Name; Narender Kumar

Roll Number: 202102611

Assignment 2

Write a program(in C/C++/Python) to implement the sparse Matrix. Take input matrix of size 'm' x 'n' and convert it into sparse matrix.

```
from scipy import sparse
import numpy as np

R = int(input("Enter the number of rows:"))
C = int(input("Enter the number of columns:"))
matrix = []
print("Enter the entries row wise:")
for i in range(R):          # row element entries
    a =[]
    for j in range(C):      # column element entries
        a.append(int(input()))
    matrix.append(a)

# For printing the matrix
for i in range(R):
    for j in range(C):
        print(matrix[i][j], end = " ")
    print()

print("The input matrix is:")
print(matrix)
sparse_matrix = sparse.csr_matrix(matrix)
print("The sparse matrix is:")
print(sparse_matrix)
```

```
Enter the number of rows:4
Enter the number of columns:4
Enter the entries row wise:
3
4
56
7
8
8
64
3
3
4
6
7
78
```

```
8
9
9
3 4 56 7
8 8 64 3
3 4 6 7
78 8 9 9
The input matrix is:
[[3, 4, 56, 7], [8, 8, 64, 3], [3, 4, 6, 7], [78, 8, 9, 9]]
The sparse matrix is:
  (0, 0)   3
  (0, 1)   4
  (0, 2)   56
  (0, 3)   7
  (1, 0)   8
  (1, 1)   8
  (1, 2)   64
  (1, 3)   3
  (2, 0)   3
  (2, 1)   4
  (2, 2)   6
  (2, 3)   7
  (3, 0)   78
  (3, 1)   8
  (3, 2)   9
  (3, 3)   9
```