Introduction to GIS with ArcGIS Pro

Working with GIS Data: Populating a Geodatabase

Session 4

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Lecture Outline

- Introduction & Recap (5 minutes)
- Overview of **Geodatabase** in ArcGIS (15 minutes)
- Create a **File Geodatabase** (10 minutes)
- Populate a **File Geodatabase** (20 minutes)
  - Create Data (Point, Polyline and Polygon features)
  - Read Data
  - Update Data
  - Delete Data
- Guided Student Exercise & Q&A (10 minutes)

Course Outline

Week 0: Pre-Course Setup (Self-Paced)

- **Task:** This self-paced module must be completed before the first live class.
- **Topics:** Reviewing system requirements, understanding license options, downloading and installing ArcGIS Pro, and successfully signing in using the provided guidance.

Week 1: Getting Started with ArcGIS Pro

- **Class 1:** Introduction to ArcGIS Pro and Project Structure
- **Class 2:** Map Navigation and Data Exploration

Week 2: Working with GIS Data

- **Class 3:** Connecting to Data Sources
- **Class 4:** Populating a Geodatabase

Week 3: Coordinate Systems

- **Class 5:** Understanding Coordinate Systems
- **Class 6:** Managing Projections and Transformations

Recap of Season 3

GIS Data Types - Vector & Raster

Adding data from various sources in ArcGIS Pro

Geodatabase

in ArcGIS

Geodatabase

Database for GIS data.

Used in ArcGIS Pro and many other Esri products.

Stores Geometry, Attribute, Projection, Topology and other related Data/Information.

Efficient and better than folder/file-based GIS data.

A single location for multiple GIS layers/feature class.

Geodatabase *cont…*

At its most basic level, an **ArcGIS geodatabase** is a collection of geographic datasets of various types held in a common file system folder, or a multi-user relational database management system such as IBM Db2, Microsoft SQL Server, Oracle, PostgreSQL, or SAP HANA.

https://pro.arcgis.com/en/pro-app/latest/help/data/geodatabases/overview/what-is-a-geodatabase-.htm

Type of Geodatabase

File geodatabases

A file geodatabase is stored as multiple files in a folder with a **.gdb** extension. Each dataset is contained in a single file. By default, files can grow to 1 TB, but this can be changed to 4 or 256 TB using a configuration keyword.

Mobile geodatabases

A mobile geodatabase is stored in an SQLite database that is entirely contained in a single file and has a .geodatabase extension.

Enterprise geodatabases

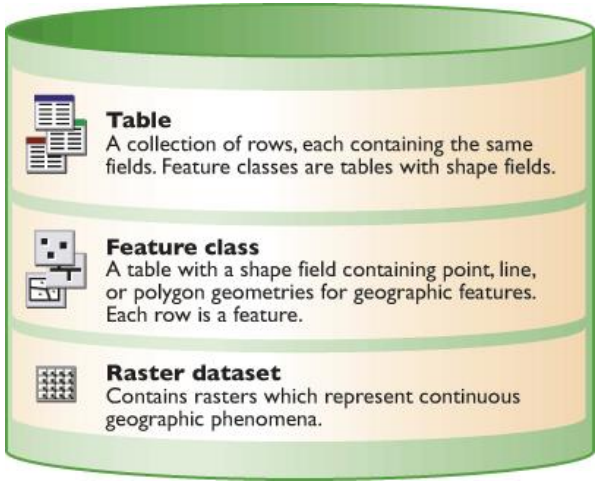
Also known as **multiuser** geodatabases, enterprise geodatabases are stored in relational databases. They can be virtually unlimited in size and number of users; the limits differ depending on the database management system (DBMS) vendor.

https://pro.arcgis.com/en/pro-app/latest/help/data/geodatabases/overview/types-of-geodatabases.htm

Fundamental datasets in the geodatabase

A key geodatabase concept is the dataset. It is the primary mechanism used to organize and use geographic information in ArcGIS. The geodatabase contains three primary dataset types:

- Feature classes
- Raster datasets
- Tables



File Geodatabase

in ArcGIS

Create a file geodatabase

- Use the Catalog pane in ArcGIS Pro
- Run the Create File Geodatabase tool
- Run a Python script

Populate a File Geodatabase

CRUD Operation

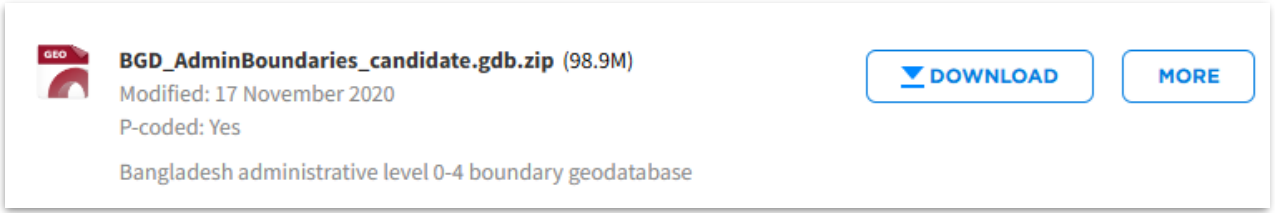
- Create
- Read
- Update
- Delete

Demo

Download a File Geodatabase

Download administrative boundary data of Bangladesh in File Geodatabase format.

https://data.humdata.org/dataset/cod-ab-bgd



Demo

- Add a File Geodatabase in a ArcGIS Pro Project (READ)
- Create File Geodatabase (CREATE)
- Create Feature Class Manually (CREATE)
- Create Feature Dataset (CREATE)
- Populate a Feature Class by digitizing (CREATE)
- Create Feature Class by import Data (CREATE)
- Update a Feature Class (UPDATE)
- Delete a Feature Class (DELETE)

Exercise

1. Create a File Geodatabase
2. Create Point, Polyline and Polygon Feature Class
3. Create new feature by digitizing
4. Create new feature by importing Shapefile in File Geodatabase

Preview for Season 5

- Understanding Coordinate Systems.
- How to discover and transform Coordinate systems.

References

What is a Geodatabase?

https://pro.arcgis.com/en/pro-app/latest/help/data/geodatabases/overview/what-is-a-geodatabase-.htm