***//Assignment-15 Data Structures Lab***

***//WAP to convert the Sparse Matrix into non-zero form***

#include <stdio.h>

#define MAX 20

void read\_matrix(int a[10][10], int row, int column);

void print\_sparse(int b[MAX][3]);

void create\_sparse(int a[10][10], int row, int column, int b[MAX][3]);

int main()

{

int a[10][10], b[MAX][3], row, column;

printf("\nEnter the size of matrix (rows, columns): ");

scanf("%d%d", &row, &column);

read\_matrix(a, row, column);

create\_sparse(a, row, column, b);

print\_sparse(b);

getch();

return 0;

}

void read\_matrix(int a[10][10], int row, int column)

{

int i, j;

printf("\nEnter elements of matrix\n");

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

{

for (j = 0; j < column; j++)

{

printf("[%d][%d]: ", i, j);

scanf("%d", &a[i][j]);

}

}

return ;

}

void create\_sparse(int a[10][10], int row, int column, int b[MAX][3])

{

int i, j, k;

k = 1;

b[0][0] = row;

b[0][1] = column;

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

{

for (j = 0; j < column; j++)

{

if (a[i][j] != 0)

{

b[k][0] = i;

b[k][1] = j;

b[k][2] = a[i][j];

k++;

}

}

b[0][2] = k - 1;

}

return;

}

void print\_sparse(int b[MAX][3])

{

int i, column;

column = b[0][2];

printf("\nSparse form - list of 3 triples\n\n");

for (i = 0; i <= column; i++)

{

printf("%d\t%d\t%d\n", b[i][0], b[i][1], b[i][2]);

}

return;

}

**OUTPUT:**

Enter the size of matrix (rows, columns): 2 3

Enter elements of matrix

[0][0]: 1

[0][1]: 0

[0][2]: 2

[1][0]: 0

[1][1]: 0

[1][2]: 3

Sparse form - list of 3 triples

2 3 3

0 0 1

0 2 2

1 2 3