Exercise 3: Graph Data Structures

In either Java or Python, implement correct and efficient algorithms to converted an undirected graph G between the following graph data structures. You must give the time complexity of each algorithm, assuming *n*vertices and *m*edges:

a. Convert from an adjacency matrix to adjacency lists

b. Convert from an adjacency list to an incidence matrix. An incidence matrix *M* has a row for each vertex and a column for each edge, such that *M[i, j]* = 1 if vertex *i* is part of edge *j*, otherwise *M[i, j]* = 0.

c. Convert from an incidence matrix to adjacency lists.

d. Zip your code and submit it in the Canvas.

NOTE:

* You can use the built-in List, ArrayList data structure of Java and Python.
* It's not enough to mindlessly type lines of code. You need to make sure you understand what each line of code is doing. You will be quizzed about it.