Math 1332 Review 4(answers)

1. An HMO has 40 doctors to be apportioned among four clinics. The apportionment will be done based upon the average weekly patient load at each hospital.

a) Find the standard divisor.

$$\frac{2002}{40} = \boxed{50.05}$$

Clinic	A	B	C	D	Total
Avg. weekly patient load	275	392	611	724	2002
b) Standard quota	5.49	7.83	12.21	14.47	40
c) Lower quota	5	7	12	14	38
d) Upper quota	6	8	13	15	42
e) Hamilton Apportionment	6	8	12	14	40
f) Jefferson Apportionment	5	8	12	15	40
g) Adams Apportionment	6	8	12	14	40
h) Webster Apportionment	6	8	12	14	40

2. A school district has 150 new laptop computers to be divided among three schools.

School	A	B	C	Total
Enrollment	370	3365	3765	7500

School	A	B	C	Total
Enrollment	370	3365	3765	7500
Standard quota	7.4	67.3	75.3	150
a) Hamilton Apportionment	8	67	75	150

School	A	B	C	Total
Enrollment	370	3365	3765	7500
Standard quota	7.45	67.75	75.80	151
b) Hamilton Apportionment	7	68	76	151

c) Does the Alabama Paradox occur?

Yes, the number of laptops increased from 150 to 151, but School A goes from 8 laptops to only 7.

3. A corporation has two branches, A and B. Each year the company awards 33 promotions.

Branch	A	B	Total
Employees	372	1278	1650
Standard quota	7.44	25.56	33
a) Hamilton Apportionment	7	26	33

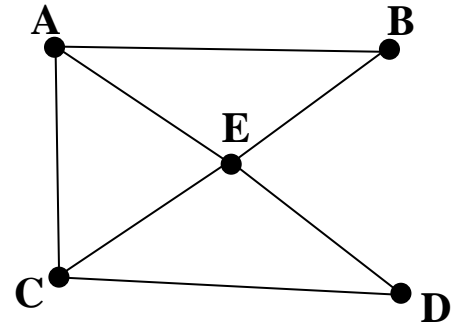| Branch	A	B	C	Total
Employees	372	1278	355	2005
Standard quota	7.42	25.49	7.08	40
b) Hamilton Apportionment	7	26	7	40

c) Does the New States Paradox occur?

No, the addition of branch C didn't change the original apportionment for branches A and B.

4. Answer the following using the given graph:

a) Complete the table:

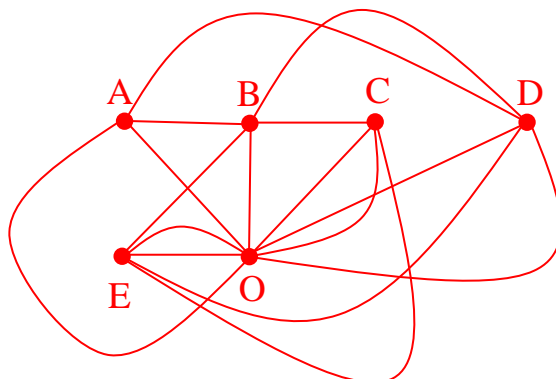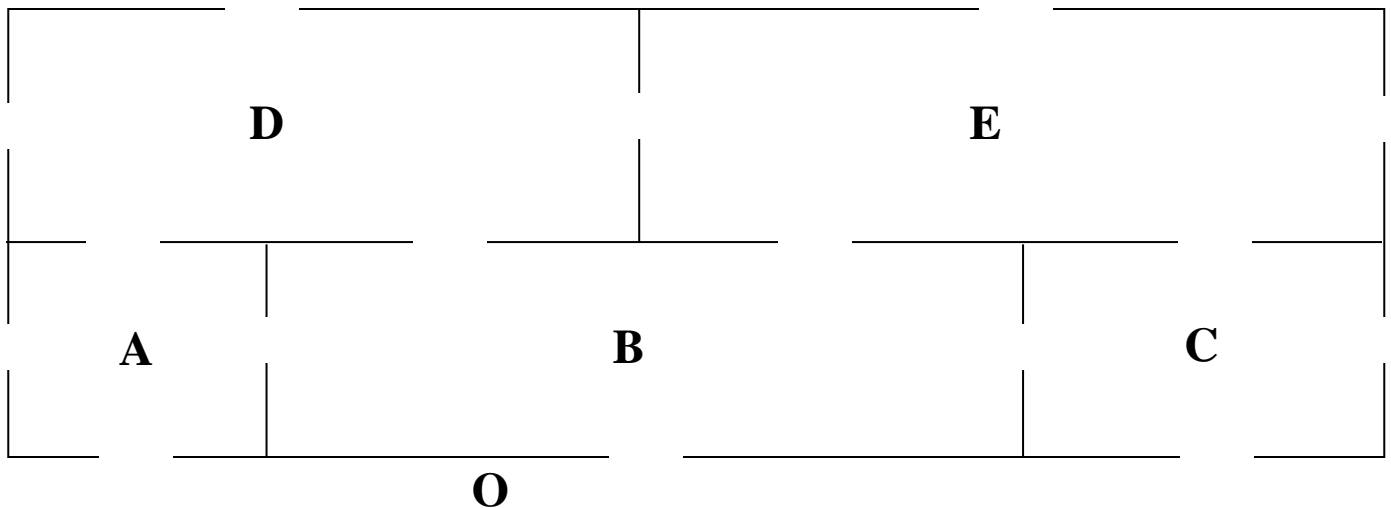| Vertex	Degree
A	3
B	2
C	3
D	2
E	4

b) How many odd vertices does the graph have?

2

c) How many even vertices does the graph have?

3

d) How many bridges does the graph have?
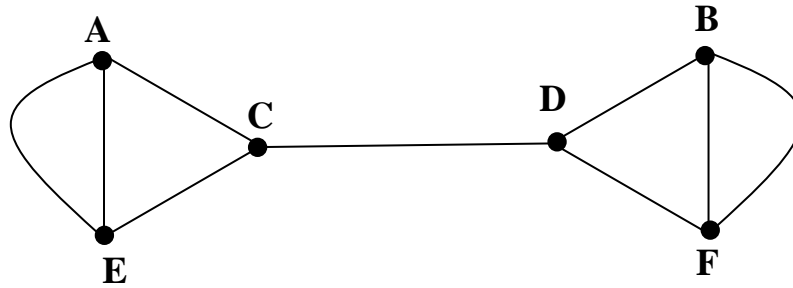
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5. Draw a graph for the following building floor plan that represents the rooms and exterior and the connections via doors:
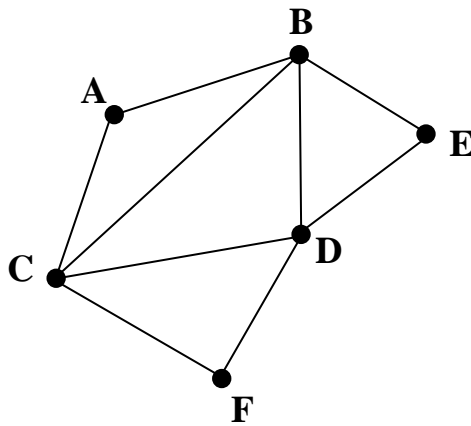
6. Determine if the given graph has an Euler path, an Euler circuit, or neither.
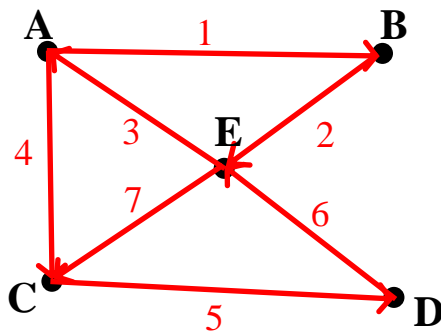
a)

Neither, because there are more than two odd vertices.

b)

Both, because there are no odd vertices.

7. Find an Euler path for the graph:

As a sequence, the path is A,B,E,A,C,D,E,C.