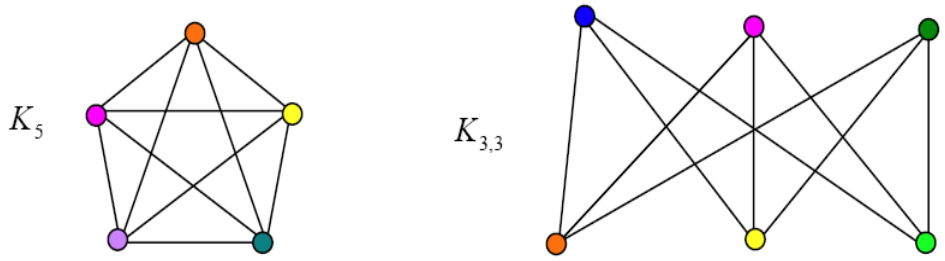
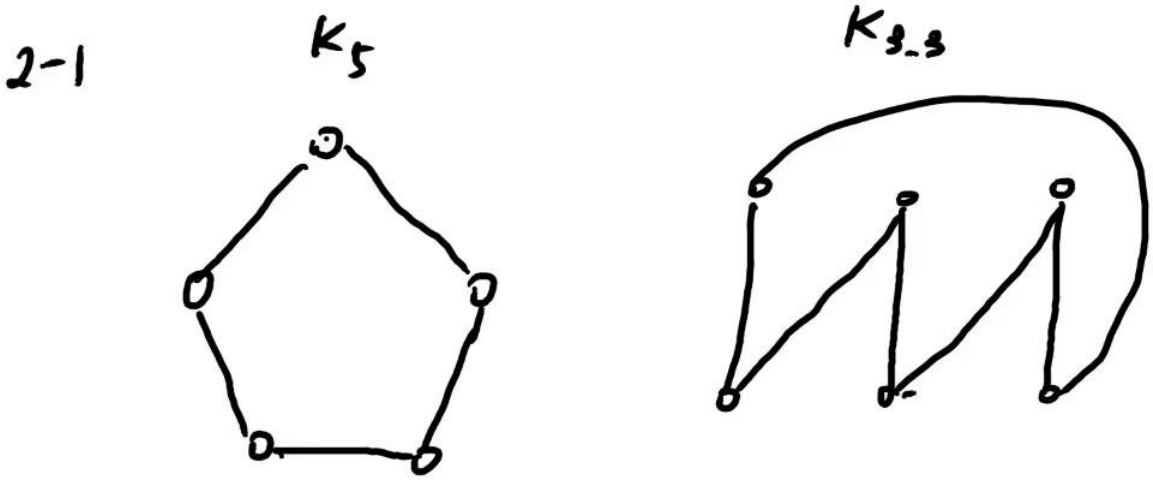
HOMEWORK PROBLEMS #2

2-1 Are the following two graphs Eulerian, semi-Eulerian, non-Eulerian, Hamiltonian, semi-Hamiltonian, and/or non-Hamiltonian graphs?

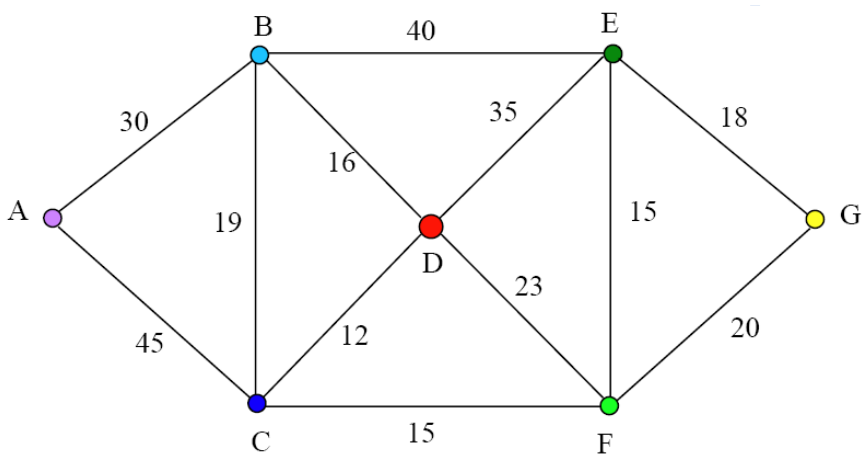


K5 is Eulerian, because the number of points with odd degrees is 0. Also, K5 is connected and there can be no isolated points.
K33 is a non-Eulerian, because the number of points with odd degrees is 6,not 2, so it is not a semi-Eulerian.

K5 and K33 are Hamiltonian.
We can find the way



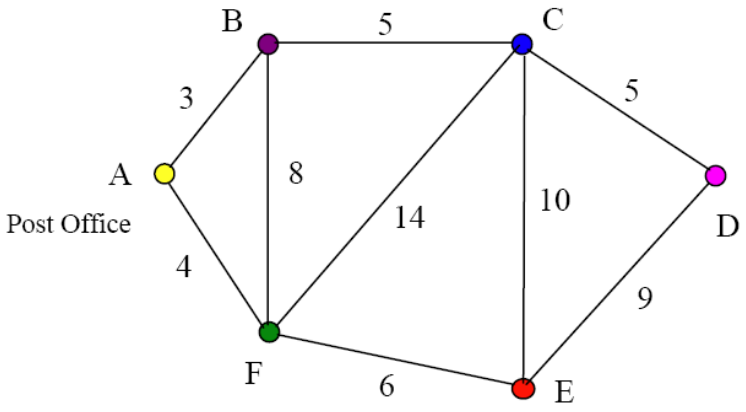
2-2 Find the shortest path length from A to G in the following graph:

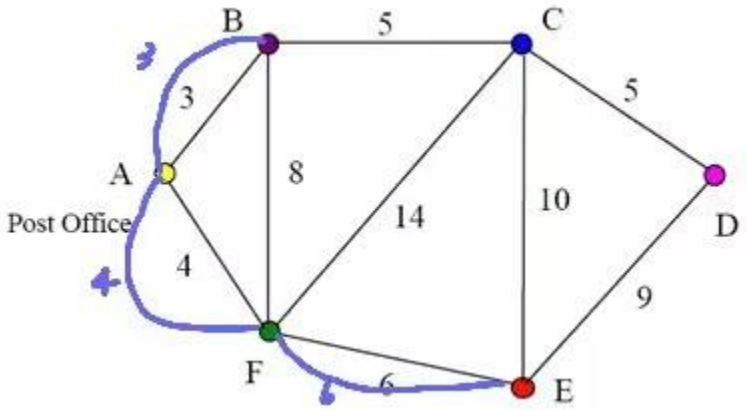


	B	C	D	E	F	G
A	30	45	\	\	\	\
AB	30	45	46	70	\	\
ABC	30	45	46	70	60	\
ABCD	30	45	46	70	60	\
ABCDF	30	45	46	70	60	80
ABCDFE	30	45	46	70	60	80

We can use the Dijkstra
Path= A -> C -> F-> G the shortest length = 80

2-3 Solve the following Chinese postman problem:





We use Tpl represents “Total path-length”, add three edges
For each loop, we can find the increment is not longer than the original loop
So it is a solution
A -> F -> E -> D -> C -> D -> F -> C -> B -> A -> B -> F -> A
And total path length is 3+3+4+4+6+6+8+5+14+10+5+9 = 77