

CSCI 271

Homework 9

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- (a) A directed multigraph, where each vertex represents a mailbox; a link (u, v) is a message from u to v , where (u, u) is a reflexive message.
(b) There are a majority of one way links from spammers (say 67%, and a minority of insular multilinks from associates. If distinguisheth per-day by color: expect mor activity during the week.
- Vertex: city; edge: flight, labeled with time.
- $|V(G)| = 4; |E(G)| = 8$

v_i	$deg^-(v_i)$	$deg^+(v_i)$
a	2	2
b	3	4
c	2	1
d	1	1

- Yes
- $f : G_1 \rightarrow G_2$, where f is an isomorphism.

f	
G_1	G_2
u_1	v_1
u_2	v_2
u_3	v_4
u_4	v_5
u_5	v_3

6. Not isomorphic (anisomorphic); the sets of vertices' degrees are not equal:

$$\deg(E(G_1)) = \{3\}^4\{2\}^2 \neq \deg(E(G_2)) = \{3\}^3\{2\}^3$$

- 7.

	Path	Simple	Circuit	Length
a, b, e, c, b	✓	✓	×	4
a, d, a, d, a	✓	×	×	4
a, d, b, e, a	×			
a, b, e, c, b, d, a	×			