

FIELD DATA TYPES

One of the essential properties of a field in an attribute table is its data type, which defines the type of information the field can hold. When a new field is added to a table, its data type is specified and can't be changed thereafter. There are several field data types, but those used most often are text (sometimes called "string") and the four numeric types: short integer, long integer, float, and double.

Text fields are for descriptions, codes, non-computational numbers (such as postal codes or telephone numbers), and the like. The default length of a text field is 255 characters. If you know that your entries will be shorter—for example, if you're storing two-letter state abbreviations—you should set the length property accordingly. In the interest of saving space, you can also use codes in place of long descriptions. In a geodatabase, codes and their associated values can be managed through a so-called "attribute domain" (not discussed in this book).

For numeric data, use short or long integers when the values are whole numbers, such as population or number of items sold. Whether to use the short or long integer type depends on how large the numbers are (see the associated table). Use floats or doubles when the values are fractional. Floats store six digits with precision (for example, 12345.6 or 1.23456). Numbers with more digits are stored with some rounding, which may slightly affect calculations. Doubles are stored with 15 digits of precision. Floats are suitable for most statistical calculations, such as population density and average income. Doubles are recommended for fields storing geographic measurements and calculations. ArcGIS Pro uses the "double" type in its Shape_Length and Shape_Area fields.

[Table 4-1](#) summarizes the field data types available for geodatabase feature classes. Not all data types are available for shapefiles.

Table 4-1. Field data types for geodatabase feature classes

Text	Letters, numbers, special characters
Short integer	Whole numbers from –32,768 to 32,767 (uses 2 bytes)
Long integer	Whole numbers from –2,147,483,648 to 2,147,483,647 (uses 4 bytes)
Float	Fractional numbers: precise to 6 digits, then rounded (uses 4 bytes)
Double	Fractional numbers: precise to 15 digits, then rounded (uses 8 bytes)
Date	Dates and/or times
BLOB	Binary large objects, including special feature types such as geodatabase annotation
Raster	Small images
GUID	Unique feature/record identifier for features in distributed geodatabases
ObjectID	Unique feature/record identifier
Shape	Feature geometry type (for example, point, line, or polygon)