Faculty of
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Name:.....

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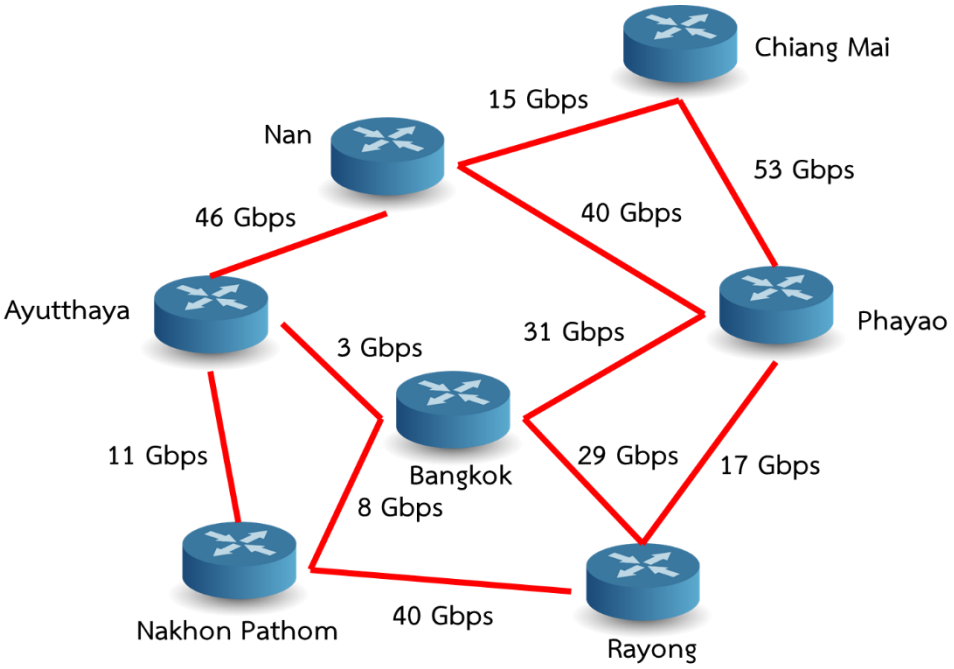
Assignment # 8: Graphs

1. Draw a graph corresponding to the data in the table below.

1.1 The number indicated the weight of the edge between (*u*, *v*).

	BKK	PHS	CNX	KKC	NST
BKK	0	1	3	3	2
PHS	1	0	4	4	3
CNX	3	4	0	6	5
KKC	3	4	6	0	7
NST	2	3	5	7	0

2. Given a computer network below, provide your answer on the following questions.



2.1 List all the nodes (v_1, v_2, …, v_n) in the network as a set of V.

V =

2.2 How many edges are there in the network? Provide all pairs of edges (u, v) in the network as a set or collection of E.

E =

2.3 List the adjacent nodes of Phayao.

2.4 Provides all cycle paths in the computer network.

2.5 Create an adjacency matrix of the computer network where each cell in the matrix is the weight of the edge between (*u*, *v*).

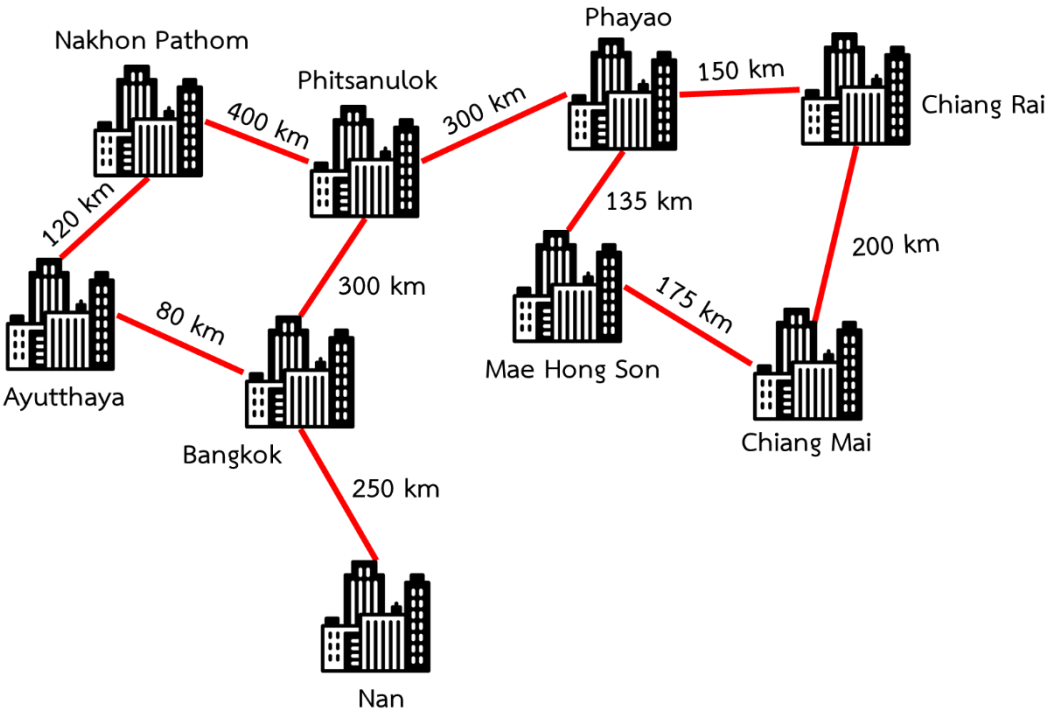
	Ayutthaya	Bangkok	Chiang Mai	Nan	Nakhon Pathom	Phayao	Rayong
Ayutthaya							
Bangkok							
Chiang Mai							
Nan							
Nakhon Pathom							
Phayao							
Rayong							

2.6 Provide the most efficient traversal path using depth-first search, starting from Ayutthaya.

2.7 Provide the most efficient traversal path using breadth-first search. Also indicate the level for each node.

Hint: No need to start from Ayutthaya.

3. Given a city network below, provide your answer on the following questions.



3.1 List all the nodes (v_1, v_2, ..., v_n) in the network as a set of V.

V =

3.2 Provide all pairs of edges (u, v) in the network as a set or collection of E.

E =

3.3 List the adjacent nodes of Phitsanulok.

3.4 Create an adjacency matrix of the computer network where each cell in the matrix is the weight of the edge between (*u*, *v*).

	Ayutthaya	Bangkok	Chiang Mai	Chiang Rai	Mae Hong Son	Nan	Nakhon Pathom	Phayao	Phitsanulok
Ayutthaya									
Bangkok									
Chiang Mai									
Chiang Rai									
Mae Hong Son									
Nan									
Nakhon Pathom									
Phayao									
Phitsanulok									

3.5 Provides 5 simple paths in the network.

3.6 Provide the efficient traversal path using depth-first search starting from Ayutthaya. Use the ordering A-Z of the first character of the node level, when considering the nodes to visit first.

3.7 Provide the efficient traversal path using breadth-first search starting from Ayutthaya. Use the ordering A-Z of the first character of the node level, when considering the nodes to visit first.