Geoprocessor Programming Model

10-version Geoprocessor

ArcGIS 10

Use CreateObject to create an object that may be used as a tool or method parameter.

This version of the Geoprocessor Programming Model shows the methods, properties and objects as supported when creating the geoprocessor using the import arcpy command

```
import arcpy
```

arcpy

- MaxSeverity
- MessageCount
- OverwriteOutput: Boolean
- ParameterCount
- ScriptVersion
- Toolbox
- AddError (Message)
- AddFieldDelimiters (FieldName, Workspace)
- AddIDMessage (Type, ID, Argument1, Argument2)
- AddMessage (Message)
- AddReturnMessage (Index)
- AddToolbox (Toolbox)
- AddWarning (Message)
- ClearEnvironment (Environment)
- Command (CommandLineString)
- CopyParameter (fromIndex, toIndex)
- CheckExtension (ExtensionCode)
- CheckInExtension (ExtensionCode)
- CheckOutExtension (ExtensionCode)
- CheckProduct (ProductCode)
- CreateObject (ObjectName, Argument1, Argument2, Argument3, Argument4, Argument5): Object
- CreateRandomValueGenerator(Seed, Algorithm)
- CreateScratchName (Prefix, Suffix, dataType, workspace)
- CreateUniqueName (InputValue, workspace)
- Describe (InputValue): Object
- Exists (InputValue): Boolean
- GetInstallInfo (InstallType): Python Dictionary
- GetMessage (Index)
- GetMessages (severity)
- GetParameter (Index): Value
- GetParameterAsText (Index)
- GetParameterCount (ToolName)
- GetParameterInfo(Tool): Python List
- GetParameterValue (ToolName, Index)
- GetReturnCode (Index)
- GetSeverity (Index)
- GetSystemEnvironment (envName)
- IsSynchronous (ToolName)
- ListFields (InputValue, wildCard, fieldType): Python List
- ListIndexes (InputValue, wildCard): Python List
- ListDatasets (wildCard, geometryType): Python List
- ListFeatureClasses (wildCard, geometryType): Python List
- ListRasters (wildCard, rasterType): Python List
- ListTables (wildCard, tableType): Python List
- ListWorkspaces (wildCard, workspaceType): Python List
- ListEnvironments (wildCard): Python List
- ListToolboxes (wildCard): Python List
- ListTools (wildCard): Python List
- ListInstallations (wildCard): Python List
- LoadSettings (XMLFile)
- ParseFieldName (FieldName, Workspace)
- ParseTableName (TableName, Workspace)
- ProductInfo ()
- QualifyFieldName (FieldName, Workspace)
- QualifyTableName (TableName, Workspace)
- RemoveToolbox (Toolbox)
- ResetEnvironments ()
- ResetProgressor ()
- SetParameterAsText (Index, Argument)
- SetParameter (Index, Argument)
- SetProgressor (Type, Label, Min, Max, Interval)
- SetProgressorLabel (Label)
- SetProgressorPosition (Position)
- SaveSettings (XMLFile)
- SetProduct (ProductCode)
- InsertCursor (InputValue, SpatialReference): Object
- SearchCursor (InputValue, WhereClause, SpatialReference, FieldList, SortFields): Object
- UpdateCursor (InputValue, WhereClause, Spatial Reference, FieldList, SortFields): Object
- TestSchemaLock (inputValue): Boolean
- Usage (method)
- ValidateFieldName (FieldName, Workspace)
- ValidateTableName (TableName, Workspace)

Dynamic Methods and Properties

- Environment
- Tool (tool parameters)

Any tool from a referenced toolbox may be called as a method, while environment settings are properties.

SpatialReference

All Coordinate Systems

- Type
- Name
- Abbreviation
- Remarks
- FactoryCode
- HasMPrecision
- HasXYPrecision
- HasZPrecision
- FalseOriginAndUnits
- MFalseOriginAndUnits
- ZFalseOriginAndUnits
- Domain
- MDomain
- ZDomain
- IsHighPrecision
- XYTolerance
- MTolerance
- ZTolerance
- XYResolution
- MResolution
- ZResolution
- Usage
- CreateFromFile (prjFile)

Geographic Coordinate System only

- SemiMajorAxis
- SemiMinorAxis
- Flattening
- Longitude
- RadiansPerUnit
- GCSName
- GCSCode
- SphereoidName
- SphereoidCode
- DatumName
- DatumCode
- PrimeMeridianName
- PrimeMeridianCode
- AngularUnitName
- AngularUnitCode

Projected Coordinate System only

- CentralMeridian
- CentralMeridianInDegrees
- LongitudeOfOrigin
- LatitudeOf1st
- LatitudeOf2nd
- FalseEasting
- FalseNorthing
- CentralParallel
- StandardParallel1
- StandardParallel2
- LongitudeOf1st
- LongitudeOf2nd
- ScaleFactor
- Azimuth
- Classification
- PCSName
- PCSCode
- ProjectionName
- ProjectionCode
- LinearUnitName
- LinearUnitCode

FieldInfo

- Count
- AddField (FieldName, NewName, Visible, SplitRule)
- ExportToString ()
- FindFieldByName (FieldName)
- FindFieldByNewName (NewName)
- GetFieldName (Index)
- GetNewName (Index)
- GetSplitRule (Index)
- GetVisible (Index)
- LoadFromString (inputString)
- RemoveField (Index)
- SetFieldName (Index, FieldName)
- SetNewName (Index, NewName)
- SetSplitRule (Index, SplitRule)
- SetVisible (Index, Visible)

ValueTable ***

- RowCount
- ColumnCount
- AddRow (optional value)
- GetRow (rowIndex)
- GetTrueValue (rowIndex, columnIndex)
- GetValue (rowIndex, columnIndex)
- LoadFromString (value)
- ExportToString
- RemoveRow (rowIndex)
- SetRow (rowIndex, value)
- SetColumns (value)
- SetValue (rowIndex, columnIndex)

* Use either a read-only or read-write Field object to set the property. The returned object is read-write.

** Create and populate a Field object to set the properties of the Output field within a FieldMap object.

FieldMappings

- FieldValidationWorkspace (Workspace)
- FieldCount
- Fields: Python List
- AddTable (inputTableName)
- AddFieldMap (FieldMap)
- GetFieldMap (Index): FieldMap
- ReplaceFieldMap (Index, FieldMap)
- RemoveFieldMap (Index)
- FindFieldMapIndex (FieldName)
- RemoveAll ()
- ExportToString ()
- LoadFromString (inputString)

FieldMap

- MergeRule (String)
- JoinDelimiter (String)
- OutputField (Field: Object) *
- InputFieldCount (Long)
- SetStartTextPosition (Index, Long)
- GetStartTextPosition (Index)
- SetEndTextPosition (Index, Long)
- GetEndTextPosition (Index)
- AddInputField (inputTableName, FieldName, StartTextPosition, EndTextPosition)
- FindInputFieldIndex (Table, FieldName)
- GetInputTableName (Index)
- GetInputFieldName (Index)
- RemoveInputField (Index)
- RemoveAll ()

Point

- ID
- X
- Y
- Z
- M

Field **

- Name
- AliasName
- Domain
- Editable: Boolean
- IsNullable: Boolean
- Required: Boolean
- Length
- Type
- Scale
- Precision

Array

- Count
- Reset ()
- Next () : Object
- Add (Object)
- Insert (Index, Object)
- Remove (Index)
- RemoveAll ()
- Replace (Index, Object)
- GetObject (Index): Object

NetCDFFileProperties ***

- GetAttributeNames (VariableName): Python List
- GetAttributeValue (VariableName, AttributeName)
- GetDimensionIndex (DimensionName, Value)
- GetDimensions (): Python List
- GetDimensionsByVariable (VariableName): Python List
- GetDimensionSize (DimensionName)
- GetDimensionValue (DimensionName, Index)
- GetFieldType (Name)
- GetSpatialReference (VariableName, XDimension, YDimension): SpatialReference
- GetVariables (): Python List
- GetVariablesByDimension (DimensionName): Python List

ArcSDESQLExecute

- TransactionAutoCommit (Long)
- Execute
- StartTransaction
- CommitTransaction
- RollBackTransaction

Result ***

- Status
- ResultID
- MessageCount
- MaxSeverity
- OutputCount
- GetMessages (severity)
- GetMessage (index)
- GetSeverity (index)
- GetInput (index): Object
- GetOutput (index): Object
- GetMapImageURL (ParameterList, Height, Width, Resolution)
- Cancel ()

RecordSet

- Load (InputValue)
- Save (OutputValue)

FeatureSet

- Load (InputValue)
- Save (OutputValue)

Geometry

- Type
- Extent: Object
- Centroid: Point
- TrueCentroid: Point
- LabelPoint: Point
- FirstPoint: Point
- LastPoint: Point
- Area
- Length
- IsMultipart: Boolean
- PartCount
- HullRectangle
- GetPart (Index): Object

Extent

- XMin
- YMin
- XMax
- YMax
- MMin
- MMax
- ZMin
- ZMax
- Width
- Height
- Depth
- LowerLeft: Point
- LowerRight: Point
- UpperLeft: Point
- UpperRight: Point

*** When using CreateObject to create ValueTable, NetCDFFileProperties and Result objects, an extra argument is used.

CreateObject ("ValueTable", columnCount)
CreateObject ("NetCDFFileProperties, NetCDFFile)
CreateObject ("Result", toolName + " " + ResultID)

**** When using CreateObject to create ArcSDESQLExecute,, the syntax is:

CreateObject ("ArcSDESQLExecute", <serverName>, <portNumber>, <version>, <userName>, <password>)

Value

- Value

Field

- Name
- AliasName
- Domain
- Editable: Boolean
- IsNullable: Boolean
- Required: Boolean
- Length
- Type
- Scale
- Precision

ListFields returns a Python List of Field objects.

A Field returned from a Fields object is almost equivalent to a Field object that can be created using the CreateObject method. The only difference is their read/write capabilities.

Index

- Name
- IsAscending: Boolean
- IsUnique: Boolean
- Fields: Python List

ListIndexes returns a Python List of Field objects.

An Index Object can create a Fields object for that index.

Parameter

- Name
- Direction
- DataType
- ParameterType
- ParameterDependencies
- Value
- DefaultEnvironmentName
- Enabled: Boolean
- Altered: Boolean
- HasBeenValidated: Boolean
- Category
- Schema: Object
- Filter: Object
- Symbology
- Message
- SetErrorMessage (Message)
- SetWarningMessage (Message)
- ClearMessage ()
- HasError ()
- HasWarning ()
- IsInputValueDerived ()
- SetIDMessage(Message)

Schema

- Type
- Clone: Boolean
- FeatureTypeRule
- FeatureType
- GeometryTypeRule
- GeometryType
- ExtentRule
- Extent: Object
- FieldsRule
- AdditionalFields
- CellSizeRule
- CellSize
- RasterRule
- RasterFormatRule
- AdditionalChildren

Filter

- Type
- List

Rows (SearchCursor, InsertCursor, UpdateCursor)

SearchCursor

- Next () : Object
- Reset ()

InsertCursor

- Reset ()
- NewRow () : Object
- InsertRow (Object)

UpdateCursor

- Next () : Object
- Reset ()
- UpdateRow (Object)
- DeleteRow (Object)

Each row will dynamically support the field name as a property.

Row

- FieldName
- GetValue (fieldName)

Row

- FieldName
- GetValue (fieldName)
- SetValue (fieldName, Value)

Geometry

- Type
- Extent: Object
- Centroid: Point
- TrueCentroid: Point
- LabelPoint: Point
- FirstPoint: Point
- LastPoint: Point
- Area
- Length
- IsMultipart: Boolean
- PartCount
- HullRectangle
- GetPart (Index): Object

Using the Geometry field, a geometry object may be created. It is used to describe the properties of the geometry for each row in a feature class.

FeatureClass Properties

- FeatureType
- HasM: Boolean
- HasZ: Boolean
- HasSpatialIndex: Boolean
- RelationshipClassNames: Python List
- ShapeFieldName
- ShapeType
- TopologyName

Table Properties
Dataset Properties

Coverage FeatureClass Properties

- FeatureClassType
- HasFAT: Boolean
- Topology

Table Properties
Dataset Properties

Layer Properties

- FeatureClass: Object
- FieldInfo: Object
- WhereClause
- NameString

FeatureClass Properties

Describe Object Properties

- DataType
- CatalogPath

Table Properties

- HasOID: Boolean
- OIDFieldName
- Fields: Python List
- Indexes: Python List

Dataset Properties

- DatasetType
- Extent: Object
- MExtent
- ZExtent
- SpatialReference: Object

TableView Properties

- Table: Object
- FIDSet
- FieldInfo: Object
- WhereClause
- NameString

Table Properties

Workspace Properties

- Connection Properties
- ConnectionString
- Domains: Python List
- WorkspaceFactoryProgID
- WorkspaceType

Coverage Properties

- Tolerances

Dataset Properties

Relationship Class Properties

- IsVersioned: Boolean
- Fields: Python List

Table Properties

Raster Catalog Properties

- RasterFieldName

Dataset Properties
Table Properties

Raster Dataset Properties

- BandCount
- CompressionType
- Format
- Permanent: Boolean
- SensorType

Raster Band Properties
Dataset Properties

Raster Band Properties

- Height
- IsInteger: Boolean
- MeanCellHeight
- MeanCellWidth
- NoDataValue
- PixelType
- PrimaryField
- TableType
- Width

Dataset Properties

Red text indicates a property set.

An Object is created with all of the properties of the data being described. The specific properties listed apply to all types of data.

Each type of data has unique properties. Depending on their relationship, properties of other data types may also be available.

All properties and method parameters are either a string or a long data type, unless otherwise stated. Some properties and parameters may be objects or Boolean values.

The different colors in this model help you connect the various methods and properties with the appropriate objects.

Object key

- Property Get
- Property Get/Put
- Method

Additional information about this model is available in the Using the geoprocessor section of the ArcGIS Desktop 10 Help at: Geoprocessor > Automating your work with scripts > Getting started with writing geoprocessing scripts > Using the geoprocessor.

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