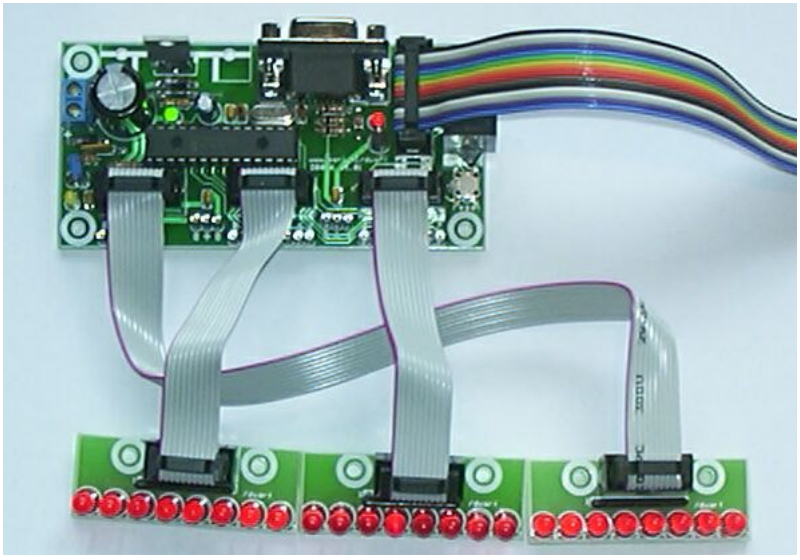
Dwarf Boards

DN004 : kitt-style display in Jal on 22 pins of DB016

(c) Van Ooijen Technische Informatica
version 1.0

Introduction

This note shows how to create a kitt (Knight Rider) style display on the 22 available I/O pins of a DB016. Three DB010 boards with 8 LEDs can be used to provide the LEDs. BUS_A has only 6 I/O pins, so the order is BUS_B, BUS_C, BUS_A.



Code

```
-- DN004.jal : kitt-style display on all pins
-- hardware: db016 + connect active-low LEDs to all pins

include DB016_18F252_PLL_40
include jdelay

bus_a_digital
bus_b_digital
bus_c_digital

bus_a_direction = all_output -- note: only 6 pins!
bus_b_direction = all_output
bus_c_direction = all_output

var byte count = 0
```

```
var byte step = 0

forever loop
   count = count + step

   if ( count == 0 ) then
      step = 1
   end if
   if ( count == 21 ) then
      step = -1
   end if

   bus_b_pin_0 = ! ( count ==  0 )
   bus_b_pin_1 = ! ( count ==  1 )
   bus_b_pin_2 = ! ( count ==  2 )
   bus_b_pin_3 = ! ( count ==  3 )
   bus_b_pin_4 = ! ( count ==  4 )
   bus_b_pin_5 = ! ( count ==  5 )
   bus_b_pin_6 = ! ( count ==  6 )
   bus_b_pin_7 = ! ( count ==  7 )

   bus_c_pin_0 = ! ( count ==  8 )
   bus_c_pin_1 = ! ( count ==  9 )
   bus_c_pin_2 = ! ( count == 10 )
   bus_c_pin_3 = ! ( count == 11 )
   bus_c_pin_4 = ! ( count == 12 )
   bus_c_pin_5 = ! ( count == 13 )
   bus_c_pin_6 = ! ( count == 14 )
   bus_c_pin_7 = ! ( count == 15 )

   bus_a_pin_0 = ! ( count == 16 )
   bus_a_pin_1 = ! ( count == 17 )
   bus_a_pin_2 = ! ( count == 18 )
   bus_a_pin_3 = ! ( count == 19 )
   bus_a_pin_4 = ! ( count == 20 )
   bus_a_pin_5 = ! ( count == 21 )

   delay_1ms( 100 )
end loop
```

The first include is specific for the board, microcontroller and frequency used, it establishes among other things the I/O declarations that are used. The next include establishes the delay declarations used.

Next the three busses are set to digital mode and output.

The main loop counts back and forth from 0 to 21. The direction of the count is set by making the variable count equal to 1 for left-to-right, or -1 for right-to-left. The appropriate value is assigned when the count value reaches one of the extremes.

The next block serves to make exactly one pin (the one that corresponds to the current value of count) low.

The last statement in the loop is a delay of 100 ms.

Change notes

the latest version of this document can be downloaded from http://www.voti.nl/dwarf

version	date	notes
1.0	2003-11-04	first version