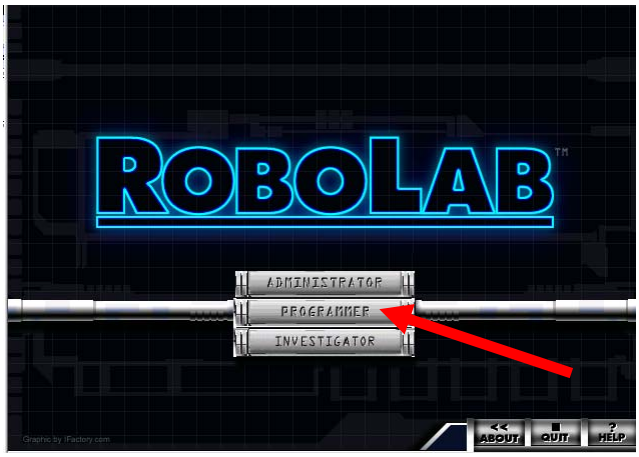
Appendix A

Programming Power Point

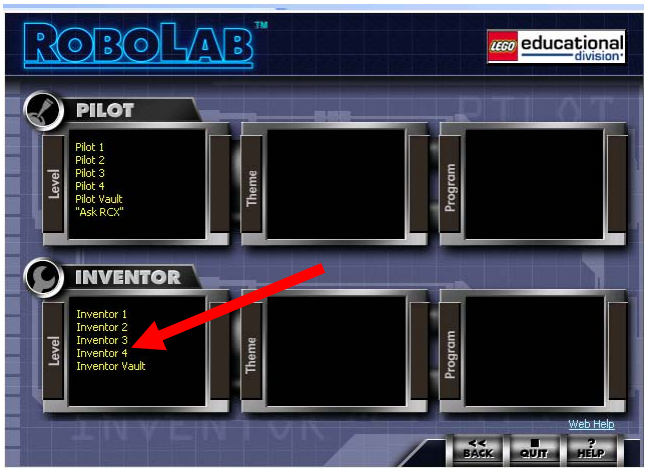
Hofstra Center for Technological Literacy

Programming in…

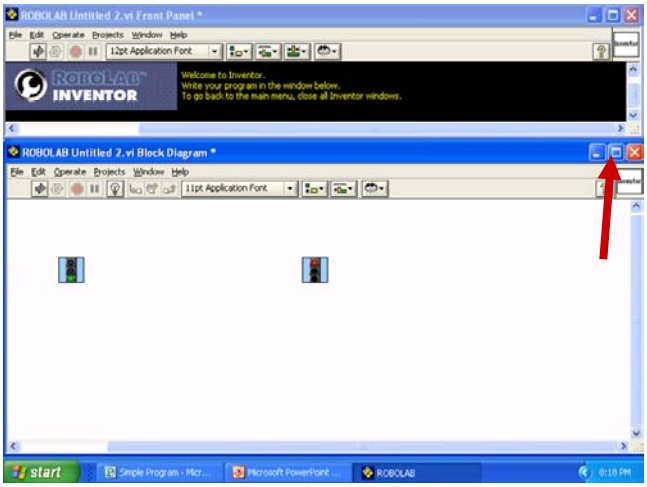
Enter the Robolab as a programmer.



Double click on Inventor 4



Two screens open.

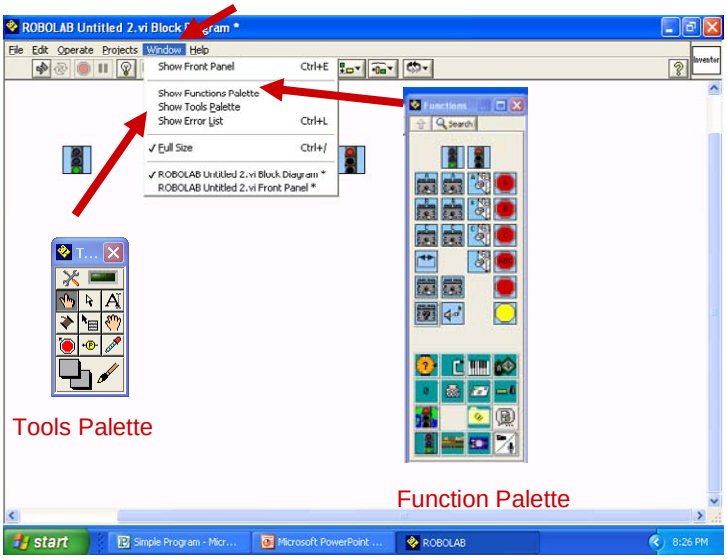


You will not work in the top screen, but closing it will close the program.

You will work in the Block Diagram screen.

Maximize it by clicking on the maximize icon.

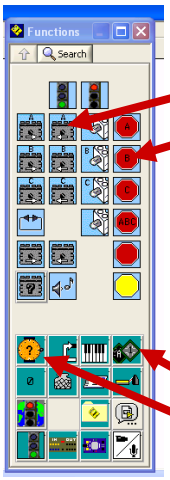
Bring the tool palettes into view.



Click on Window, Show Functions Palette.

Then, click on Window, Show Tools Palette.

The function palette contains the program commands.



At the top are…

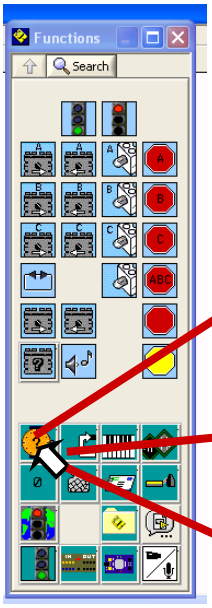
Motors

Stops.

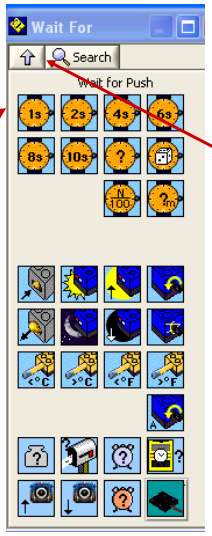
At the bottom are additional commands, allowing you to adjust the…

Power Levels

Time



Wait for



Clicking on a command at the bottom of the functions palette brings up the many variations of that command.

Clicking on the white arrow at the top right returns you to the function palette.

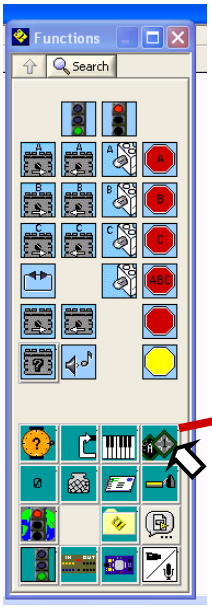
You can “wait for”

Time

Touch

Light/Darkness

# of Rotations



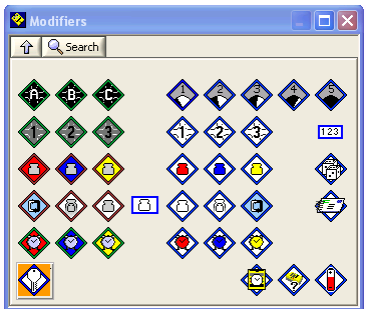
Modifiers

The modifier tool palette shows the output 

and input 

ports.
It also has power levels 

and a numeric constant. 



The tools palette contains the icons for pointing, dragging, writing and wiring programs.

Operate Value- for changing the numeric constant.

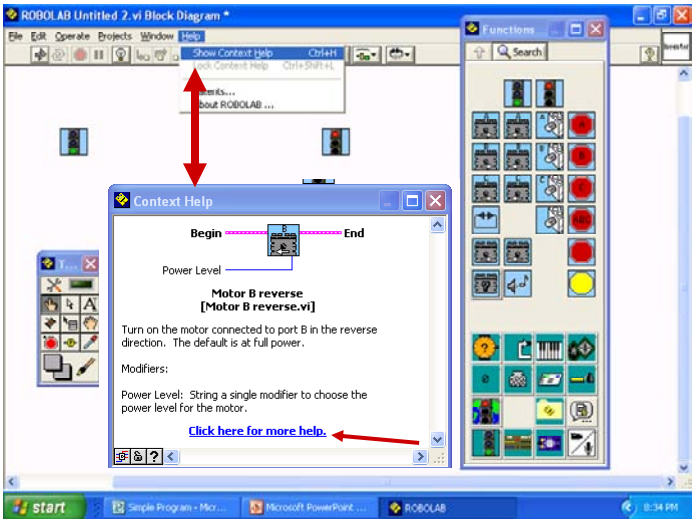
Connect Wire- for connecting the program commands.

Edit Text- excellent for identifying programs.

Position/Size/Select- for moving icons

Pressing the spacebar will toggle between the “wire” and the P/S/Select icons.

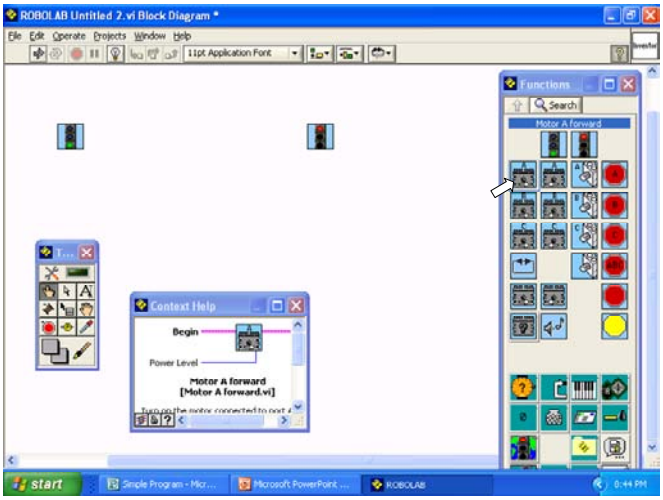
Open the context help window.



Context help describes any icon that you roll the mouse over.

Additionally, if you click for more help with a function, it will give you examples of programming.

Write a program.

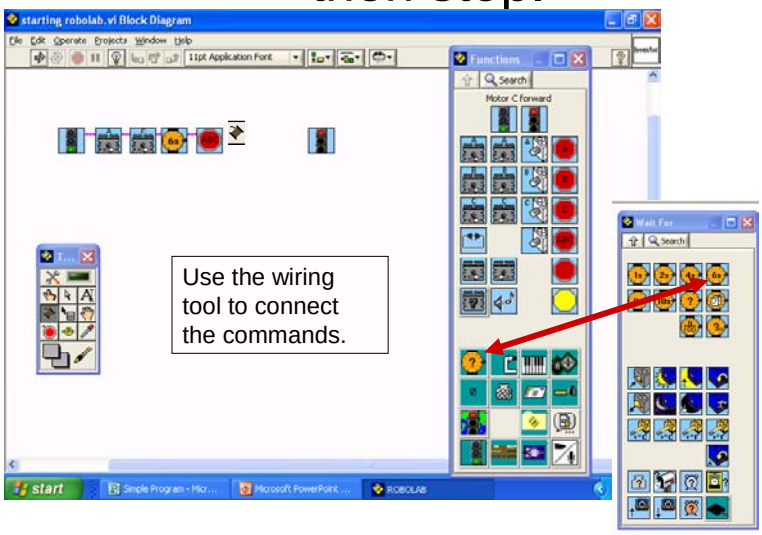


The traffic lights identify where the program begins and ends.

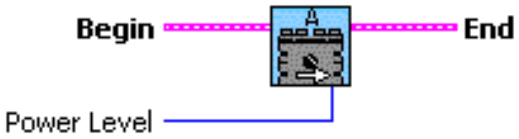
Use the pointer to select icons and pull them onto the screen.

You may need to move the end program icon (red stop light) to make room.

Go forward for 6 seconds, then stop.

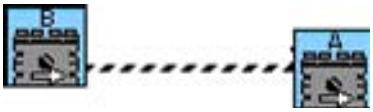


Wiring Tips



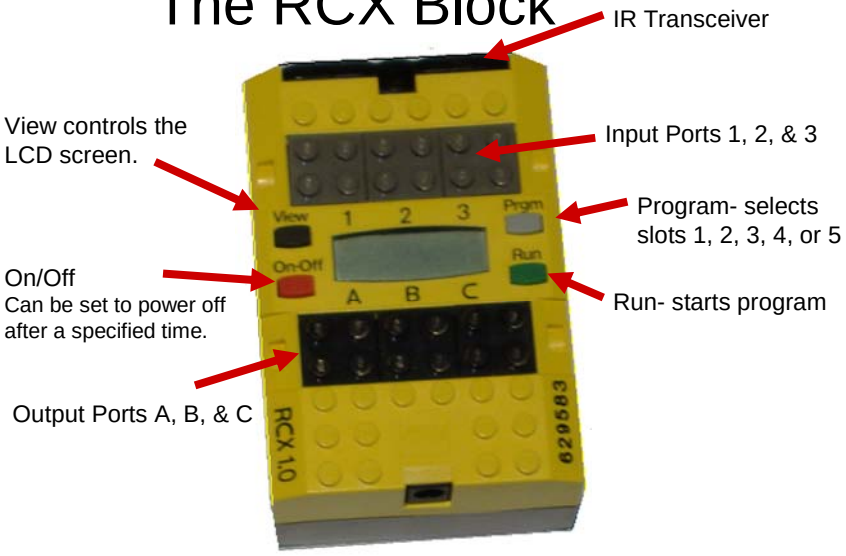
The wire must be connected in the correct places (or terminals) of each command icon. The terminal will flash when the wire icon is touching.

A pink wire symbolizes a good connection. A broken connection is a broken black line.



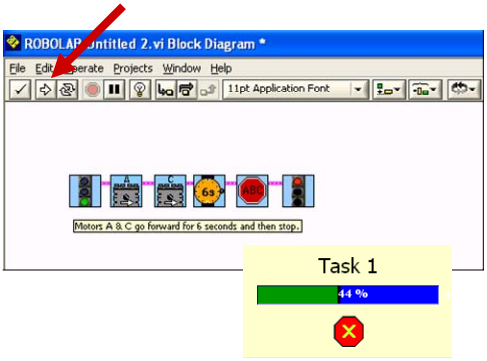
Go to the Edit menu at the top of the screen or use the keys “Ctrl” and “B” to remove bad wires.

The RCX Block



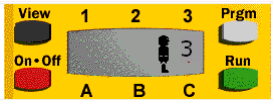
Turn on the robot and select a program slot before downloading your program.

Downloading the Program.



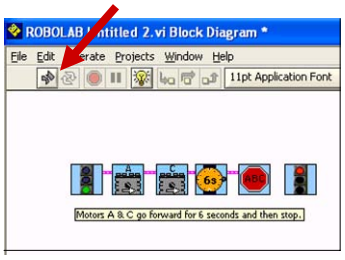
If your program is written correctly, the arrow at the top of the screen is white.

Turn on the RCX block and select a program slot. Face the window on the RCX block to the infrared transmitter (tower) attached to the computer and click on the white arrow. The program will download.

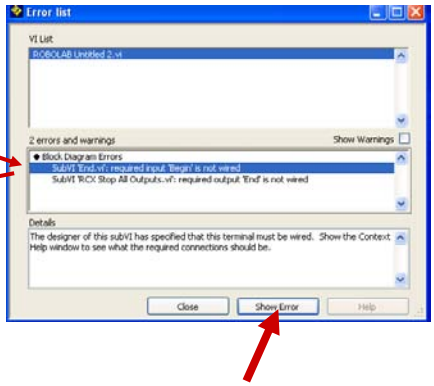


This program was successfully downloaded to slot 3.

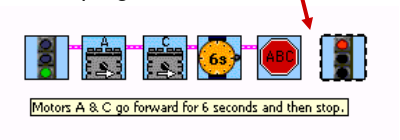
Faulty Programs



If the program is faulty, the arrow will be grayed. Click on the arrow to find out what is wrong.



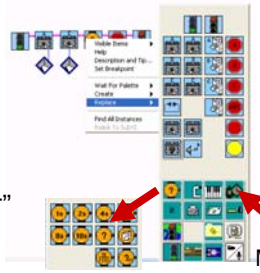
Select an error and click on show error to see the error highlighted in the program.



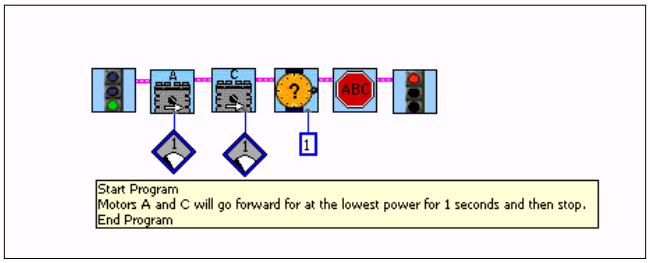
KSB 4- Modify your program.

Remember the power levels and numeric constant are found under the modifiers icon. Click on the icon and add the power level.

Change the “wait for six seconds” icon. Right click on it, then choose replace and the functions tool bar pops up. Select the “wait for” with a question mark. Then add the numeric constant.

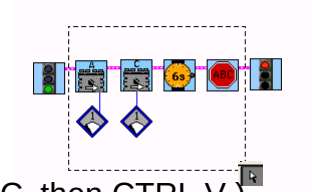


Modifiers



Copy and Paste

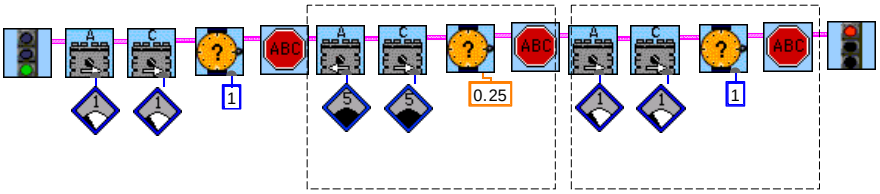
Select the part of code that you wish to copy using the Position, Size, Select (arrow) icon.



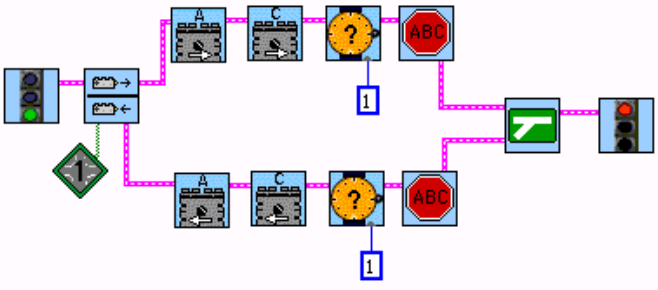
Copy and paste.
(Edit...copy then Edit...paste ***or*** CTRL C, then CTRL V.)

Reposition the parts of the code to where you want them.

Make changes if necessary. You can quickly make a program that goes forward, turns and goes forward again.



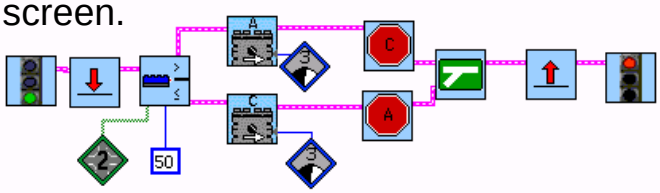
Using the Touch Sensor



Start Program
Touch Sensor Fork
If sensor is untouched, follow top program.
Motors A and C will go forward for 1 seconds and then stop.
If sensor is pressed, follow bottom program.
Motors A and C will go backwards for 1 seconds and then stop.
Fork Merge
End Program

Using the Light Sensor

•The light sensor has a scale of 0 to 100.
•After downloading the program, use the view button to move the caret ^ to the input port with the light sensor.
•Run the program and hold the robot over dark and light surfaces. The value will show on the LCD screen.



Line Following Program
The light sensor is connected to port 2.
The program loops continuously; if the light is greater than 50, motor A runs and motor C stops.
If the light is less than or equal to 50, motor C runs and motor A stops.
The program runs in a continuous loop, jumping back to the start.