

UC

The Attribute Assistant – Every Data Editor's Best Friend

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Background

Working in production

- While attending Utah State University, I worked in a couple of local factories.
- Proform – an exercise equipment assembly plant in Logan, Utah – treadmills and step machines.
- La-Z-Boy – a furniture assembly plant in Tremonton, Utah.
- Each of these jobs were paid on a “piece rate” with quality of the final product factored in.

Efficiency is key in production

- To produce the most machines/couches and thereby maximizing our paychecks it was essential to identify ways to improve efficiency while at the same time maintaining a high level of quality.
- A savings of minutes per unit could add up by the end of the night.

Creating GIS data is production work

- **There may be no physical, finished product - but creating GIS features is the same as building a treadmill or a recliner.**
 - It takes time.
 - It requires accuracy and precision.
 - A repeatable process should be followed.
 - It is often mind numbingly boring and tedious.
 - Efficient processes can decrease the time factor and increase accuracy, precision and quality of the final product.

Creating GIS Data cont'd

- The bottleneck in GIS data creation is usually attribute entry.
- Attribute entry is also the area where errors are most often introduced – typos, missed fields, etc.
- Some of these problems can be addressed by using feature templates with default values and required fields, but a feature template can't gather information from nearby features, nor can it run an expression on other fields placing the result in another field.

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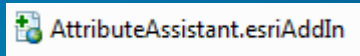
Where to get it.

- **Download the add-in from solutions.esri.com**
 - Tables are empty
- **Download an editing template from solutions.esri.com**
 - Address Data Management template
 - Water Utility Network Editing and Analysis template
 - Tables are populated with working examples.
 - Some fields already set up to work with the Local Government Information Model – Last Updated, Last Editor
 - I recommend this method.

The Attribute Assistant

How to install it

- **Simply double click on the add-in file**
 - The file is located in a folder called **Application** that comes with the download.



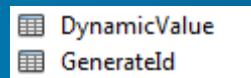
- If ArcMap is open – you will need to close it and open it again to have access to the AA toolbar.
- Add the AA toolbar – **Customize -> Toolbars -> Attribute Assistant**



The Attribute Assistant

How it works

- Utilizes two attribute tables that need to be added to the map.
 - DynamicValue
 - GenerateID



- DynamicValue Table
 - This is where most of the work is done.
 - Each row contains a method to be performed on a single field, and in some cases many fields. Some methods copy features to another layer.
- GenerateID
 - Contains rows of named sequences to be used to generate unique IDs for features.
 - Used by the GENERATE_ID method in the DynamicValue table.

The Attribute Assistant

How it works

- Fields in the DynamicValue table –

Table (layer) and field names

Method name and parameters

When method is run
Comments

DynamicValue											
OBJECTID*	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)	
52	*	INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
62	*	OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
63	*	MAINTBY	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
108	*	FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
109	*	INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
110	*	LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>	<Null>	True	
111	*	LASTEDITOR	CURRENT_USER	<Null>	True	True	False	<Null>	<Null>	True	
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADDRESSENTRANCEID 0 ENT-[seq]	True	False	False	<Null>	1	False	
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPoint SITEADDID	True	False	False	<Null>	1	False	
14	AddressPoint	ADDRESSPTID	GENERATE_ID	ADDRESSPOINTID 0 ADD-[seq]	True	False	False	<Null>	1	False	
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False	
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySite FACILITYID	True	True	False	<Null>	<Null>	True	
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloor BUILDINGKEY	True	True	False	<Null>	<Null>	True	
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloor FLOORID	True	True	False	<Null>	<Null>	True	
115	BuildingFloorplanLine	BASEELEV	INTERSECTING_FEATURE	BuildingFloor BASEELEV	True	True	False	<Null>	<Null>	True	
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloor FLOOR	True	True	False	<Null>	<Null>	True	
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloor BUILDINGKEY	True	True	False	<Null>	<Null>	True	
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloor FLOORID	True	True	False	<Null>	<Null>	True	

The Attribute Assistant

How it works – DynamicValue table

Table (layer) and field names

Method name and parameters

When method is run

OBJECTID *	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)
52 *		INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>		False
62 *		OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
63 *		MAINTBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
108 *		FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
109 *		INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
110 *		LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>		True
111 *		LASTEDITOR	CURRENT_USER	<Null>	True	True	False	<Null>		True
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADDRESSENTRANCEID[0]ENT-[seq]	True	False	False	<Null>	1	False
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPoint[SITEADDID	True	False	False	<Null>	1	False
14	AddressPoint	ADDRESSPTID	GENERATE_ID	ADDRESSPOINTID[0]ADD-[seq]	True	False	False	<Null>	1	False
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySite\FACILITYID	True	True	False	<Null>		True
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloor\BUILDINGKEY	True	True	False	<Null>		True
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloor\FLOORID	True	True	False	<Null>		True
115	BuildingFloorplanLine	BASESELEV	INTERSECTING_FEATURE	BuildingFloor\BASESELEV	True	True	False	<Null>		True
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloor\FLOOR	True	True	False	<Null>		True
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloor\BUILDINGKEY	True	True	False	<Null>		True
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloor\FLOORID	True	True	False	<Null>		True

- Table Name field-
 - An asterisk (*) indicates any table that has the named field
 - Table name must be the actual name – no aliases. NOT case sensitive
- Field Name field-
 - Field name must be the actual name – no aliases. NOT case sensitive
- Value Method field-
 - Domain of all methods in the file geodatabase that comes with the download.

The Attribute Assistant

How it works – DynamicValue table

Table (layer) and field names

Method name and parameters

When method is run

OBJECTID	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)
52		INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>		False
62		OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
63		HANDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
108		FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
109		INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
110		LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>		True
111		LASTEDFOR	CURRENT_USER	<Null>	True	True	False	<Null>		True
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADDRESSENTRANCED[0]ENT-[seq]	True	False	False	<Null>	1	False
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPointSITEADDID	True	False	False	<Null>	1	False
14	AddressPoint	ADDRESSPTID	GENERATE_ID	ADDRESSPOINTID[0]ADD-[seq]	True	False	False	<Null>	1	False
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySite\FACILITYID	True	True	False	<Null>		True
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloor\BUILDINGKEY	True	True	False	<Null>		True
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloor\FLOORID	True	True	False	<Null>		True
115	BuildingFloorplanLine	BASEELEV	INTERSECTING_FEATURE	BuildingFloor\BASEELEV	True	True	False	<Null>		True
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloor\FLOOR	True	True	False	<Null>		True
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloor\BUILDINGKEY	True	True	False	<Null>		True
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloor\FLOORID	True	True	False	<Null>		True

- Value Info field-

- List of parameters needed for selected method.
- Pipe separated (some commas between pipes for field lists and such).
- Currently 71 methods.
- Many used in geometric network editing. (AA started out in Water Utility Network Editing)

The Attribute Assistant

How it works – DynamicValue table

Table (layer) and field names

Method name and parameters

When method is run

OBJECTID *	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)
52		INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>		False
62		OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
63		HANDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
108		FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
109		INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
110		LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>		True
111		LASTEDITOR	CURRENT_USER	<Null>	True	True	False	<Null>		True
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADRESSENTRANCED[0]ENT-[seq]	True	False	False	<Null>	1	False
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPointSITEADDID	True	False	False	<Null>	1	False
14	AddressPoint	ADDRESSFTID	GENERATE_ID	ADDRESSPOINTID[0]ADD-[seq]	True	False	False	<Null>	1	False
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySite[FACILITYID]	True	True	False	<Null>		True
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloor[BUILDINGKEY]	True	True	False	<Null>		True
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloor[FLOORID]	True	True	False	<Null>		True
115	BuildingFloorplanLine	BASESELEV	INTERSECTING_FEATURE	BuildingFloor[BASESELEV]	True	True	False	<Null>		True
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloor[FLOOR]	True	True	False	<Null>		True
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloor[BUILDINGKEY]	True	True	False	<Null>		True
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloor[FLOORID]	True	True	False	<Null>		True

- Create/Change/On Manual fields-

- Boolean fields.

- Indicate when the method is triggered-

- Create – When a feature is created.

- Change – When an attribute for a feature is changed.

- On Manual – When the “Run Manual Rules for Selected Features” button is clicked.

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How it works – DynamicValue table

Table (layer) and field names

Method name and parameters

When method is run

OBJECTID *	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)
52		INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
62		OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
63		HANDBY	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
108		FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
109		INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
110		LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>	<Null>	True
111		LASTEDITOR	CURRENT_USER	<Null>	True	True	False	<Null>	<Null>	True
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADRESSENTRANCED[O]ENT-[seq]	True	False	False	<Null>	1	False
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPointSITEADDID	True	False	False	<Null>	1	False
14	AddressPoint	ADDRESSPTID	GENERATE_ID	ADDRESSPOINTID[O]ADD-[seq]	True	False	False	<Null>	1	False
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>	<Null>	False
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySite[F]ACILITYID	True	True	False	<Null>	<Null>	True
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloor[BUILDINGKEY	True	True	False	<Null>	<Null>	True
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloor[FLOORID	True	True	False	<Null>	<Null>	True
115	BuildingFloorplanLine	BASESELEV	INTERSECTING_FEATURE	BuildingFloor[BASESELEV	True	True	False	<Null>	<Null>	True
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloor[FLOOR	True	True	False	<Null>	<Null>	True
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloor[BUILDINGKEY	True	True	False	<Null>	<Null>	True
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloor[FLOORID	True	True	False	<Null>	<Null>	True

- Rule Weight field-

- A number that indicates the run order of each record in the Dynamic Value table.
- Higher numbers are run first.
- Useful if another method in your Dynamic Value table relies on this field already being populated.

The Attribute Assistant

How it works – DynamicValue table

Table (layer) and field names

Method name and parameters

When method is run

OBJECTID	Table Name	Field Name	Value Method	Value Info	Create	Change	On Manual	Comments	Rule Weight or Order	On Change (Geometry)
52		INSTALLDATE	LAST_VALUE	<Null>	True	True	False	<Null>		False
62		OWNEDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
63		HANDBY	LAST_VALUE	<Null>	True	True	False	<Null>		False
108		FLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
109		INTERFLOOR	LAST_VALUE	<Null>	True	True	False	<Null>		False
110		LASTUPDATE	TIMESTAMP	<Null>	True	True	False	<Null>		True
111		LASTEDITOR	CURRENT_USER	<Null>	True	True	False	<Null>		True
19	AddressEntrancePoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
20	AddressEntrancePoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
21	AddressEntrancePoint	ENTRANCEPTID	GENERATE_ID	ADRESSENTRANCED[0]ENT-[seq]	True	False	False	<Null>	1	False
22	AddressEntrancePoint	SITEADDKEY	LINK_TABLE_ASSET	SiteAddressPointSITEADDID	True	False	False	<Null>	1	False
14	AddressPoint	ADDRESSPTID	GENERATE_ID	ADDRESSPOINTID[0]ADD-[seq]	True	False	False	<Null>	1	False
15	AddressPoint	POINTTYPE	LAST_VALUE	<Null>	True	True	False	<Null>		False
16	AddressPoint	CAPTUREMETH	LAST_VALUE	<Null>	True	True	False	<Null>		False
112	BuildingFloorplanLine	FACILITYID	INTERSECTING_FEATURE	FacilitySiteFACILITYID	True	True	False	<Null>		True
113	BuildingFloorplanLine	BUILDINGKEY	INTERSECTING_FEATURE	BuildingFloorBUILDINGKEY	True	True	False	<Null>		True
114	BuildingFloorplanLine	FLOORID	INTERSECTING_FEATURE	BuildingFloorFLOORID	True	True	False	<Null>		True
115	BuildingFloorplanLine	BASEELEV	INTERSECTING_FEATURE	BuildingFloorBASEELEV	True	True	False	<Null>		True
116	BuildingFloorplanLine	FLOOR	INTERSECTING_FEATURE	BuildingFloorFLOOR	True	True	False	<Null>		True
117	BuildingFloorplanLine	BUILDING	INTERSECTING_FEATURE	BuildingFloorBUILDINGKEY	True	True	False	<Null>		True
118	BuildingFloorplanLine	FLOORKEY	INTERSECTING_FEATURE	BuildingFloorFLOORID	True	True	False	<Null>		True

- On Change (Geometry) field –

- Boolean field

- Indicates the method will be triggered if the geometry of a feature is changed.

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How it works – DynamicValue table

DynamicValue										
OBJECTID *	Table Name	Field Name	Value Method	Value Info	On Create	On Change (Attribute)	On Change (Geometry)	Manual Only	Rule Weight	Comments

- Field order is different if you download the AA by itself.
- This order and field naming scheme make the table a bit more intuitive.
- You can always append the records from one of the templates into this table to test out the samples.

The Attribute Assistant

- Things to keep in mind-
 - DynamicValue and GenerateID tables need to be added to your map.
 - GenerateID table can not be used with multiple editors.
 - Methods can be run on existing points using the other tools on the toolbar – Change Rules, Geometry Change Rules, Manual Rules, and Create Rules.
 - The AA is fully supported by ESRI Tech Support.
 - Geonet in the Local Government group for help.
 - Quality Control checks are still needed

The Attribute Assistant

- Resources –
 - Geonet
 - solutions.arcgis.com
 - <http://solutions.arcgis.com/shared/help/attribute-assistant/>
 - Follow Michael Miller on Geonet
 - Documentation tab on the above link to the AA
 - The documentation is much better than it was in 2011 when I first started using the AA

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Questions?