arcpy Geometry Objects

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Overview

1. What is a Geometry object?

2. Types of Geometry objects

3. Some Geometry object properties and methods

4. arcpy Point and Array objects

What is a geometry object?

What is a geometry object?

- Geometry objects are used to store geometries

- Other things that store geometries:

    - Feature classes

    - Well-know text (WKT) string

    - Well-known binary (WKB; see above link)

    - GeoJSON

What is a geometry object?

- Geometry objects are im memory (not persistent)

- They have properties and methods

- They cannot store attributes

Types of Geometry objects

Types of Geometry objects

- arcpy.PointGeometry (not to be confused with Point)

- arcpy.Polyline

- arcpy.Polygon

- arcpy.Muiltpoint

- **Note:** different names, different types, all the same properties and methods

Geometry object properties and methods

Geometry object properties and methods

- Object can return geometry in a number of other formats:

    - .JSON (assuming ESRI JSON, not GeoJSON)

    - .WKB

    - .WKT

Geometry object properties and methods

- Geometric properties:

  - .area, .length

  - .centroid (always within the feature)

  - .trueCentroid (feature center of gravity)

  - .extent

  - etc.

- Others:

  - .type (point, polyline, polygon?)

  - .spatialReference

Geometry object properties and methods

- Many spatial methods:

    - .boundary()

    - .buffer(distance)

    - .clip(envelope)

    - .contains(second_geometry)

    - .distanceTo(other)

    - .intersect(second_geometry)

    - .projectAs(spatial_reference, {transformation name})

arcpy Point and Array objects

arcpy Point and Array object

- Used to construct features

- Used to hold data in a "dummy" container

  - requires less resources and is faster

arcpy Point and Array objects

- Point objects are used to hold coordinates

    - Have X, Y, Z, M, and ID

    - No spatial reference attribute

    - Some limited methods
      (I am unsure if the documentation is really accurate)

    - Points are the basic building blocks of all the geometry classes

arcpy Point and Array objects

- Array objects hold a collection of Point objects to be used to construct a geometry

- Just a container