

**PES UNIVERSITY**

**Department of Computer Science & Engineering**

**Microprocessor & Computer Architecture Lab**

**UE23CS251B**

**WEEK 4 submission**

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| 1 | Write an ALP using ARM7TDMI to add n numbers bytewise.  . .DATA    A: .byte 1,2,3,4,5,6,7,8,9,10  Program screen shot:    Screen shot of Register set output: |
| 2 | Write an ALP using ARM7TDMI to generate a square given matrix with A  If (i==j) then A[i][j]=5  Otherwise A[i][j]=0  (Note:Any size of matrix can be given as input)  Considering 4X4 matrix    Example : 5 0 0 0  0 5 0 0  0 0 5 0  0 0 0 0  Before:  A:.word 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16  After:  A:.word 5,0,0,0,0,5,0,0,0,0,5,0,0,0,0,5  Program screen shot:    Screen shot of Register set output and memory location: |
| 3 | Write an ALP using ARM7TDMI to convert hexadecimal to decimal.  Input: **0x0124**(Hex)  Conversion Process:   * 0x124→ Extract **4**→ 0 \* 16 + 4 = 4 * 0x124 → Extract **2** → 2 \* 16^1 + 4 = 36 * 0x124 → Extract **1** → 1\* 16^2 + 36 =292   Output: **292(**Decimal)  Program screen shot:    Screen shot of Register set output and memory location: |
| 4 | Write an ALP using ARM7TDMI, for the given matrix arranged in Column major order, find the index of an element if coordinates of a matrix is given and also find the address of the indexed element. (Using MLA instruction)  . DATA    A:.WORD 1,2,3,4,5,6,7,8,9  .Index for the column major= y\*no of rows+x  Program screen shot:    Screen shot of Register set output and memory location: |
|  | Assignments Questions |
| 5 | Write an ALP using ARM7TDMI to reverse the elements stored in location A with location B  Before:  A:.word 1,2,3,4,5,6,7,8,9,10  After :  A:.word 10,9,8,7,6,5,4,3,2,1  Program screen shot:    Screen shot of Register set output: |
| 6 | Write an ALP using ARM7TDMI to find the largest of all the BCD digits of a given 32bit number.  (hint:If R1=17845374 the largest digit is 8  Program screen shot:    Screen shot of Register set output: |

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| Extra |
| Write an ALP using ARM7TDMI to copy a block 400 bytes of data from location A to location B if the rate of data transfer rate is 40 bytes, LDM and STM instructions.  and  For the same transfer the block with auto-indexing. |