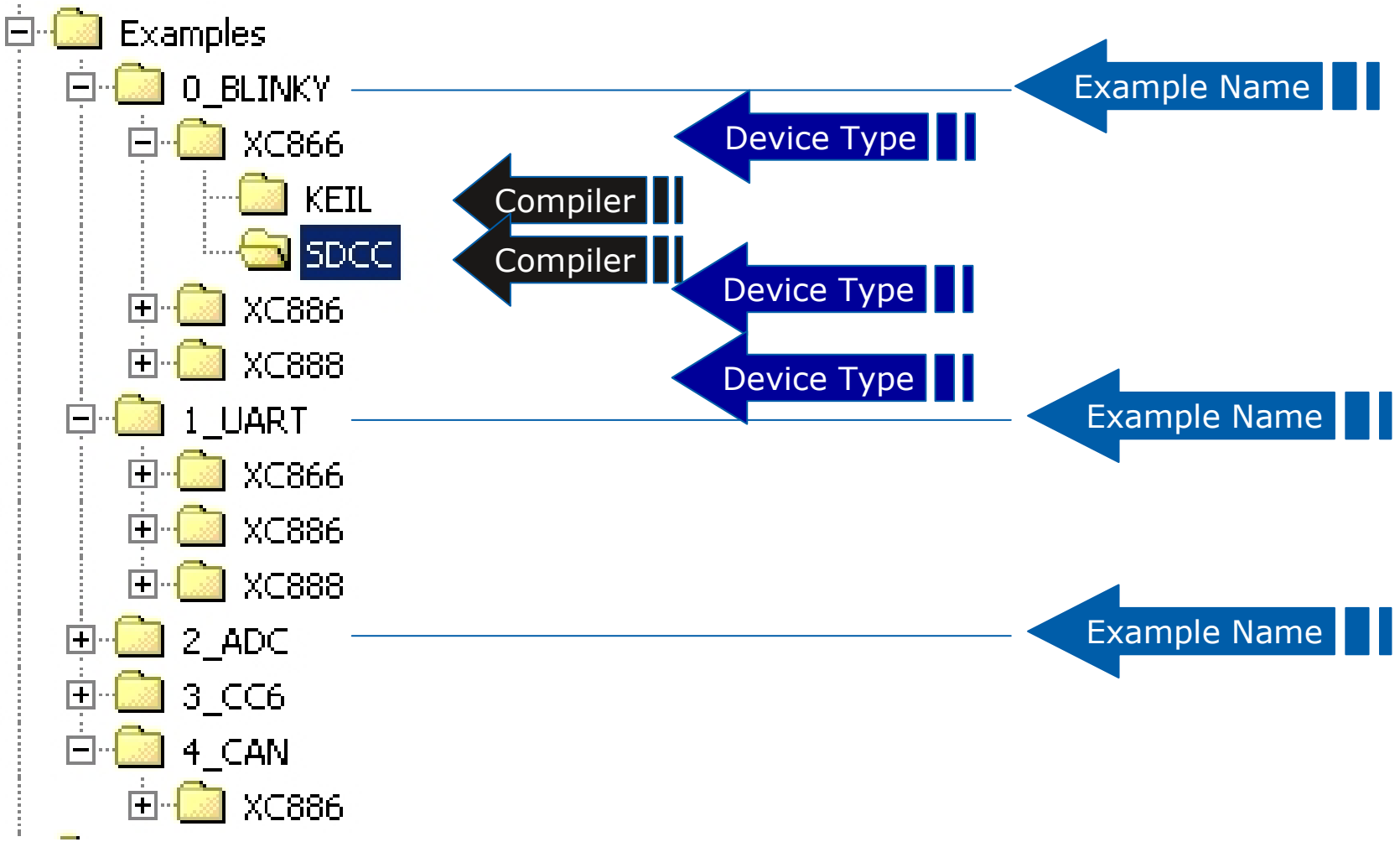
Getting Started USCALE

Examples for XC800

January 2008

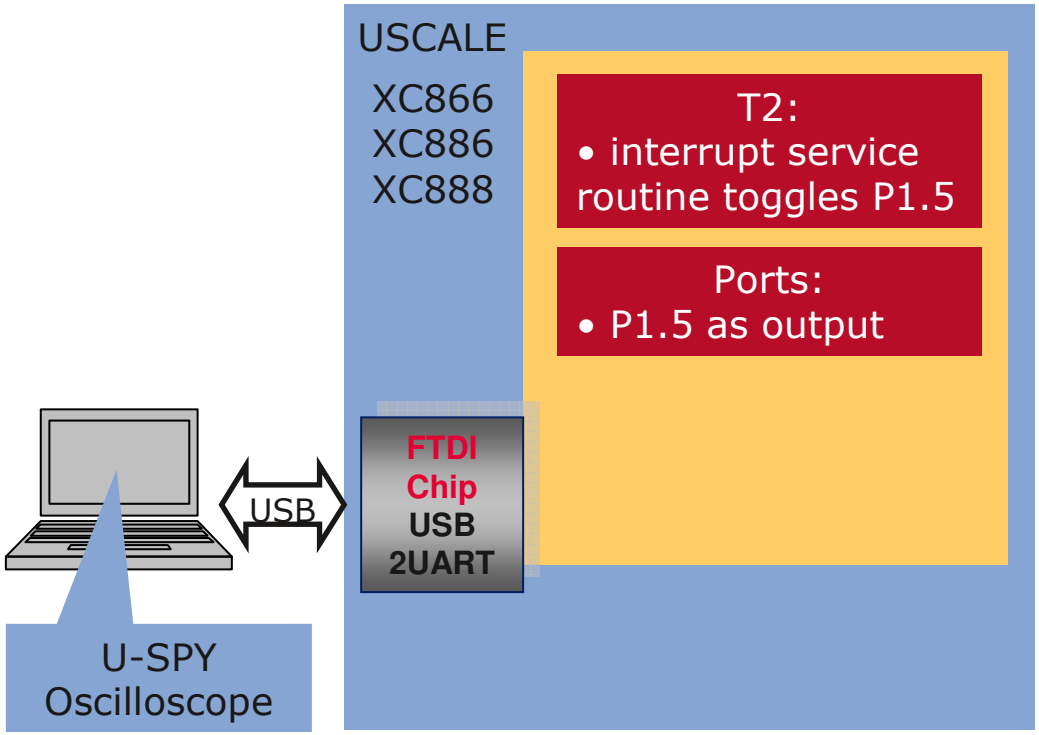
Never stop thinking

Example Structure



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Example – USC_BLINKY



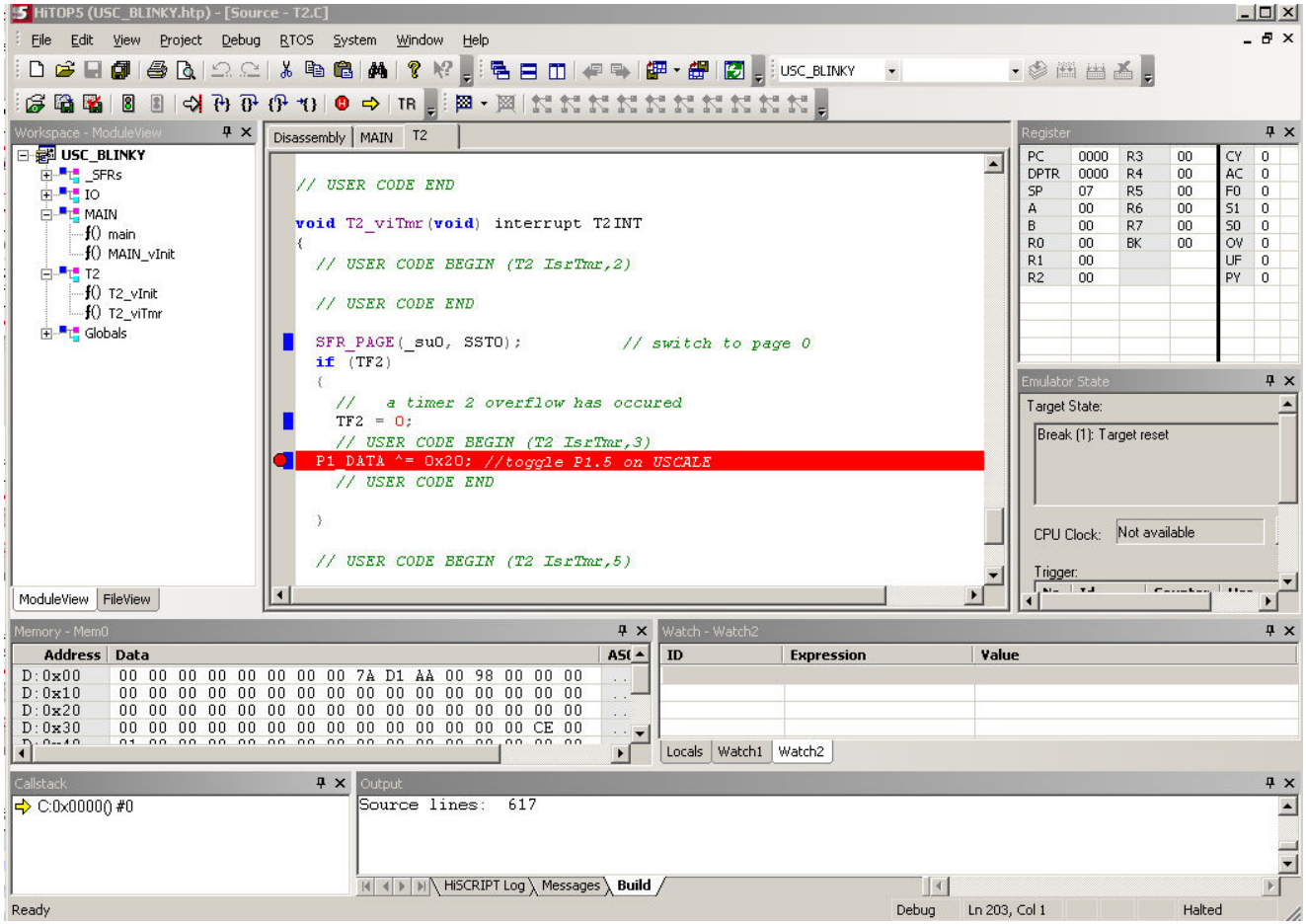
- T2 in autoreload mode, generates interrupt on overflow
- toggle P1.5 periodically
- period time adjustable
- download code through Hitop
- debug: set break / go / single step / etc.

- Note: T2-ISR function is
  - inside T2.C for XC866
  - inside SHARED_INT.C for XC886/888

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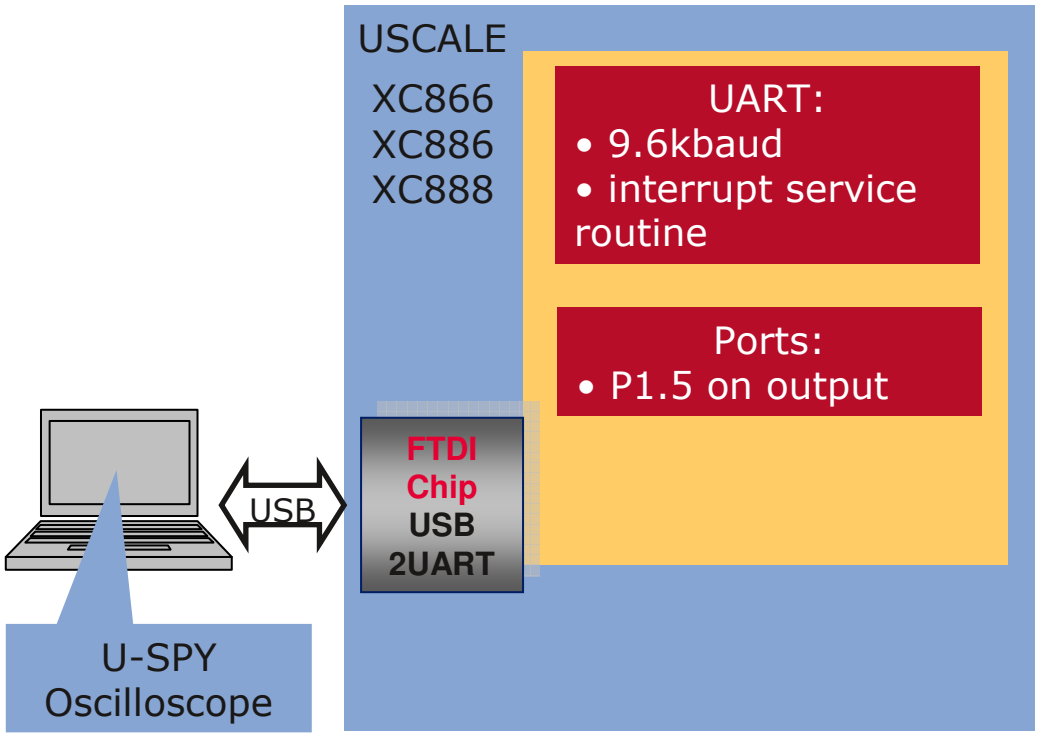
Example – USC_BLINKY

- Test Hitop Debugger
  - set breakpoint
  - go to breakpoint
  - single step
  - watch memory
  - watch variables



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Example – USC_UART



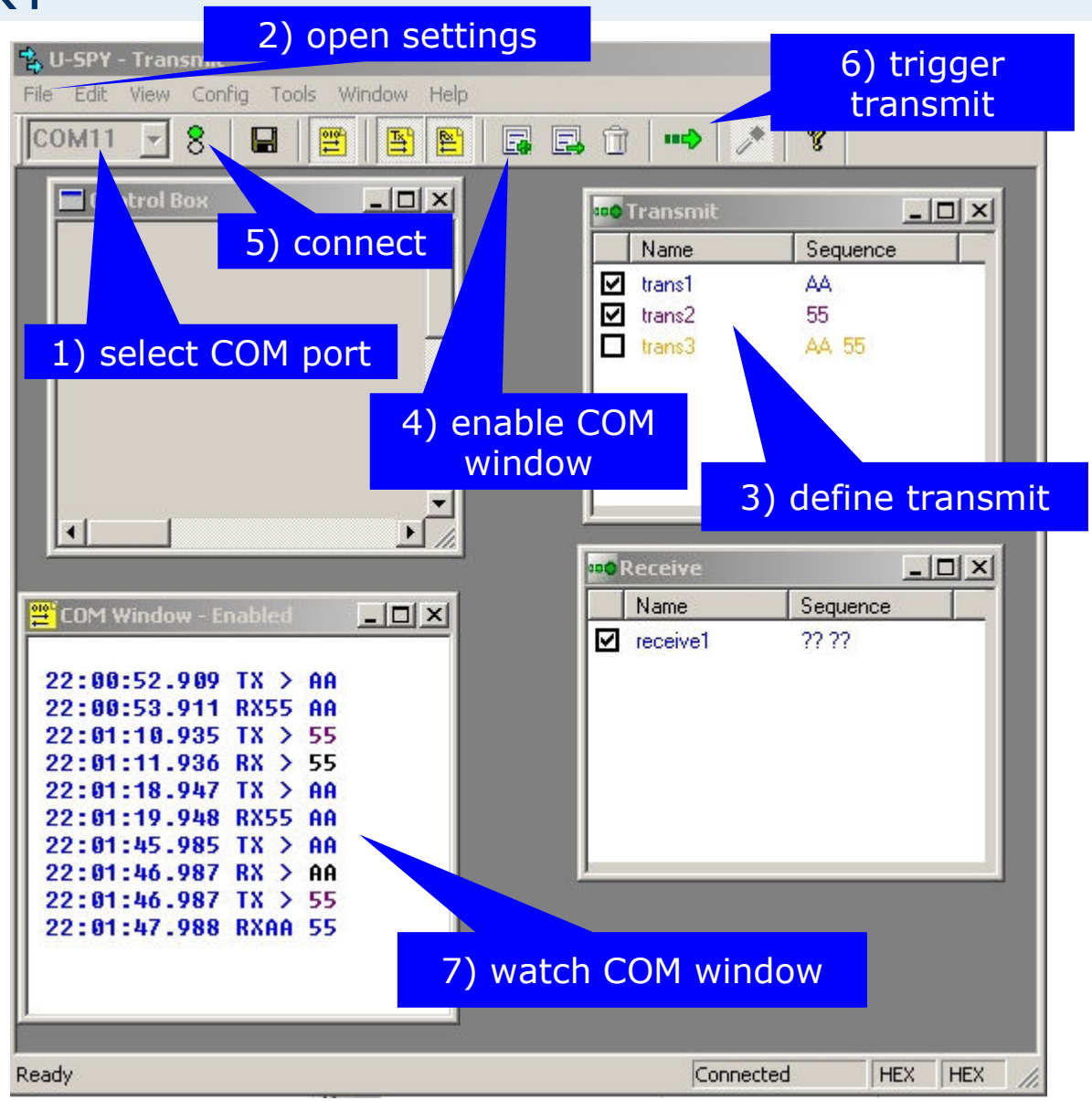
- reply a received byte within UART interrupt service routine
- toggle P1.5 at every transmit

- Note: different baudrate settings for XC866 and XC886/XC888 due to different clocking scheme

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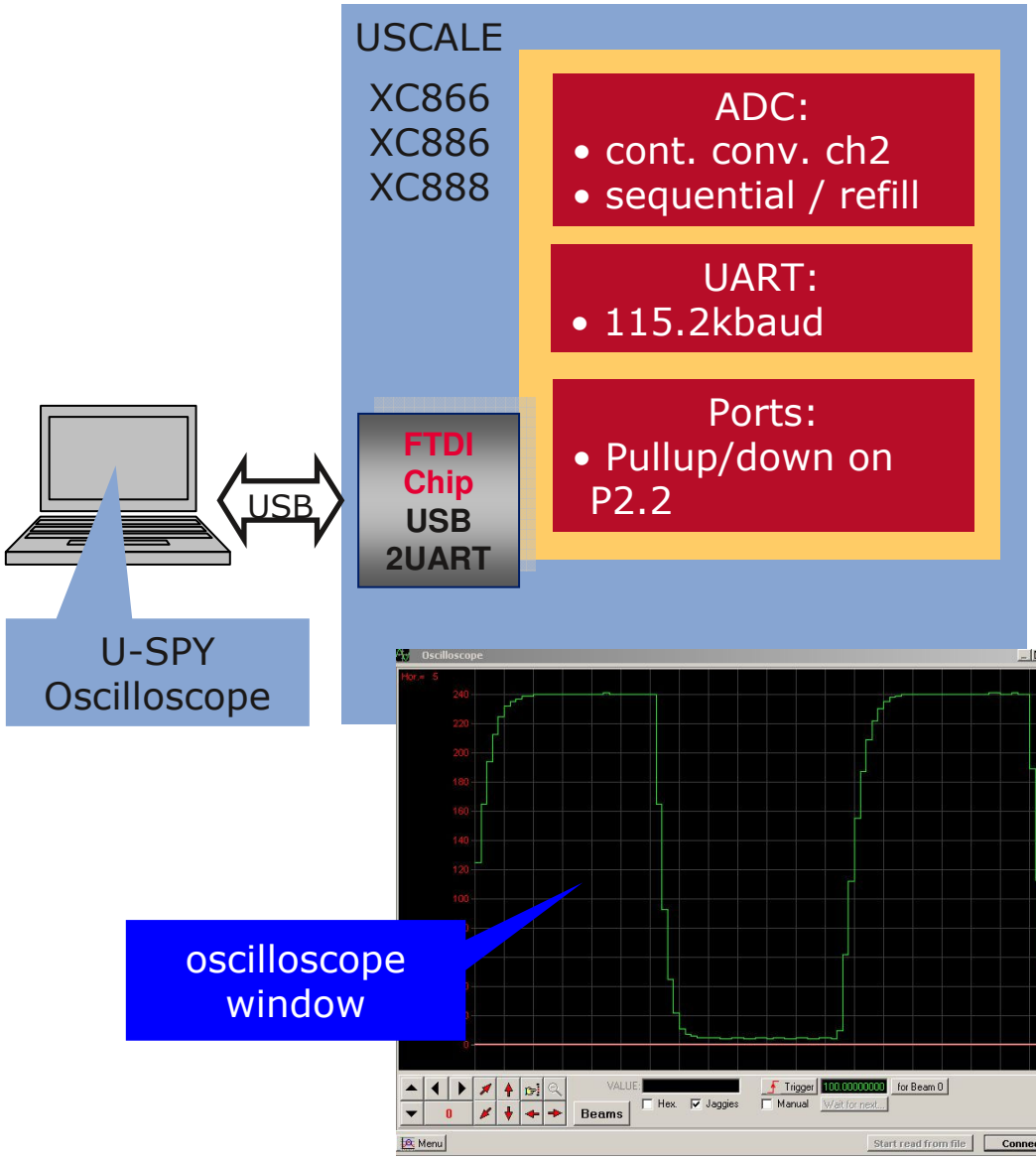
Example – USC_UART

- USPY configuration
  1. select COM port
     - use tool show_devices.exe from CD folder \tools\USCALE\FindDevices
     - just write the port number to the field
  2. open settings
     - SPY_UART.ini
  3. define transmit message
  4. enable COM window
  5. connect
  6. trigger transmit
  7. watch COM window

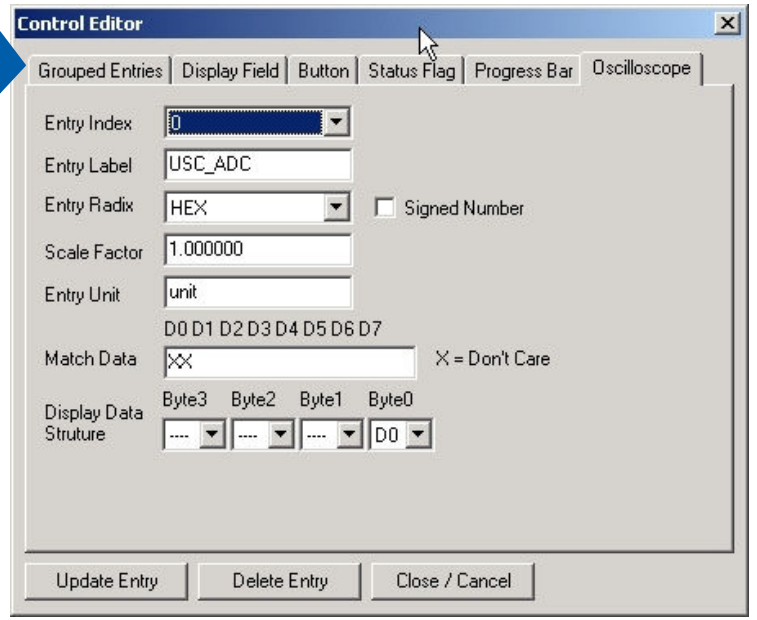


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Example – USC_ADC

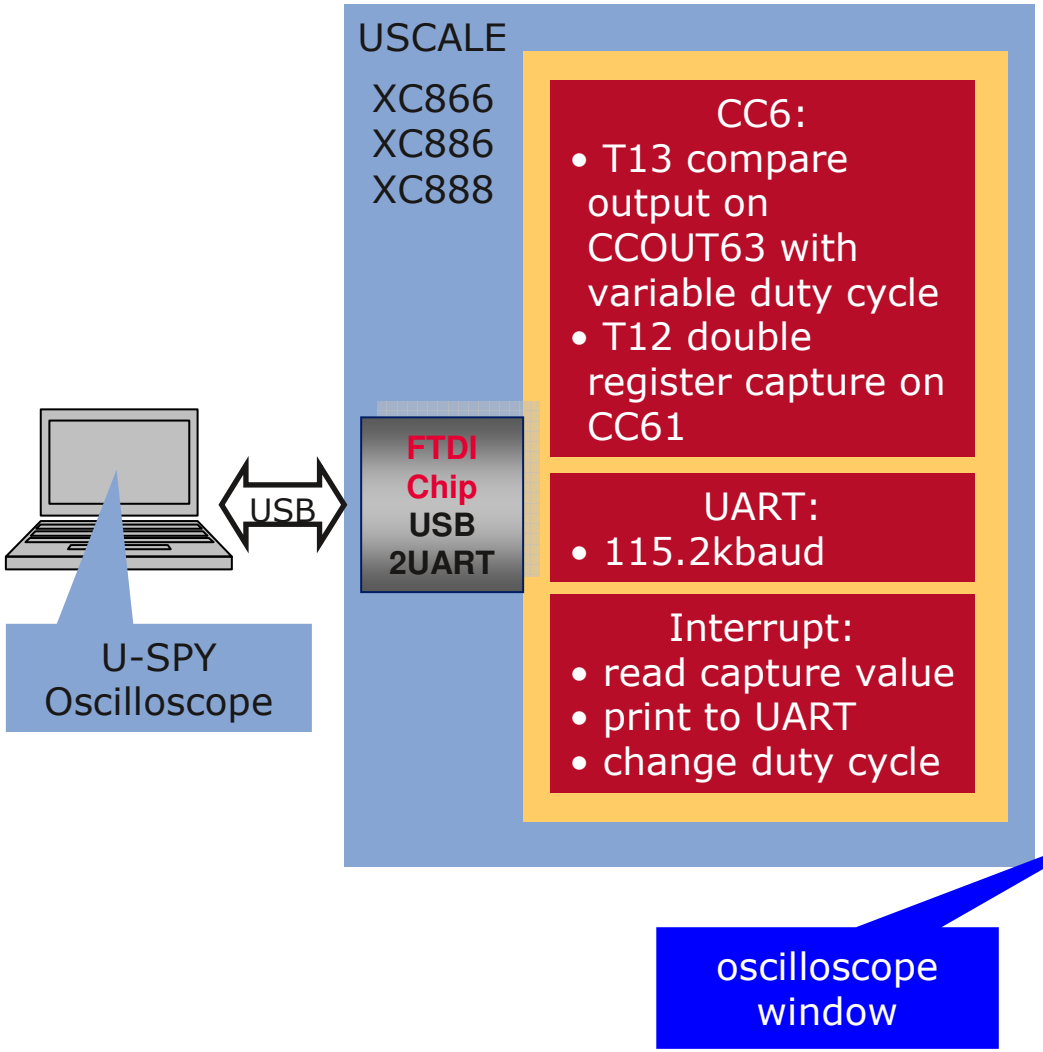


- Toggle pullup/pulldown on P2.2/CH2
  - this resistor charges the ADC's capacitor field according to an RC curve
- sample this curve with ADC (CH2)
- Dump ADC result to buffer and print to UART
- *Touch leftmost pins with your fingers and watch the result on oscilloscope window (you change the capacitve load)*
- USPY configuration:
  > Tools > ControlBox > Open Editor > Oscilloscope



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Example – USC_CC6

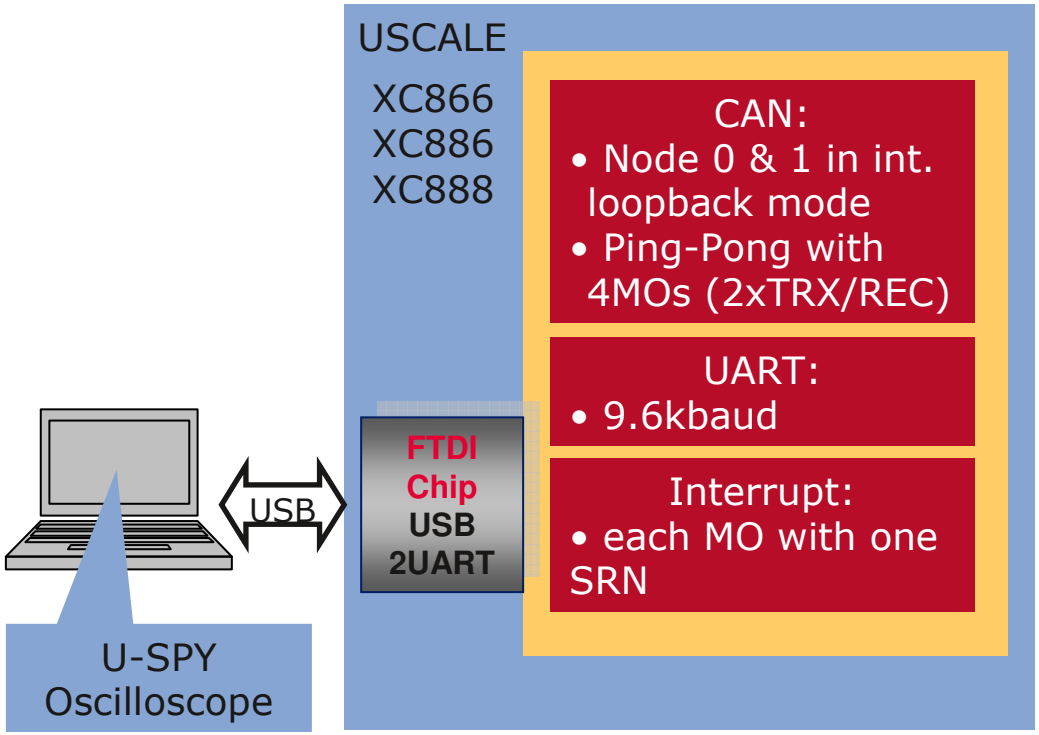


- Output PWM (on T13) with variable duty cycle on P3.7
- Capture rising and falling edge with T12 and print value to UART
- *Connect leftmost pins from upper and lower row with a jumper (P37/COUT63 ←→ P31/CC61)*

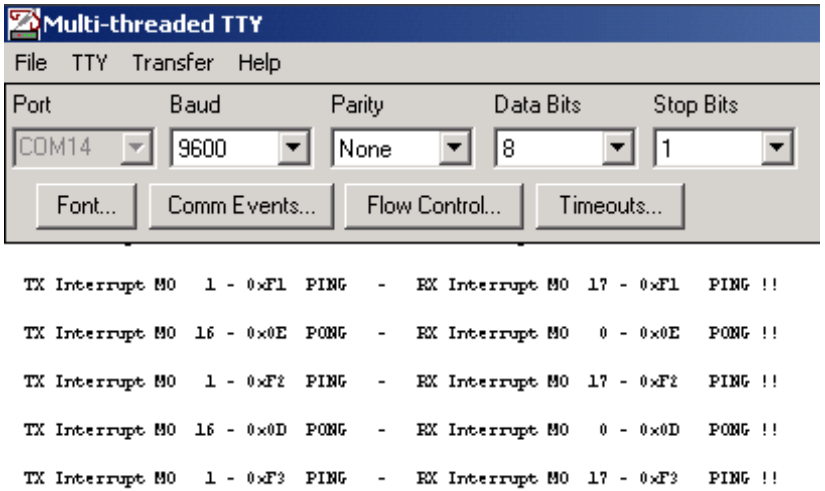


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Example – USC_CAN (1)



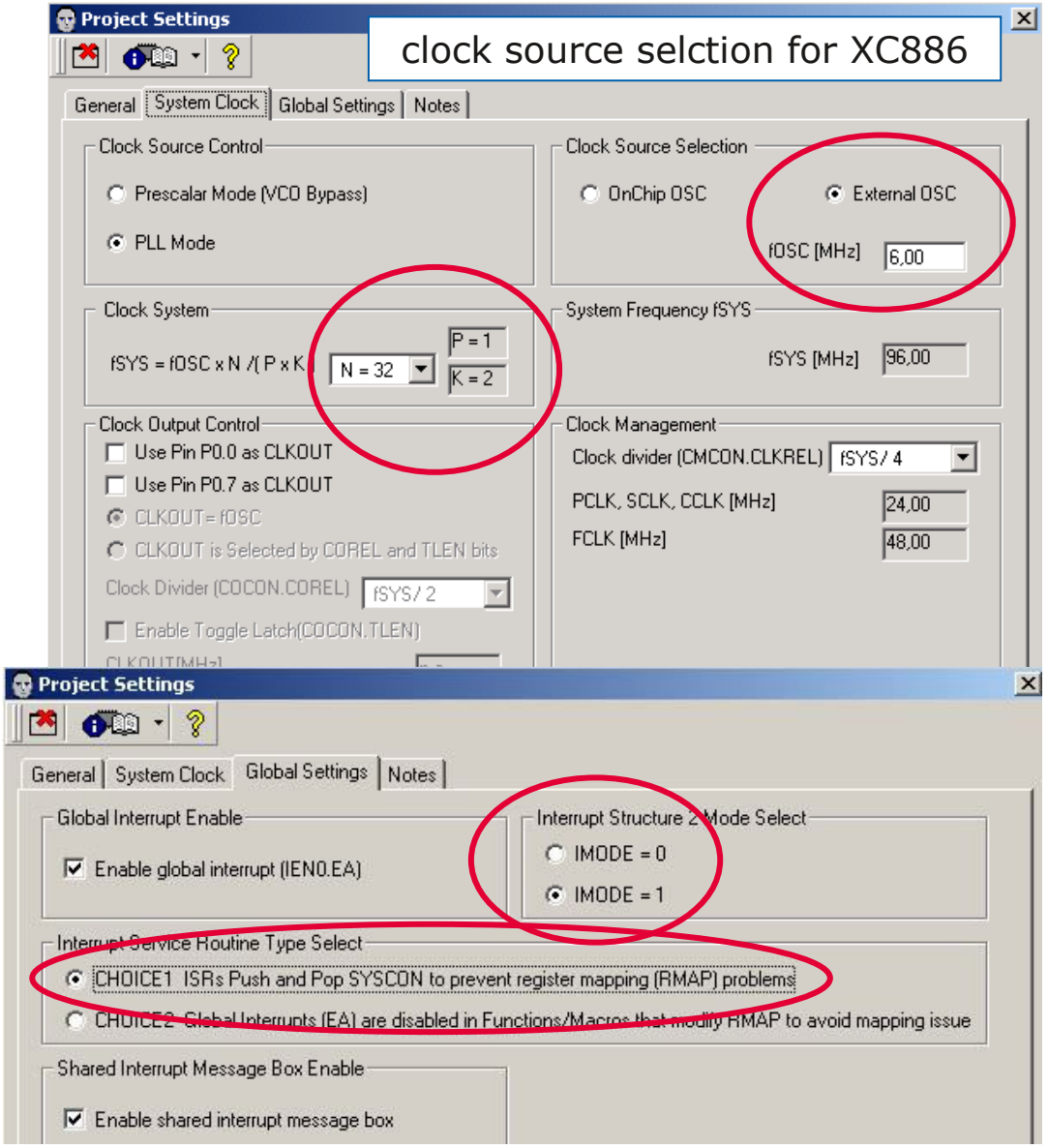
- Node 0/1
- Ping-pong with nodes and 4 MOs
- CAN Node Configuration
  - Node0 / MO01-TRX / ID7 / SRN0
  - Node0 / MO00-REC / ID5 / SRN1
  - Node1 / MO16-TRX / ID5 / SRN3
  - Node1 / MO17-REC / ID7 / SRN4
- Print REC-Object to UART
- *use terminal program (e.g. MTTY@9600bd)*



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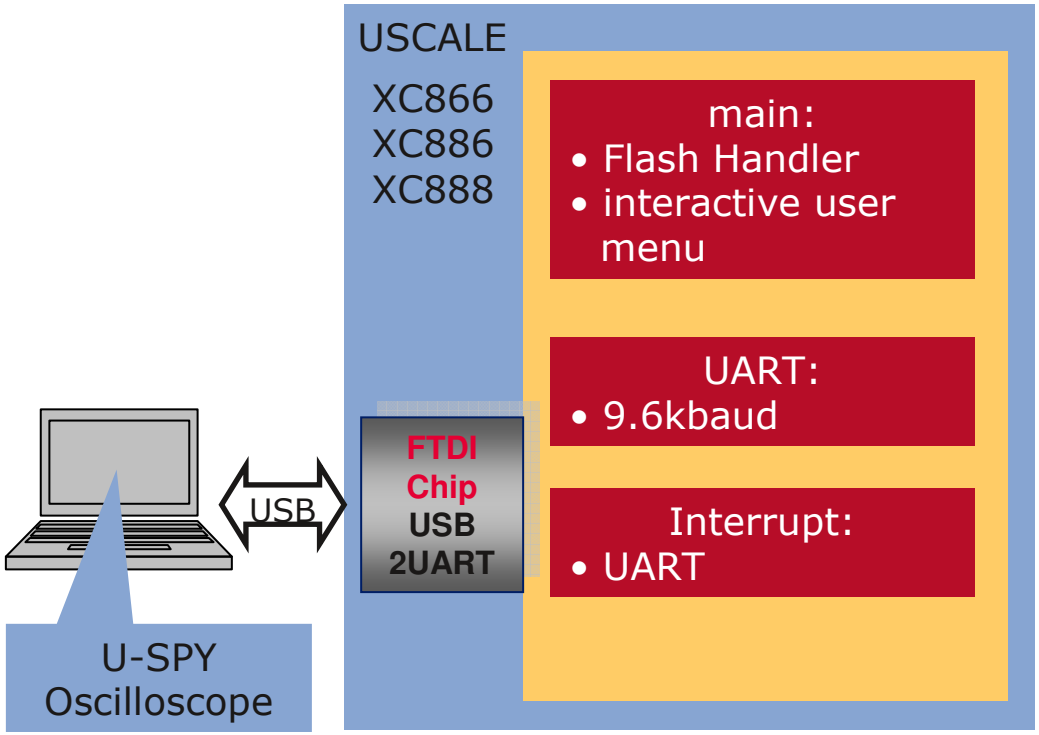
Example – USC_CAN (2)

- For CAN application an accurate clock source is needed → external crystal clock
- Configure external clock in DAvE
  - General Settings
    - USCALE has a 6MHz crystal
    - >> OSC settings not default in DAvE
  - All examples for XC886/888 are compiled with
    - IMODE = 1
      → Int. Structure 1
    - CHOICE 1
      → push-pop RMAP in every ISR

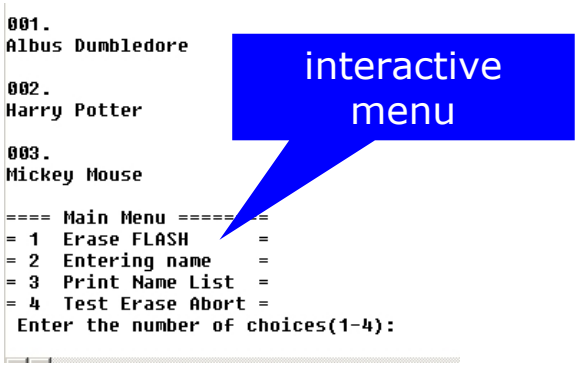


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Example – USC_EEPROM



- Write & Erase DFLASH using polling method and FlashHandler routines
- DataSet size is one WL
- Print modified DFLASH to UART
- *Use MTTY@9600 baud or another terminal program*
  - MTTY can be found on CD folder \tools\6_Monitor\MTTY



DFLASH memory dump

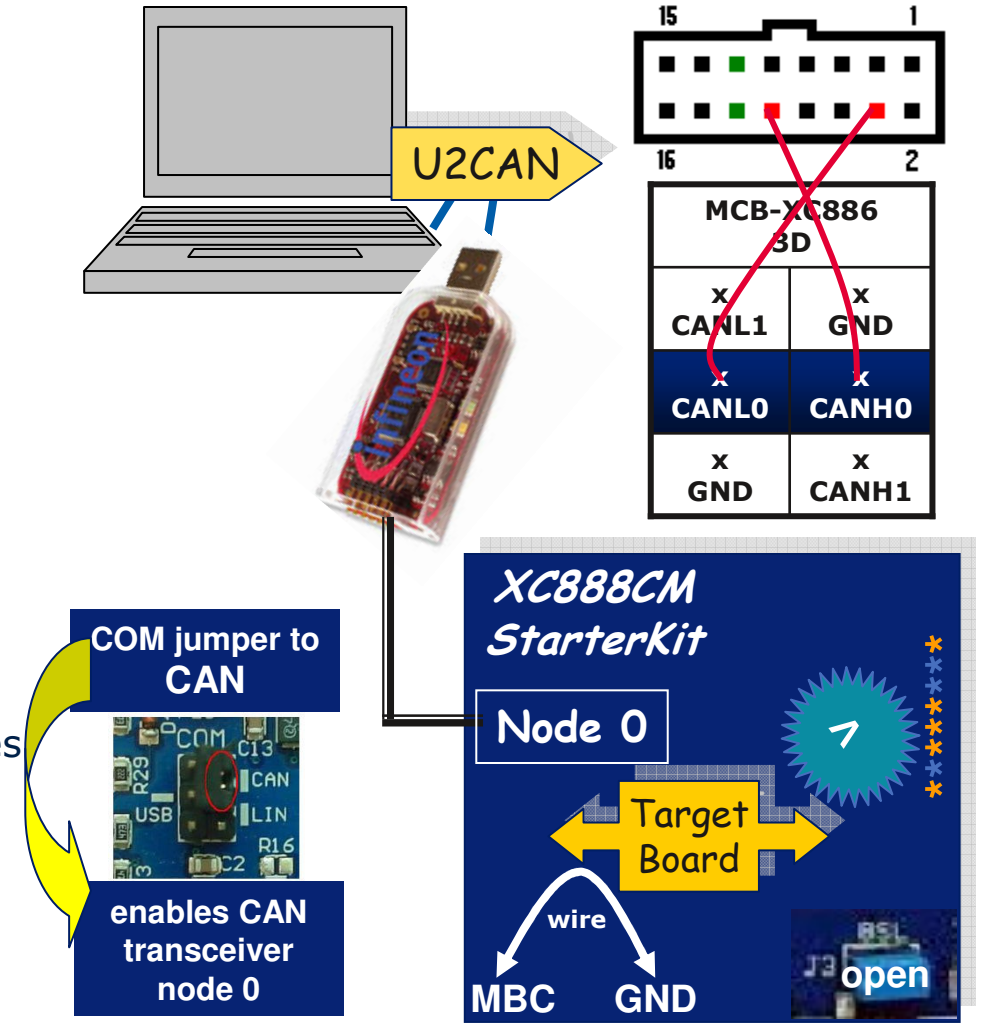
Memory - Mem0

Address	Data	ASCII
C:0xA000	41 6C 62 75 73 20 44 75 6D 62 6C 65 64 6F 72 65	Albus Dumbledore
C:0xA010	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	....
C:0xA020	48 61 72 72 79 20 50 6F 74 74 65 72 00 00 00 00	Harry Potter....
C:0xA030	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	....
C:0xA040	4D 69 63 6B 65 79 20 4D 6F 75 73 65 00 00 00 00	Mickey Mouse....
C:0xA050	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	

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Example USC_U2CAN

- Flash Target through CAN-BSL
  - use SKIT XC886 with a „CM“ device
- Connect target board as shown
  - COM jumper to CAN
  - MBC to VSSP (hardwire on pin header)
  - open BSL jumper
  - hardwire
    - USCALE.4 → SKIT_3D.3
    - USCALE.10 → SKIT_3D.4
- Use U2CAN as CAN flasher
  - press download button
    - connect button turns to green
    - select target hex-file (e.g. BlinkyP3.hex)
    - watch autobaud detection in footline and “ignore error messages and hints”
    - wait until “download & verify OK”
  - unconnect MBC from VSSP
  - press RESET and watch target program (e.g. BlinkyP3)

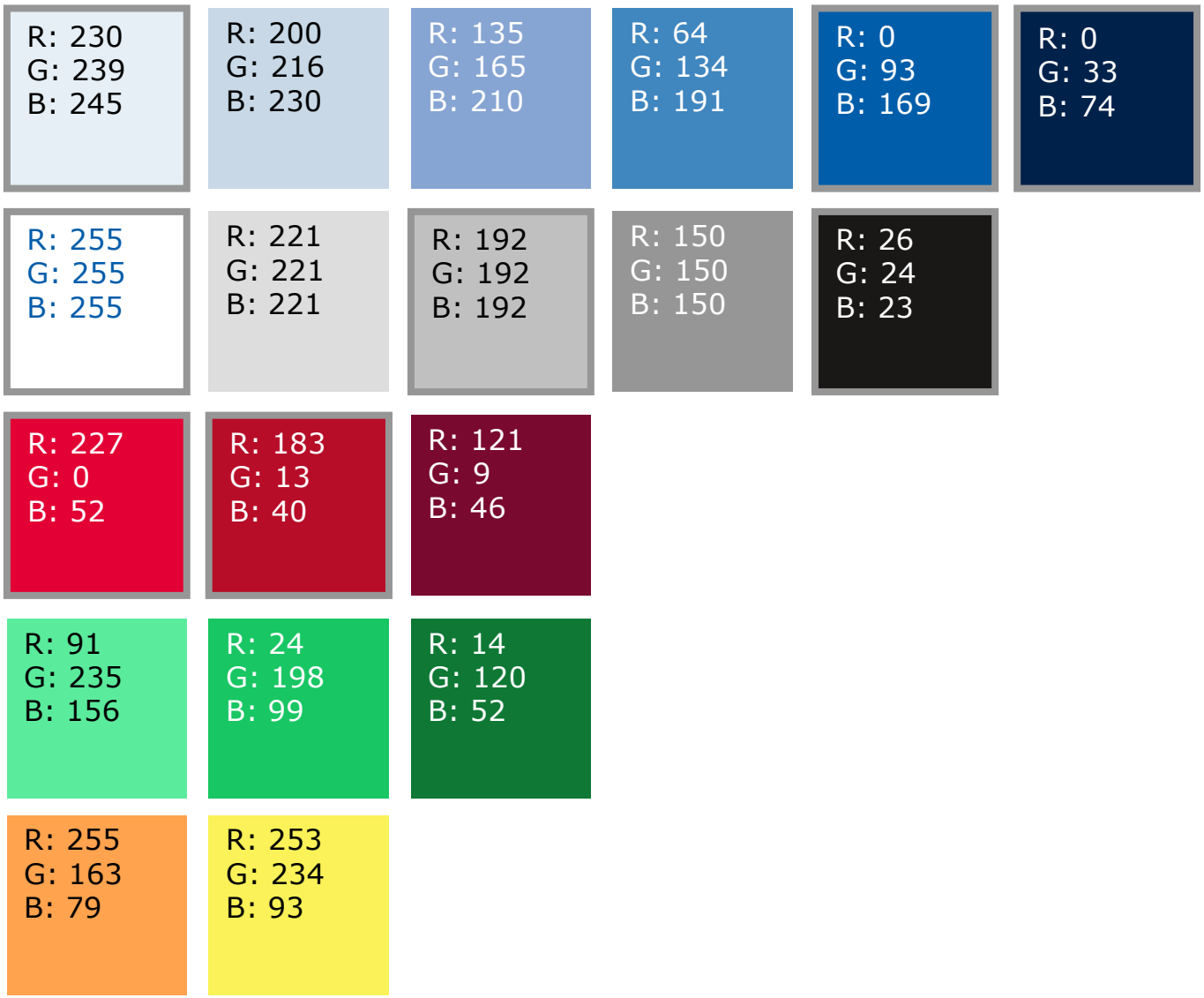


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Never stop thinking

The Color System



Primary Colors

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