This video will demonstrate how to modify an existing GIS dataset or create a new GIS dataset using cursors.
To modify a feature class or a table, the UpdateCursor must be used. The row object must be retrieved for the feature or table row that will be modified.

The row object's **setValue** method can be used to specify a new value for a field that exists in the dataset's attribute table.
Although the field values set for a feature or row, the changes do not take effect until the cursor object is updated. We need to replace the original row object with its revised version in the cursor object.

The cursor object’s `updateRow` method will apply any changes that had been made previously to the row object.
Features or table rows can be deleted when using the update cursor.

To delete a feature, get the feature’s corresponding row object.

Then use the cursor object’s deleteRow method and specify the row object to be deleted.

Note that deletions cannot be undone so it is a good idea to make a copy of the dataset before modifying it.
Example script: editing data

```python
# create update cursor...
rows = arcpy.UpdateCursor("towns.shp")

# for each row object...
for row in rows:
    # get area from field...
    area = row.getValue("Area")

    # set new value for field...
    row.setValue("Area_ha", area/10000)

    # apply changes...
    rows.updateRow(row)

# delete cursor and row objects...
del rows, row
```

This slide shows an example of a script that modifies a shapefile. An update cursor is created for the “towns.shp”. A for loop is used to iterate through each feature in the shapefile. For each feature, the area is calculated and converted from meters to hectares (1 ha = 10,000 sq meters). The feature area is written to the “Area_ha” field and the cursor is updated for the feature’s row object. After the loop completes, the cursor and row objects are deleted to ensure that the file lock is removed.
This slide shows an example of a script in which an update cursor is used to delete features in a shapefile. For each feature in the “towns.shp”, the area is calculated. If the area is less than 50,000, then the feature is deleted using the cursor’s deleteRow method. After the loop completes, the cursor and row objects are deleted.
An insert cursor is used to create entirely new features or table rows. The cursor works with any type of feature class or GIS table (i.e. .dbf, info). Arcpy’s InsertCursor method is used to create the cursor object.

The cursor object’s newRow method is used to create a new row object.

The row object’s setValue method is used to assign a value for a specified field.
After creating a new row object and setting field values, the row object can be inserted into the cursor object.

The cursor object’s `insertRow` method is used to add the new row object to the dataset.
Let's look at an example of a script that creates new rows in an existing table. In this example, we have a list that contains the attribute values that we want to use for each feature – the values for a single feature are contained within a nested list.

Arcpy's InsertCursor method is used to create the cursor object.

The cursor object's **newRow** method is used to create a new row object.

A for loop is used to iterate through each sublist in the dataLst. Note that in the loop headerline, 3 variables are assigned – there is one variable for each item in a given sublist from dataLst.

For each table row, values are set for the “Name”, “Population”, and “area” fields.

The cursor object's insertRow method is used to add the new row object to the table.

After the loop, the cursor and row objects are deleted.
The search and update cursors allow data to be read from any field.

Certain fields in a feature class or raster attribute table cannot be modified.

Rows cannot be deleted from a raster attribute table.

Only one cursor should be used on a given dataset at a time. Iterating through the features or rows in a dataset is a relatively slow operation so avoid reading through the same dataset more than once in a script.

Cursor’s have additional capabilities that we did not discuss in this video – refer to ArcGIS's help documentation for further information.

Next week, we’ll use cursors to work with the spatial aspects of features.