**Assignment 2**

**GitHub Link:**

[https://github.com/sufiyanjunaidi13/Advance\_Algorithm\_Assignment-2 (github.com)](https://github.com/sufiyanjunaidi13/Advance_Algorithm_Assignment-2)

**Program to Implement an Array Implementation for Sparse Matrices**

#include <iostream>

#include <vector>

using namespace std;

int main()

{

// Assume 4x5 sparse matrix

int sparseMatrix[4][5] =

{

{0 , 0 , 3 , 0 , 4 },

{0 , 0 , 5 , 7 , 0 },

{0 , 0 , 0 , 0 , 0 },

{0 , 2 , 6 , 0 , 0 }

};

int row = 4, col = 5;

vector<int> row\_index, col\_index, value;

// Traverse the sparse matrix and add non-zero elements to the vectors

for (int i = 0; i < row; i++) {

for (int j = 0; j < col; j++) {

if (sparseMatrix[i][j] != 0) {

row\_index.push\_back(i);

col\_index.push\_back(j);

value.push\_back(sparseMatrix[i][j]);

}

}

}

int size = value.size();

int compactMatrix[3][size];

// Copy vectors to compact matrix

for (int i = 0; i < size; i++) {

compactMatrix[0][i] = row\_index[i];

compactMatrix[1][i] = col\_index[i];

compactMatrix[2][i] = value[i];

}

// Print compact matrix

for (int i = 0; i < 3; i++) {

for (int j = 0; j < size; j++) {

cout << compactMatrix[i][j] << " ";

}

cout << endl;

}

return 0;

}

