0907432 Computer Design (Spring 2019) <u>Quiz 2</u>							
]	رقم الشعبة:	التسجيل:	رقم		الاسم:	
Instructions: Time 15 minutes. Open book and notes exam. No electronics. Please answer all problems in the space provided and limit your answer to the space provided. No questions are allowed. <i>Good Luck</i> P1. Given the following details about virtual memory address translation and the TLB contents,							
Virtual address					TLB		
47 46 45 44 43 15 14 13 12 11 10 98 32 1 0				Physical page			
47 40	45 44	43 15 14 13 12	11 10 98 32 1 0	Valid Dirty Ref	Tag	address	
		Virtual page number	Page offset				
						000 0004	
l						000 0003	
				1 1 1 0 0000 0003 1 0 1 0 0000 0004		000 0002	
		Translation		0 0 0		0000001	
		Translation		1 0 1 0 0000 0005	; ;	000 0000	
a)	39 38 37 15 14 13 12 11 10 98 32 10 Physical page number Page offset Physical address a) What is the translation of the virtual address 0000 0000 2135h (all numbers are hexadecimal)? The solution is: Page offset is 135h Virtual page number is 2, which is a hit in the second TLB entry. The physical page number is 000 0003 The physical address is 00 0000 3135 h b) What is the addressed page (code, read only data, or read/write data page)? The solution is: Since the dirty page is set, the page must be read/read data.						

P2. What is the expected speedup of converting a serial program to a parallel program that runs on 4 processors? Assume that the parallelizable fraction is 80%.

The solution is:

Speedup = 1 / ((1-f) + f/s) = 1/ (0.2 + 0.8/4) = 1 / (0.2 + 0.2) = 1 / 0.4 = 2.5