;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

; addarray.bin – sample program for the VCPU-2015

; Add 2 arrays of words (4-bytes each). (C[1] = A[1] + B[1])

; The length of the array is in Arraylen.

; Paul Michaud, April 3, 2015

; -address at 40+ corrected

;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

0000 ORG 00

0000 C020 Start BRA MAIN

0002 00000004 Arraylen dw 4

0006 00000100 Aptr dw ArrayA

000A 00000110 Bptr dw ArrayB

000E 00000120 Cptr dw ArrayC

0020 ORG 20H

0020 4020 MAIN MOV R0,#Arraylen ;use r0 to get arraylen

0022 2801 LDR R1,[R0] ;use r1 as counter

0024 4067 MOV R7,#Aptr ;use r7 to get pointers to the arrays

0026 2874 LDR R4,[R7] ;R4 points to arrayA

0028 40A7 MOV R7,#Bptr ;

002A 2875 LDR R5,[R7] ;R5 points to arrayB

002C 40E7 MOV R7,#Cptr ;

002E 2876 LDR R6,[R7] ;R6 points to arrayC

0030 2842 AGAIN LDR R2,[R4] ;get arrayA element

0032 2853 LDR R3,[R5] ;get arrayB element

0034 0432 ADD R2,R3 ;add elements

0036 2062 STR R2,[R6] ;store result in arrayC

0038 6044 ADD R4,#4 ;increment pointers++

003A 6045 ADD R5,#4

003C 6046 ADD R6,#4

003E 7011 SUB R1,#1 ;counter--

0040 81EE BNE AGAIN ;do again if not zero

0042 E000 STP

0100 ORG 100

0100 55555555 ArrayA dw 55555555,44444444,8,FFFFFFFF

0104 44444444

0108 00000008

010C FFFFFFFF

0110 01020304 Array dw 01020304,22222222,8,2

0114 22222222

0118 00000008

011C 00000002

0120 00000000 ArrayC dw 0,0,0,0

0124 00000000

0128 00000000

012C 00000000

**Memory dump of the arrays before the program is run**

0100 55 55 55 55 44 44 44 44 00 00 00 08 FF FF FF FF

U U U U D D D D . . . . . . . .

0110 01 02 03 04 22 22 22 22 00 00 00 08 00 00 00 02

. . . . " " " " . . . . . . . .

0120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

**Memory dump of the arrays after the program is run**

0100 55 55 55 55 44 44 44 44 00 00 00 08 FF FF FF FF

U U U U D D D D . . . . . . . .

0110 01 02 03 04 22 22 22 22 00 00 00 08 00 00 00 02

. . . . " " " " . . . . . . . .

0120 56 57 58 59 66 66 66 66 00 00 00 10 00 00 00 01

V W X Y f f f f . . . . . . . .