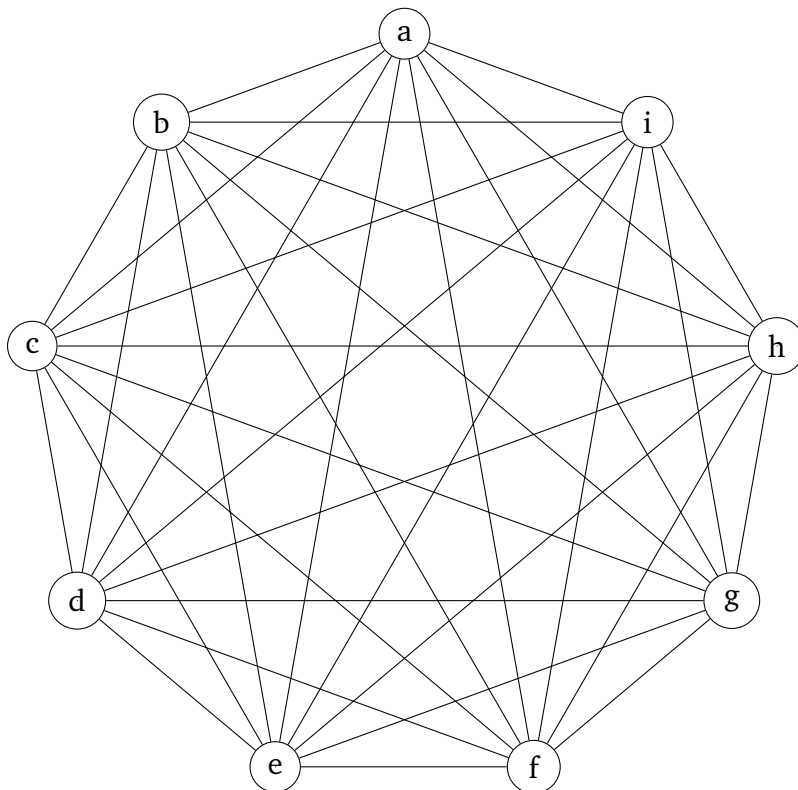


SPANNING TREES & HAMILTONIAN CYCLES HOMEWORK

TEXT: 12.7, 12.8, 12.9

LAST NAME	FIRST NAME	DATE
-----------	------------	------

1. Use the Edge-picking algorithm to find a Hamiltonian cycle through the weighted graph. Compute the weight of your cycle. The weights are given on the right as a list sorted by edge weight, so that you can easily look up the next lightest edge.



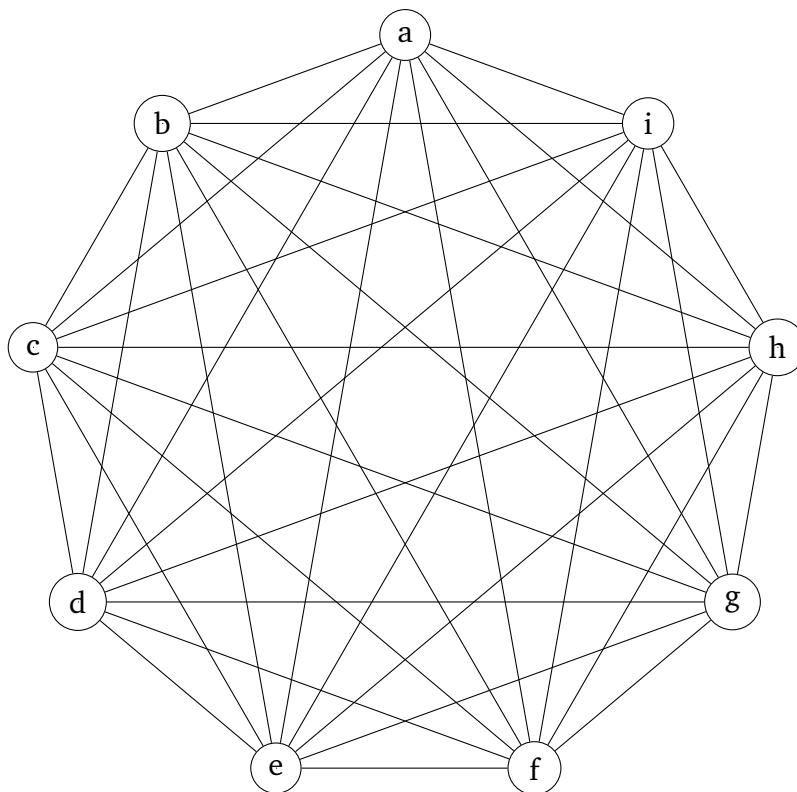
edge weights:

dg	1
be	2
eh	3
cg	4
gh	5
ad	6
ah	7
de	8
ef	9
gi	10
ei	11
hi	12
af	13
ai	14
ab	15
ae	16
fh	17
fi	18
bg	19
bi	20
cd	21
dh	22
fg	23
bf	24
bh	25
ce	26
bc	27
ag	28
bd	29
cf	30
ac	31
ch	32
ci	33
df	34
di	35
eg	36

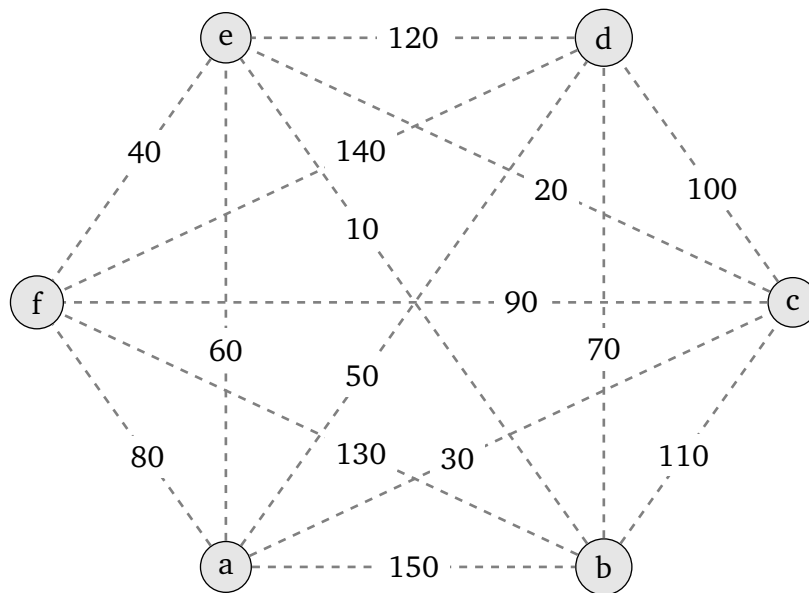
2. Use the Greedy algorithm starting with vertex a to find a Hamiltonian cycle through the weighted graph. The weights are given below as a two-way table, so that you can easily look up all edges corresponding to each vertex.

Compute the weight of your cycle. Be sure to indicate clearly the order in which the vertices/edges are traversed.

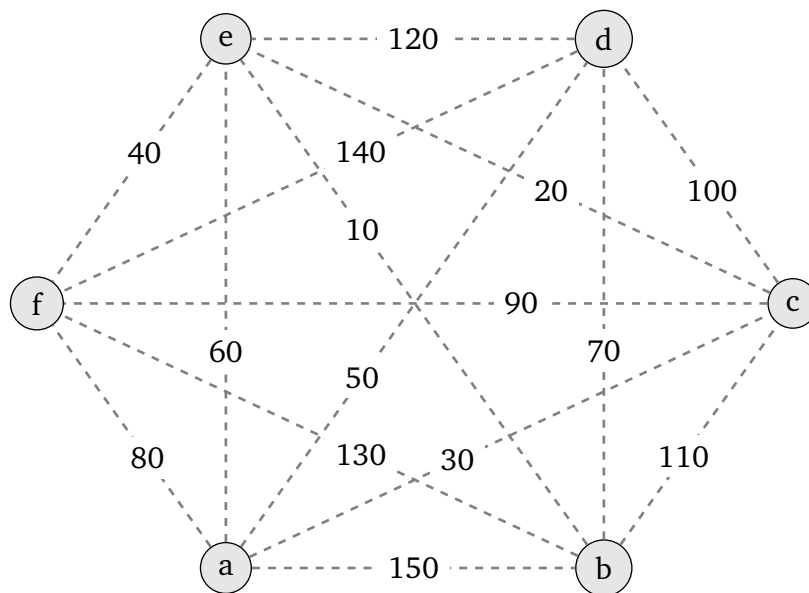
	a	b	c	d	e	f	g	h	i
a		15	31	6	16	13	28	7	14
b	15		27	29	2	24	19	25	20
c	31	27		21	26	30	4	32	33
d	6	29	21		8	34	1	22	35
e	16	2	26	8		9	36	3	11
f	13	24	30	34	9		23	17	18
g	28	19	4	1	36	23		5	10
h	7	25	32	22	3	17	5		12
i	14	20	33	35	11	18	10	12	



3. Use the Greedy algorithm starting with vertex *a* to find a Hamiltonian cycle through the weighted graph. Compute the weight of your cycle. Be sure to indicate clearly the order in which the vertices/edges are traversed.

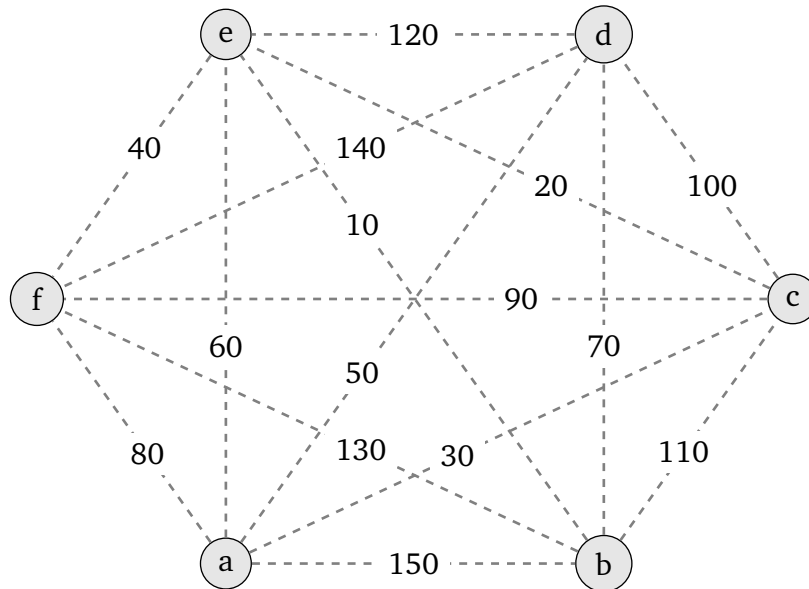


4. Use the Edge-picking algorithm to find a Hamiltonian cycle through the weighted graph. Compute the weight of your cycle.

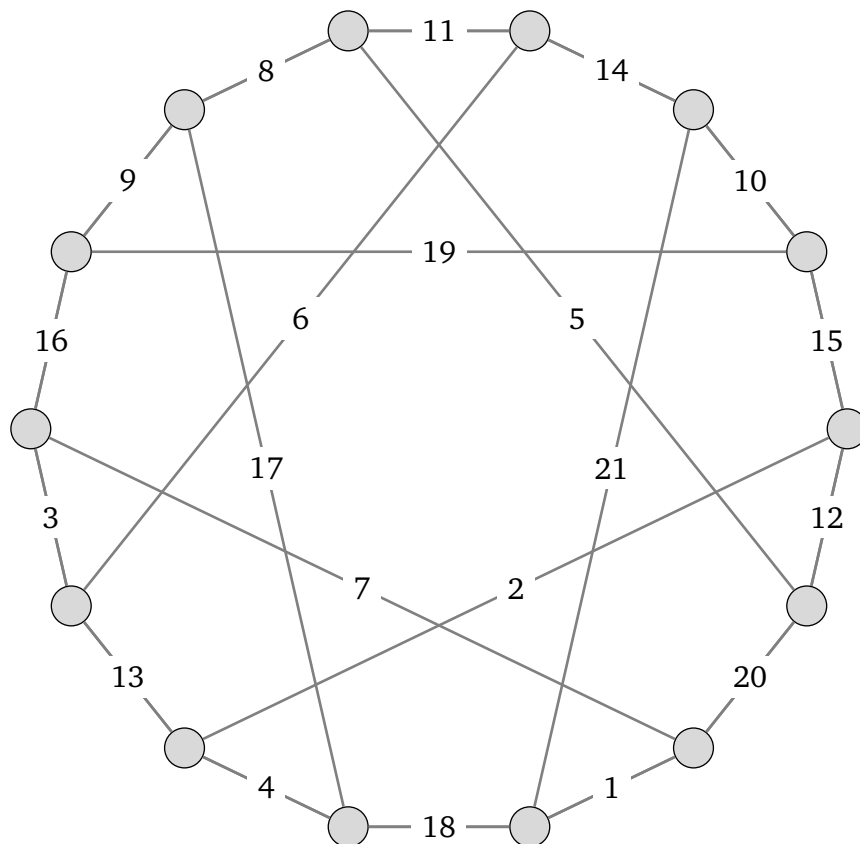


Use the Kruskal's algorithm to find the minimum spanning tree for the given graph. Compute the weight of the spanning tree.

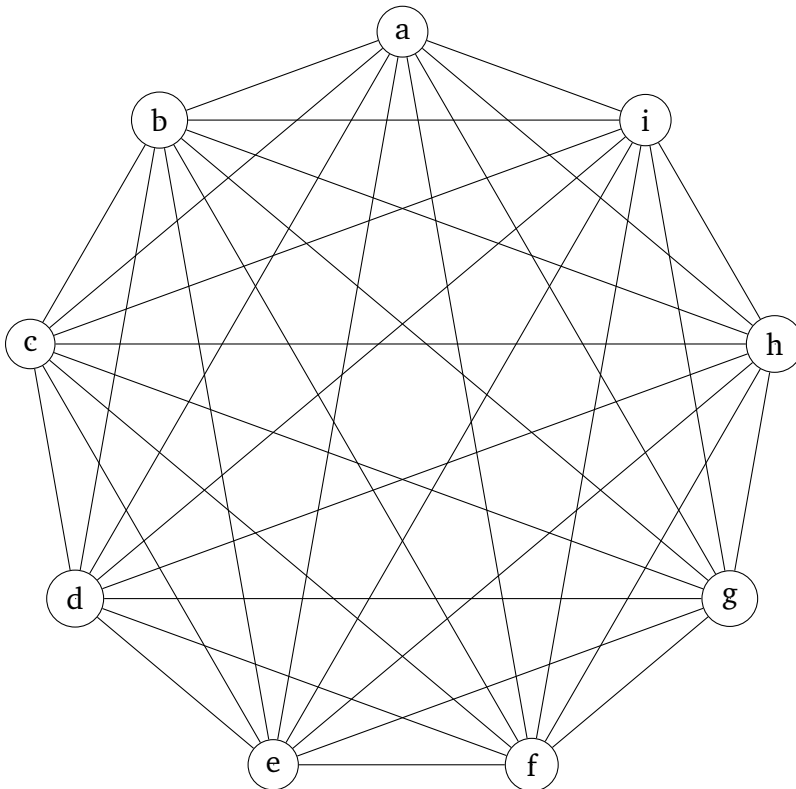
5.



6.



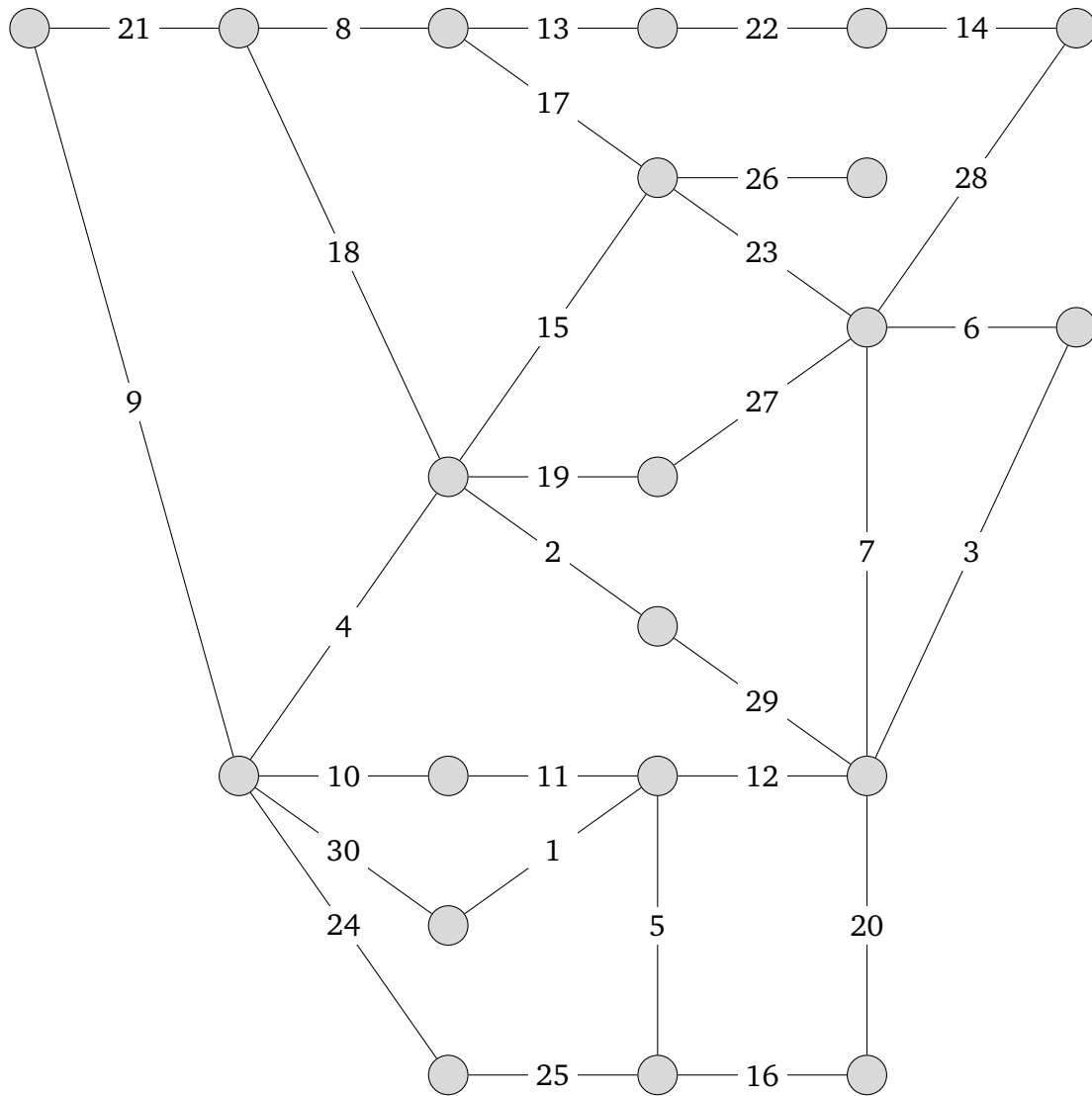
7. Use the Kruskal's algorithm to find the minimum spanning tree for the given graph. Compute the weight of the spanning tree.



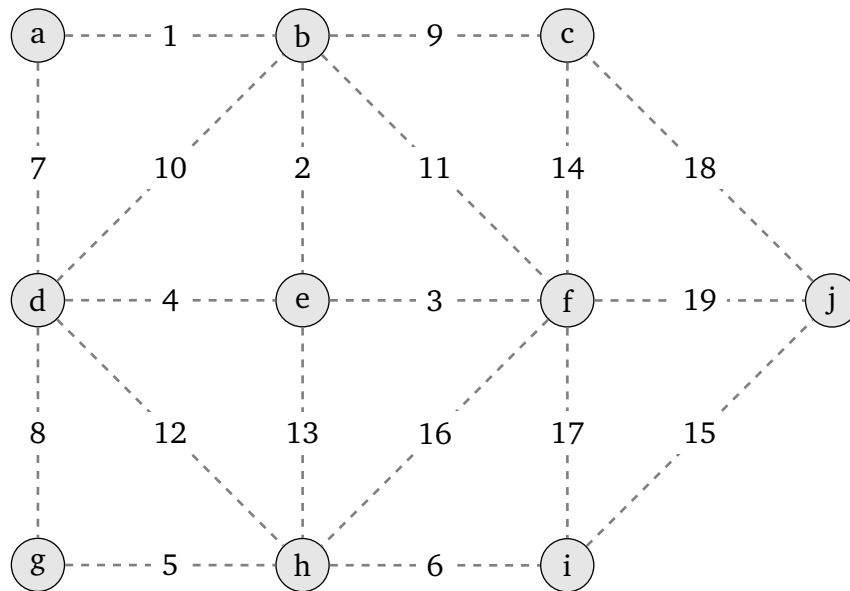
edge weights:

dg	1
be	2
eh	3
cg	4
gh	5
ad	6
ah	7
de	8
ef	9
gi	10
ei	11
hi	12
af	13
ai	14
ab	15
ae	16
fh	17
fi	18
bg	19
bi	20
cd	21
dh	22
fg	23
bf	24
bh	25
ce	26
bc	27
ag	28
bd	29
cf	30
ac	31
ch	32
ci	33
df	34
di	35
eg	36

8. Use the Kruskal's algorithm to find the minimum spanning tree for the given graph. Compute the weight of the spanning tree.



9. Use the Edge-picking algorithm starting to find a Hamiltonian cycle through the weighted graph. Compute the weight of your cycle. Be sure to indicate clearly the order in which the vertices/edges are traversed.



10. Make up a connected weighted graph without bridges where the Edge-picking algorithm fails to find a cycle.

11. Make up a connected weighted graph without bridges where the Greedy algorithm fails to find a cycle, no matter which vertex you start from.

ANSWERS