

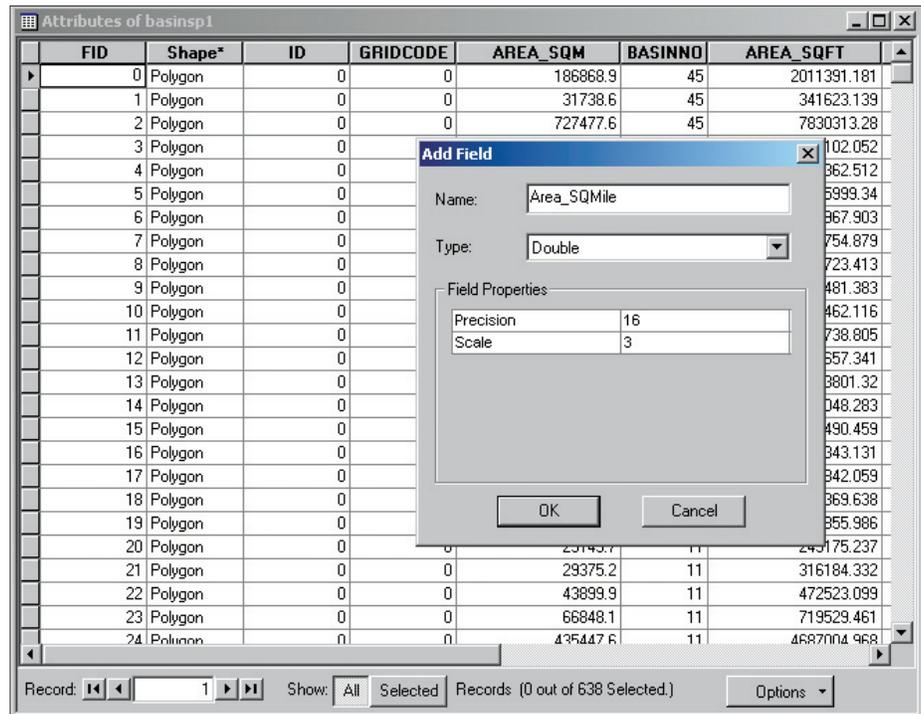
Adding Fields to a Shapefile Attribute Table in ArcGIS

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Attributes, which describe qualities associated with features, are stored in tables. Data attribute type and field properties, such as precision, scale, or length, must be specified when creating fields for the attribute table of a new shapefile or when adding a new field to the attribute table for an existing shapefile. The choice of attribute data type and associated settings affect storage and display and can have serious consequences for the accuracy and efficiency of the underlying database.

In ArcGIS, you can store a value for a feature attribute as one of seven data types—short integer, long integer, float, double, text, date, and binary large object (BLOB). Attribute tables also contain predefined fields that hold data on geometry and the object ID. Float and double data types contain real numeric values and are used for continuous data that is measured or calculated. Short and long integer data types store data that represents numeric values that can be counted or that designate a coded value used for classification. Text data fields can also store coded values or contain descriptive text that characterizes a feature or provides its name. Temporal aspects of a feature, such as when a valve was last tested, are stored as a date type. BLOB data types allow integration of other media such as video, images, or sound. The table in Figure 1 summarizes information on these data types.

Most large organizations manage databases using a schema that specifies fields. Unless you



In ArcMap, right-click on the shapefile. In the Add Field dialog box, choose name and type and set the field properties.

are the database manager for your organization, typically you will only modify the tables associated with data you personally manage. To add a field to a table, you must have write access to the data and no other user or application, including

another ArcMap or ArcCatalog session, can access the data while the table is being edited.

Adding a New Field to a Table Using ArcMap

Before editing a shapefile attribute table, you may want to review the data attribute types and settings for the existing fields in the table.

1. With ArcMap running and the map document containing the shapefile to be modified open, right-click on the shapefile in the Table of Contents and choose Properties from the context menu.
2. In the Layer Properties dialog box, click on the Fields tab. Each attribute table field is listed along with its data attribute type and properties. Click OK to close the Layer Properties dialog box.
3. To begin adding fields to the table, right-click on the shapefile in the Table of Contents and choose Open Attribute Table from the context menu.

Attribute Data Type	Description
Float	One sign bit, seven exponent bits, and 24 mantissa bits
Double	One sign bit, seven exponent bits, and 56 mantissa bits
Short Integer	One sign bit and 15 binary bits with a range of approximately -32 thousand to 32 thousand.
Long Integer	One sign bit and 31 binary bits with a range of approximately -2 billion to 2 billion
Text	Any number of characters stored as bytes. All text values in a field have the same number of characters with trailing blanks
Date	Date values are based on a standard time format that is translated into the current day and time in a the local time zone
BLOB	Complex objects such as images and video

Figure 1: Characteristics of attribute data types

4. Click on the Options button in the table frame and choose Add Field.

5. In the Add Field dialog box, name the new field and select the type. Under Field Properties, set the length for Text or BLOB data types, precision for short or long integer data types, or precision and scale for float or double data types.

6. Click OK to close the dialog box.

Precision is the number of significant digits used to store numbers. The precision of data reflects the level of detail at which a value is kept, not necessarily its accuracy. Determine the level of precision actually needed for your application because the higher the precision setting, the more disk space will be required for storage. Scale, in the context of data attribute types, refers to the number of places to the right of the decimal point.



Once the new shapefile is created in ArcCatalog, access the Shapefile Properties dialog box to add fields and set their properties.

Creating a New Shapefile in ArcCatalog

When creating a new shapefile, FID, Shape, and ID fields are automatically generated but the attribute data types for any other fields you add will need to be specified.

1. Start ArcCatalog and navigate to the location of the folder that will store the new shapefile and select it.

2. Choose File > New > Shapefile from the main menu. In the Create New Shapefile dialog box, name the shapefile, choose the feature type, and set the coordinate system. Check the boxes for M and Z values if you need to store these values. Click OK when finished.

3. Right-click on the newly created shapefile and choose Properties from the context menu.

4. In the Shapefiles Properties dialog box, click on the Fields tab.

5. To create a new field, select the first available blank line by clicking on the tab next to the line. Under Field Name, enter the attribute name. Tab to the Data Type field and click on it to access the drop-down box. Select the appropriate attribute data type.

6. Once the data type has been selected, the field properties for the new field can be set. After setting the field properties, click Apply to finalize edits to this field and add more fields or click OK to finish adding fields and close the Shapefile Properties dialog box.

Fields for shapefile attribute tables can be added, deleted, or edited in ArcCatalog. New fields are often needed to hold values calculated from other fields in the table or to code features that have been selected by location or attribute. **AU**