In the previous exercise, you wrote a program in Lua that reads points and polygons in any of the following formats: MID/MIF (MapInfo), shapefiles (ArcView), or KML (Google Earth). In this exercise, you will complement the program by also reading lines from a source.

Then, write a program that implements the OGC definitions 9-intersection dimension-extended model for topological operations between two closed polygons, and a line and a polygon. Then, change the definitions, so as to distinguish between the two cases below:
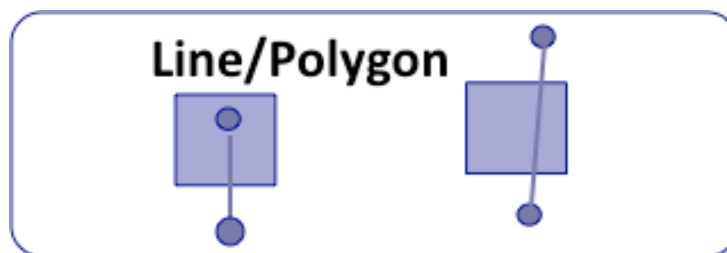
For OGC, these two cases are examples of "a line crosses a polygon". Change the definitions of the 9-intersection dimension-extended model to distinguish between "enter/leaves" (first case) and "crosses" (second case).

For OGC, these three cases are examples of "a polygon is within another polygon". Change the definitions of the 9-intersection dimension-extended model to distinguish between "enter/leaves" (first case) and "crosses" (second case).

See the Wikipedia page: http://en.wikipedia.org/wiki/DE-9IM