# EAST WEST UNIVERSITY
## Department of Computer Science and Engineering
## B.Sc. in Computer Science and Engineering Program
## Lab II Examination, Spring 2022 Semester

**Course:** **CSE246 Algorithm, Section-03**
**Instructor:** **Jesan Ahammed Ovi, Senior lecturer, CSE Department**
**Full Marks:** **13 (13 will be considered for final grading)**
**Time:** **1 Hour**

**Note:** There are TWO questions, answer ALL of them. Course Outcome (CO) and Mark of each question are mentioned at the right margin.

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1. Write a program in C/C++/JAVA/Python that takes a directed weighted graph as input. Apply DFS algorithm to topologically sort the nodes of the graph if possible otherwise print cycle found. [CO1, Marks: 8]

| Sample input | Sample output |
|---|---|
| 4<br>4<br>0 1<br>1 2<br>3 2<br>0 3 | 0 1 2 3 |

2. Write a program in C/C++/JAVA/Python that takes n number of coins as input. Consider the supply of each coin is infinite. Design a dynamic programing solution that determines whether a given coin C can be changed by those n number of coins. If possible, find the required coins otherwise just print not possible. [CO3, Marks: 5]

| Sample input | Sample output |
|---|---|
| 5<br>1 5 10 20 50<br>Amount: 17 | Possible<br>Required coins: 1, 1, 5, 10 |
| 5<br>3 5 10 100 500<br>Amount: 16 | Possible<br>3 3 5 5 |