PROGRAMMING ASSIGNMENT 2

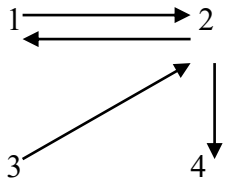
The assignment has two parts. The two parts must be done separately.

In the first part of the assignment, write a program that will determine whether a given relation is reflexive, symmetric, anti symmetric, transitive, equivalence, and partial order. The input to the program is a file containing the relation. The input file contains the binary matrix representing the relation. The 0's and 1's of the matrix are separated by white spaces. The file also contains the size of the matrix at the top. The output of the program is a file containing the six decisions about the relation. The program asks the user for file names.

5		reflexive - yes
1 0 0 0 0		symmetric - no
1 1 1 1 1	⋯⋯▸	anti symmetric - yes
0 0 1 0 0		transitive - yes
0 0 0 1 0		equivalence - no
1 0 1 1 1		partial order - yes

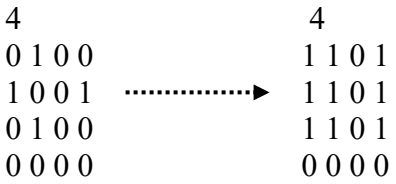
Run your program with the given relations. Submit the results.

In the second part of the assignment, write a program that will compute the transitive closure of a given relation. The Warshall's algorithm must be used to compute the transitive closure. The input to the program is a file containing the relation. The input file contains the binary matrix representing the relation. The 0's and 1's of the matrix are separated by white spaces. The file also contains the size of the matrix at the top. The output of the program is a file containing the transitive closure of the given relation. The output file contains the binary matrix representing the transitive closure. The program asks the user for file names.



R = {(1, 2), (2, 1), (3, 2), (2, 4)}

R* = {(1, 2), (1, 1), (1, 4), (2, 1), (2, 2), (2, 4), (3, 2), (3, 1), (3, 4)}



Run your program with the given relations. Submit the results.

Requirements

1) Doing the assignment

Programming assignment must be done in Java language

Each part must be done separately

2) Getting results

Run the programs on the given input files and get the results

Place the results of all parts in one text file.

Make sure the results are formatted, organized, and labeled in the text file

Convert the text file to a pdf file named results.pdf

3) Program files

Place .java files of each part in separate folders named part1, part2

Place only .java files in the folders

Zip the two folders separately into part1.zip, part2.zip

4) Submission

Submit part1.zip, part2.zip, results.pdf

Attach the three files to the email

5) Other matters

There should not be any screenshot anywhere

Program must be written in good style

Program must be well documented with comments explaining all steps

6) Not following these requirements will result in zero for the assignment.