

IEEE Robotics Competition Workshop

This tutorial is extracted from the extensive library of ROBOLAB programs made available by the **Center for Engineering Educational Outreach** at TUFTS University. For the complete list of programs, please refer to the following web site:

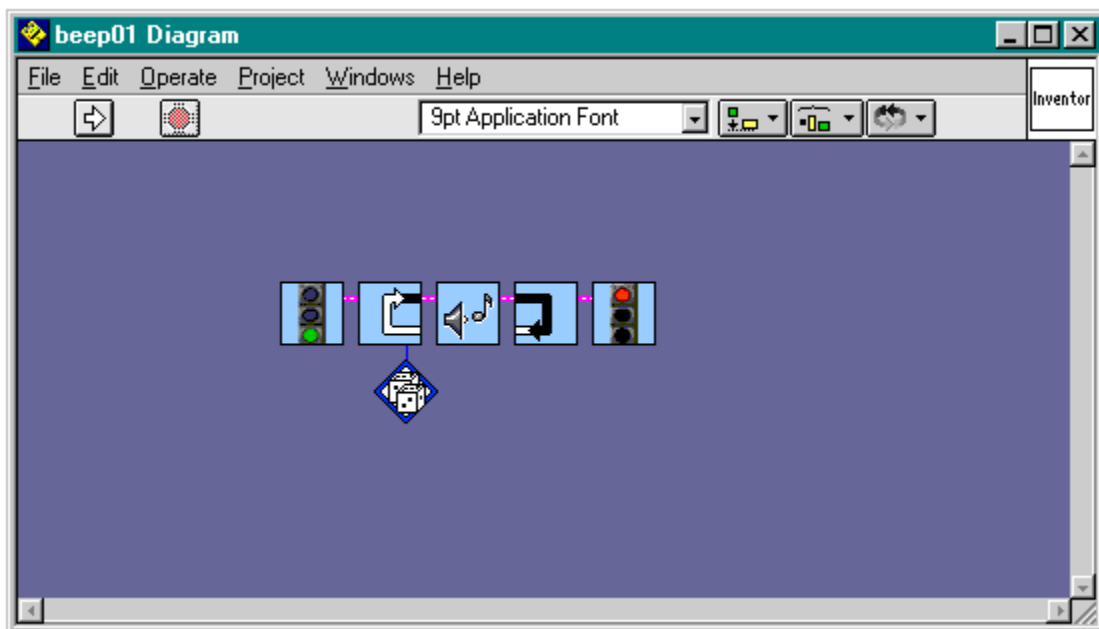
<http://www.ceeo.tufts.edu/graphics/robolab/Intro.htm>

For the purposes of this tutorial, we have gone ahead and tried most of the programs, and selected a portion of them (14) that are increasing in complexity and understanding. You will be introduced to containers, forks, jumps, task splits, timers and loops. As well, you will be controlling two motors, as well as interfacing to three sensors (two bump and one light).

All these programs are to be run in ROBOLAB v2.5.4 and using the Inventor Level 4).

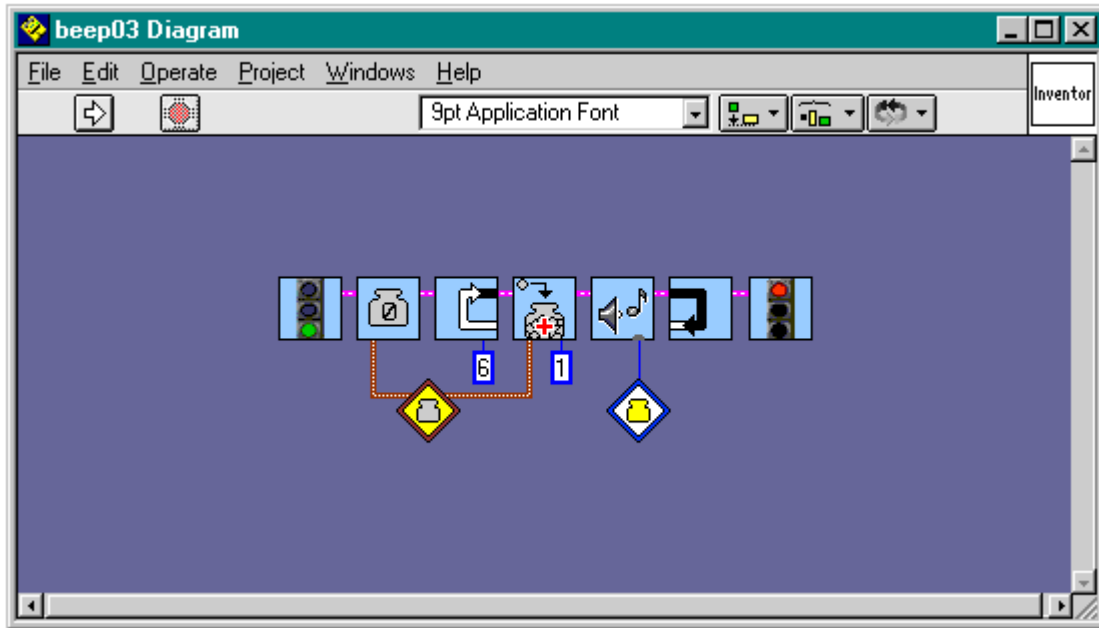
Program #1)

In this program, the RCX will beep a random number of times.



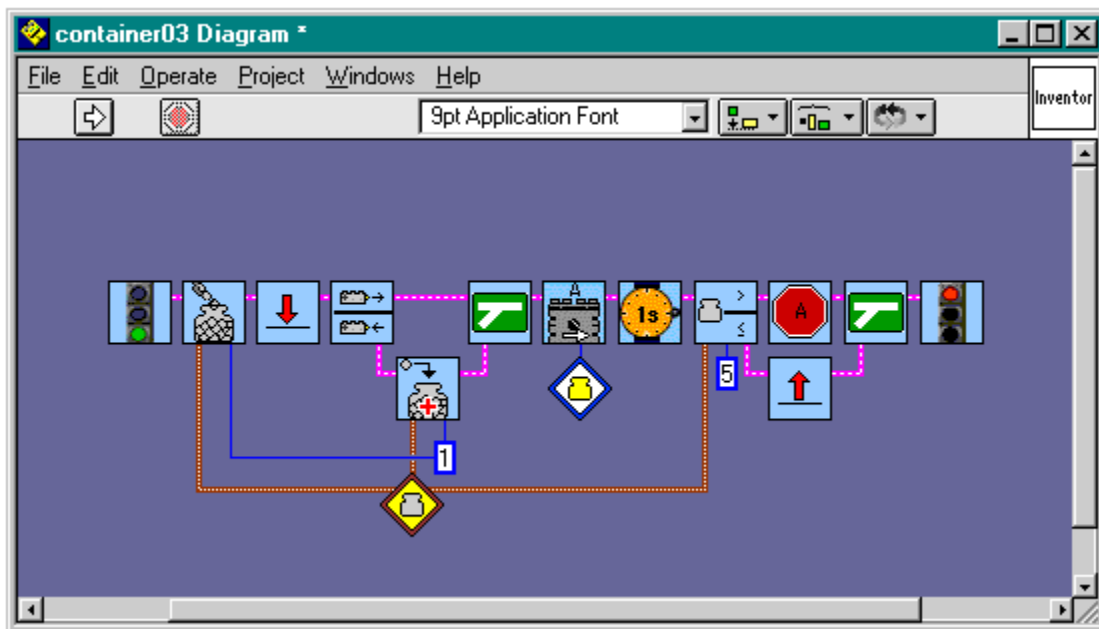
Program #2)

In this program, the RCX will play six different beeps in order using a container.



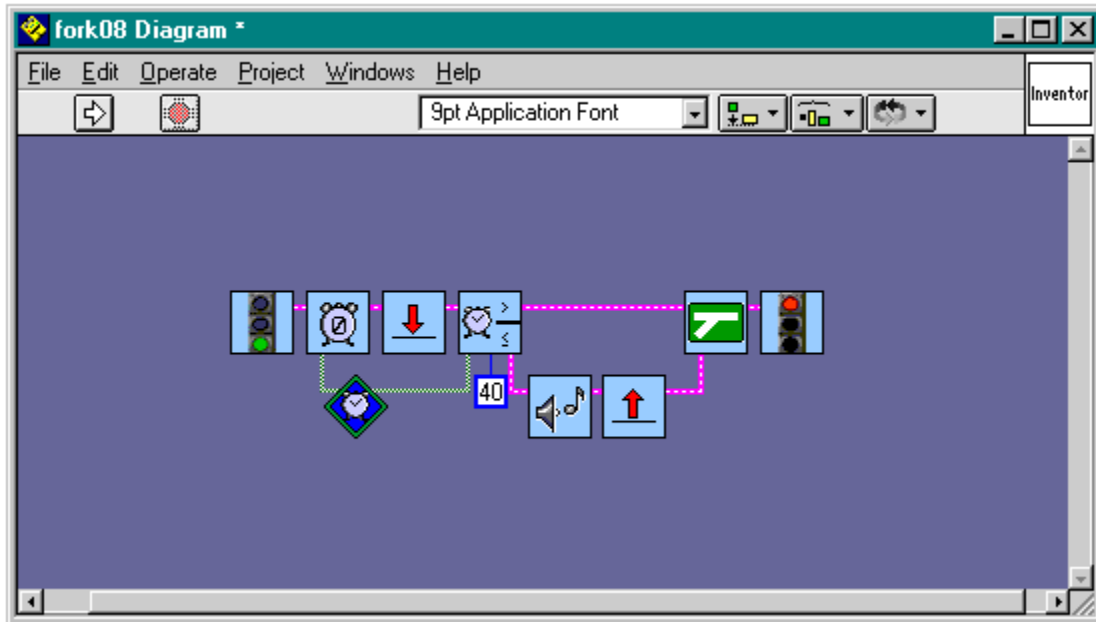
Program #3)

In this program, the motor will run until the button is pressed six times. The motor speed changes every time that the button is pressed.



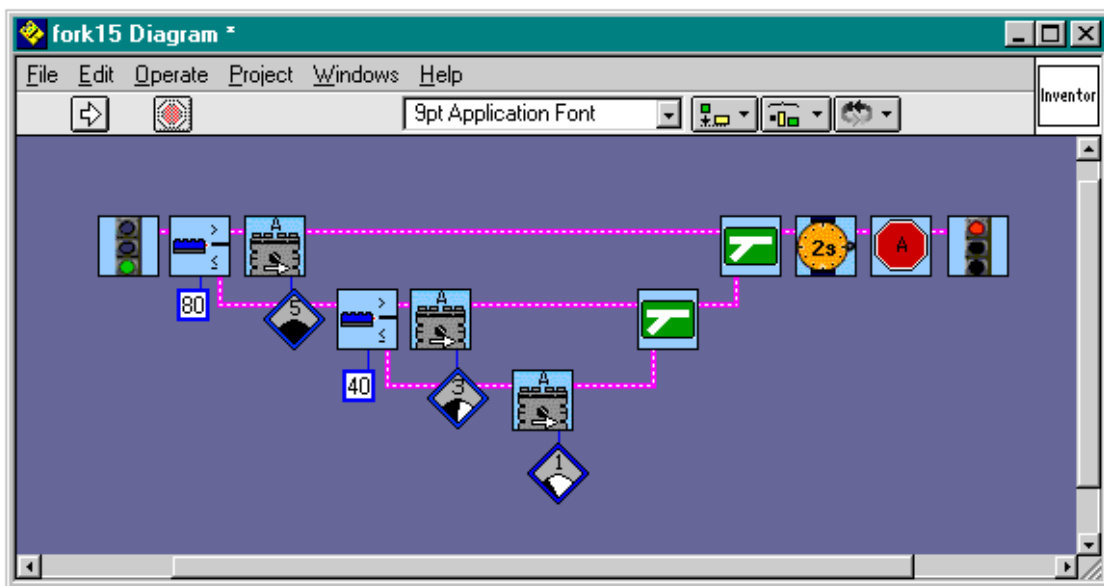
Program #4)

In this program, the RCX will beep until the timer value is greater than forty (four seconds).



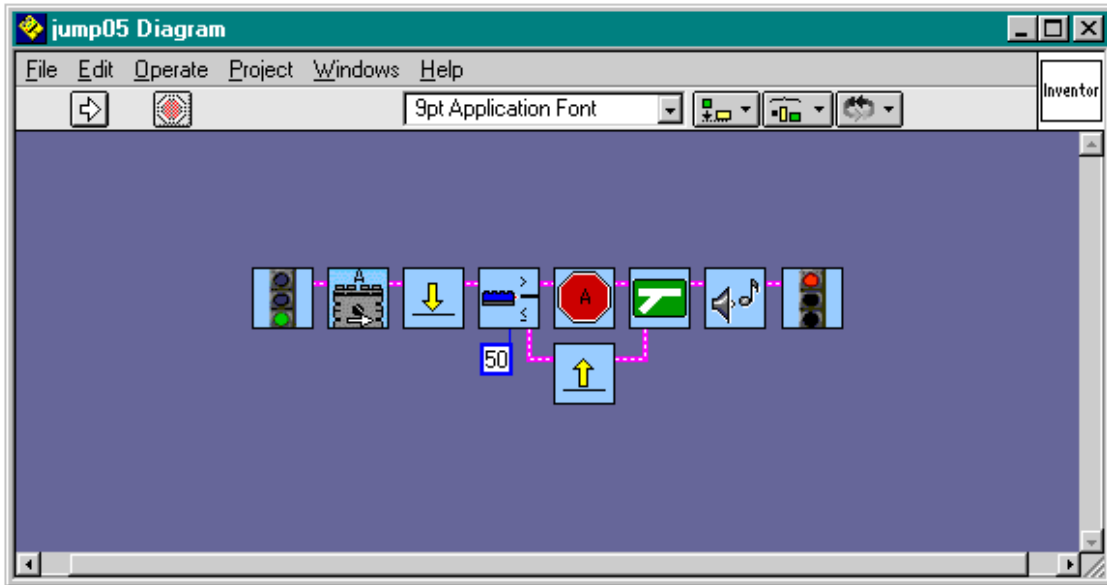
Program #5)

In this program the motor will be set to speed level five if the light level is greater than eighty. If the light level is greater than forty but less than eighty the motor will be set to speed level 3. If the light level is less than forty the motor will be set to speed level one.



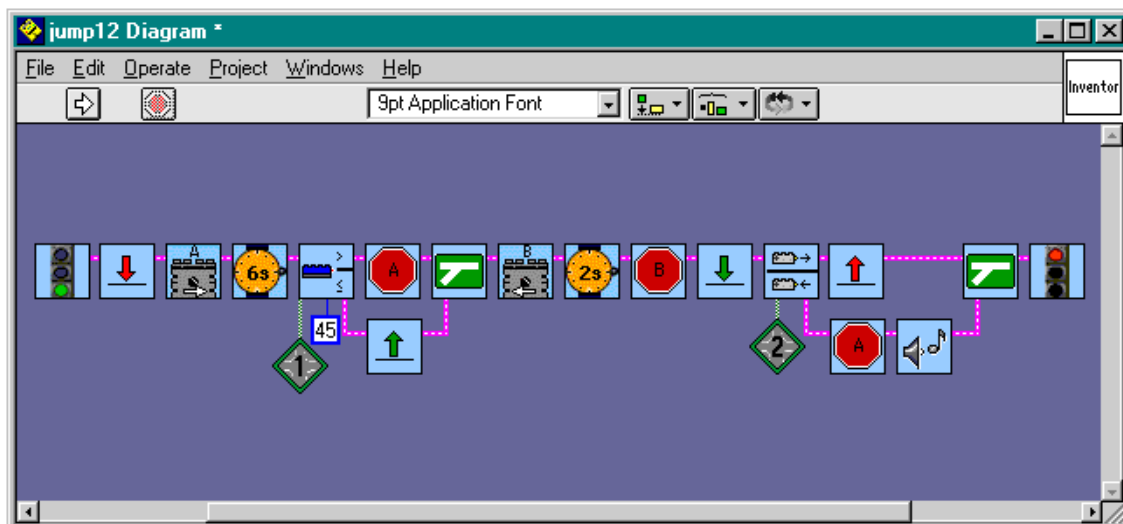
Program #6)

In this program, the RCX will run the motor. If the light value is less than fifty it will jump back to recheck the value. Once it reads a value over fifty it will stop the motor and beep.



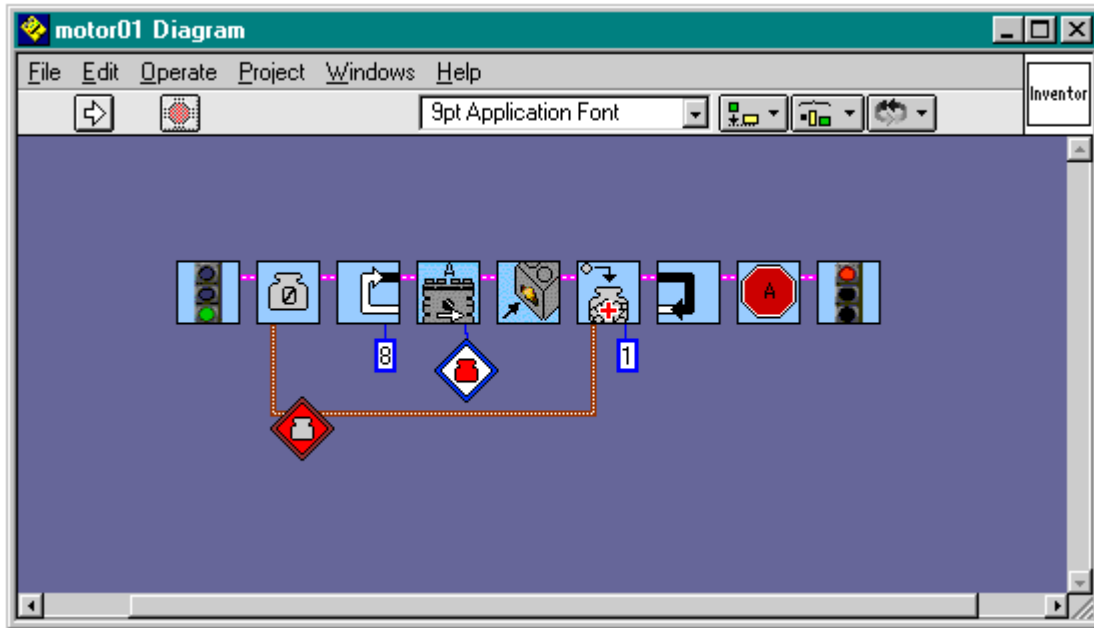
Program #7)

In this program, motor a will run for six seconds and then check the light value. If the light value is less than forty-five the program will jump to checking the touch sensor. If the light value is greater than forty-five the motor will be stopped and motor b will run backwards for two seconds, before checking the touch sensor. If the touch sensor is not pressed in the program will jump all of the way back to the beginning. If the touch sensor is pressed in the RCX will stop the a motor if it is still running, beep and end.



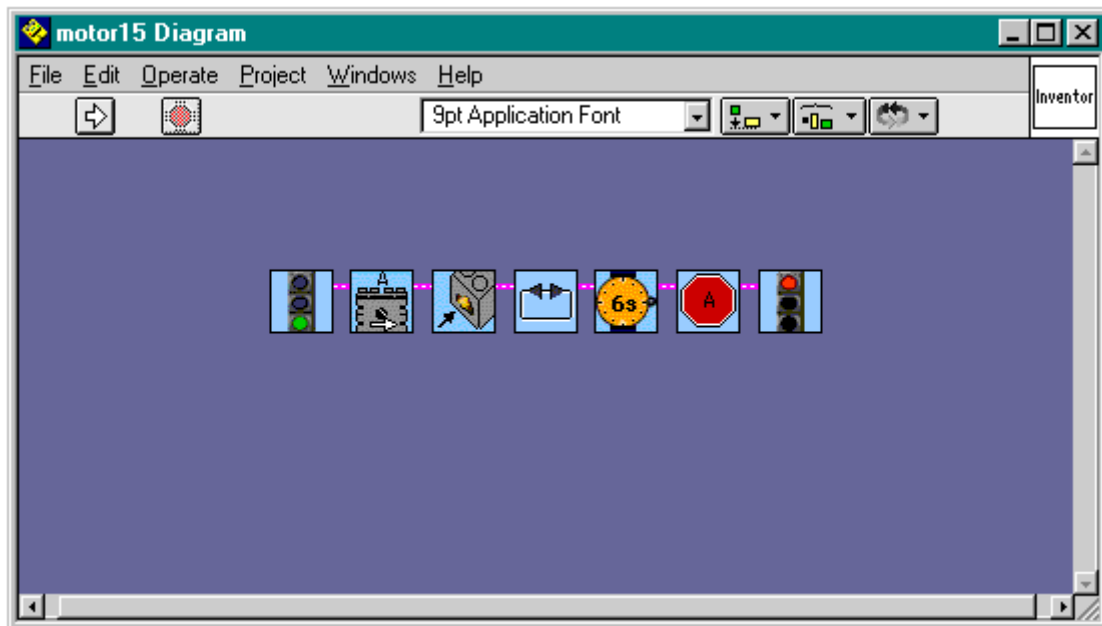
Program #8)

In this program, the motor is set to the value of the container. Each time the button is pressed one is added to the container and the speed increases. This loop goes through eight times.



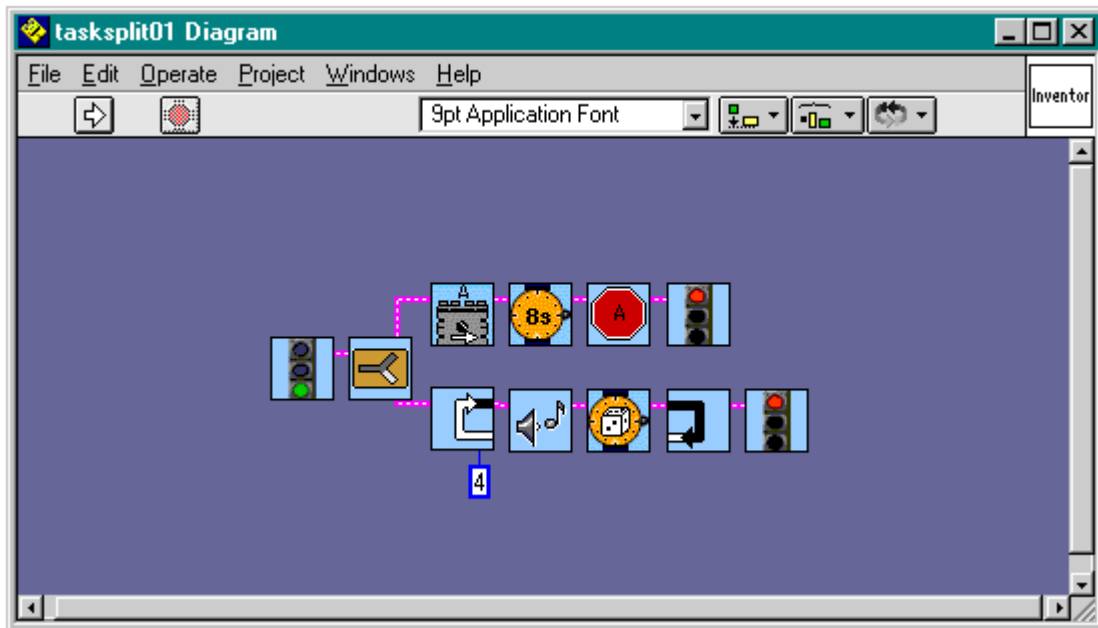
Program #9)

In this program, the motor is turned on and is then reversed when the button is pushed. (note: this program will not work with a light)



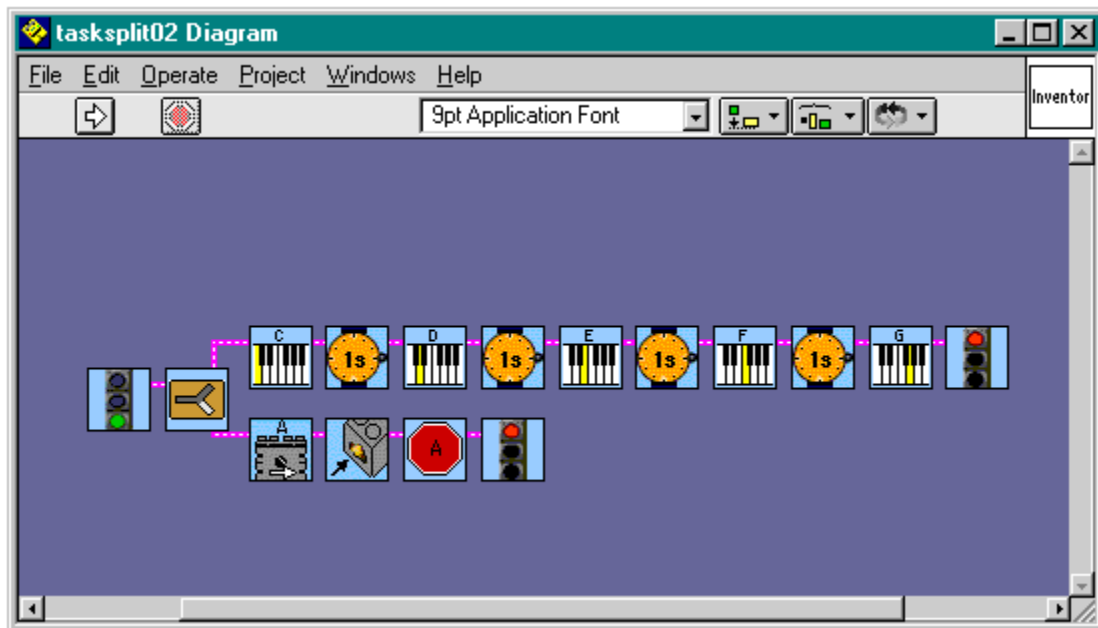
Program #10)

In this program, task A runs the motor for eight seconds. Task B beeps, waits for a random amount of time and repeats four times.



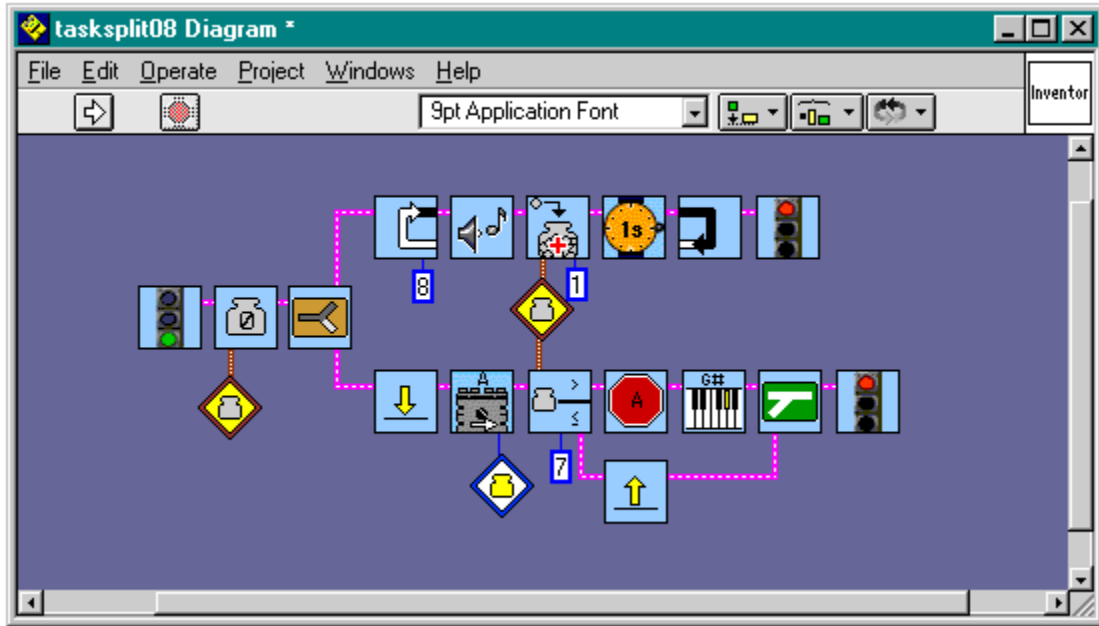
Program #11)

In this program, task A plays the musical notes C through G in one second intervals. Task B runs the motor until the button is pressed.



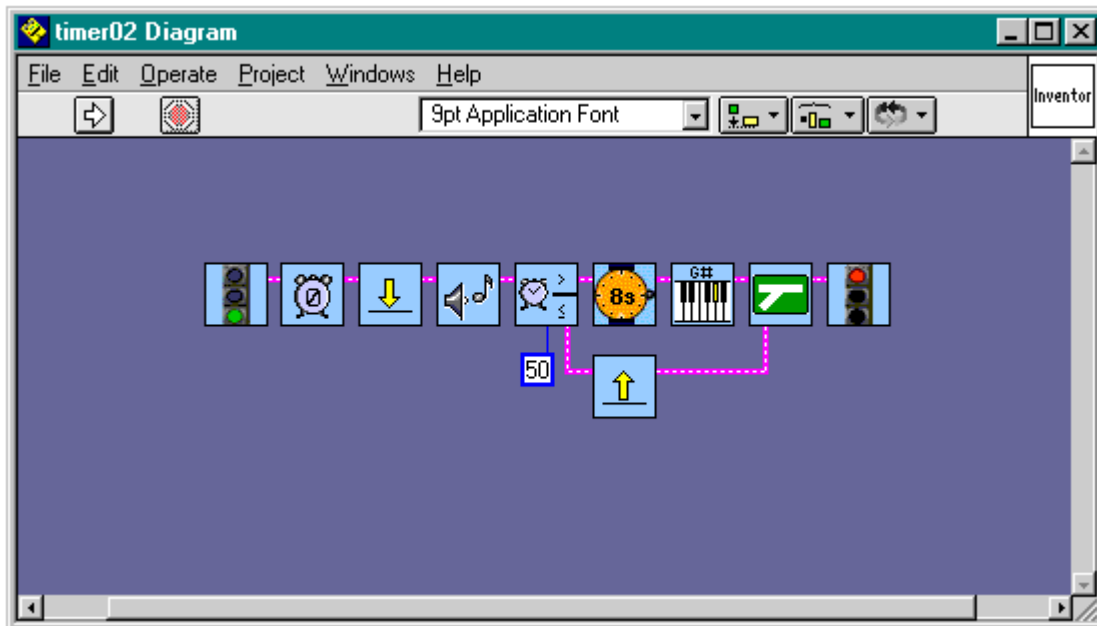
Program #12)

In this program, task A beeps, adds one to the value of the yellow container, and then waits one second. It loops through these commands eight times. Task B sets the motor speed to the value of the yellow container. If the value of the yellow container is greater than seven the motor stops and plays a G# note, but if the value is less than seven it loops back to the start of task B.



Program #13)

In this program, the RCX beeps until the timer is greater than fifty, at which point it waits eight seconds and plays a G note.



Program #14)

In this program, the timer starts when the button is pressed in and stops when it is released (after beeping). The RCX then waits an equal amount of time and beeps again.

