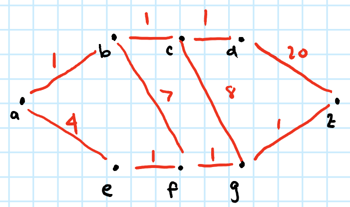
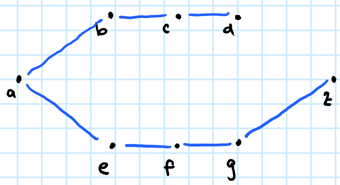
Assignment 10

David Yan 14, 15, 18

Tuesday, March 8, 2016 2:08 PM

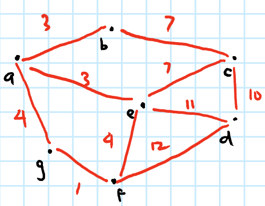
10.7-14

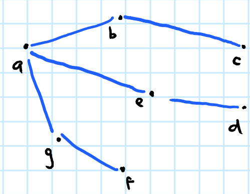




Step	V(T)	E(T)	F	L(a)	L(b)	L(c)	L(d)	L(e)	L(f)	L(g)	L(z)
0	{a}	Ø	{a}	**0**	∞	∞	∞	∞	∞	∞	∞
1	{a}	Ø	{b, e}	0	**1**	∞	∞	4	∞	∞	∞
2	{a, b}	{{a, b}}	{c, f, e}	0	1	**2**	∞	4	8	∞	∞
3	{a, b, c}	{{a, b},{b, c}}	{d, g, f, e}	0	1	2	**3**	4	8	10	∞
4	{a, b, c, d}	{{a, b},{b, c}, {c, d}}	{e, f, g, z}	0	1	2	3	**4**	8	10	23
5	{a, b, c, d, e}	{{a, b},{b, c}, {c, d}, {a, e}}	{f ,g ,z}	0	1	2	3	4	**5**	10	23
6	{a, b, c, d, e, f}	{{a, b},{b, c}, {c, d}, {a, e}, {e, f}}	{g, z}	0	1	2	3	4	5	**6**	23
7	{a, b, c, d, e, f, g}	{{a, b},{b, c}, {c, d}, {a, e}, {e, f}, {f, g}}	{z}	0	1	2	3	4	5	6	**7**
8	{a, b, c, d, e, f, g, z}	{{a, b},{b, c}, {c, d}, {a, e}, {e, f}, {f, g}, {g, z} }									

10.7-15





Step	V(T)	E(T)	F	L(a)	L(b)	L(c)	L(d)	L(e)	L(f)	L(g)
0	{a}	Ø	{a}	**0**	∞	∞	∞	∞	∞	∞
1	{a}	Ø	{b, e, g}	0	**3**	∞	∞	3	∞	4
2	{a, b}	{{a, b}}	{c, e, g }	0	3	10	∞	**3**	∞	4
3	{a, b, e}	{{a, b}, {a, e}}	{c, d, f, g}	0	3	10	14	3	7	**4**
4	{a, b, e, g}	{{a, b}, {a, e},{a, g}}	{c, d, f}	0	3	10	14	3	**5**	4
5	{a, b, e, f }	{{a, b}, {a, e},{a, g},{g, f}}	{c, d}	0	3	**10**	14	3	5	6
6	{a, b, e, f ,c }	{{a, b}, {a, e},{a, g},{g, f}, {b, c}}	{d}	0	3	10	14	3	5	4
7	{a, b, e, f ,c, d}	{{a, b}, {a, e},{a, g},{g, f}, {b, c},{e, d}}								

10.7-18

Given any two distinct vertices of a tree, there exists a unique path from one to another.

a) This is impossible since if there was more than one path, Tree T would not be a tree since there is a circuit

b) Suppose not. Suppose there is a tree T, u, and v where each is a distinct vertices And P_1 and P_2 are distinct paths that join u and v. Let P_1 be a path denoted with the following vertices $P_1 = v_0, v_1, v_2, \ldots v_m = v$. Let there also be a path P_2 be denoted $u = u_0, u_1, u_2 \ldots u_m$ which is also equal to v. Since T is a tree with no parallel paths P_1 must diverge from P_2. Let i be the integer such that $v_i \neq u_i$. Then $v_{i-1} = u_{i-1}$. Let there also be an integer j and k such that j and k are the least integer greater than i so that $v_j = u_k$. Then $v_{i-1}\ v_i\ v_{i+1} \ldots v_j (= u_k) u_{k-1} \ldots u_i\ u_{i-1} (= v_{i-1})$
This is a circuit. Because such a circuit exists, it contradicts the fact that T is a tree
Therefore if a tree has two distinct vertices there is only one unique joining path.