Geoprocessing Data Types of Parameters and Environments

Data types are classifications that identify possible values for data and operations that can be done on the data, as well as the way the data is stored

Data Type	Description	String Syntax[1]	Scripting Object[3]	ArcObjects
Address locator	A dataset, used for geocoding, that stores the address attributes, associated indexes, and rules that define the process for translating nonspatial descriptions of places to spatial data. [.loc]	catalogPath	. _ .	DEAddressLocator
Address locator style	A template on which to base the new address locator. [.lot]	catalogPath	. _ .	GPAddressLocatorStyle
Analysis cell size	The cell size used by raster tools.	cellSize | catalogPath	. _ .	GPAnalysisCellSize
Any value	A data type that accepts any value.	any value	. _ .	GPType **[*abstract datatype*]**
ArcMap Document	A file that contains one map, its layout, and its associated layers, tables, charts, and reports. [.mxd]	catalogPath	. _ .	DEMapDocument
Area units	An areal unit type and value such as square meter or acre.	arealUnit unitOfMeasure unitOfMeasure keywords: ACRES | ARES | HECTARES | SQUARECENTIMETERS | SQUAREDECIMETERS | SQUAREINCHES | SQUAREFEET | SQUAREKILOMETERS | SQUAREMETERS | SQUAREMILES | SQUAREMILLIMETERS | SQUAREYARDS | SQUAREMAPUNITS |UNKNOWN	. _ .	GPArealUnit
Boolean	A boolean value.	TRUE | FALSE	. _ .	GPBoolean
CAD Drawing Dataset	A vector data source with a mix of feature types with symbology. The dataset is not usable for feature class-based queries or analysis.	catalogPath	. _ .	DECadDrawingDataset
Catalog Root	The top-level node in the catalog tree.	catalogPath	. _ .	DECatalogRoot
Cell Size	The cell size used by Spatial Analyst.	MAXOF | MINOF | value	. _ .	GPSACellSize
Composite Datatype	A collection of datatypes.	… dependent on datatypes in collection…	. _ .	GPCompositeDataType **[abstract datatype]**
Composite Layer	A reference to a several children layers, including symbology and rendering properties.	layerName | catalogPath	. _ .	GPCompositeLayer DECompositeLayer
Compression	Specifies the type of compression used for a raster.	LZ77 | JPEG | JPEG2000 | NONE	. _ .	GPRasterGDBEnvCompression
Coordinate System	A reference framework—such as the UTM system—consisting of a set of points, lines, and/or surfaces, and a set of rules, used to define the positions of points in two and three dimensional space.	catalogPath	. _ .	GPCooridnateSystem
Coordinate Systems Folder	A folder on disk storing coordinate systems.	catalogPath	. _ .	DESpatialReferencesFolder
Coverage	A courage dataset, a proprietary data model for storing geographic features as points, arcs, polygons with associated feature attribute tables.	catalogPath	. _ .	DECoverage
Coverage Feature Class	A coverage feature classes such as point, arc, node, route, route system, section, polygon, and region.	catalogPath	. _ .	DECoverageFeatureClass ICoverageFeatureClass ICoverageFeatureClass2
Data Element	A dataset visible in ArcCatalog.	catalogPath	. _ .	DEType **[*abstract datatype*]**

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Database Connections	The database connection folder in ArcCatalog.	catalogPath	._.	**DEDiskConnection**
Dataset	A collection of related data, usually grouped or stored together.	catalogPath	._.	DEDatasetType **[*abstract datatype*]**
Date	A date value.	format depends on the regional settings of the computer;	._.	GPDate
dBASE Table	Attribute data stored in dBASE format.	catalogPath	._.	DEDbaseTable ITable
Decimate	Specifies a subset of nodes of a TIN to create a generalized version of that TIN.	ZTOLERANCE Z_Tolerance maxNumberOfNodes | COUNT maxNumberOfNodes	._.	DecimateNodes DecimateNodesByCount
Disk Connection	An access path to a data storage device.	catalogPath	._.	DEDiskConnection
Double	Any floating point number will be stored as a double-precision 64-bit value.	example: 5.6	._.	GPDouble
Envelope	The coordinate pairs that define the minimum bounding rectangle the data source fall within.	X_Minimum Y_Minimum X_Maximum Y_Maximum	._.	GPEnvelope
Evaluation Scale	The scale value range and increment value applied to inputs in a weighted overlay operation.	EvaluationScale Minimum Maximum Increment EvaluationScale: '1 to 9 by 1' | '1 to 5 by 1' | '1 to 3 by 1' | '-1 to 1 by 1' | '-5 to 5 by 1' | '-10 to 10 by 2'	._.	GPEvaluationScale
Extent	Specifies the coordinate pairs that define the minimum bounding rectangle (xmin, ymin and xmax, ymax) of a data source. All coordinates for the data source fall within this boundary.	catalogPath | X_Minimum Y_Minimum X_Maximum Y_Maximum	._.	GPExtent
Feature Class	A collection of spatial data with the same shape type: point, multipoint, polyline, polygon.	catalogPath	._.	DEFeatureClass IFeatureClass ICoverageFeatureClass
Feature Dataset	A collection of feature classes that share a common geographic area and the same spatial reference system.	catalogPath	._.	DEFeatureDataset IFeatureDataset
Feature Layer	A reference to a feature class, including symbology and rendering properties. [.lyr]	featurelLayerName | catalogPath	._.	GPFeatureLayer IFeatureLayer
Field	A column in a table that stores the values for a single attribute	fieldName	**Field**	Field IField
Field Info	The details about a field in a FieldMap.	"fldName newFldName visible;$fldName_1$ $newFldName_1$ $visible_1$;…;$fldName_N$ $newFldName_N$ $visible_N$"	**FieldInfo**	GPFieldInfo
Field Mappings	A collection of fields in one or more input tables.	use String Object; use of String Syntax not recommended; catalogPath | SR_ID	**FieldMap; FieldMappings**	GPFieldMapping
File	A file on disk.	catalogPath	._.	DEFile IFile
Folder	Specifies a location on a disk where data is stored.	catalogPath	._.	DEFolder
Formulated Raster	A raster surface whose cell values are represented by a formula or constant.	catalogPath	._.	GPRasterFormulated
GeoDataServer	A coarse grain object that references a geodatabase.	catalogPath	._.	DEGeoDataServer
Geodataset	A collection of data with a common theme in a geodatabase.	"catalogPath;$catalogPath_1$;…;$catalogPath_N$"	._.	**[*abstract datatype*]**
Geometric Network	A linear network represented by topologically connected edge and junction features. Feature connectivity is based on their geometric coincidence.	catalogPath	._.	DEGeometricNetworkType DEGeometricNetwork
Geostatistical Layer	A reference to a geostatistical data source, including symbology and rendering properties.	geostatisticalLayerName | catalogPath	._.	GPGALayer

Data Type	Description	String Syntax[1]	Scripting Object[3]	ArcObjects
Geostatistical Value Table	A collection of data sources and fields that define a geostatistical layer.	"catalogPath field;catalogPath$_1$ field$_1$;…;catalogPath$_N$ field$_N$"	._.	GPGAValueTable
Group Layer	A collection of layers that appear and act as a single layer. Group layers make it easier to organize a map, assign advanced drawing order options, and share layers for use in other maps.	"groupLayerName;groupLayerName$_1$;…;groupLayerName$_N$" | "catalogPath;catalogPath$_1$;…;catalogPath$_N$"	._.	GPGroupLayer
Horizontal Factor	The relationship between the horizontal cost factor and the horizontal relative moving angle.	rasterName BINARY ZeroFactor CutAngle | catalogPath BINARY ZeroFactor CutAngle | rasterName FORWARD ZeroFactor CutAngle SideValue | catalogPath FORWARD ZeroFactor CutAngle SideValue | rasterName LINEAR ZeroFactor CutAngle Slope | catalogPath LINEAR ZeroFactor CutAngle Slope | rasterName INVERSE LINEAR ZeroFactor CutAngle Slope | catalogPath INVERSE LINEAR ZeroFactor CutAngle Slope | rasterName TABLE tableName | catalogPath TABLE tableName | rasterName TABLE catalogPath| catalogPath TABLE catalogPath	._.	GPSAHorizontalFactor
Index	A data structure used to speed the search for records in a geographic datasets and database.	number	._.	Index
INFO Expression	A syntax for defining and manipulating data in an INFO table.	SUBSET itemName operator value | SUBSET itemName operator value CONNECTOR itemName$_1$ operator$_1$ value$_1$ CONNECTOR … CONNECTOR itemName$_N$ operator$_N$ value$_N$ | ADD itemName operator value | ADD itemName operator value CONNECTOR itemName$_1$ operator$_1$ value$_1$ CONNECTOR … CONNECTOR itemName$_N$ operator$_N$ value$_N$ | SWITCH itemName operator value | SWITCH itemName operator value CONNECTOR itemName$_1$ operator$_1$ value$_1$ CONNECTOR … CONNECTOR itemName$_N$ operator$_N$ value$_N$	._.	GPINFOExpression
INFO Item	An item in an INFO table.	itemName	._.	GPArcInfoItem
INFO Table	A table in an INFO Database.	catalogPath	._.	DEArcInfoTable IArcInfoTable
Layer	A reference to a data source, such as a shapefile, coverage, geodatabase feature class, or raster, including symbology and rendering properties. [.lyr]	layerName | catalogPath	._.	**[abstract datatype]**
Layer File	A file with a .lyr extension that stores the layer defintion, including symbology and rendering properties.	catalogPath	._.	DELayer ILayer
Line	A shape, straight or curved, defined by a connected series of unique x,y coordinate pairs.	coordinateList	._.	GPLine
Linear unit	A linear unit type and value such as meter or feet.	linearUnit unitOfMeasure unitOfMeasure keywords: CENTIMETERS | DECIMALDEGREES | DECIMETERS | FEET | INCHES | KILOMETERS | METERS | MILES | MILLIMETERS | NAUTICALMILES | POINTS | UNKNOWN | YARDS	._.	GPLinearUnit
Long	An integer number value.	number	._.	GPLong
M Domain	A range of lowest and highest possible value for m coordinates.	M_Minimum M_Maximum	._.	GPMDomain
Map Algebra Expression	A query syntax used by Spatial Analyst to evaluate raster data.	catalogPath | MA_expression --> link to online doc	._.	GPSAMapAlgebraExp

Data Type	Description	String Syntax[1]	Scripting Object[3]	ArcObjects
MultiValue	A collection of values stored in one column in a value table.	"string;$string_1$;…;$string_N$"	._.	GPMultiValue
Neighborhood	The shape of the area around each cell used to calculate statistics.	ANNULUS InnerRadius OuterRadius Units | CIRCLE Radius Units | RECTANGLE Height Width Units | WEDGE StartAngle EndAngle Radius Units | IRREGULAR KernelFileName | catalogPath | WEIGHT KernelFileName or catalogPath Units keywords: CELL | MAP	._.	GPSANeighborhood
Network Analyst Class FieldMap	A mapping between location properties in a network analyst layer (such as stops, facilities, and incidents) and a point feature class.	property field defaultValue	._.	NAClassFieldMap
Network Analyst Hierarchy Settings	A hierarchy attribute that divides hierarchy values of a network dataset into three groups using two integers. The first integer, high_rank_ends, sets the ending value of the first group; the second number, low_rank_begin, sets the beginning value of the third group.	NONE | HIERARCHY defaultRanges | HIERARCHY customRanges upTo andHigher	._.	GPNAHierarchySettings
Network Analyst Layer	A special group layer used to express and solve network routing problems. Each sublayer, held in-memory, in a Network Analyst layer represent some aspect of the routing problem and the routing solution.	layerName | catalogPath	._.	GPNALayer INALayer
Network Dataset	A collection of topologically connected network elements (edges, junctions, and turns), derived from network sources and associated with a collection of network attributes.	catalogPath	._.	DENetworkDataset INetworkDataset
Network Dataset Layer	A reference to a network dataset, including symbology and rendering properties.	layerName | catalogPath	._.	GPNetworkDatasetLaye
Point	A pair of x,y coordinates.	coordinatePair	**Point**	GPPoint
Polygon	A connected sequence of x,y coordinate pairs, where the first and last coordinate pair are the same.	coordinateList	._.	GPPolygon
Projection File	A file storing coordinate system information for spatial data. [.prj]	catalogPath	._.	DEPrjFile IFile
Pyramid	Specifies if pyramids will be built.	NONE | PYRAMIDS pyramidLevel sampleMethod sampleMethod keywords: NEAREST | BILINEAR | CUBIC	._.	GPRasterGDBEnvPyramid
Radius	Specifies which surrounding points will be used for interpolation.	FIXED Distance Min#OfPts | VARIABLE NumOfPts MaxDistance	._.	GPSARadius
Random Number Generator	Specifies the seed and the generator to be used when creating random values.	seed randomGenType randomGenType keywords: STANDARD_C | ACM599 | MERSENNE_TWISTER	._.	GPRandomNumberGenerator
Raster Band	A layer in a raster dataset.	catalogPath	._.	DERasterBand IRasterBand
Raster Catalog	A collection of raster datasets defined in a table; each table records defines an individual raster datasets in the catalog.	catalogPath	._.	DERasterCatalog IRasterCatalog
Raster Catalog Layer	A reference to a raster catalog, including symbology and rendering properties.	rasterCatalogLayer | catalogPath	._.	GPRasterCatalogLayer IRasterCatalogLayer
Raster Dataset	A single dataset built from one or more rasters.	catalogPath	._.	DERasterDataset IRasterDataset

Data Type	Description	String Syntax[1]	Scripting Object[3]	ArcObjects
Raster Layer	A reference to a raster, including symbology and rendering properties.	catalogPath	. _ .	GPRasterLayer IRasterLayer
Raster Statistics	Specifies if raster statistics will be built.	NONE | STATISTICS X-SkipFactor Y-SkipFactor statsIgnoreValue	. _ .	GPRasterGDBEnvStatistics
Relationship Class	The details about the relationship between objects in the geodatabase.	catalogPath	. _ .	DERelationshipClass IRelationshipClass
Remap	A table that defines how raster cell values will be reclassified.	OldValues NewValue ClassifyMethod OldValues: number | range | string | NoData NewValue: number | range | string | NoData ClassifyMethod keywords: MANUAL | EQUALINTERVAL | DEFINEDINTERVAL | QUANTILE | NATURALBREAKS | STANDARDDEVIATION	. _ .	GPSANumberRemap GPSAStringRemap
Route Measure Event Properties	Specifies the fields on a table that describe events that are measured by a linear reference route system.	inEventProperties POINT mField | inEventProperties LINE fromMField toMField	. _ .	GPRouteMeasureEventProperties
SemiVariogram	Specifies the distance and direction representing two locations that is used to quantify autocorrelation.	ORDINARY SPHERICAL Lag size Major range Partial sill Nugget | ORDINARY CIRCULAR Lag size Major range Partial sill Nugget | ORDINARY EXPONENTIAL Lag size Major range Partial sill Nugget | ORDINARY GAUSSIAN Lag size Major range Partial sill Nugget | ORDINARY LINEAR Lag size Major range Partial sill Nugget | UNIVERSAL LINEARDRIFT Lag size Major range Partial sill Nugget | UNIVERSAL QUADRATICDRIFT Lag size Major range Partial sill Nugget	. _ .	GPSASemiVariogram
Shapefile	Spatial data in shapefile format. [.shp]	catalogPath	. _ .	DEShapefile IFeatureclass
Spatial Reference	The coordinate system used to store a spatial dataset, including the spatial domain.	use String Object; use of String Syntax not recommended; catalogPath | SR_ID	**Spatialreference**	GPSpatialReference ISpatialReference
SQL Expression	A syntax for defining and manipulating data from a relational database.	fieldName operator value	. _ .	GPSQLExpression
String	A text value.	any combination of characters including spaces	. _ .	GPString
Table	Tabular data.	catalogPath	. _ .	DETable
Table View	A representation of tabular data for viewing and editing purposes, stored in memory or on disk.	tableViewName | catalogPath	. _ .	GPTableView IFeatureclass ITable ILayer
Terrain	A multiresolution TIN.	catalogPath	. _ .	DETerrain
Terrain Layer	A reference to a terrain, including symbology and rendering properties. It's used to draw a terrain.	terrainLayerName | catalogPath	. _ .	GPTerrainLayer
Text File	Data stored in ASCII format.	catalogPath	. _ .	DETextFile
Tile Size	Specifies the width and the height of a data stored in block.	width height	. _ .	GPRasterGDBEnvTileSize
Time configuration	Specifies the time periods used for calculating solar radiation at specific locations.	SPECIAL DAYS | WITHIN A DAY numOfDays startTime endTime | MULTIPLE DAYS IN A YEAR year startDay endDay | WHOLE YEAR WITH MONTHLY INTERVAL year	. _ .	GPSATimeConfiguration
TIN [Triangulated Irregular Network]	A vector data structure that partitions geographic space into contiguous, non-overlapping triangles. The vertices of each triangle are sample data points with x-, y-, and z-values.	catalogPath	. _ .	DETin ITin
TIN Layer	A reference to a TIN, including topological relationships, symbology, and rendering properties.	TINLayerName | catalogPath	. _ .	GPTINLayer ITINLayer

Data Type	Description	String Syntax[1]	Scripting Object[3]	ArcObjects
Topo Features	Features that are input to the interpolation.	catalogPath featureLayer field Type Type keywords: POINTELEVATION | CONTOUR | STREAM | SINK | BOUNDARY | LAKE	. _ .	GPSATopoFeatures
Topology	A topology that defines and enforces data integrity rules for spatial data.	catalogPath	. _ .	DETopology ITopology
Topology Layer	A reference to a topology, including symbology and rendering properties.	topologyLayerName | catalogPath	. _ .	GPTopologyLayer ITopologyLayer
Variant	A data value that can contain any basic type: boolean, date, double, long, and string.	any combination of characters including spaces	. _ .	GPVariant
ValueTable	A collection of columns of values.	catalogPath	. _ .	GPValueTable
Vertical Factor	Specifies the relationship between the vertical cost factor and the vertical relative moving angle.	BINARY ZeroFactor LowCutAngle HighCutAngle | LINEAR ZeroFactor LowCutAngle HighCutAngle Slope | INVERSE LINEAR ZeroFactor LowCutAngle HighCutAngle Slope | SYMMETRIC LINEAR ZeroFactor LowCutAngle HighCutAngle Slope | SYMMETRIC INVERSE LINEAR ZeroFactor LowCutAngle HighCutAngle Slope | COS LowCutAngle HighCutAngle Power | SEC LowCutAngle HighCutAngle Power | COS_SEC LowCutAngle HighCutAngle COS_Power SEC_Power | SEC_COS LowCutAngle HighCutAngle COS_Power SEC_Power | TABLE tableName | TABLE catalogPath	. _ .	GPSAVerticalFactor
VPF Coverage	Spatial data stored in Vector Product Format.	catalogPath	. _ .	DEVPFCoverage
VPF Table	Attribute data stored in Vector Product Format.	catalogPath	. _ .	DEVPFTable
Weighted Overlay Table	A table with data to combine multiple rasters by applying a common measurement scale of values to each raster, weighting each according to its importance.	"rasterName %Influence Field Remap[2]";"…" | "catalogPath %Influence Field Remap[2]";"…";	. _ .	GPSAWeightedOverlayTable
Weighted Sum	Specifies data for overlaying several rasters multiplied each by their given weight and then summed.	"rasterName Field Weight";"rasterName$_1$ Field$_1$ Weight$_1$";" …"; | "catalogPath Field Weight";"catalogPath$_1$ Field$_1$ Weight$_1$";" …";	. _ .	GPWeightedSum
Workspace	A container such as a geodatabase or folder.	catalogPath	. _ .	DEWorkspace
XY Domain	A range of lowest and highest possible values for x,y coordinates.	X_Minimum Y_Minimum X_Maximum Y_Maximum	. _ .	GPXYDomain
Z Domain	A range of lowest and highest possible value for z coordinates.	Z_Minimum Z_Maximum	. _ .	GPZDomain

[1] **catalogPath**: C:\workspace\datatypes\... ;
layerName/~LayerName: Layer on disk ,as in C:\workspace\landuse.lyr; layer in ArcMap TOC; internal layer created by geoprocessing tools;
collection: "string;string$_1$;…;string$_N$";
catalogPath, layerName, itemName: if spaces are present, **must** single or double quote each one in a collection; example: " 'string';'string1';'…';'string$_N$'";
coordinateList: x_1 y_1;x_2 y_2; …;x_N y_N; polygon: x_1 y_1;x_2 y_2; …;x_N y_N;x_1 y_1;
keywords are in CAPS: as in ACRES and METERS;

[2] For the string syntax refer to the Remap data type.

[3] string objects are marked with a patterned background;