DUALDPTR PAGE 1

1 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

2 ;

3 ; Author : ADI - Apps www.analog.com/MicroConverter

4 ;

5 ; Date : October 2003

6 ;

7 ; File : DualDPTR.asm

8 ;

9 ; Hardware : ADuC842/ADuC843

10 ;

11 ; Description : Sample Program to show the new ADuC842 features

12 ; of dual DPTRs.

13 ;

14 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

15

16 $MOD842 ; Use 8052&ADuC832 predefined symbols

00B4 17 LED EQU P3.4 ; P3.4 drives red LED on eval board

18

19 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20 ; BEGINNING OF CODE

---- 21 CSEG

22

0000 23 ORG 0000h

0000 75D703 24 MOV PLLCON,#03H

25 ; CONFIGURE UART....9600 buad at core clk of 2.097152MHz

26

0003 759E83 27 MOV T3CON,#83h

0006 759D2D 28 MOV T3FD,#2Dh

0009 759852 29 MOV SCON,#52h

30

31 ; enable the intenal On-Chip XRAM

32

000C 43AF01 33 ORL CFG842, #01h

34

35 ; move 512 bytes from code memory (adress 1000h -> 1200h) into

36 ; data XRAM (address 0000h -> 0200h)

37 ; configure the datapointer

000F 900000 38 MOV DPTR, #0

0012 75A755 39 MOV DPCON, #55h ; auto toggle between DPTRs

40 ; auto increment shadow DPTR

41 ; auto increment main DPTR

42 ; select shadow DPTR

0015 901000 43 MOV DPTR, #1000h

44

0018 45 COPYDATALOOP:

46 ; read Code Memory using Shadow DPTR

0018 E4 47 CLR A

0019 93 48 MOVC A, @A+DPTR ; read code memory

49 ; auto increment shadow DPTR

50 ; swap to main DPTR

51 ; write to XRAM using main DPTR

001A F0 52 MOVX @DPTR, A ; write to XRAM

53 ; auto increment main DPTR

54 ; swap to shadow DPTR

55 ; check if at end of loop

56 ; NOTE: shadow DPTR selected (not main)

001B E583 57 MOV A, DPH

001D B412F8 58 CJNE A, #12h, COPYDATALOOP

DUALDPTR PAGE 2

59

60

0020 00 61 NOP ; <----NOTE: Set a breakpoint in the debugger here

62 ; This will show that the values in code memory

63 ; at addresses 1000h thru 1200h has been mapped

64 ; into XRAM at address 0000h thru 0200h.

65 ; The debugger will not run the nextpiece of

66 ; code as this requires the use of the serial port

67

68

69

70

71 ; transmit XRAM up UART

0021 75A704 72 MOV DPCON, #4 ; select main DPTR

73 ; auto increment DPTR

74 ; do not toggle DPTR

0024 900000 75 MOV DPTR, #0

0027 7810 76 MOV R0, #16

0029 77 SENDXRAM:

0029 E0 78 MOVX A, @DPTR

002A 120042 79 CALL SENDVAL

002D D8FA 80 DJNZ R0, SENDXRAM

81 ; send a newline

002F 740A 82 MOV A, #10

0031 120058 83 CALL SENDCHAR

0034 740D 84 MOV A, #13

0036 120058 85 CALL SENDCHAR

0039 7810 86 MOV R0, #16

003B E583 87 MOV A, DPH

003D B402E9 88 CJNE A, #2, SENDXRAM

89

0040 80FE 90 JMP $

91

92

93 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

94 ; SENDVAL

95

0042 96 SENDVAL: ; converts the hex value of A into two ASCII chars,

97 ; and then spits these two characters up the UART.

98 ; does not change the value of A.

99

0042 C0E0 100 PUSH ACC

0044 C4 101 SWAP A

0045 120060 102 CALL HEX2ASCII

0048 120058 103 CALL SENDCHAR ; send high nibble

004B D0E0 104 POP ACC

004D C0E0 105 PUSH ACC

004F 120060 106 CALL HEX2ASCII

0052 120058 107 CALL SENDCHAR ; send low nibble

0055 D0E0 108 POP ACC

109

0057 22 110 RET

111 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

112 ; SENDCHAR

113

0058 114 SENDCHAR: ; sends ASCII value contained in A to UART

115

0058 3099FD 116 JNB TI,$ ; wait til present char gone

DUALDPTR PAGE 3

005B C299 117 CLR TI ; must clear TI

005D F599 118 MOV SBUF,A

119

005F 22 120 RET

121 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

122 ; HEX2ASCII

123

0060 124 HEX2ASCII: ; converts A into the hex character representing the

125 ; value of A's least significant nibble

126

0060 540F 127 ANL A,#00Fh

0062 B40A00 128 CJNE A,#00Ah,$+3

0065 4002 129 JC IO0030

0067 2407 130 ADD A,#007h

0069 2430 131 IO0030: ADD A,#'0'

132

006B 22 133 RET

134 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1000 135 ORG 1000h

136

1000 00010203 137 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1004 04050607

1008 08090A0B

100C 0C0D0E0F

1010 10111213 138 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1014 14151617

1018 18191A1B

101C 1C1D1E1F

1020 20212223 139 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1024 24252627

1028 28292A2B

102C 2C2D2E2F

1030 30313233 140 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1034 34353637

1038 38393A3B

103C 3C3D3E3F

1040 00010203 141 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1044 04050607

1048 08090A0B

104C 0C0D0E0F

1050 10111213 142 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1054 14151617

1058 18191A1B

105C 1C1D1E1F

1060 20212223 143 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1064 24252627

1068 28292A2B

106C 2C2D2E2F

1070 30313233 144 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1074 34353637

1078 38393A3B

107C 3C3D3E3F

1080 00010203 145 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1084 04050607

1088 08090A0B

108C 0C0D0E0F

1090 10111213 146 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1094 14151617

DUALDPTR PAGE 4

1098 18191A1B

109C 1C1D1E1F

10A0 20212223 147 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10A4 24252627

10A8 28292A2B

10AC 2C2D2E2F

10B0 30313233 148 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10B4 34353637

10B8 38393A3B

10BC 3C3D3E3F

10C0 00010203 149 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

10C4 04050607

10C8 08090A0B

10CC 0C0D0E0F

10D0 10111213 150 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

10D4 14151617

10D8 18191A1B

10DC 1C1D1E1F

10E0 20212223 151 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10E4 24252627

10E8 28292A2B

10EC 2C2D2E2F

10F0 30313233 152 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10F4 34353637

10F8 38393A3B

10FC 3C3D3E3F

1100 00010203 153 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1104 04050607

1108 08090A0B

110C 0C0D0E0F

1110 10111213 154 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1114 14151617

1118 18191A1B

111C 1C1D1E1F

1120 20212223 155 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1124 24252627

1128 28292A2B

112C 2C2D2E2F

1130 30313233 156 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1134 34353637

1138 38393A3B

113C 3C3D3E3F

1140 00010203 157 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1144 04050607

1148 08090A0B

114C 0C0D0E0F

1150 10111213 158 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1154 14151617

1158 18191A1B

115C 1C1D1E1F

1160 20212223 159 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1164 24252627

1168 28292A2B

116C 2C2D2E2F

1170 30313233 160 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1174 34353637

1178 38393A3B

117C 3C3D3E3F

DUALDPTR PAGE 5

1180 00010203 161 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1184 04050607

1188 08090A0B

118C 0C0D0E0F

1190 10111213 162 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1194 14151617

1198 18191A1B

119C 1C1D1E1F

11A0 20212223 163 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11A4 24252627

11A8 28292A2B

11AC 2C2D2E2F

11B0 30313233 164 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11B4 34353637

11B8 38393A3B

11BC 3C3D3E3F

11C0 00010203 165 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

11C4 04050607

11C8 08090A0B

11CC 0C0D0E0F

11D0 10111213 166 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

11D4 14151617

11D8 18191A1B

11DC 1C1D1E1F

11E0 20212223 167 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11E4 24252627

11E8 28292A2B

11EC 2C2D2E2F

11F0 30313233 168 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11F4 34353637

11F8 38393A3B

11FC 3C3D3E3F

169

170

171 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

172

173 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

DUALDPTR PAGE 6

ACC. . . . . . . . . . . . . . . D ADDR 00E0H PREDEFINED

CFG842 . . . . . . . . . . . . . D ADDR 00AFH PREDEFINED

COPYDATALOOP . . . . . . . . . . C ADDR 0018H

DPCON. . . . . . . . . . . . . . D ADDR 00A7H PREDEFINED

DPH. . . . . . . . . . . . . . . D ADDR 0083H PREDEFINED

HEX2ASCII. . . . . . . . . . . . C ADDR 0060H

IO0030 . . . . . . . . . . . . . C ADDR 0069H

LED. . . . . . . . . . . . . . . NUMB 00B4H NOT USED

P3 . . . . . . . . . . . . . . . D ADDR 00B0H PREDEFINED

PLLCON . . . . . . . . . . . . . D ADDR 00D7H PREDEFINED

SBUF . . . . . . . . . . . . . . D ADDR 0099H PREDEFINED

SCON . . . . . . . . . . . . . . D ADDR 0098H PREDEFINED

SENDCHAR . . . . . . . . . . . . C ADDR 0058H

SENDVAL. . . . . . . . . . . . . C ADDR 0042H

SENDXRAM . . . . . . . . . . . . C ADDR 0029H

T3CON. . . . . . . . . . . . . . D ADDR 009EH PREDEFINED

T3FD . . . . . . . . . . . . . . D ADDR 009DH PREDEFINED

TI . . . . . . . . . . . . . . . B ADDR 0099H PREDEFINED