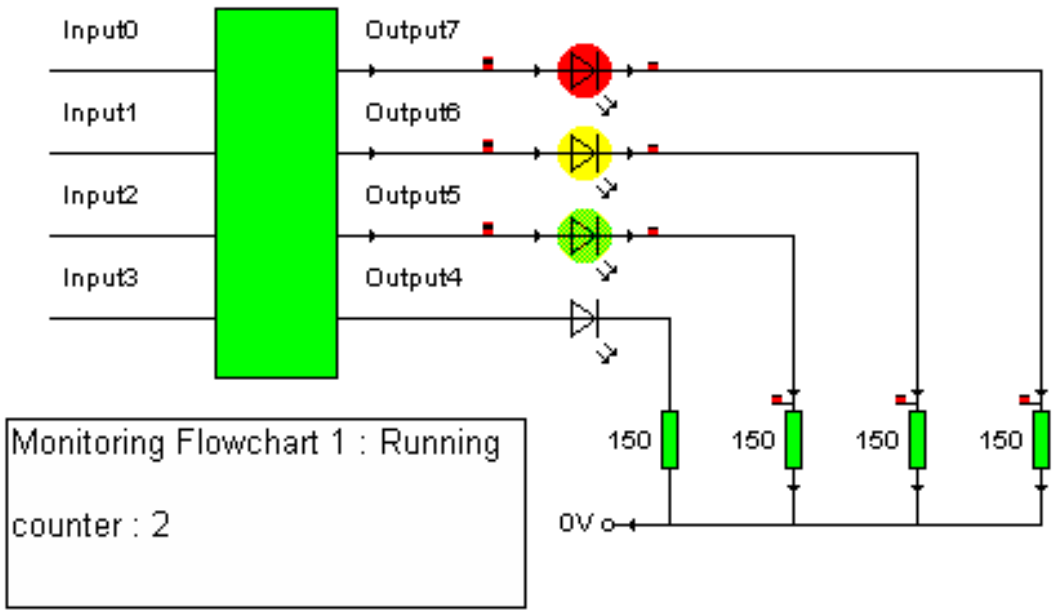
PBasic - for Next loops

Introduction

In most control applications it is a requirement to repeat a process over and over again. Sometimes it is required to repeat a process a set number of times. In PBasic a set of commands called a "for next loop" provides us with a means to do just this.

In this activity you will compare a flowchart written in Crocodile Technology with the equivalent PBasic code. You will then write the PBasic code in the Program editor software before downloading the program onto the Stamp microcontroller.

Task 1



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1. Open Crocodile Technology file Model 1.

2. Run the flowchart (by clicking on the black triangle). Watch the flowchart and microcontroller for about 30 seconds. Describe what happens to the outputs.

3. Run the flowchart again. This time observe the "Monitoring flowchart1" box and compare the flowchart cells with the PBasic code alongside.

   The variable counter is set to be the microcontroller internal register called b0 using the command "symbol" - so throughout the program b0 and counter are exactly the same thing.

   Describe what happens to the variable "counter".

4. Given that pins 4,5,6 & 7 are being used for outputs explain what the command "dirs" does.

5. Explain what happens inside the for next loop.

6. Explain what happens when counter is incremented to ten.

7. Explain what happens after the for next loop exits.

8. Connect the serial and power cables to the Stamp controller. Click on the red circle at the top of the flowchart. Once the program has finished downloading disconnect

the serial cable. Explain what happens.

9. Run the Program Editor software. Type the PBasic program as shown in the Crocodile Technology simulator file. Close and exit from Crocodile Technology.

   Re-connect the serial cable to the Stamp controller.Download the program you typed in the Program Editor.

   Once the program has downloaded disconnect the serial cable. Describe what happens on the Stamp controller.

10. The LED connected to output pin 4 should be flashing. Without downloading the program again determine a way to make the Stamp controller run the program from the start again.

Computer programs should be designed first using a technique such as flowcharts. This flowchart should then be converted to computer code.

Crocodile Technology allows the program to be designed and tested at flowchart level before the final conversion to code and download onto the microcontroller.

"for next" loops provide a method to repeat a sequence of commands a desired number of times.

-- END OF ACTIVITY --