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Homework 3

Microprocessor System Design- ELEN 120

Due 10/9/2023

30 points

1) I would like to use a constant value in the instruction:

and r1,r2,#_____

I need to place one of the following constants in the blank space. For each suggested value below, tell me if this is a valid or invalid constant for this instruction. For each invalid constant, explain why in the space below. For this problem., do not use a computer, calculator, or simulator. (2 points each)

Constant	Valid	Invalid
0x12340000		; Is not 0-255 shifted by 0-23 or duplicated
0x000ff000		
0xffffffff		
0x007f8000		
0x003f9000		; Is not 0-255 shifted by 0-23 or duplicated
0x00770077		

- 2) Each of these problems includes a 32-bit arithmetic function that sets the N, Z, C, and V flags. The data is already in registers when a single instruction performs each operation. Calculate the 32-bit result and provide it in hexadecimal and fill in the proper flag values (0 or 1) after each operation is performed. For this problem., do not use a computer, calculator, or simulator. (3 points each)

	N	Z	C	V
$\begin{array}{r} 0x11111111 \\ + 0x11111111 \\ \hline \end{array}$	0	0	0	0

	N	Z	C	V
$\begin{array}{r} 0x00000001 \\ - 0x00000002 \\ \hline \end{array}$	1	0	0	0

	N	Z	C	V
$\begin{array}{r} 0xAAAAAAAA \\ + 0x55555555 \\ \hline \end{array}$	1	0	0	0

	N	Z	C	V
$\begin{array}{r} 0x00000002 \\ - 0x00000002 \\ \hline \end{array}$	0	1	1	0

	N	Z	C	V
$\begin{array}{r} 0xFFFFFFFF \\ + 0x00000003 \\ \hline \end{array}$	0	0	1	0

	N	Z	C	V
$\begin{array}{r} 0x80000000 \\ - 0x00000002 \\ \hline \end{array}$	0	0	1	1