**Examples**
- Creating Filled Theissen/Voronoi polygons
- Creating Unfilled Theissen/Voronoi polygons
- Interpolating Qualitative Data (Nearest Neighbour)

**Dialog Box**
- Using the operation dialog box interface
- Using the dialog box interface to create or edit scripts

**Target Map**
Use the **Target Map** drop-down list to specify a map layer of sparse point data to act as centroids for the “catchment area” of the Theissen or Voronoi polygons. The **Fence** operation will assign the value of each point to its respective catchment area, therefore, each point must have a unique identifier or it will not be possible to distinguish among the polygons. If you have a map layer of uni-valued points, use the **Clump** operation to assign unique identifiers to each one. Non-point cells should have the value “VOID”.
**Frame Areas Only**

Click the **Frame areas only** option to delineate the boundaries between the polygons. The cells representing the boundaries will be assigned the value “1” and the interior cells will be assigned the value “VOID”. The polygon centroid points in the Target map must still have unique values for polygons to be generated.

### Syntax

- Syntax and type conventions
- Using the Script window interface
- Using the dialog box interface to create or edit scripts

```
Fence map [FrameOnly];
```

**Fence map**

The **Fence** statement specifies a map layer of sparse points which will act as centroids for the generation of “catchment area” of the Theissen or Voronoi polygons. Each point must have a unique value. All non-point cells must have the value “VOID”. If your point data are not all unique, use the **Clump** operation to assign each a unique identifier.

**FrameOnly**

**FrameOnly** is an optional modifier will create the boundaries of unfilled Theissen or Voronoi polygons. Boundary cells are assigned the value “1” and non-boundary cells are assigned the value “VOID”. Polygon boundaries are one cell wide. If this modifier is not specified, the Theissen or Voronoi polygons are filled with the unique value of the sparse point cells in the target map layer.

### Details

The **Fence** operation creates a map layer of Theissen or Voronoi polygons from a set of sparse, non-VOID data points cells.

Theissen or Voronoi polygons are defined by boundaries or lines that are equidistant from a set of sparse points. The boundaries define “catchment areas” for each point. For example, the points could be rain gauge stations, in which case the polygons would represent the area over which the measurements would be applied, or the points could be shopping malls, in
which case the polygons would represent the customer base for which a given mall is the closest.

In the above map layer, the original sparse data points have been overlaid on a set of Theissen polygons that were created by the Fence Frame Areas Only operation. Values of population density were then assigned to the polygons. Note that the polygon boundaries are positioned so that any point on the line is the same distance from the two closest points. Theissen “catchments” are defined as containing all points that are closer to their centroid than to any other centroid.

The Fence operation creates a temporary map layer where the VOID cells of the input map layer are assigned a value based on that cells distance from the nearest data point. The Fence operation then scans for local maximum points, which are like ridges between the data points. The Fence algorithm then selects those local maximums by “walking” along the ridge to define the polygons.

The resulting map layer will contain either filled polygons, using the cell values from the input map layer, or framed polygons, using a line of cells with the value “1” to outline the polygons.

**What Do I Need?**
To successfully execute the Fence operation you will need a map layer of sparse data points that specify the location of the measured data. Each data point must have a unique value; if not, use the Clump operation to assign
unique identifiers to each sparse point. Non-data cells should have the value “VOID”.