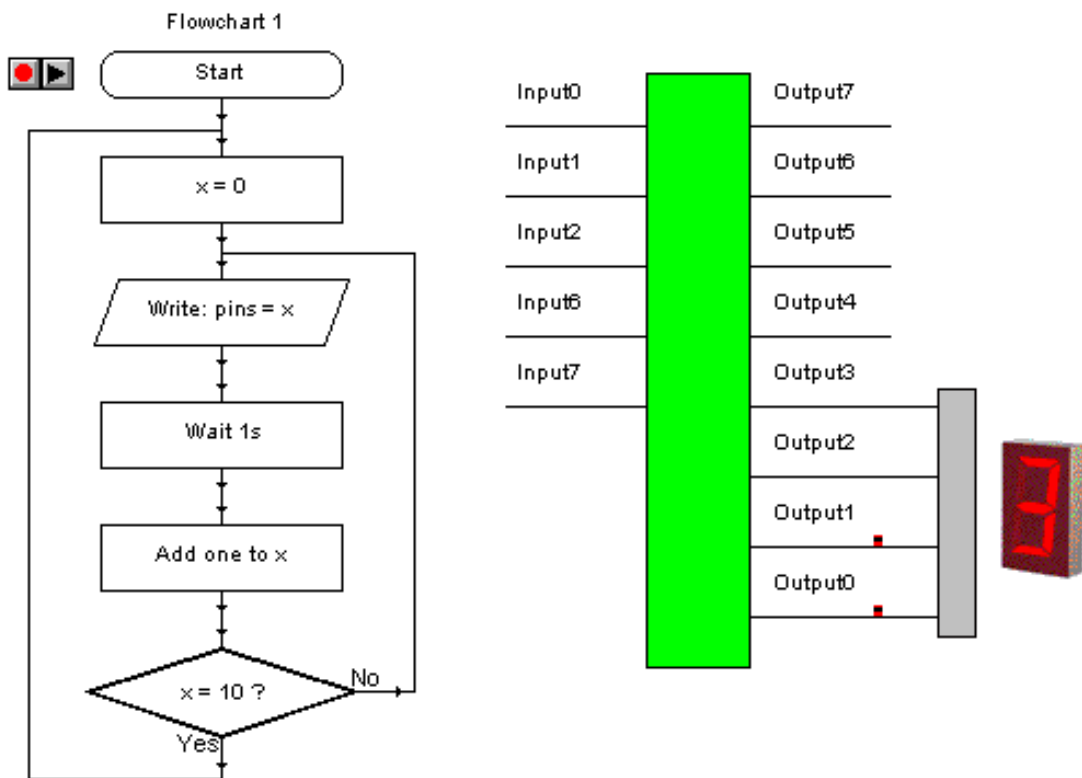


Binary and decimal number systems

Introduction

Counting can be done using a variety of number systems. The most well known system is decimal - counting in "tens". However the binary number system counts in "twos". In this exercise you will learn how the binary number system relates to the decimal number system.

Task 1



Microcontroller drives 7 segment display

1. Open Crocodile Technology file Model 1.
2. Make sure the flowchart is running. Observe outputs 0,1,2 & 3 of the microcontroller. What are the output lines doing?

3. Observe the 7 segment display. What is the range of numbers being displayed ?

4. When an output line is off enter a "0" and when it is on enter a "1". The first 3 rows of the table below have been completed for you. Complete the next 7 rows. (The last 6 rows will not be needed yet.)

D C B A Decimal value on				
Output3	Output2	Output1	Output0	7 segment display
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2

5. The column header labelled "D", "C", "B" and "A" are the "weighting" of each output. Score out the letters D,C,B and A and replace them with the decimal number that you think each output contributes to the overall decimal value shown on the 7 segment display.
6. Complete the last 6 rows of the table by extending the sequence of "1"s and "0"s for the outputs. What will the corresponding decimal numbers be ?

Outputs from the microcontroller are digital (on or off). These outputs can be considered as **binary digits (bits)**. The bits can be used to represent a decimal number - this is called **binary coded decimal**.

-- END OF ACTIVITY --