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**19CSE205 – Program Reasoning – Practice Questions**

1. Consider a function which takes an array as input and determines if it is an increasing array or not. An increasing array is one in which element at i-th position is strictly greater than the one at (i-1)-th position. Provide the precondition, postcondition and loop invariant.
2. Consider a function which takes an array as input and determines if it is palindromic or not. You need to provide the precondition, postcondition and loop invariant.
3. Consider a function which takes two matrices (2D arrays) as parameters and returns if adding them yields a zero matrix. Provide the precondition, postcondition and loop invariant.
4. Consider a function which takes two matrices (2D arrays) as parameters and returns if multiplication of them yields a unit matrix. Provide the precondition, postcondition and loop invariant.
5. Consider a 9x9 matrix representing a sudoku grid. Write the postcondition to check if the returned matrix is valid. A valid sudoku matrix is one in which every 3x3 submatrix, every row and every column has one occurrence of numbers 0 to 9. You don’t have to write the sudoko solver function. Just the postcondition is enough.