

Introduction to Robotics: Lecture Notes

Today you will learn the basics of the *Robolab* software. Without *Robolab* (or another equivalent **control program**), the RCX would be useless. The name of the software used to program the RCX is *Robolab*. Using this unique software, we can control the RCX and any devices that are connected to it.

First we must make sure that our tower is connected. Remember, this is the transceiver that is used to send an infrared signal from the computer to the RCX and back. A transceiver is a transmitter and a receiver in one.

When programming in *Robolab*, the work area window is very small. Use the Command+Question Mark (Cmd+?) key combination to enlarge the window to full screen.

Use the spacebar on your keyboard to change your mouse's cursor to the "pointer". Press it again to change your mouse's cursor to the "spool of wire" tool. Using the pointer, you can select programming icons and move them around. Using the spool of wire, you can connect the icons and create a program.



Programs look like this:



Begin Program: Appears in **every** program. Indicates the beginning of a program.



End Program: Appears in **every** program. Indicates the end of a program



Motor A forward: Turns on the motor that is plugged into output port A.



Wait for Two Seconds: Suspends any change in the program for two seconds



Stop Output C: Halts the electricity from flowing to output port C.



Lamp C: Indicates a lamp is plugged into output port C.



Wait for Push: Suspends any change in the program until touch sensor is pressed.

An output device is something that displays an action. These are usually called actuators. Examples of actuators are motors and lamps. They plugged into output ports only. Controlling motors is important to controlling the behavior of a robot. Turning, for example can be achieved two different ways. One way is to turn on both motors, but in opposite directions. This will cause the robot to spin in place. A second way to turn is to turn one motor on and leave the other motor off. This will cause the robot to rotate around the motor that is off.

An input device is something that collects data and sends that **into** the RCX. These are usually called sensors. Sensors are plugged into input ports only. An example of a sensor is the touch sensor. The RCX can detect when the yellow button has been pushed and/or let go.

Last, when downloading a program to the RCX, the RCX must be **turned on** and facing the tower. Then using *Robolab*, click on the white arrow in the upper-left corner. This will initiate the download. Then press run on the RCX to test your program.