Lecture 3 : Educational robotics. Brick buttons AS SENSORS

Lecturer: Mukhamediyeva Kymbatsha Maulenovna

Learn how to use your brick buttons as sensors

- The Brick Buttons are the five buttons on the EV3 Brick (all buttons except the Back button)
- They can be used as sensors to detect if a button has been pressed, to find out which button was pressed and to control your program
- You can even use them to track if the button was pressed and then released in the past (like Bumped for the Touch Sensor)
- Note: You cannot detect if two buttons are pressed at the same time
- Wait Blocks, Switches, Loops and the Brick Buttons Programming Blocks all let you use the brick buttons as sensors
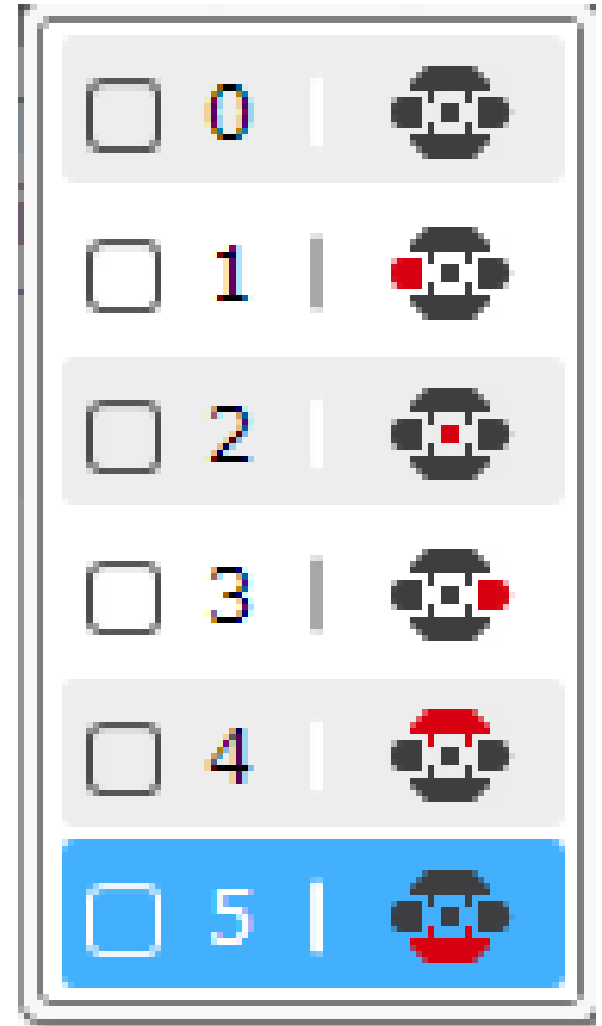
CHALLENGE: Program your robot to move forward until a button is pressed. Just like in the beginner lessons that used sensors, you will use a Wait For block to complete this challenge.

A good use for such a program might be to help you debug. Adding a Wait For Button Press in your code helps you run parts of your code and check for errors.

- **STEP 1:** Turn on motor in your Move Steering Block
- **STEP 2:** Add a Wait For Button Press (Middle Button)
- **STEP 3:** Stop Motors after the button is pressed.

Challenge 1 Solution

STEP 1: Turn motor on

STEP 2: Wait for the middle button on the brick to be pressed

STEP 3: Stop the motors after the button was pressed

Challenge 2: Menu With Buttons

Create an onscreen menu using the brick buttons that does a different action based on which button is pressed. The actions to program are – go forward, backward, left and right

STEP 1: Use four Display Blocks to display the 4 actions on the screen so it will look like the image on the right
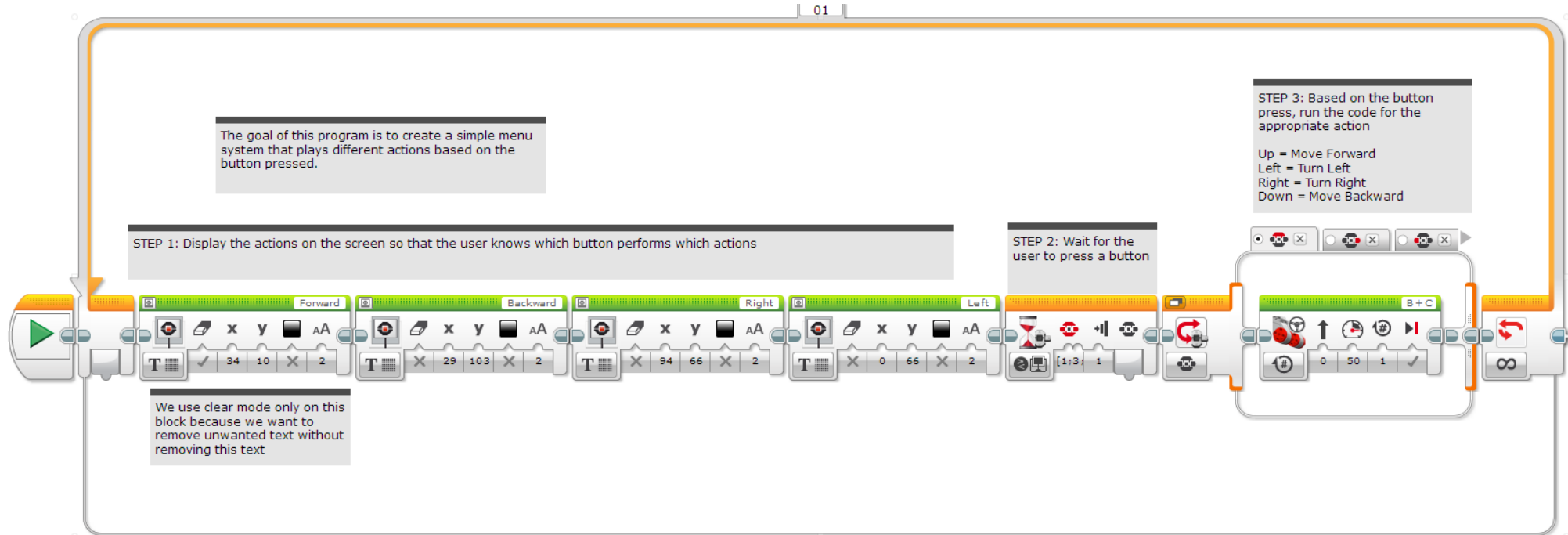
STEP 2: Add a Wait For button press

STEP 3: Add a Switch Block and based on which button is pressed, run the code for the four actions – left, right, forward, backward

STEP 4: Place all the above Blocks in a loop that runs forever

Challenge 2 Solution

The goal of this program is to create a simple menu system that plays different actions based on the button pressed.

STEP 1: Display the actions on the screen so that the user knows which button performs which actions

STEP 2: Wait for the user to press a button

STEP 3: Based on the button press, run the code for the appropriate action

Up = Move Forward
Left = Turn Left
Right = Turn Right
Down = Move Backward

We use clear mode only on this block because we want to remove unwanted text without removing this text

Note that if the action in the switch block is very quick (like adding to a variable or displaying a sensor value), the above loop and selected action will run multiple times

References

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Valk, L. (2014), *THE LEGO® MINDSTORMS® EV3 DISCOVERY BOOK*. William Pollock, USA.

Filipov, S.A. (2013), *Robotics for children and parents*, Fradkova, A.L., St. Petersburg.