

Assignment-10:



You've just been hired as a GIS developer in a large city and are receiving your first Python assignment. Your co-workers in the GIS department are very excited because they've just deployed the city's first "citizen participation" Web map. The map is a community effort to target graffiti: anyone on the Web can go to the map and place a point to report a graffiti incident.

The application has already been wildly successful in its first few months of operation and your department has amassed a large amount of point data showing graffiti incidents. However, the police chief is now interested in seeing an aggregation of this data by patrol zones. The goal is to set a priority on each zone and allot more resources to fighting graffiti in the high priority zones.

Your task

You have a point feature class of graffiti incidents and a polygon feature class of patrol zones with some empty attributes already created for you. You must write a script that updates the attributes of the patrol zones with:

- The number of graffiti incidents falling within the patrol zone. This is an integer that goes in the INCIDENTS field.
- The priority ranking for the patrol zone. This is a string that goes in the PRIORITY field. You will derive this string using some simple math that compares the number of incidents in the zone with the area of the zone.

Patrol zone priority rankings

You will calculate a priority ranking for each zone by dividing the number of graffiti incidents in the zone by the area of the zone. Your script should then examine the result and assign the appropriate priority ranking (PRIORITY). These are the priority rankings:

- **TOP CONCERN**—15 or more incidents per square mile
- **HIGH CONCERN**— At least 12 but less than 15 incidents per square mile
- **SOME CONCERN**— At least 6 but less than 12 incidents per square mile
- **LOW CONCERN**—Fewer than 6 incidents per square mile

Deliverables

The deliverables for this project are:

- Your Python script (.py file) that performs the above tasks
- A short writeup (about 300 words) describing how you approached the problem. If you included any "over and above" efforts, please describe these here so the graders know to look for them.

Challenges

In this task, you need to manage an update cursor and perform repeated SelectLayerByLocation operations in order to figure out how many incidents each zone contains. You then need to use the number of incidents to calculate the incidents per square mile, and make a decision about which priority to assign.
