Alarm Clock

Design Brief

Design and make a novelty alarm clock.

Circuit Explanation

This circuit makes us of the Serial LCD/clock module which can be set to trigger at certain periods and so is ideal for use as an alarm system. The 'Clock' link on the serial LCD/clock module is used, so that the current time is always displayed on the bottom line of the LCD.

Please read the serial LCD/clock datasheet (AXE033.pdf) in combination with this datasheet for further information on the use of this module.

The output from the module is connected to the PICAXE input, and the PICAXE then triggers the sound generator and the LED output. Note this circuit could easily be expanded to include extra outputs such as motors, buzzers for novelty alarm clocks.

Instead of making a single 'beep' noise with a piezo or buzzer, the output drives a M66T music generator which will play a complete tune on the piezo sounder. Note that the M66T has a maximum voltage of 3V and so two 1K resistors are used to form a potential divider on the output, to ensure the maximum voltage rating is not exceeded.

Program Explanation

The program waits for an input from the serial LCD/clock module and then triggers the outputs.
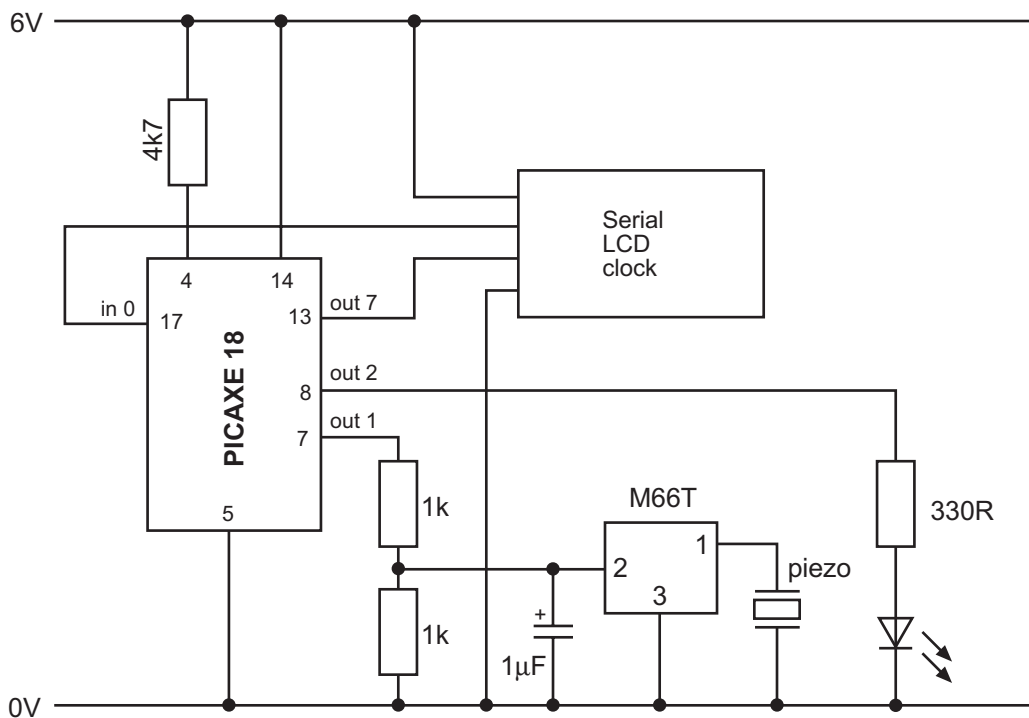
Program Listing

```
'Alarm Clock
'For PICAXE-18

'Serial LCD on output 7
'LED on output 2
'Sound chip on output 1
'Alarm trigger from LCD on input 0


' Setup the LCD message
' My displaying predefined message 3 on top line
' Time will always be shown on bottom line
' because of the hardwired jumper link on module

init:
     pause 50
     serout 7,N2400, (3)


' Sit in a loop waiting for alarm trigger

main:if pin0 = 1 then alarm
     goto main


' Display 'getup' message, beep, and flash LED

alarm:
     serout 7,N2400, (1)  ' mesage
     high 2               ' sound on

     for b0 = 1 to 200    ' flash LED
        high 2
        pause 100
        low 2
        pause 100
     next b0

     low 2               ' sound off
     goto init


'Setup Program
' This is a separate program that should be run once
'to setup the clock time, messages and alarm.
'Note you should change the time to the current date/time,
'not Christmas Day as in the example!

setup:
serout 7,N2400,(253,1,"Time to get up! ")
pause 500
serout 7,N2400,(253,3," My Alarm Clock ")
pause 500
serout 7,N2400, (253,0,"25/12/01 22:00  ")
pause 500
serout 7,N2400, (253,8,"xx/xx/xx 07:00  ")
pause 500
     end
```