Administering your Enterprise Geodatabase using Python

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2019 **Esri DEV**Summit **Conference** | Palm Springs, CA

Assumptions

- Basic knowledge of python
- Basic knowledge enterprise geodatabases and workflows
- You want code

- Please turn off or silence cell phones

Roadmap

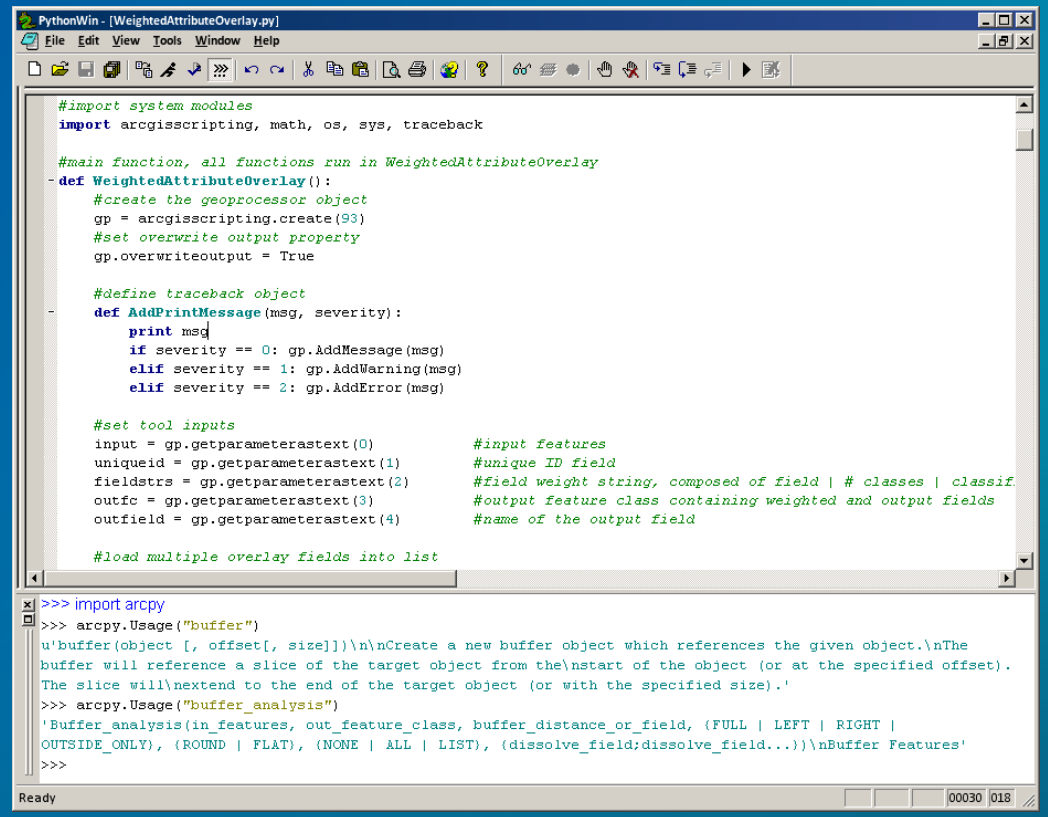
Session is divided into three parts

- **Part 1: Types of administrators**
- **Part 2: Geodatabase Creation**
- **Part 3: Version Management**

- **Demos throughout**

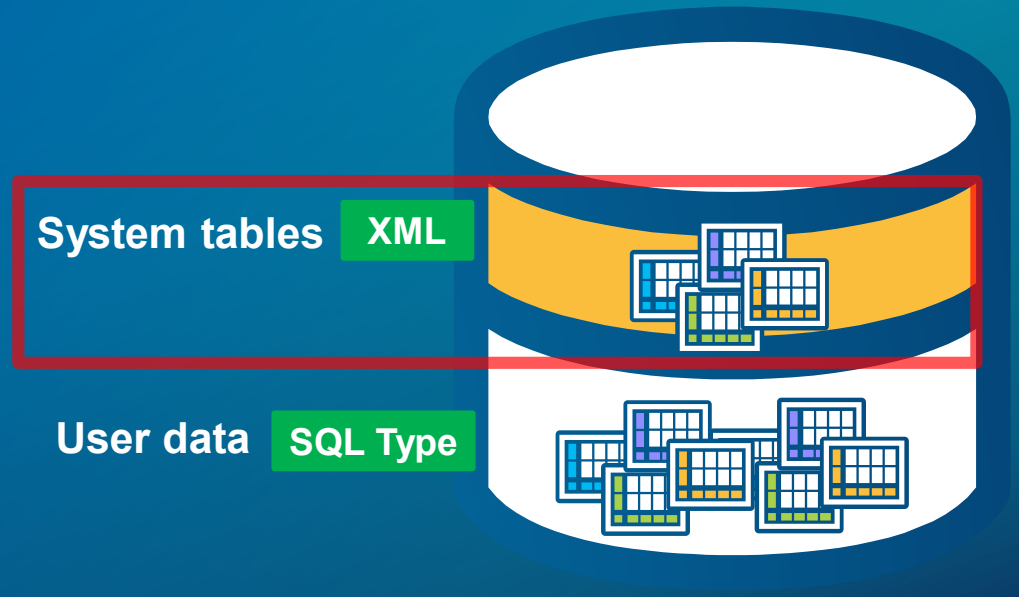
Python

- Free
- Simple and easy to learn
- Easy to maintain
- Wide-acceptance
- Modular
- Cross platform
- Scheduling



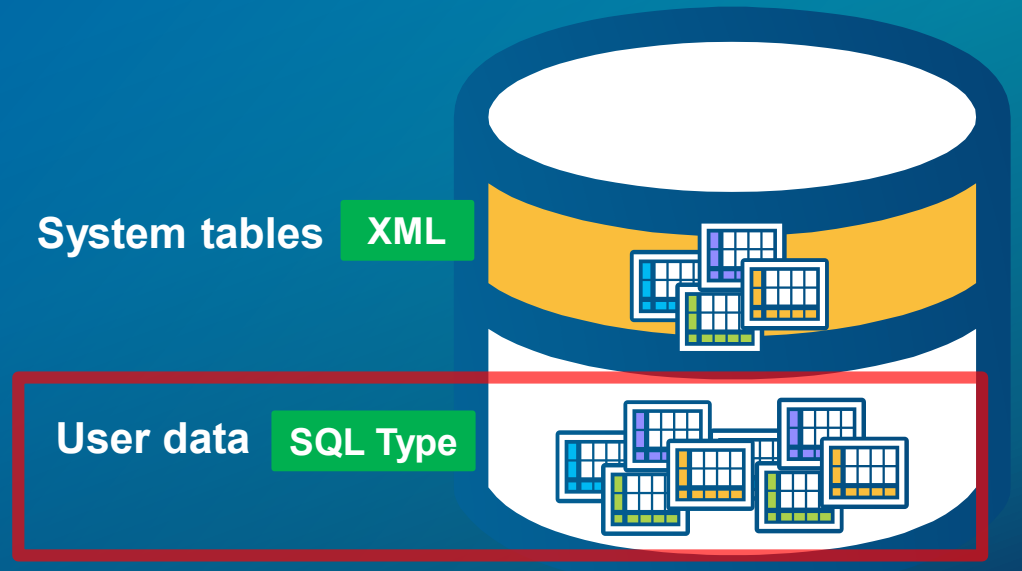
Geodatabase system tables

- System tables store definitions, rules, and behavior for datasets
- Tracks contents within a geodatabase
- Stores some database level metadata
  - Versions, domains, etc.
- Admin operations:
  - Geodatabase upgrade
  - Connection management
  - Version management



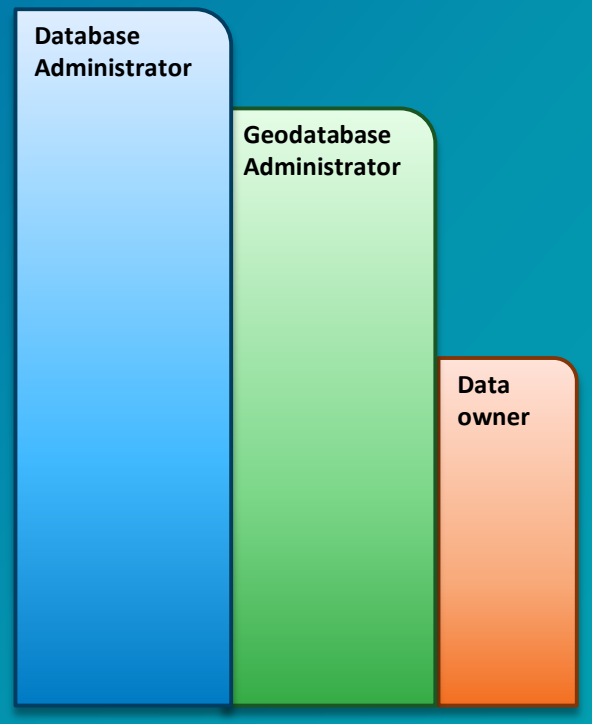
User-defined tables

- Stores the content of each dataset in the geodatabase
  - Datasets are stored in one or more tables
- Administrative Operations:
  - Grant/revoke privileges
  - Update statistics/indexes
  - Register as versioned
  - Add global id's
  - Enable editor tracking
  - Enable Archiving



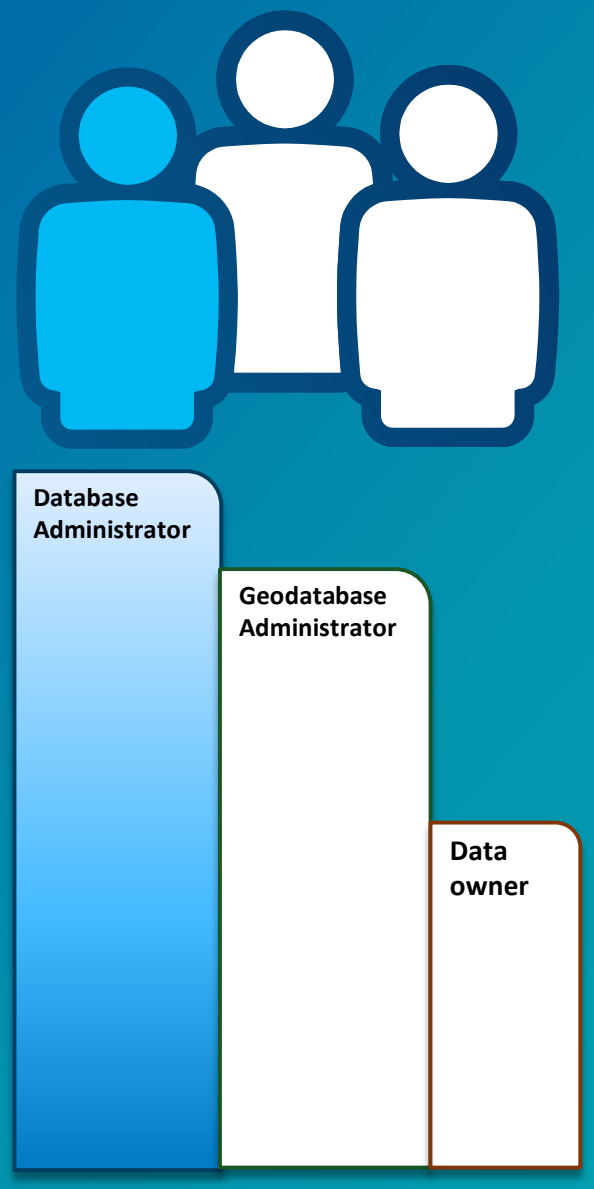
Types of administrators

- Database administrator (DBA)
- Geodatabase administrator
- Data owner (aka dataset administrator)
- May or may not be the same person.



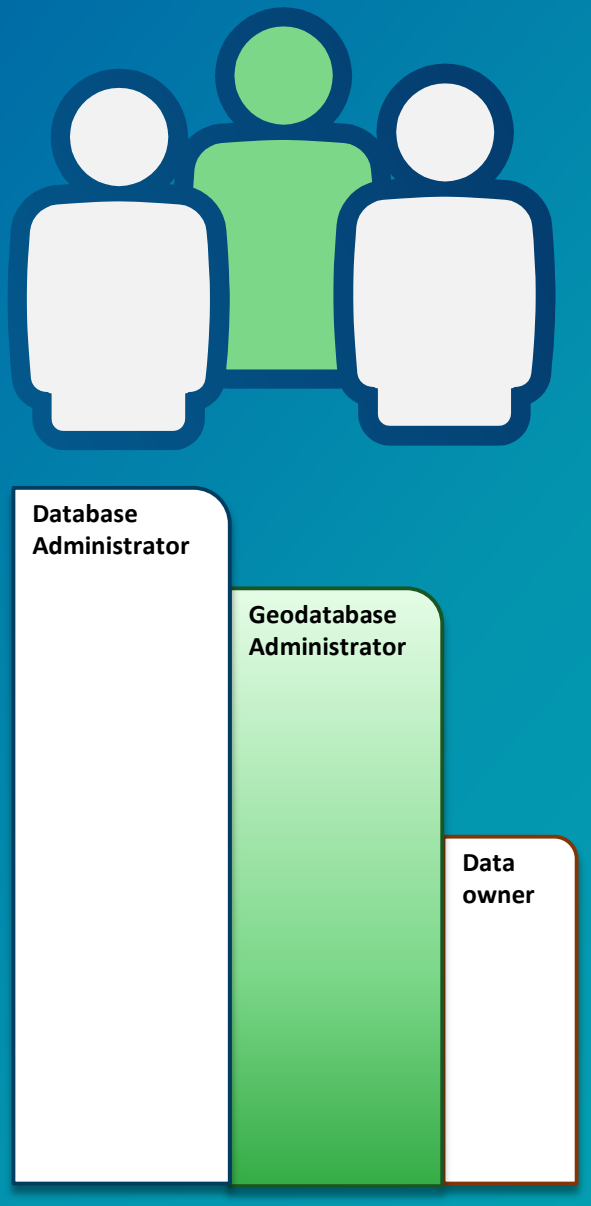
Database Administrator

- Instance level admin
- User management
- Database backup
- System security
- Performance monitoring
- DBMS client software



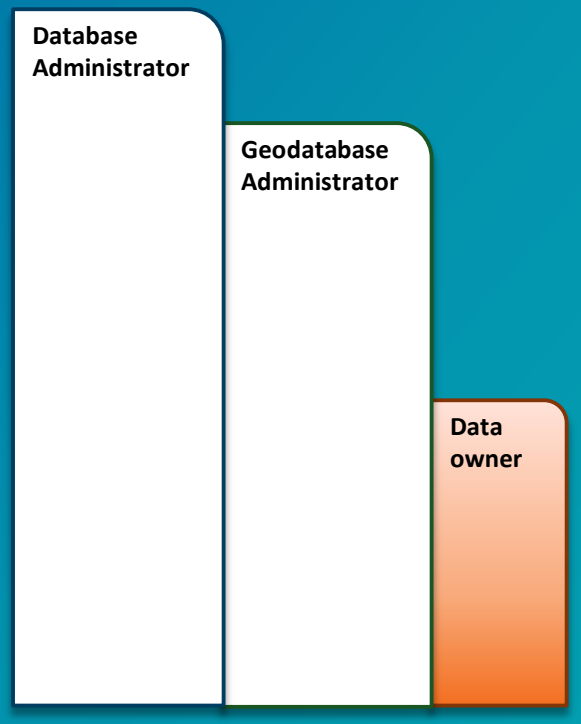
Geodatabase Administrator

- Owns the geodatabase repository
- Can edit any versioned data
- Perform compress



Data Owner

- Dataset administrator
  - Granting privileges to data
  - Modifying schema of data
  - Enabling Geodatabase behavior on the data tables
  - Statistics and index maintenance of the data tables

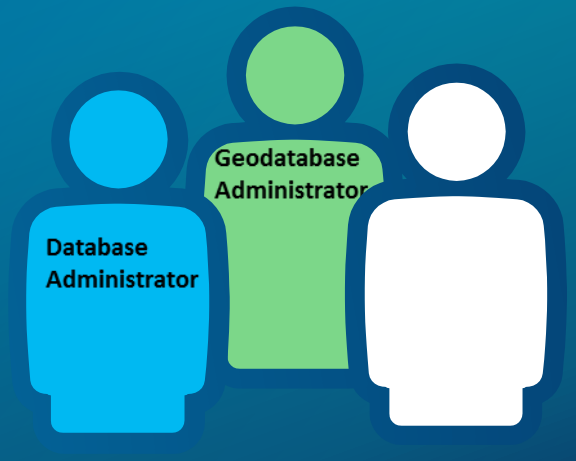


Database Admin Workflows

Creating Enterprise Geodatabases

- Create Enterprise Geodatabase tool

  When you have a need for:
  - Creating testing or development environments
  - Database does not already exist
- Enable Enterprise Geodatabase tool
  - When you have an existing database



Creating Users

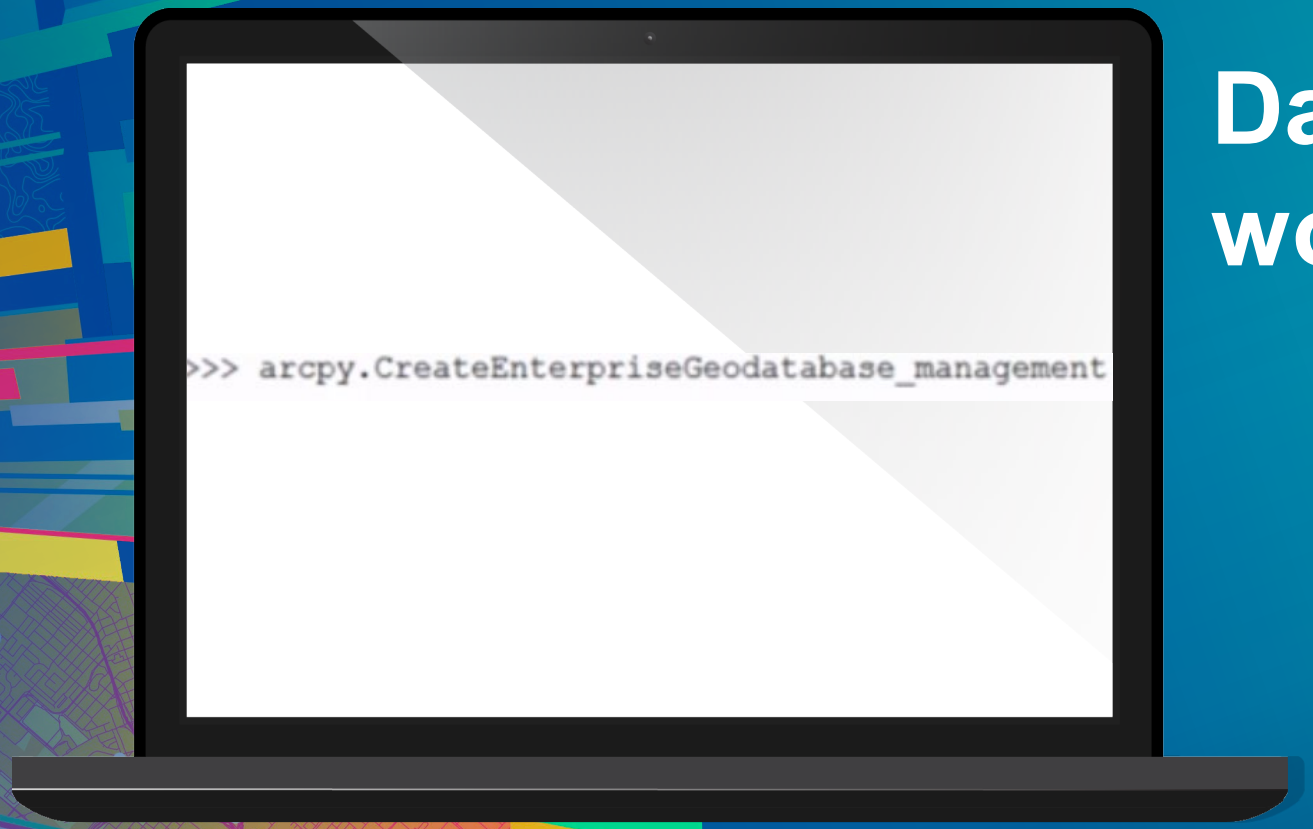
- Create database user tool
- Creates a user in enterprise geodatabase or database
- Cannot create geodatabase administrative user

- https://pro.arcgis.com/en/pro-app/tool-reference/data-management/create-database-user.htm

Creating Database Roles

- Makes it easier to assign privileges to a group
- Prior to creating users in the geodatabase
- When creating users you can assign them to a role

Demo 1



Database Admin workflow

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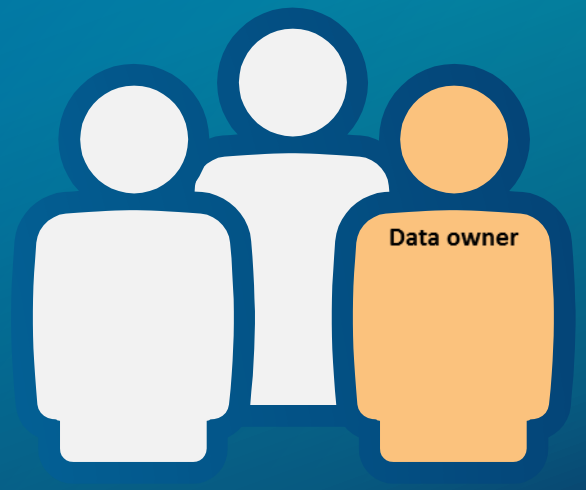
Dataset Admin Workflows

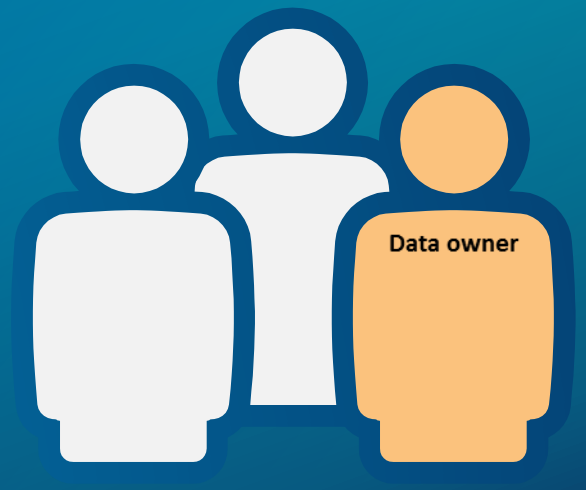
Creating and Loading Data

- Numerous tools for creating any type of data:
  - Create table, Create feature class, Create Raster Dataset, etc.
  - Create Geometric Network, Create Topology, Create Domain, etc.
- Also tools for loading data:
  - Feature class to feature class (single)
  - Feature class to geodatabase (multiple)
  - Import XML workspace
  - Append

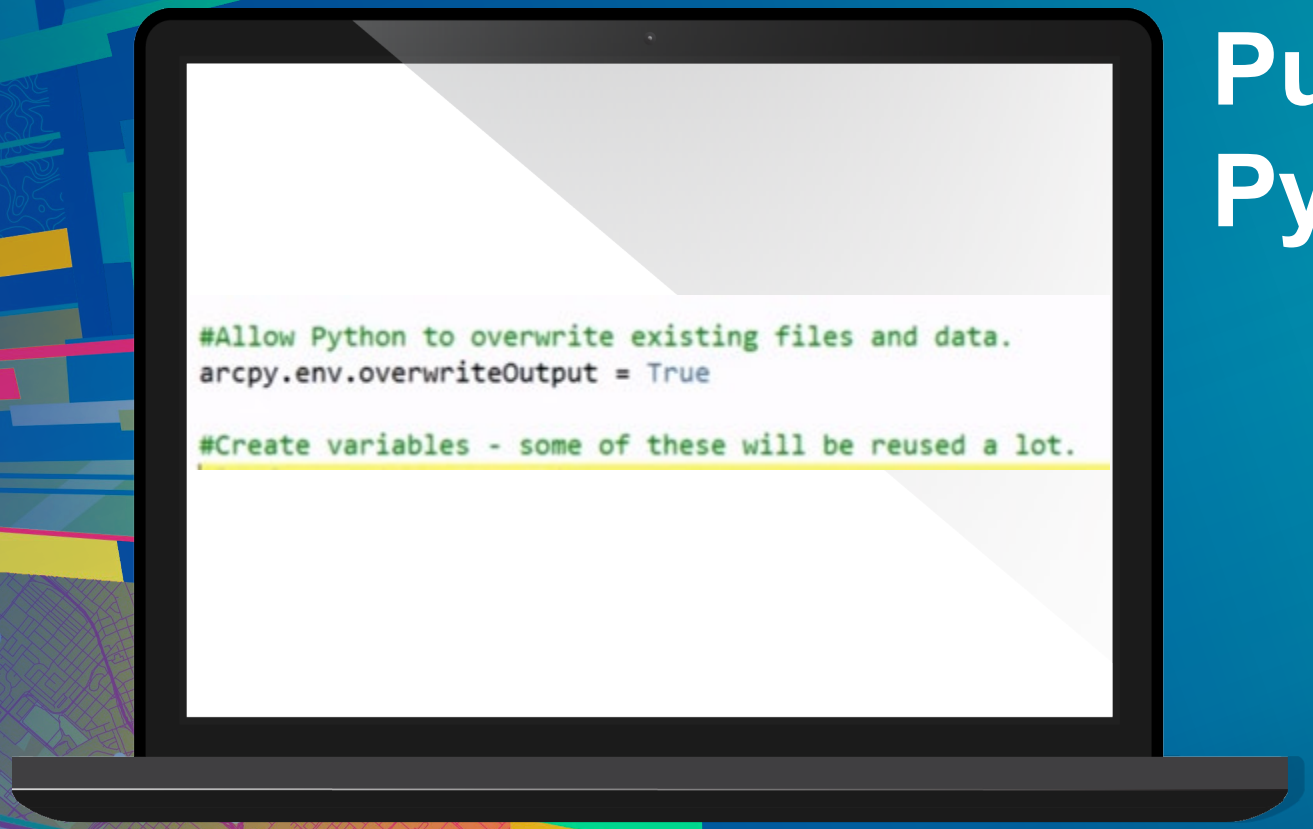


Managing privileges

- Allow other users of the geodatabase to view or edit data that you own
- Change privileges tool
- Allows multiple input datasets to be passed in
- Grant view only or view and edit
  - View = select
  - Edit = insert, update, delete



Demo 2



Putting it together via Python

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Disconnecting user connections

- A user who is connected but has gone home
- Create a cold backup of the database
- Running large queries that are using up resources

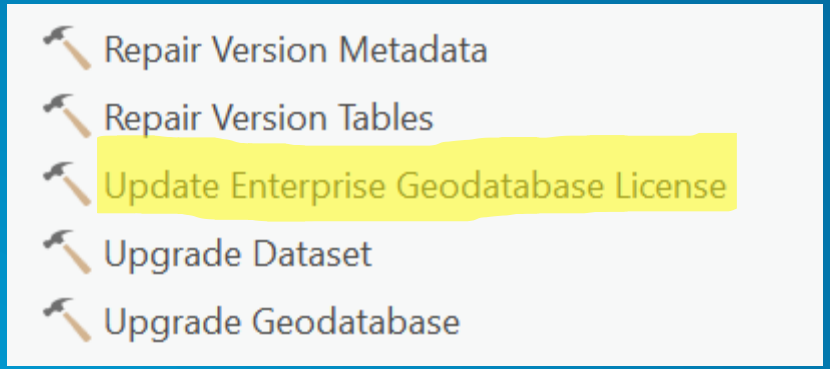
Managing user connections with arcpy functions

- Block/allow connections
  - `arcpy.AcceptConnections`
  - Provide boolean
- Finding connected users
  - `arcpy.ListUsers`
  - Returns a tuple of properties for each connected user
  - ID, name, machine name, connection time, connection type
- Disconnecting users
  - `arcpy.DisconnectUser`
  - Use ids provided from listusers function or use ‘ALL’ keyword

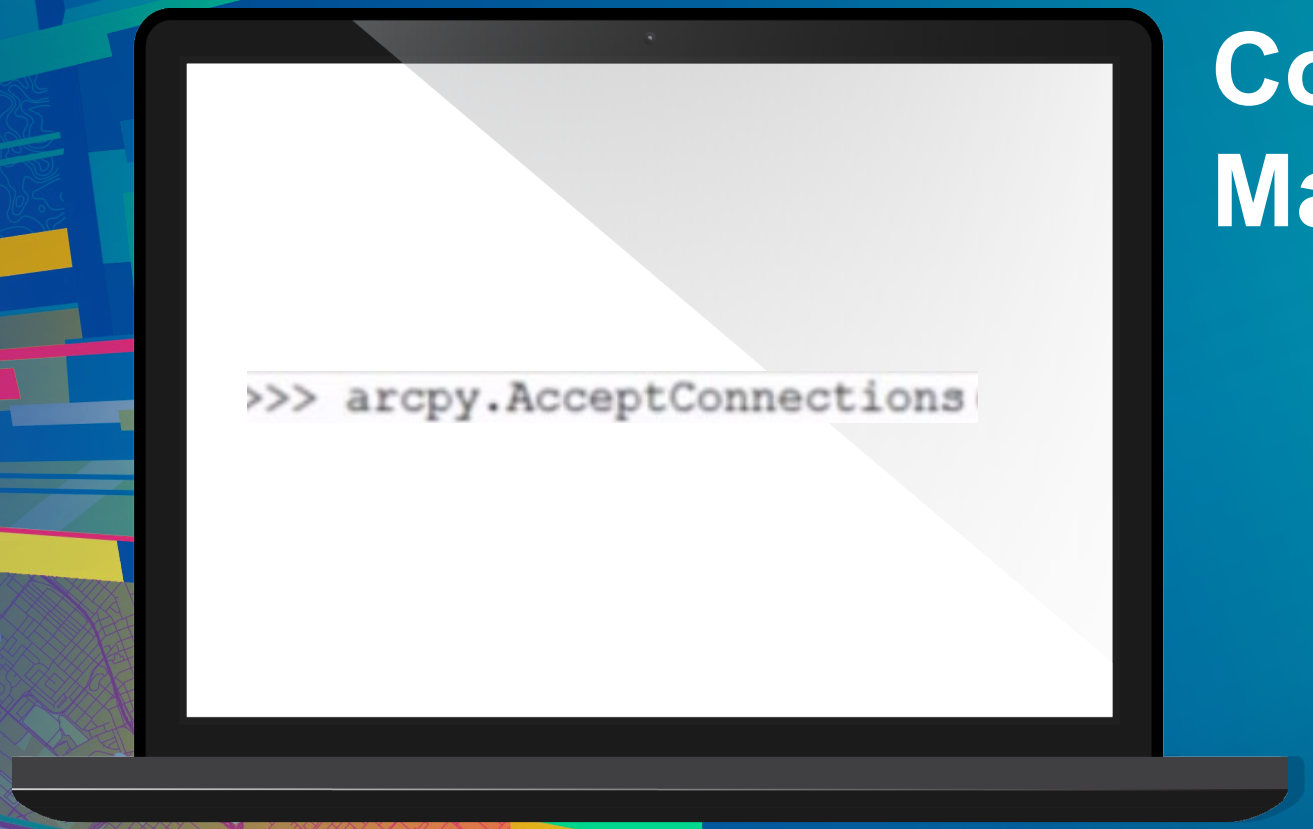
Disconnecting services

- Services connect as regular users
- Disconnecting all users will disconnect services
- ArcGIS Server logic will try to reconnect
- Workflow:
  - Block connections
  - Stop service
  - Perform administrative tasks
  - Allow connections
  - Start service

Update Geodatabase license



Demo 3



Connection Management

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Geodatabase Admin Workflows

Parts of the version administration workflow

- Reconciling, posting, compressing
- Updating statistics and indexes on system tables
- Updating statistics and indexes on user data tables

Reconciling and Posting Versions

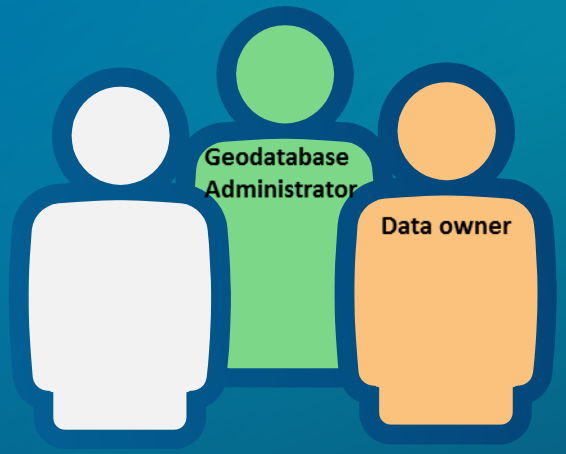
- Reconcile = pulling changes from a parent to child version
- Post = pushing reconciled changes to parent version from child
- Reconcile versions tool
- Recommended to run as geodatabase administrator

Compressing your geodatabase

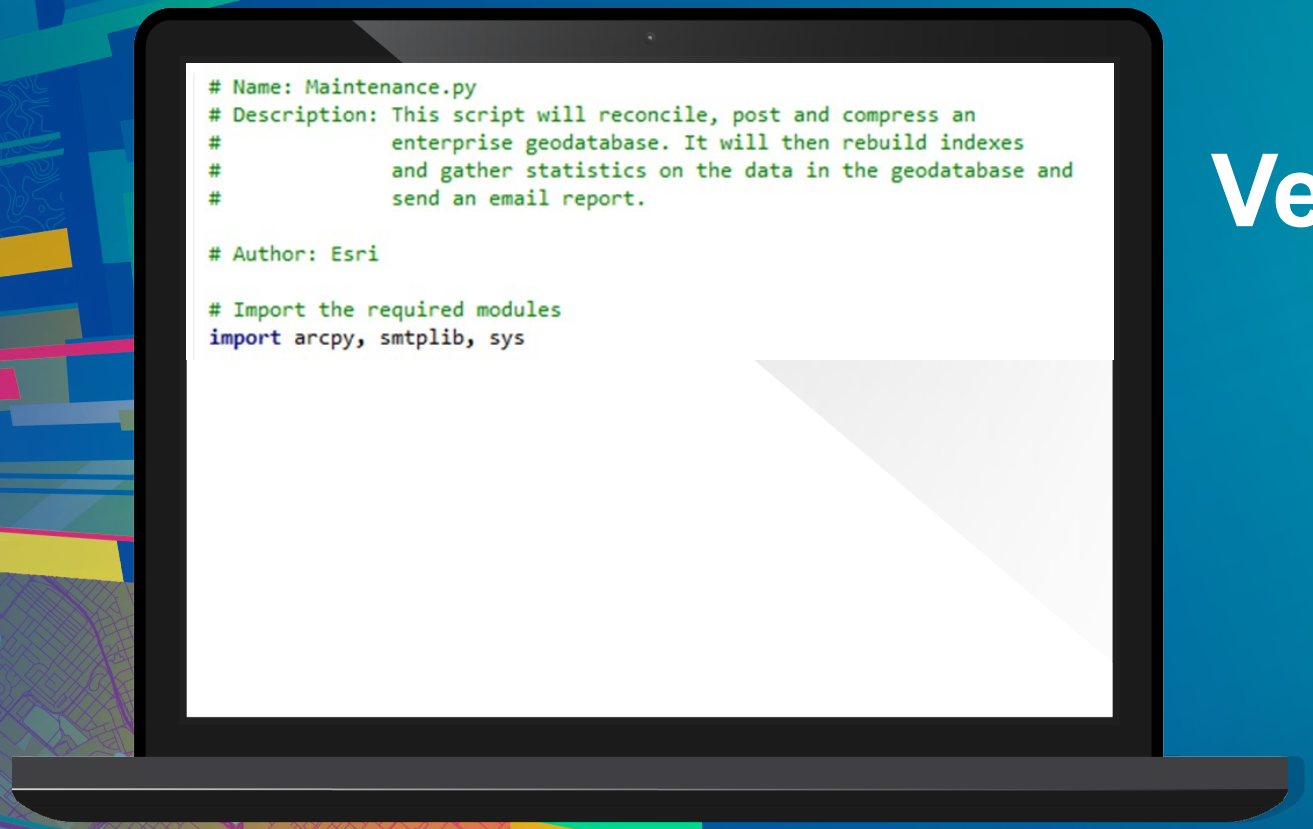
- Compress geoprocessing tool
- Run regularly
  - Trims states
  - Moves edits from delta tables

Indexes and Statistics

- Update after major ‘data change’ events
  - Reconcile
  - Compress
  - Appending data
  - Typically not necessary after loading new data
- Can be done by both:
  - Geodatabase Admin (system tables)
  - Data owner (data tables)
- We suggest to run these tools as required.



Demo 4



Version Maintenance

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Summary

Other sessions…

ArcGIS API for Python: Advanced Scripting - 9948 -> Primrose B

Thursday 3/7/2019 -> 9.00 AM- 10.00AM

ArcGIS API for Python for Analysts and Data Scientists – 9973 -> Primrose C- D

Thursday 3/7/2019 -> 10.30 AM – 11.30 AM

ArcGIS API for Python: Getting to know Pandas and the Spatial Enabled DataFrame- 10299-> Smoketree A- E

Thursday 3/7/2019 -> 1.00 – 2.00 PM

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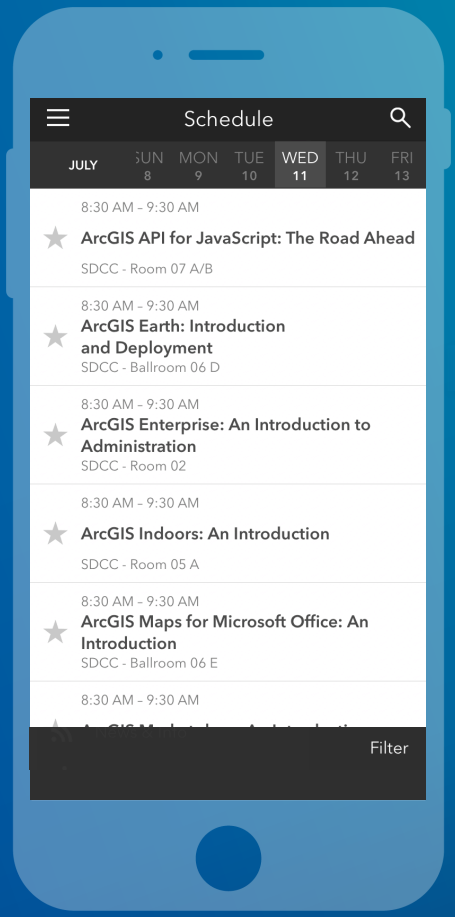

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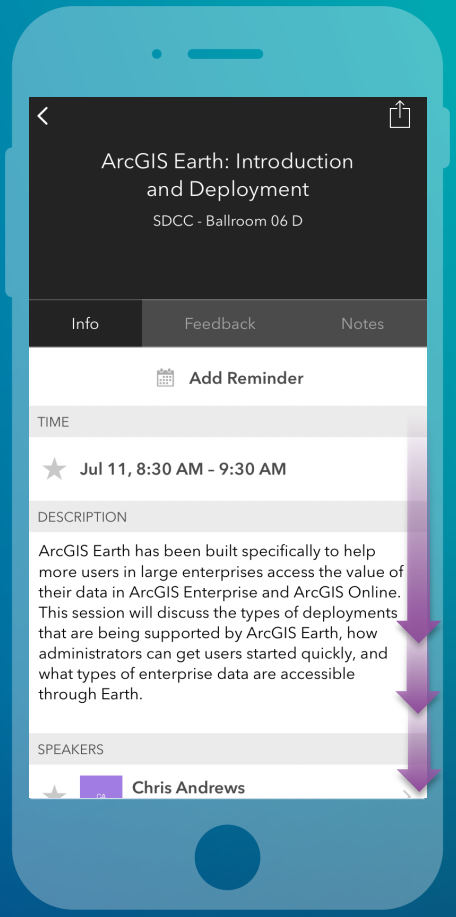
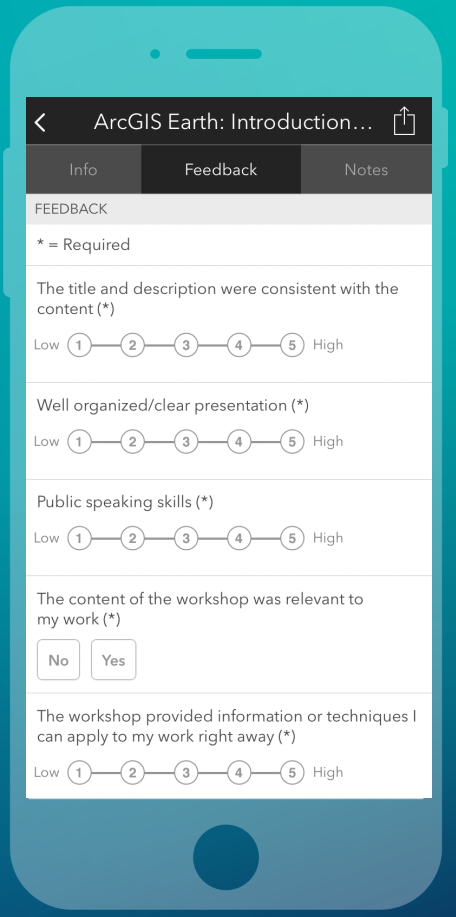


Complete answers and select “Submit”



Slides and Code
http://esriurl.com/PyGDB2019

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