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1 ;====================================================================

2 ;

3 ; Author : ADI - Apps

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5 ; Date : June 2002

6 ;

7 ; File : tx11to20.asm

8 ;

9 ; Hardware : ADuC831

10 ;

11 ; Description : This slave program transmits the numbers 11-20 in

12 ; binary form continuously down the spi port after

13 ; receiving a clock signal.

14 ;

15 ; After the transmission of each byte the incoming

16 ; byte is saved in order at a internal RAM address

17 ; between #40h and #50h

18 ;

19 ; This program can be used with the master program

20 ; spimast.asm (which generates a clock signal for

21 ; the slave)

22

23 ; The Slave program tx11to20 should be started

24 ; after the master program (831mstr.asm) but within

25 ; the time delay of 5s in order that the slave

26 ; program is synchronised by the first outputted

27 ; clock of the master.

28 ;

29 ; The clock is inputted at sclock (pin 26)

30 ; The data is outputted at MISO (pin 19)

31 ; The data is inputted at sdata/MOSI (pin 27)

32 ;

33 ;====================================================================

34 ;

35 $MOD831 ;Use 8052 predefined Symbols

36

00B4 37 LED EQU P3.4

0000 38 FLAG BIT 00H

39

40

41 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

42 ; BEGINNING OF CODE

---- 43 CSEG

0000 44 ORG 0000H

45

0000 020060 46 JMP MAIN

47 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

48 ; SPI INTERRUPT ROUTINE

003B 49 ORG 003BH

003B C200 50 CLR FLAG ; Clear flag to leave loop

51

003D A7F7 52 MOV @R1, SPIDAT ; move input into memory

003F 09 53 INC R1 ; increment memory location so new

54 ; data is stored in new address

55

0040 B95002 56 CJNE R1, #50H, CONT ; reset memory location to 40h when

57 ; memory location reaches 50h saving

58 ; 16 bytes of data

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0043 7940 59 MOV R1, #40H

0045 32 60 CONT: RETI

61

62

63 ;====================================================================

64

0060 65 ORG 0060H ; Start code at address above interrupts

66

67

68

0060 69 MAIN: ; Main program

70

0060 75F824 71 MOV SPICON,#24h ; Initialise SPICON to have

72 ; -Enable SPI serial port

73 ; -slave mode select

74 ; -CPOL=0, clk idling low

75 ; -CPHA=1

76 ; note: it is important to have CPHA in the master and the slave

77 ; program equal, otherwise uncertainty will exist, as the input

78 ; will be measued during its change of state, and not is at

79 ; its final value.

80

0063 75A901 81 MOV IEIP2, #01h ; Enable SPI interrupt

82

0066 780A 83 MOV R0, #0AH ; initialise R0 to 10 to start

84 ; transmission from 11

0068 7940 85 MOV R1, #40h ; initialise R1 to 40 to store the

86 ; input data from memory location 40

87

006A D2AF 88 SETB EA ; Enable interrupts

89

006C 90 TRNSMT:

006C 08 91 INC R0

006D 88F7 92 MOV SPIDAT, R0 ; transmit the current value on R0

006F D200 93 SETB FLAG ; set flag so that we wait here until

94 ; the spi interrupt routine clears

95 ; the FLAG

96

0071 2000FD 97 JB FLAG, $ ; stay here until flag is cleared

98 ; by interrupt

99

100 ; check if R0 is equal to 20. If so the number 20 has been

101 ; transmitted and we should reset R0 to 10 to start transmission

102 ; from 11 again.

0074 E8 103 MOV A, R0

0075 B414F4 104 CJNE A, #14H, TRNSMT ; if R0 is not 20, jump to TRNSMT

0078 780A 105 MOV R0, #0AH ; if R0=20 make R0=10 & jump to TRNSMT

007A 80F0 106 JMP TRNSMT

107

108 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

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CONT . . . . . . . . . . . . . . C ADDR 0045H

EA . . . . . . . . . . . . . . . B ADDR 00AFH PREDEFINED

FLAG . . . . . . . . . . . . . . B ADDR 0000H

IEIP2. . . . . . . . . . . . . . D ADDR 00A9H PREDEFINED

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

MAIN . . . . . . . . . . . . . . C ADDR 0060H

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

SPICON . . . . . . . . . . . . . D ADDR 00F8H PREDEFINED

SPIDAT . . . . . . . . . . . . . D ADDR 00F7H PREDEFINED

TRNSMT . . . . . . . . . . . . . C ADDR 006CH