Tutorials/UserTutorials/198/1>.
- Music Panel:** A table with columns for "Step", "Clean", "Play", "Edit", and "Delete". It lists various audio files like "Camera Click.mp3", "Buddy.mp3", "Houser.mp3", "Ukulele.mp3", and "Happy Birthday.mp3".
- Microphone Panel:** Features a "RECORD" button, "Repeat" and "Stop" buttons, and an "Export To Soundboard" button.
- Soundboard v4 Panel:** A list of 13 sound effects with "Play", "Edit", and "Delete" buttons for each. The list includes "Accordion.mp3", "Alroog.mp3", "Car Horn.mp3", "Cowboy.mp3", "Fat.mp3", "Fire Truck Seen.mp3", "Hum.mp3", "I am a robot.mp3", "Laser.mp3", "Open The Door.mp3", "Pacman.mp3", "R2D2.mp3", "Train Whistle.mp3", and "Joy whos interest waw".

The Windows taskbar at the bottom shows the system tray with the time 4:08 PM and date 3/16/2017.

Step 6

Use the arrow keys and sliders of the **Servo Movement Panel** to control wheel movement.

The screenshot displays the EZ-Builder software interface for controlling a robot. The main window is titled "EZ-Builder - AdventureBot.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, and EZ-Cloud AppStore. The interface is divided into several panels:

- Connection:** A list of four connection attempts, all showing "Connect" status with IP address 192.168.1.123.
- Servo Movement Panel:** A panel with four directional arrow keys (Up, Down, Left, Right) and a central slider, used for controlling the robot's movement.
- Camera:** A live video feed of a person sitting at a desk with a camera on a tripod. The camera is labeled "ez-robot".
- EZ-Robot:** A 3D model of the robot in a virtual environment with a blue sky and green ground.
- Device:** A panel with tabs for Multi Color, Motion, Object, and Grid. It shows video device settings for "EZB://192.168.1.1" and video settings for Image Brightness, Image Contrast, and Image Saturation.
- Microphone:** A panel with a "RECORD" button and a volume slider.
- Music:** A table with columns for Stop, Clean, and a volume slider (set to 100). The table lists various music files:

Stop	Clean	Volume
0	Camera Click.mp3	Play Edit Delete
1	Buddy.mp3	Play Edit Delete
2	House.mp3	Play Edit Delete
3	Ukulele.mp3	Play Edit Delete
4	Happy Birthday.mp3	Play Edit Delete

- Soundboard v4:** A panel with a "Stop" button and a volume slider (set to 100). It lists various sound effects:

Stop	Clean	Volume
0	Accordion.mp3	Play Edit Delete
1	Altoaga.mp3	Play Edit Delete
2	Car Horn.mp3	Play Edit Delete
3	Cowboy.mp3	Play Edit Delete
4	Fart.mp3	Play Edit Delete
5	Fire Truck Seen.mp3	Play Edit Delete
6	Hum.mp3	Play Edit Delete
7	I am a robot.mp3	Play Edit Delete
8	Laser.mp3	Play Edit Delete
9	Open The Door.mp3	Play Edit Delete
10	Pacman.mp3	Play Edit Delete
11	R2D2.mp3	Play Edit Delete
12	Train Whistle.mp3	Play Edit Delete
13	Joy whos interest waw	Play Edit Delete

The bottom status bar shows the system tray with the time 4:59 PM and date 3/16/2017.

Step 7

Use the **Microphone** control to record and playback sounds.

The screenshot displays the EZ-Builder software interface for controlling a robot. The main window is titled "EZ-Builder - AdventureBot.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, EZ-Cloud AppStore, RoboScratch (F8), Blockly (F9), and Workspaces (F10, F11, F12).

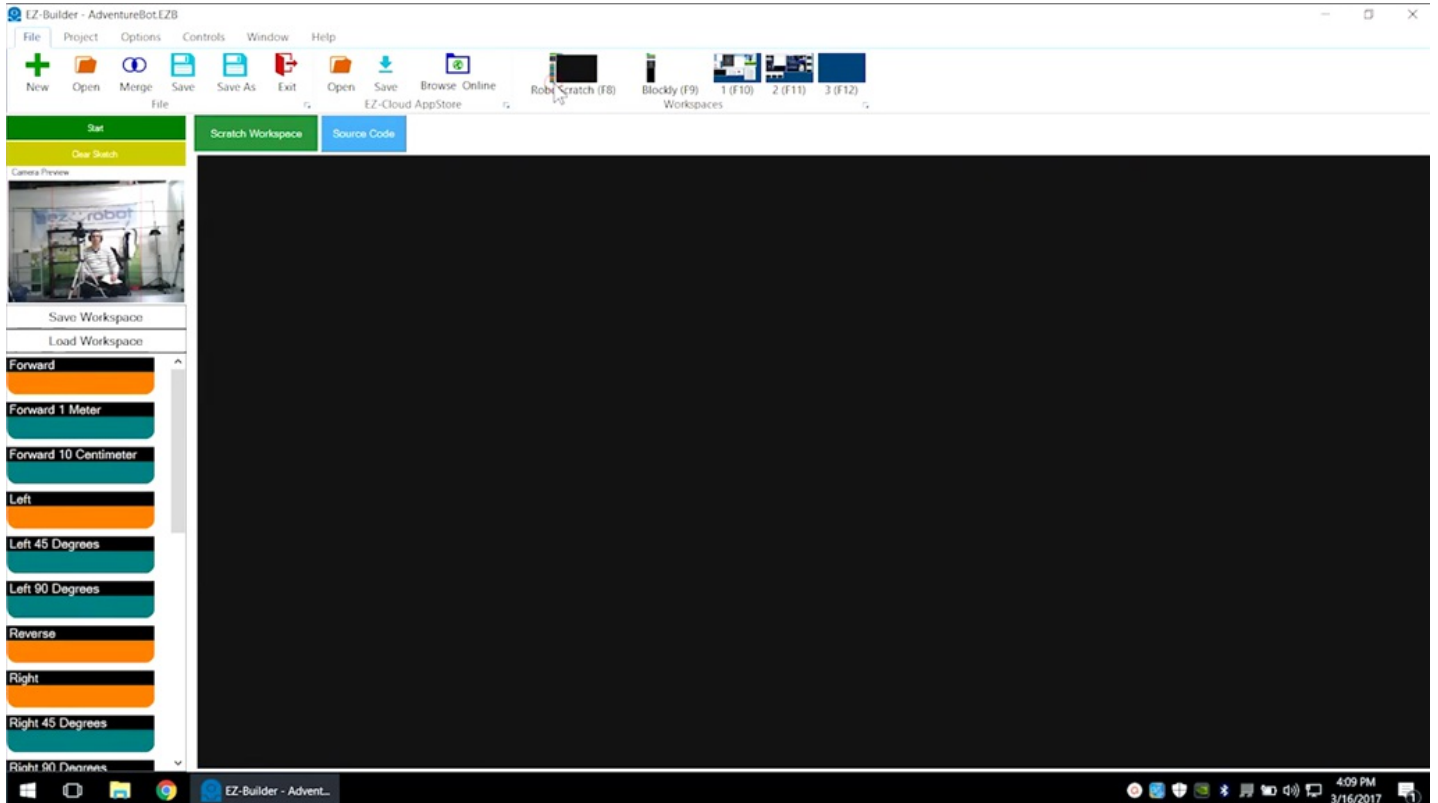
Key components of the interface include:

- Connection Panel:** Lists four connection attempts, all with the IP address 192.168.1.123 and a status of "Connect".
- Servo Movement Panel:** Contains directional arrows and a "Click to use Arrow Keys" button.
- Camera Panel:** Shows a live video feed of a person operating a robot. It includes a "Device" dropdown set to "EZB://192.168.1.1", a "Video Device" field, and sliders for "Image Brightness", "Image Contrast", and "Image Saturation". There are also "Start" and "Pause" buttons for "Video Recording" and an "Enhancements" checkbox for "Sharpen Image".
- Music Panel:** A table with columns for "Step", "Clean", and "100". It lists several audio files for playback, such as "Camera Click.mp3", "Buddy.mp3", "Houser.mp3", "Ukulele.mp3", and "Happy Birthday.mp3".
- Microphone Panel:** Features a green "STOP (1.5s)" button, a "Repeat" button, and an "Export To Soundboard" button. A waveform visualization is visible above the buttons.
- Soundboard v4 Panel:** A list of 13 sound effects with columns for "Step", "Clean", "Play", "Edit", and "Delete". The effects include "Accordion.mp3", "Altoog.mp3", "Car Horn.mp3", "Cowboy.mp3", "Fat.mp3", "Fee Truck Seen.mp3", "Hum.mp3", "I am a robot.mp3", "Laser.mp3", "Open The Door.mp3", "Pacman.mp3", "R2D2.mp3", "Train Whistle.mp3", and "Joy whos interest way".
- EZ-Robot Panel:** Displays a 3D model of a robot on a green field under a blue sky. It includes a "Buy" button, "Community Printing", "Design", and "Instructions" options.
- Notepad:** Contains a note about driving a two-wheeled adventurebot with a camera and a link to a tutorial: <http://www.ez-robot.com/Tutorials/UserTutorials/198/1>.

The Windows taskbar at the bottom shows the time as 4:59 PM on 3/16/2017.

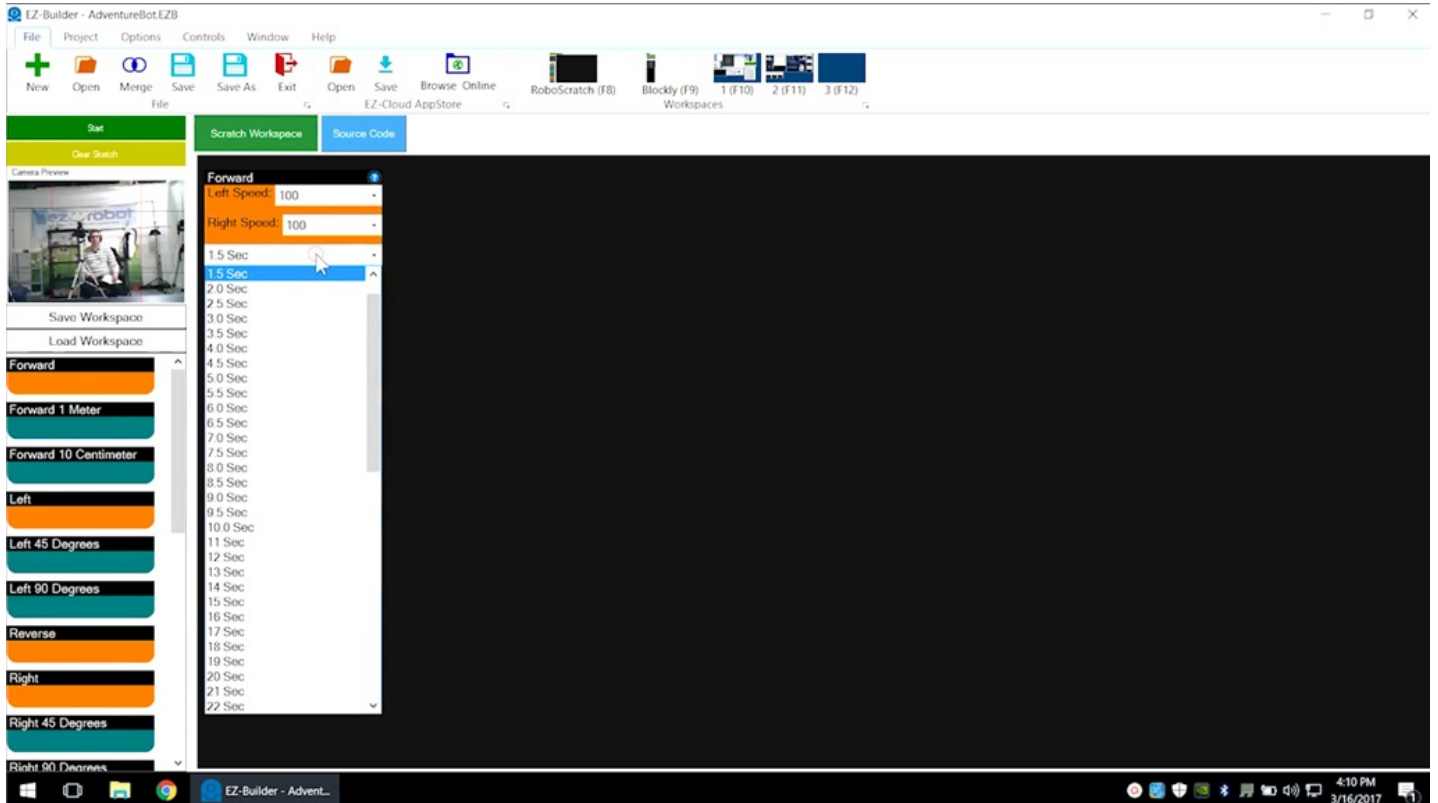
Step 8

RoboScratch can be used to create custom programs.



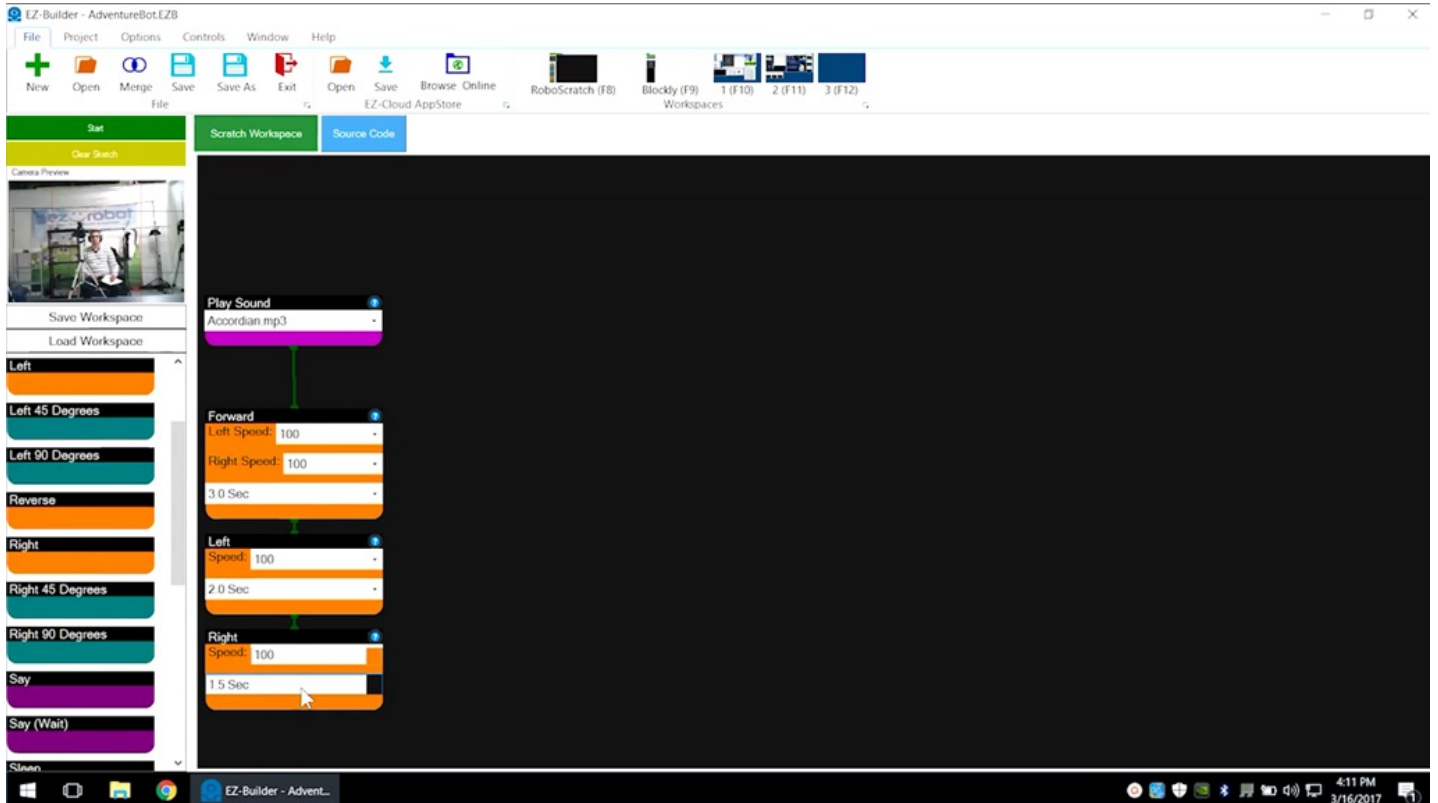
Step 9

Build programs by selecting actions.



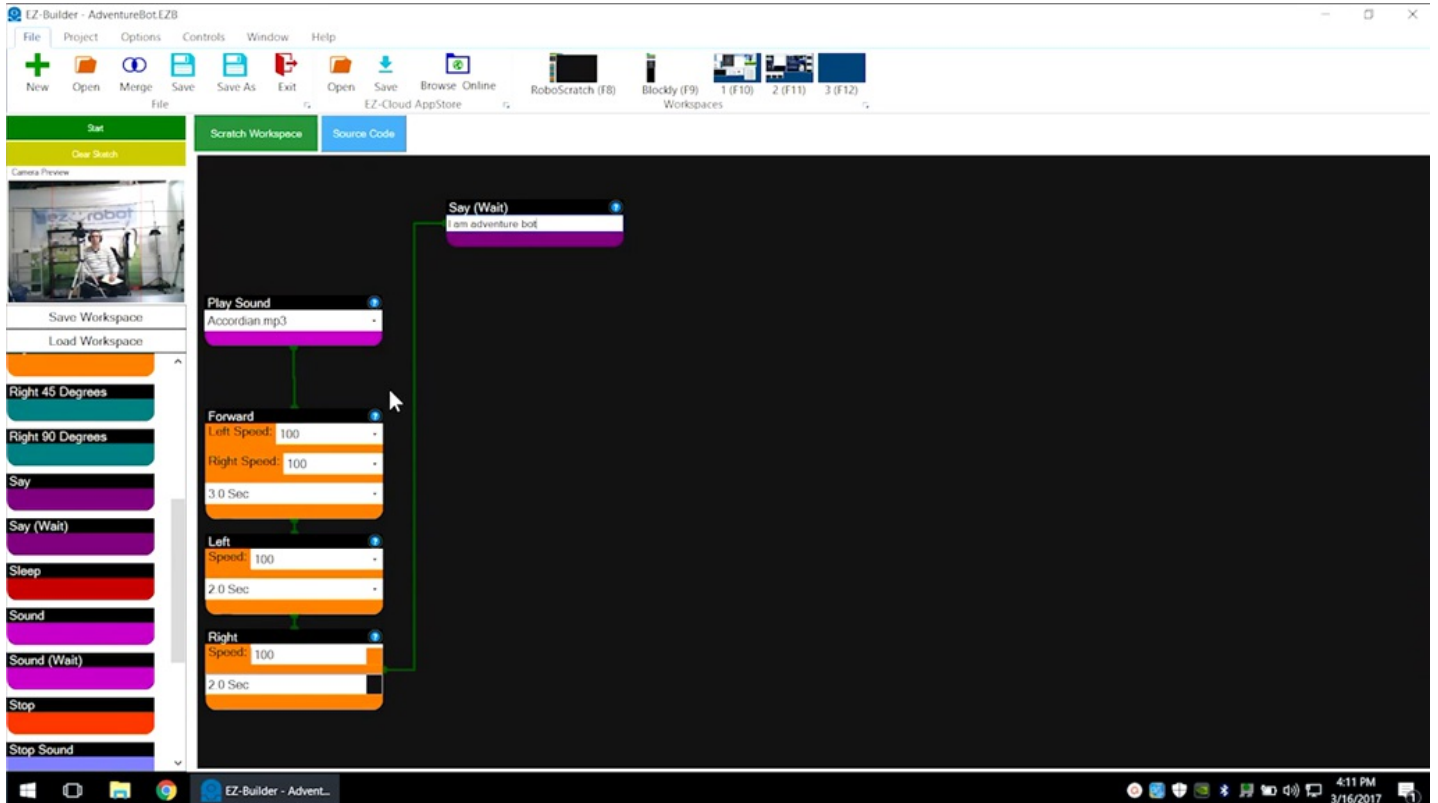
Step 10

Learn more about **RoboScratch** in **Episode 006**.



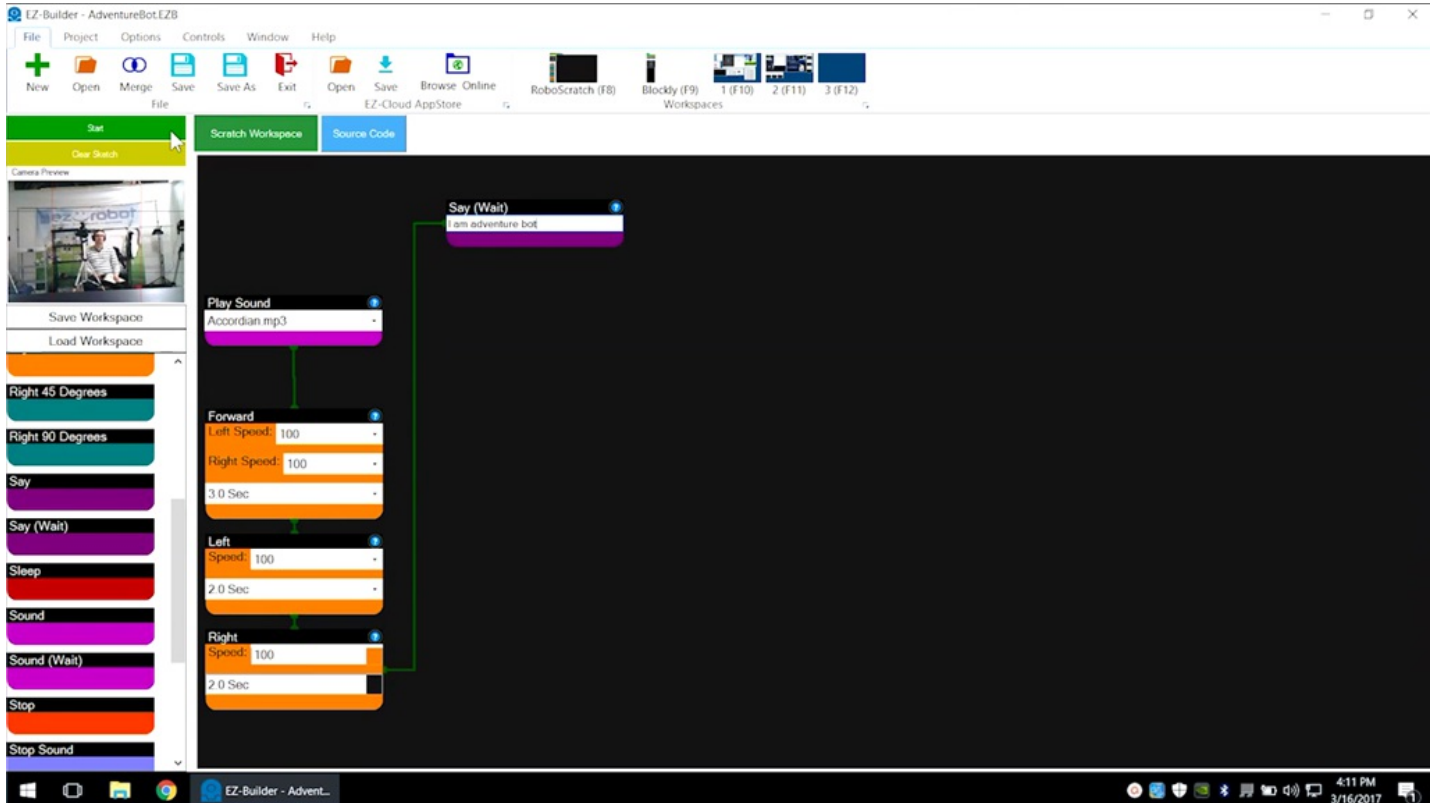
Step 11

Follow the green line to see the action execution order.



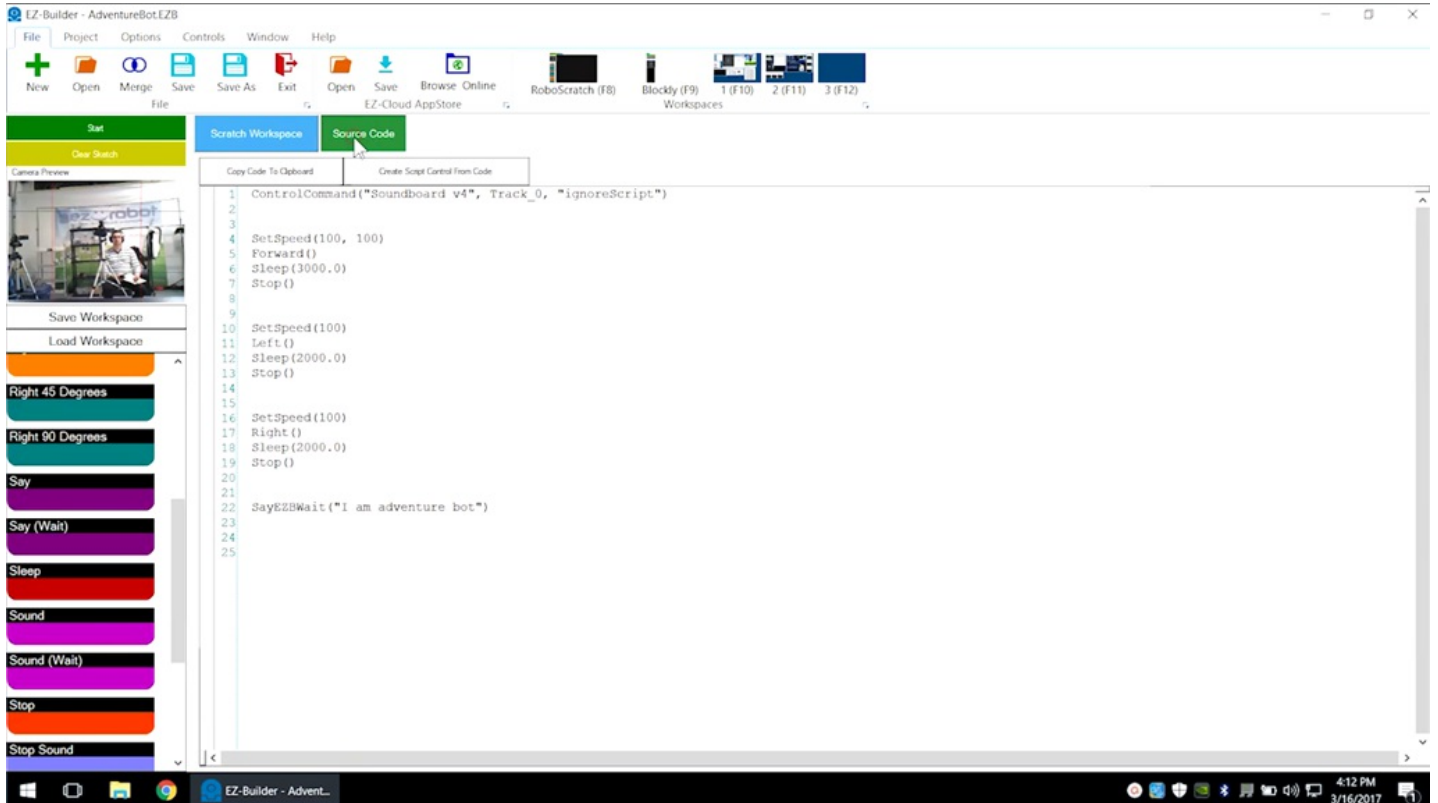
Step 12

Click on **Start** to run the program.



Step 13

Click on **Source Code** to view the generated code.



The screenshot displays the EZ-Builder software interface for a project named "AdventureBotEZB". The "Source Code" tab is active, showing a list of 25 lines of code. The code includes commands for controlling a soundboard, setting motor speeds, and making the robot move in various directions (forward, left, right) with specific sleep durations. A "Say" command is also present, with a "Wait" option.

```
1 ControlCommand("Soundboard v4", Track_0, "ignoreScript")
2
3
4 SetSpeed(100, 100)
5 Forward()
6 Sleep(3000.0)
7 Stop()
8
9
10 SetSpeed(100)
11 Left()
12 Sleep(2000.0)
13 Stop()
14
15
16 SetSpeed(100)
17 Right()
18 Sleep(2000.0)
19 Stop()
20
21
22 SayEZBWait("I am adventure bot")
23
24
25
```

The interface also features a menu bar with options like File, Project, Options, Controls, Window, and Help. A toolbar contains icons for New, Open, Merge, Save, Save As, Exit, Open, Save, Browse Online, and EZ-Cloud AppStore. On the left side, there is a "Camera Preview" window showing a robot, and a "Block Palette" with various motion and control blocks such as "Right 45 Degrees", "Right 90 Degrees", "Say", "Say (Wait)", "Sleep", "Sound", "Sound (Wait)", "Stop", and "Stop Sound".

Step 14

In the **Camera** control, click on the **Gear Icon** and select **Enable Movement Tracking**.

The screenshot displays the EZ-Builder software interface. The main window is titled "EZ-Builder - AdventureBotEZB". The "Camera" control panel is active, showing a live camera feed of a person's arm. The "Camera Config" dialog box is open, with the "Settings" tab selected. The "Enable Movement Tracking" checkbox is checked. Other settings include "Enable Servo Tracking" (unchecked), "Track By Relative Position" (unchecked), "Use Grid Lines" (unchecked), "Horizontal Increment Steps" (3), and "Vertical Increment Steps" (2). The "Movement Tracking" section has "Enable Movement Tracking" (checked), "Allow Forward Movement" (checked), "Allow Left/Right Movement" (checked), and "Allow Up/Down (Dance Only)" (unchecked). The "Movement Speed" section has "Turn Speed" (30) and "Forward Speed" (100). The "Movement Delay" section has "Movement Delay" (50 ms). The "Save" and "Cancel" buttons are visible at the bottom of the dialog box. The background shows the "Connection" panel with four "Connect" buttons, the "Servo Movement Panel" with directional arrows, and a "Notepad" window with text about driving the robot with a camera. The system tray at the bottom right shows the time as 4:15 PM on 3/16/2017.

Step 15

In the **Camera** control, click on **Tracking** and select the **Color** checkbox.

The screenshot displays the EZ-Builder software interface for controlling a robot. The main window is titled "EZ-Builder - AdventureBot.EZB" and features a menu bar (File, Project, Options, Controls, Window, Help) and a toolbar with various icons. The interface is divided into several panels:

- Connection:** A list of four connection attempts, all showing "Connect" status and the IP address "192.168.1.123".
- Servo Movement Panel:** A control panel for servo motors with a red arrow pointing to the right and a "Click to use Arrow Keys" button.
- Camera:** The central panel showing a live video feed of a person's hands on a keyboard. A red bounding box is overlaid on the hands. To the right of the video feed is a control panel with tabs for "Device", "Tracking", and "Color". The "Tracking" tab is active, and the "Color" checkbox is checked. Other options include "Multi Color", "Motion", "Object", "Grid", "QR Code", "Face", "Glyph", "Custom Haar", and "Object". A "Tracking Speed (High <-> Low)" slider is also present.
- EZ-Robot:** A 3D model of a robot on a green field under a blue sky.
- Notepad:** A text area containing instructions: "Two wheeled adventurebot with camera. Use your iOS or Android device to drive this robot around and play silly sound effects." and a note about servo speeds.
- Music:** A table with columns for "Step", "Clean", "Play", "Edit", and "Delete". It lists several audio files like "Camera Click.mp3", "Buddy.mp3", "Houser.mp3", "Ukulele.mp3", and "Happy Birthday.mp3".
- Microphone:** A control panel for audio recording with a "RECORD" button, "Repeat", "Stop", and "Pause" buttons, and an "Export To Soundboard" button.
- Soundboard v4:** A list of 13 sound effects with columns for "Step", "Clean", "Play", "Edit", and "Delete".

The Windows taskbar at the bottom shows the system tray with the time "4:15 PM" and date "3/16/2017".

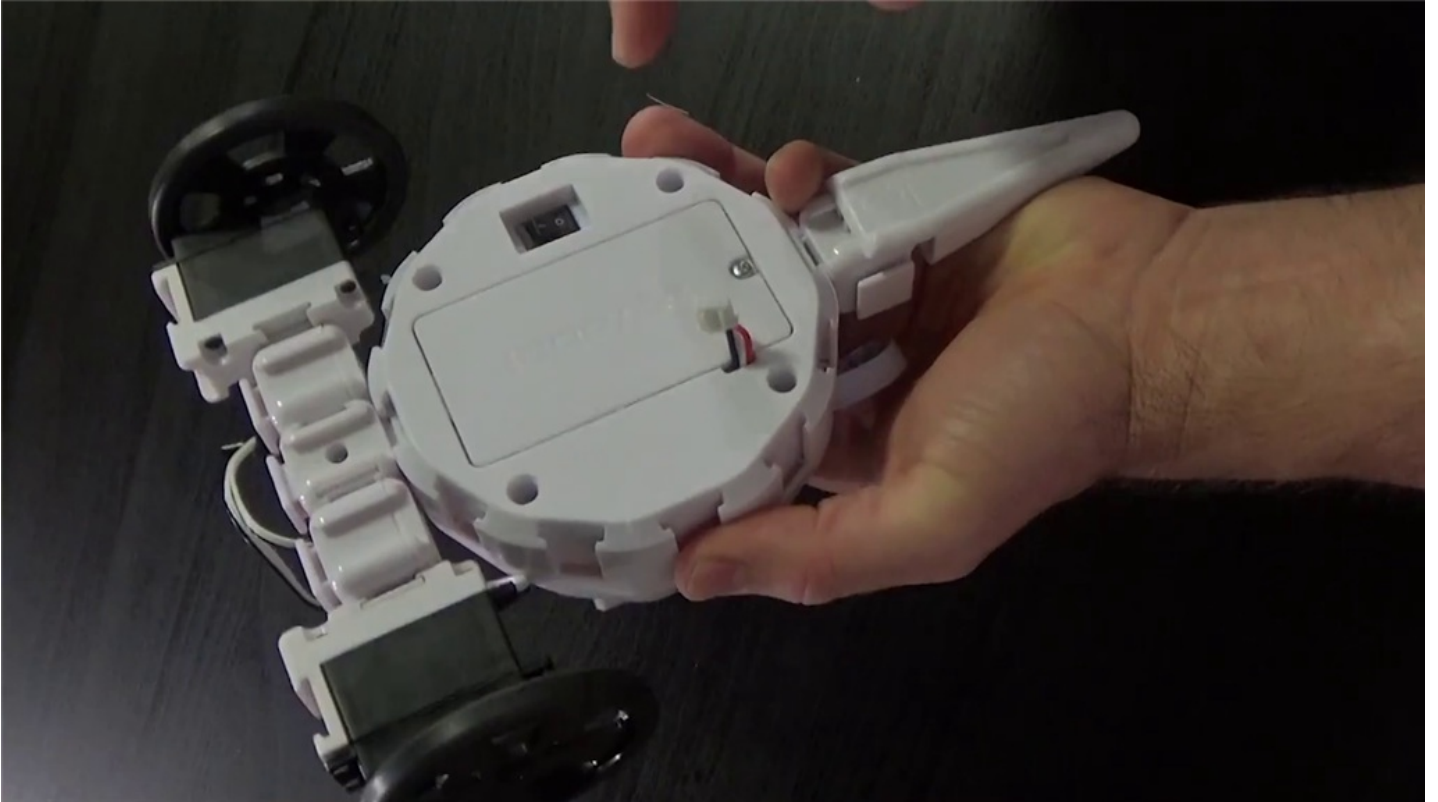
Step 16

By default, **AdventureBot** will track the color red. Turn off tracking when finished.



Step 17

Remember to disconnect, power off, and connect to the battery charger when finished.



Quiz

Question #1 What letters are always at the start of the Wi-Fi connection name?

Question #2 Which control panel is used for AdventureBot™'s movement?

Question #3 What is the default color for camera color tracking?

View the answers to this quiz at www.ez-robot.com/Tutorials/Lesson/83.

Visit www.TheRobotProgram.com for more episodes.