INTERMEDIATE PROGRAMMING LESSON

EV3 CLASSROOM: PARALLEL BEAMS (EVENTS)

By Sanjay and Arvind Seshan
Lesson Objectives

1) Learn what an event is and how to use them
2) Learn when you might use events
What are Events?

Events allow you to run two or more blocks at the same time.

What if you have one or more attachment arms connected to motors and you want to turn these arms while the robot is moving to complete a mission.

Robot lifting up hoops and driving forward.
Event Blocks

Events are triggered by different conditions (e.g. sensor values, message broadcasts, or when a program starts)

In this lesson we provide an example of each.
When Program Starts

This block is used to start your programs.

If you have more than one in a project, you can have two separate pieces of code run when the program starts.

In the example on the right, the robot will move straight for two rotations while simultaneously running Motor A for 1 rotation.
Broadcast Messages

Messages can trigger events when you want to (even in the middle of code)

Broadcast message: sends the message and then continues the rest of the code below it.

Broadcast message and wait: sends the message and waits for all the code under that received message finish and then continues the code under the broadcast message block

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Sensor Activation

You can use the Event Sensor blocks to trigger an event when a sensor condition is met.

In the example below, the robot moves forward and checks for the color black at the same time.

- **Start moving**: straight: 0 at 20 % speed
- **Color check**: when color is black
- **Beep**: play beep 60 for 0.2 seconds
- **Distance check**: when distance is less than
- **Proximity check**: when proximity is less than
- **Beacon check**: when beacon top left
- **Angle check**: when angle is less than
- **Button check**: when center button pressed

Moves forward
Simultaneously checks color
Plays a beep when black is found
Events and My Blocks

The code on the left and right may seem the same, but they are not. Only the code on the right will work properly.

The EV3 does not allow multiple identical My Blocks to run simultaneously.
Challenge

Can you write a program that uses parallel beams that have to move and pick up an object at the same time?
Credits

This tutorial was created by Sanjay Seshan and Arvind Seshan
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