UNIVERSITY OF SCIENCE AND TECHNOLOGY OF HANOI
BACHELOR ICT

Discrete mathematics - Chapter Algorithm practical work

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ATTENTIONS

- Practical work duration: *14:00 - 16:30*.
- Remember to send your work to my email address *giang-anh.tuan@usth.edu.vn* with this email title format *"[ICT Bx] - Chapter Algorithm practical work - your name"* before *23:59* (x is your enrollment academic year, i.e ICT B6, incorrect format or late submission will not be considered).

Computer Projects: write programs with these inputs and outputs.

1 PROBLEM 1

Given the list of edges of a simple graph, determine whether the graph is bipartite.

2 PROBLEM 2

Given an adjacency matrix of a graph, list the edges of this graph and give the number of times each edge appears.

3 PROBLEM 3

Given an incidence matrix of an undirected graph, list its edges and give the number of times each edge appears

4 PROBLEM 4

Given the list of edges and weights of these edges of a weighted connected simple graph and two vertices in this graph, find the length of a shortest path between them using Dijkstra algorithm. Also, find a shortest path.

5 PROBLEM 5

Given the list of edges of a simple graph, determine whether it is connected and find the number of connected components if it is not connected.