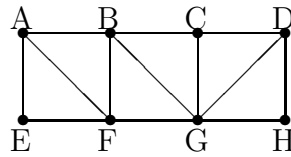


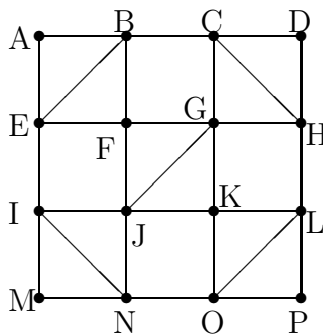


4. Can a person find a path in this house that will take her through each door exactly once?



*Solution:* In this house, there is no path that will take a person through each door exactly once; if we draw the floor plan as a highway system, we get the picture shown, in which A, C, D, and G all have odd degree. This means that the inspector has no route.

7. Using the technique provided by the proof of Theorem 4, find a route for the inspector of this system:



*Solution:* Using the labeling shown, G and J have odd degree, and all the other towns have even degree. The inspector must start his trip at G or J; one option (there are many different routes we could find) would be for the inspector to start with the route labeled G, C, D, H, L, P, O, N, M, I, E, A, B, C, H, G, F, J, G, K, J, N, I, J, at which point he is stuck, because he's used all the roads into J. His first side trip would then start and end at L; one possibility is L, O, K, L. He needs a second side trip at E, so we add in E, B, F, E, and the final route for the inspector is

G, C, D, H, L, O, K, L, P, O, N, M, I, E, B, F, E, A, B, C, H, G, F, J, G, K, J, N, I, J

There are, of course, many different routes even for this labeling, and we could have labeled the towns differently as well.