Important changes to Embedded Microcomputer Systems by Jonathan W. Valvano

Front cover, change • to Ω in six places
Page xi, Change demonstration to demonstration
Page 3, Change ordinance to ordinance
Page 5, Change N any signed 8-bit -32768 to +32787 to N any signed 16-bit -32768 to +32787
Page 5, Change U any unsigned 8-bit 0 to 65535 to U any unsigned 16-bit 0 to 65535
Page 56, Figure 1.58, Delete extra cc near Q1
Page 58, line 2, Change We see from Figure 1.63 to We see from Figure 1.56
Page 90, Program 2.4, Change SC,SD to SC,SA
Page 126, Section 2.11.3.6. Change
In this situation, if we suspect the error occurs when the pointer nears the end of the buffer, we could add a filter that saves in the array only when the pointer is above a certain value.

In this situation, if we suspect the error occurs when certain conditions are true, we could add a filter that saves in the array only when those conditions are met.
Page 134, Problem 2.3, Change result1Adr2 to result+Adr2
Page 165, Change ΔA to ΔT
Page 180, Problem 3.1, Change ldab.#V to ldab #V
Page 195, Figure 4.8, Move "software writes new data" over on top of "asks device to output it"
Page 201, Change Program 4.5 shows an illustrative example of this read-modify-write. to
Program 4.5 shows an illustrative example of this write-read.
Page 208, program 4.16 change
tpa           restore CCR to previous value
tba

tap           restore CCR to previous value
tba

Page 209, program 4.17 change
cpx PutPt Empty if initially the same
tpa           restore CCR to previous value
tba
tap           restore CCR to previous value
tba
cpy PutPt Empty if initially the same

Page 211, program 4.20 change
tpa           restore CCR to previous value
tba
tap           restore CCR to previous value
tba

Page 212, program 4.21 change
tpa           restore CCR to previous value
tba
tap           restore CCR to previous value
tba

Page 214, program 4.24 change
tpa           restore CCR to previous value
tba
tap           restore CCR to previous value
tba

Page 215, program 4.25 change
tpa    restore CCR to previous value
tba

tap    restore CCR to previous value
tba

Page 215, program 4.25 change
incb

to

dec  Size one less element in FIFO
incb

Page 215, Change graphics to graphics
Page 255, Figure 4.38, Change 0. µF to 0.1 µF
Page 258, Program 4.48, Delete these words from the comment "example 4.14.2"
Page 264, Figure 4.46, wrong figure. Should be

Clock

Data

400µs

厚 line means driven by computer

thin line means driven by keyboard

Page 271, Figure 5.6, In left hand side, draw an arrow from the SP to the top of the stack.
Page 279, change the sequence of Program 5.13 so it reads as follows
* To block a thread on semaphore S, execute SWI
SWI han ldx RunPt running process “to be blocked”
sts SP,x save Stack Pointer in its TCB
* Unlink “to be blocked” thread from RunPt list
ldy Next,x find previous thread
sty RunPt next one to run
look cpx Next,x search to find previous
beq found
ldy Next,y
bra look
found ldd RunPt one after blocked
std Next,y link previous to next to run
* Put “to be blocked” thread on block list
ldy BlockPt
sty Next,x link “to be blocked”
stx BlockPt
* Launch next thread
ldx RunPt
lds SP,x set SP for this new thread
ldd TCNT Next thread gets a full 10ms time slice
add d #20000 interrupt after 10 ms
std TOC5
ldaa #$08 ($20 on the 6812)
staa TFLG1 clear OC5F
r ti

Page 296, Table 6.7, Change cycles/µs to cycles, µs in three places
Page 307, Program 6.10, 6811 C code, change ")" to "}"

First = TIC1: Count=0: Mode=1;
if(((TIC1<<0x8000)==0)
&(&TFLG2&0x80)
Count--;

to

First = TIC1: Count=0: Mode=1;
if(((TIC1<<0x8000)==0)
&(&TFLG2&0x80)
Count--;

Page 323, Table 6.13, Change cycles/µs to cycles, µs in three places
Page 327, Table 6.14, Change cycles/\mu s to \text{cycles, } \mu s in two places.

Page 327, Program 6.24 6812 version, Change TFLG1=0x08; to TFLG1=0x08;

Page 344, Question 6.1, (change so that the answer is not directly in the Chapter.) Change

The frequency range is 0 to 2000 Hz and the resolution is 0.1Hz. For example, if the frequency is 567.83 Hz, then your software will set the global Freq \approx 5678. The C program in Section 6.3.2 measures frequency with units of 100 Hz. Make modifications to this program so the resolution is improved to 0.1 Hz. Don’t worry about frequencies above 2000 Hz.

to

The frequency range is 0 to 200 Hz and the resolution is 0.01Hz. For example, if the frequency is 56.783 Hz, then your software will set the global Freq \approx 5678. The C program in Section 6.5.2 measures frequency with units of 0.1 Hz. Make modifications to this program so the resolution is improved to 0.01 Hz. Don’t worry about frequencies above 200 Hz.

Page 362, Section 7.3.1. change

More details about common mode will be presented later in Chapters 11 and 12.

to

More details about common mode will be presented later in Sections 11.2.3 and 11.2.6.

Page 362, Change \mathbf{\bullet 100\Omega} to \approx 100\Omega

Page 363, Change

To transmit the computer enables the driver by making DE active, then sends the serial frame from the TxD output of the SCI port. If RE is also active during transmission, the transmitted frame is echoed into the serial receiver of the SCI RxD line. To receive a frame the computer simply enables its receiver (by making RE active) and accepts a serial frame on the RxD line in the usual manner.

to

Normally, we make both DE and RE active on all devices. To transmit the computer sends the serial frame from the TxD output of the SCI port. The transmitted frame is echoed into the serial receiver of the SCI RxD line. To receive a frame the computer accepts a serial frame on the RxD line in the usual manner.

Page 365, Figure 7.23, Add four direction arrows TxData to Light and Sensor to RxData

Page 380 unnumbered figure, switch PE to ILT (PE is bit 1, ILT is bit 2)

Page 382, Change SCSR to SCxSR1

Page 382, Change SCDR to SCxDRL

Page 382, Change SCxDR to SCxDRL (three places)

Page 383, Add to paragraph discussing PF

Cleared by reading SC1SR1 with PF set, then reading SCxDRL.

Page 384 third line from the top, Change \text{Section 2.4.2 to Section 2.7.2}

Page 399, Change Cleared by SPSR to Cleared by reading SPSR

Page 409, Program 7.22, change the 6805 and 6808 code from

\begin{verbatim}
data+5PDR;  // lsb of A/D
\end{verbatim}

to

\begin{verbatim}
data+=SPDR;  // lsb of ADC
\end{verbatim}

Page 435, Program 8.10, MC68HC11A8 version, Change

TFLG1=0.08;}  // ack OC5F

to

TFLG1=0x08;}  // ack OC5F

Page 435, Program 8.10, MC68HC812A4 version, Change

TCS=TCS+period; // ack OC5F

to

TCS=TCS+period; TFLG1=0x20;}

Page 436, Figure 8.26, Delete 68HC705 PortA  68HC708 PortA  68HC11 PortC

Page 437, Program 8.11, MC68HC812A4 version, Change

Ritual: clr DDRJ ;PJ3–PJ0 inputs
rts ;PJ7–PJ0 oc outputs

to

Ritual: clr DDRJ ;PJ3–PJ0 inputs
movb #$0F,PUPSJ
movb #$0F,PULEJ
rts ;PJ7–PJ0 oc outputs
Page 439, Program 8.12, MC68HC812A4 version, Change
```
DDRJ = 0x00; // PJ 7 - PJ 4 are oc outputs
```
to
```
DDRJ = 0x00; PUPSJ = PULEJ = 0x0F;
```
Page 446, Change "the resistor is calculated as (Figure 8.35)" to "the resistor is calculated as (Figure 8.33)"
Page 455, Change NOR to EOR two places
Page 476 third line from the bottom, Change peripheral to peripherals
Page 485 Table 8.14, Change \( \text{˚/s}^2 \) to \( \text{˚/s}^3 \)
Page 485 Table 8.15, Change \( \text{˚/s}^2 \) to \( \text{˚/s}^3 \)
Page 506, Table 9.5, change
```
PF4  CSD  0xxxxxxxxxxxxxxxxxx $0000 $7FFF 32K (CSDFH=0)
```
to
```
PF4  CSD  0xxxxxxxxxxxxxxxxxx $0000 $7FFF 32K (CSDFH=1)
```
Page 521, Change SMOD and MDA bits in the HPRIO to SMODN, MODB, MODA bits in the MODE
Page 525, Change SMOD and MDA bits in the HPRIO to SMODN, MODB, MODA bits in the MODE
Page 551, Figure 9.64, Delay from rise of E to fall of DBE should be 37 rather than 49 ns
Page 569, Figure 9.82, wrong figure. Should be
![Figure 9.82](image)

Page 569, Change
```
"The write timing when controlled by C1 is shown on the left in Figure 9.82; the write timing when controlled by C2 is shown on the right in Figure 9.82."
```
to
```
"The write function occurs on either the fall of C1 or the rise of C2, whichever occurs first. Let the setup time be \( t_{su} \) and assume the hold time is zero."
```
Page 589, Figure 10.18, Change speed to delay in four places
Page 620, Figure 11.49, change 10k\(\Omega \)/500k\(\Omega \) to 10k\(\Omega \)/510k\(\Omega \)
Page 620, Figure 11.50, change 10k\(\Omega \)/500k\(\Omega \) to 10k\(\Omega \)/510k\(\Omega \)
Page 621, Figure 11.51, change \( R_1/R_2 \) to \( R_1/(R_1+R_2) \)
Page 641, Table 11.17, change \( \ast \) to \( \geq \) in three places
Page 648, Fix the second equation
```
V_{out}(t_1) = V_{out}(t_0) - \frac{1}{RC} \int_{t_0}^{t_1} V_{in}(s) \, ds = \frac{1}{RC} \left( V_{in} - V_{ref} \right)
```
Page 648, Fix the fourth equation
```
V_{out}(t_2) = V_{out}(t_1) - \frac{1}{RC} \int_{t_1}^{t_2} V_{ref}(s) \, ds = V_{out}(t_1) - \frac{1}{RC} \left( V_{ref} - V_{in} \right)
```
Page 671, Question 11.3, change What do ADC and ADC to What does ADC
Page 671, Question 11.4, change What do DAC and DAC to What does DAC
Page 682, first equation, change \( \infty \) to \( = \)
Page 709, Section 12.4.2, change uncertainty of counting events is \( \Delta n \) to uncertainty of counting events is \( \sqrt{n} \)
Page 755, Figure 13.21 caption, change •N to ΔN
Page 759, Program 13.19
change
dc.b 128, 244, 5, 8 ; EPS
to
dc.b 128, 224, 5, 8 ; EPS

Page 759, Program 13.20
change
a_tab: dc.b 244, 255, 16, 0 ; DPL
to
a_tab: dc.b 224, 255, 16, 0 ; DPL

Page 764, Change ±2•F to ±2˚F
Page 794, Figure 14.32, Move the +5 to the proper place
Page 804, second equation, fix

\[ |Z| \leq \Delta z \quad \text{or} \quad |Z| \leq \gamma \Delta z \quad \text{for all } f \geq \gamma f_s \]

Page 809, Program 15.2 (two places)
change
for (i = 5; i > 0; i++)
to
for (i = 5; i > 0; i--)

Page 818 Equation 51, change -13 to +13, yielding

\[ y_2(n) = x(n) + x(n-2) + \frac{-14x(n-1)+13y_2(n-1)-231y_2(n-2)}{256} \]  (51)

Page 828, Figure 15.17, change k=16 to k=32
Page 829, Figure 15.19, add minus signs in front of the b in four places
Back cover, change 74W05 to 74S05
Back cover, change • to Ω in eight places, and •C to ºC in four places
Minor Changes (these will make the book perfect, but are not serious errors)

1) Change lower case $v$ to upper case $V$
   Figures 7.2, 7.15, 8.1, 8.2, 8.3, 8.5, 8.6, 8.10, 8.11, 8.14, 8.17, 8.25,
   Figures 8.27, 8.30, 8.31, 8.33, 8.34, 8.35, 8.38, 8.90, 9.8, 9.13, 9.57,
   Figures 9.85, 11.11, 11.38, 11.71, 11.72, 11.73, 11.84, 11.85, 11.90
   Figures 11.91, 11.95, 11.104, 11.105, 12.20, 12.43, 13.9, 13.17, 14.4

2) Change upper case $K\text{bits}$ to lower case $k\text{bits}$
   Table 7.3

3) Change upper case $K\Omega$ to lower case $k\Omega$
   Tables 8.10
   Figures 11.87, 11.89, 11.98, 11.104, 11.105, 12.33, 12.65, 12.67

4) Change $A/D$ to $ADC$
   Page s134, 141 (Table 3.1), 408, 409
   Figures 1.28, 1.40, 11.93,

5) Change $D/A$ to $DAC$
   Pages 626, 627, 628
   Figures 11.63, 11.64, 11.74, 11.79, 11.81, 11.82, 11.83, 11.85, 11.87
   Figures 11.88, 11.89, 11.110, 13.17, 13.21

6) Change upper case $K\text{Hz}$ to lower case $k\text{Hz}$
   Figures 11.15, 11.41

7) Change $^\circ K$ to $K$
   Figure 12.36

8) Fix spacing of $0 \leq V(t) \leq 10\text{W}$ in Figure 13.14

9) Fix spacing in Problem 1.6, on page 76