

Robot C Basic Screen Outline

Font Height Hotkey = CTRL and +/- to increase or decrease font height

The screenshot shows the ROBOTC software interface with several callout boxes:

- Fix Formatting:** Organizes/Tabs Code for easier reading (points to the Fix Formatting button).
- Motor and Sensor Setup:** Allows User to assign and rename properties of motors/sensors (points to the Motor and Sensor Setup button).
- Firmware:** Updates Operating (points to the Firmware Download button).
- Compile Program:** Checks the program for bugs (points to the Compile Program button).
- Download code to robot** (points to the Download to Robot button).
- Programming Area** (points to the code editor area containing the following code):

```
1 |  
2 | task main()  
3 | {  
4 |  
5 |  
6 |  
7 | }
```
- Shortcut Coding Syntax:** Drag and drop coding into your program (points to the Text Functions sidebar).
- Error and Compiling Info Box** (points to the Compiler Errors window showing: File ".\SourceFile004.c" compiled on Sep 14 2016 07:18:22).

Firmware

Definition: programming language that is placed as read-only memory that is able to run certain program types(I.E Firmware OS = Apple products; Firmware Android = Non-Apple Products)

1. Turn the EV3 Brick ON
2. Connect EV3 Lego Brick to the computer using the USB – Micro USB wire.
3. Adjust the firmware from function block (Labview) to structured text (Robot C)
 - a. Open Robot C for Lego Mindstorm 4.x
 - b. Drop Down Menu Robot > Platform Type > Lego Mindstorms > EV3
 - c. Drop Down Menu Robot > Download EV3 Linux Kernel

Tutorial 1: Make It Move

A. Make It Move

1. File > New > New File
2. Screen Layout

The screenshot shows the Robot C IDE interface. The main window displays a C program with the following code:

```
1 |  
2 | task main()  
3 | {  
4 |  
5 |  
6 |  
7 | }
```

Annotations and callouts:

- Compile Program:** Checks for errors in the program code (points to the 'Compile Program' button in the toolbar).
- Download to Robot:** Sends code to EV3 Brick (points to the 'Download to Robot' button in the toolbar).
- Quick Select Syntax Commands:** Instead of typing commands; user can select options (points to the 'Control Structures' menu in the left sidebar).
- Main body of the program:** Braces represent the start and end of the program (points to the curly braces in the code).
- Compiler Information Bar:** Shows user what has been compiled and if there is any errors (points to the 'Compiler Errors' window at the bottom).

The 'Compiler Errors' window shows the following message:

```
File ".\SourceFile002.c" compiled on Sep 01 2016 21:16:42
```

The status bar at the bottom indicates: Robot EV3 SourceFile002.c* R/W No compile errors Ln 1, Col 1

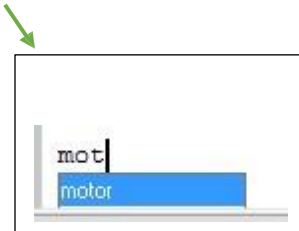
Robot C Programming Tutorial

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3. Write the following Program

a. May type all of the code or begin typing and drop down menus will appear to predict desired command

```
1
2  task main()
3  {
4
5  motor [motorB] = 50; //set motor speed for B Port
6  motor [motorC] = 50; //set motor speed for C Port
7  wait1Msec(3000); // set total time motors will run (1000ms = 1sec)
8
9  }
```



I.E

4. Compile the program to make sure there are no errors or bugs in the program

5. Connect the EV3 Brick to the PC using the USB cable > Select the **Download to Robot** > First time button is hit the software will ask you to save the source file and main file of the program. Navigate to the desired file location > Pop menu will appear > Click the Start button to start the program

Robot C Program 1: Make it Move

Write a Program that does the following. Move now faster than power setting of 25

1. Mark a start point with tape
2. Go forward as provided in the original program for 9 inches
3. Turn Right 90 degrees (Mark spot on the floor w/ tape)
4. Pause 2.5 seconds
5. Go forward 1.5 feet
6. Turn Left 45 Degrees (Mark spot on the floor w/ tape)
7. Pause for PI seconds (3.14 seconds)
8. Go Forward 2 feet
9. Pause 2.68 seconds
10. Move the robot in reverse back to the start point (Do not need to pause at the turns). Robot should come close to the original marked position on the floor.

Show program to Teacher.