ADDITIONAL EXERCISES – EML 3035

1. Write a program to find the sum of all elements of an array.
2. Write a program to accept a matrix and determine whether it is a sparse matrix. A sparse matrix is matrix that has more zero elements than nonzero elements.
3. Write a program to interchange the main diagonal elements of a square matrix with that of the secondary diagonal elements.
4. Write a program to accept a row vector, and find the second largest and second smallest elements in it.
5. Write a program to check if a given matrix is an identity matrix.
6. Write a program to find the frequency of odd numbers and even numbers in the input of a matrix.
7. Fibonacci developed a sequence 1, 1, 2, 3, 5, 8, 13, 21,… This sequence is developed by starting with numbers 1 and 1, and then the numbers following them are additions of previous two numbers, like 1+1=2, 1+2=3, 3+2=5, 5+3=8, 8+5=13 and so on. Write a function that generates the n^{th} term of the sequence.
8. Write a program to calculate factorial value of a positive integer.
9. Write a program to display a multiplication table of 9 up to 9x20.
10. Write a program to sum the series [9 + 99 + 999 + 9999 ...] up to n terms.
11. Write a program that deletes the m^{th} element in a row vector of length n and moves the elements accordingly to make a vector with n-1 elements. Do not use another vector to do this.