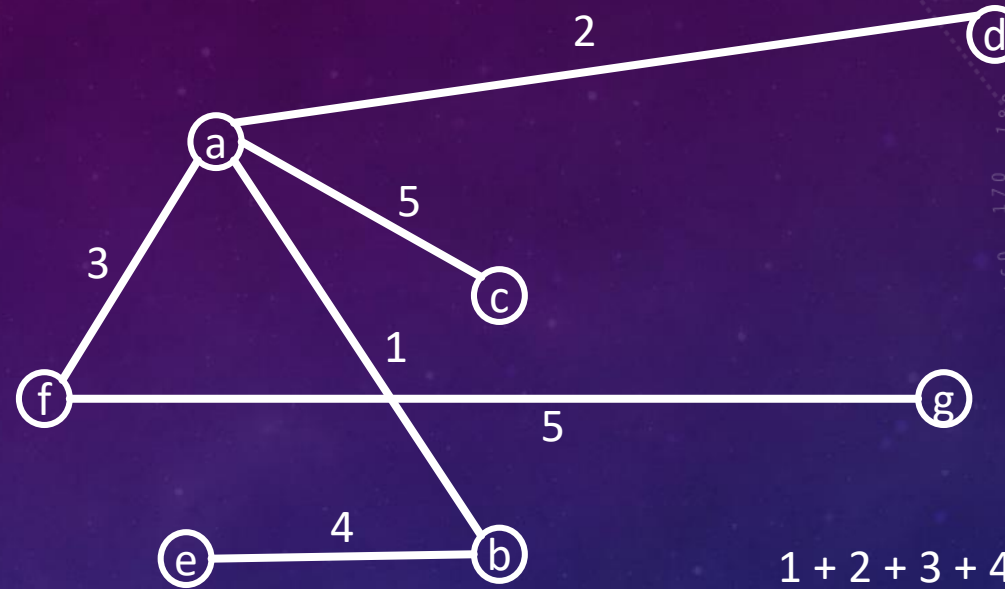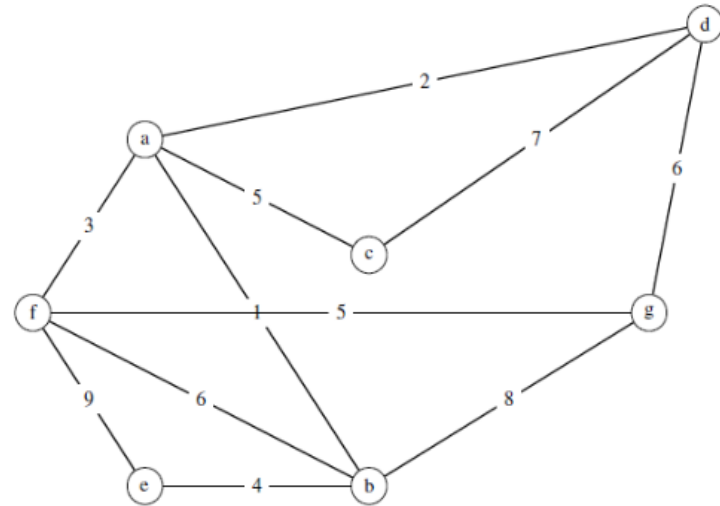# Homework

Use Kruskal's algorithm to find a minimum spanning tree of each of the following graphs. Indicate the order in which edges are added.

Group Name: Error 404
Group Leader: Mark Decello
Group Members: Mark Decello, Julius Lopez, Gene Olivia, Hanel Duran, Naglaa Saeid

Graph 1

$1 + 2 + 3 + 4 + 5 + 5 = \underline{\textbf{20}}$

Edges	Weights	Rankings		Added?	{a}, {b}, {c}, {d}, {e}, {f}, {g}
[ab]	1	[ab]	1	yes	{a, b}, {b}, {c}, {d}, {e}, {f}, {g}
[ac]	5	[ad]	2	yes	{a, b, d}, {c}, {e}, {f}, {g}
[ad]	2	[af]	3	yes	{a, b, d, f}, {c}, {e}, {g}
[af]	3	[be]	4	yes	{a, b, d, e, f}, {c}, {g}
[be]	4	[ac]	5	yes	{a, b, c, d, e, f}, {g}
[bf]	6	[fg]	5	yes	{a, b, c, d, e, f, g}
[bg]	8	[bf]	6	no	
[cd]	7	[dg]	6	no	
[dg]	6	[cd]	7	no	
[ef]	9	[bg]	8	no	
[fg]	5	[ef]	9	no	

Graph 2
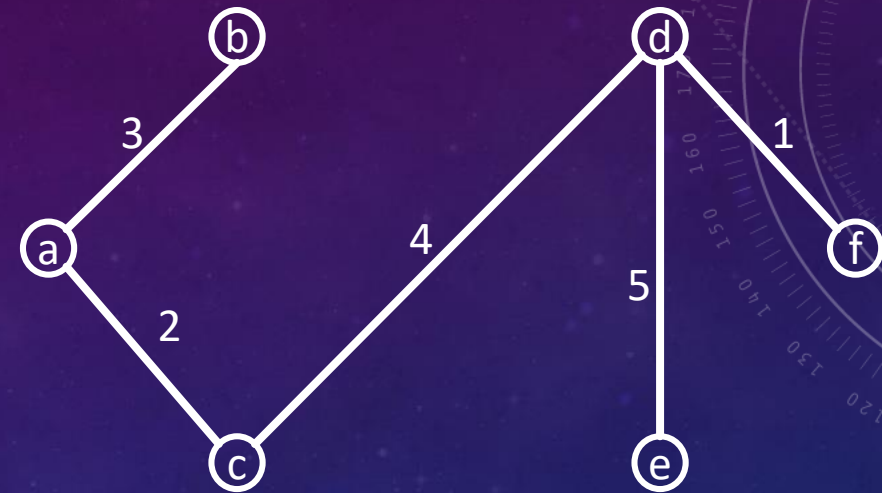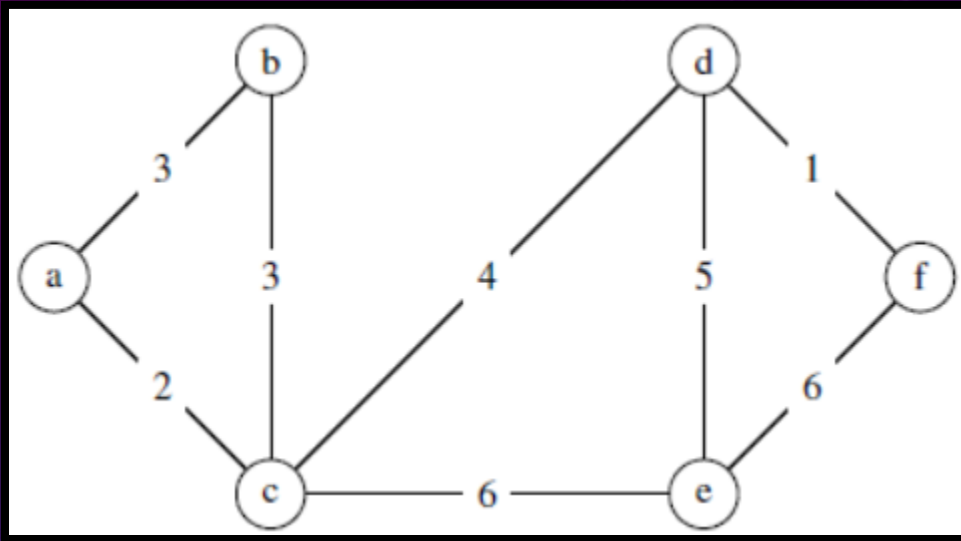
$1 + 2 + 3 + 4 + 5 = \underline{\textbf{15}}$

Edges	Weights	Rankings		Added?	{a}, {b}, {c}, {d}, {e}, {f}
[ab]	3	[df]	1	yes	{a}, {b}, {c}, {d, f}, {e}
[ac]	2	[ac]	2	yes	{a, c}, {b}, {d, f}, {e}
[bc]	3	[ab]	3	yes	{a, b, c}, {d, f}, {e}
[cd]	4	[bc]	3	no	{a, b, c}, {d, f}, {e}
[ce]	6	[cd]	4	yes	{a, b, c, d, f}, {e}
[de]	5	[de]	5	yes	{a, b, c, d, f, e}
[df]	1	[ce]	6	no	
[ef]	6	[ef]	6	no	

Graph 3
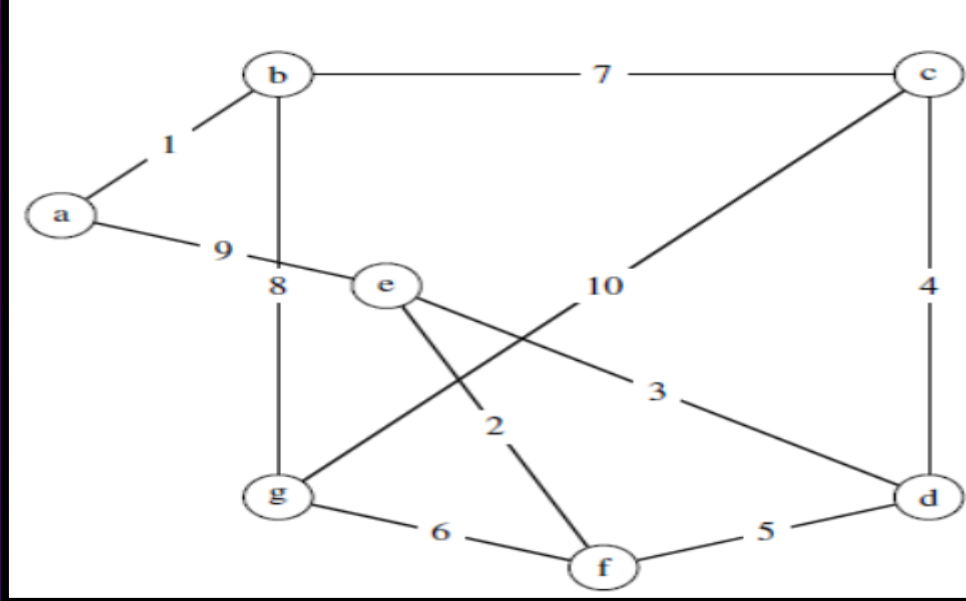
$1 + 2 + 3 + 4 + 6 + 7 = \underline{\mathbf{23}}$

Edges	Weights	Rankings		Added?	{a}, {b}, {c}, {d}, {e}, {f}, {g}
[ab]	1	[ab]	1	yes	{a, b}, {c}, {d}, {e}, {f}, {g}
[ae]	9	[ef]	2	yes	{a, b}, {c}, {d}, {e, f}, {g}
[bc]	7	[de]	3	yes	{a, b}, {c}, {d, e, f}, {g}
[bg]	8	[cd]	4	yes	{a, b}, {c, d, e, f}, {g}
[cd]	4	[df]	5	no	{a, b}, {c, d, e, f}, {g}
[cg]	10	[fg]	6	yes	{a, b}, {c, d, e, f, g}
[de]	3	[bc]	7	yes	{a, b, c, d, e, f, g}
[df]	5	[bg]	8	no	
[ef]	2	[ae]	9	no	
[fg]	6	[cg]	10	no	

Graph 4

Page 4
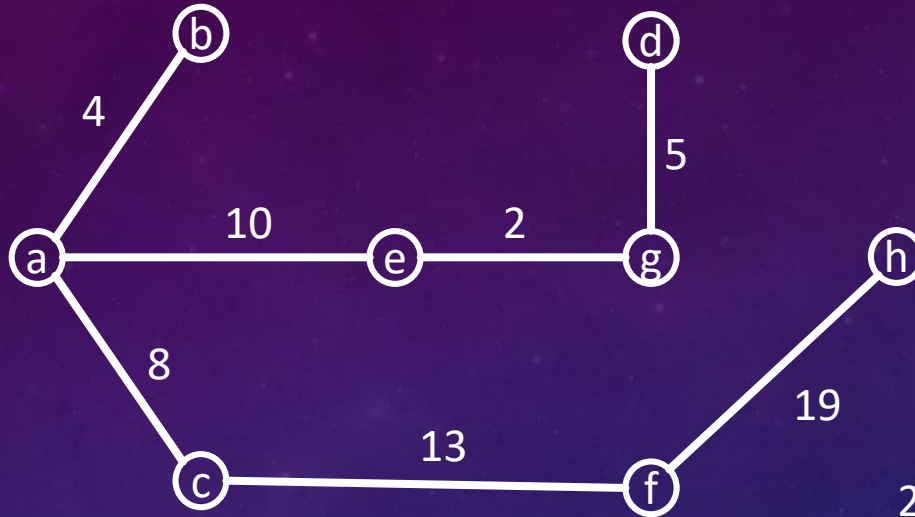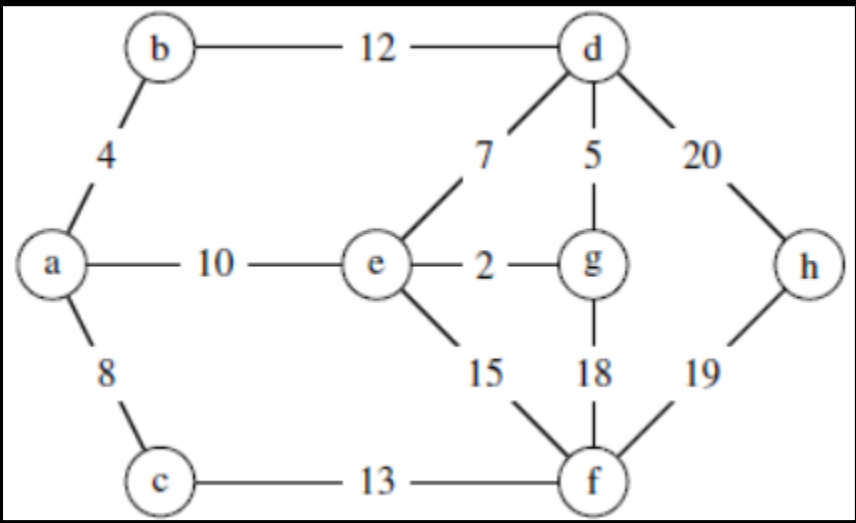
$$2 + 4 + 5 + 8 + 10 + 13 + 19 = \underline{\textbf{61}}$$

Edges	Weights	Rankings		Added?	{a}, {b}, {c}, {d}, {e}, {f}, {g}, {h}
[ab]	4	[eg]	2	yes	{a}, {b}, {c}, {d}, {e, g}, {f}, {h}
[ac]	8	[ab]	4	yes	{a, b}, {c}, {d}, {e, g}, {f}, {h}
[ae]	10	[dg]	5	yes	{a, b}, {c}, {d, e, g}, {f}, {h}
[bd]	12	[de]	7	no	{a, b}, {c}, {d, e, g}, {f}, {h}
[cf]	13	[ac]	8	yes	{a, b, c}, {d, e, g}, {f}, {h}
[de]	7	[ae]	10	yes	{a, b, c, d, e, g}, {f}, {h}
[dg]	5	[bd]	12	no	{a, b, c, d, e, g}, {f}, {h}
[dh]	20	[cf]	13	yes	{a, b, c, d, e, f, g}, {h}
[ef]	15	[ef]	15	no	{a, b, c, d, e, f, g}, {h}
[eg]	2	[fg]	18	no	{a, b, c, d, e, f, g}, {h}
[fg]	18	[fh]	19	yes	{a, b, c, d, e, f, g, h}
[fh]	19	[dh]	20	no	