**Department of Computer Science & Engineering**

**Microprocessor & Computer Architecture**

**UE24CS251B**

**MPCA Lab Programs - 4**

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| 1 | **Write an ALP to perform Convolution using MLA instruction (Addition of multiplication of respective numbers of loc A and loc B).** |
| 2 | **Write a program in ARM7TDMI-ISA to generate a diagonal matrix.**  **;Note: do not read the matrix elements.**  **LET THE DIAGONAL VALUE BE 2** |
| 3 | **Write a program in ARM7TDMI-ISA to transfer a block of 16 words stored at memory location X to memory location Y using Load Multiple and Store Multiple instructions. The rate of transfer is 24 bytes** |
| 4 | **Write an ARM ALP to perform element-wise addition of two 3×3 matrices using indexed addressing and nested loops.**  **Requirements**   1. **Matrices A and B each contain 9 elements (3 rows × 3 columns)** 2. **Matrix C should store the sum of corresponding elements** 3. **Use nested loops to traverse rows and columns** 4. **Use the MLA (Multiply Accumulate) instruction to compute the memory offset** 5. **Each matrix element is a 32-bit word** |
| 5 | **ASSIGNMENT QUESTION 1**  **Write an ARM7TDMI ALP to check whether a given 32-bit number has odd or even parity (number of 1s). It stores 00 in R7 if parity is EVEN and 01 in R7 if parity is ODD** |
| 6 | **Write an ALP to perform Convolution using MUL instruction (Addition of multiplication of respective numbers of loc A and loc B)** |