Visual Programming with ArcGIS ModelBuilder

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What is ModelBuilder?

- A built-in application in ArcGIS Desktop & ArcGIS Pro designed for creating reusable and sharable geoprocessing workflows
- It’s visual programming tool – you drag-and-drop data and tool elements and connect them to form a workflow
Creating a Model
Model Example & Model States
Not Ready to Run

Diagram:
- Input File System Directory
- Iterate Feature Classes
- Name
- Dataset
- Copy Features
- Dataset in Geodatabase
Model Example & Model States
Ready to Run
Why Use ModelBuilder?

- Automate geoprocessing workflows
  - Repeatability
- Visually represent workflows
- Run a complex succession of processes as one tool
- Share geoprocessing workflows with others
- Preserve institutional memory
Exporting

- To graphic
- To python script

```python
# coding: utf-8
#
# model.py
# Created on: 2018-03-19 13:19:06.00000
# {generated by ArcGIS/ModelBuilder}
#
# -----------------------------

# Import arcpy module
import arcpy

# Local variables:
v2016_30m_Cropland_Data_Layer = "2016 30m Cropland Data Layer"
Idaho_County_Boundaries = "D:\gis_project_work\model_builder_example\arcgis\countySelect = "in_memory\countySelect"
countySelect_Dissolve = "C:\Users\bgodfrey\Documents\ArcGIS\Default.gdb\Cropland_Data_Layer_AOI = "D:\gis_project_work\model_builder_example\arcgis\Cropland_Data_Layer_IDTMG3 = "D:\gis_project_work\model_builder_example\arcgis\cull_2016_aoi_idtmG3_alfalfa = "D:\gis_project_work\model_builder_example\arcgis"

# Process: Select
arcpy.Select_analysis(Idaho_County_Boundaries, countySelect, """"NAME"" = 'BEHER

# Process: Dissolve
arcpy.Dissolve_management(countySelect, countySelect_Dissolve, "DISTCAT", ",

# Process: Clip
arcpy.Clip_management(v2016_30m_Cropland_Data_Layer, ",1724218.95268598 220323

# Process: Project Raster
arcpy.ProjectRaster_management(Cropland_Data_Layer_AOI, Cropland_Data_Layer_IDTMG3, 

# Process: Extract by Attributes (Only Alfalfa)
arcpy.gp.ExtractByAttributes_sa(Cropland_Data_Layer_IDTMG3, "Class_Name = 'Alf
```
View

• Model report

Model Report

Generated on: Mon Mar 19 13:17:28 2018

Variables

- 2016 30m Cropland Data Layer
- Idaho County Boundaries
- countySelect
- countySelect_Dissolve
- Cropland Data Layer AOI
- Cropland Data Layer IDTM83
- cdl_2016_aoi_idtm83_alfalfa

Processes

- Select
- Dissolve
- Clip
- Project Raster
- Extract by Attributes (Only Alfalfa)
Iterators

Looping within a model

In Memory Workspace

If you (or intended users) need to be able to select a data variable (i.e. feature class) or value variable (i.e. SQL expression)
Documenting Models

- Similar approach to other items in ArcGIS
  - Right click the model in Catalog window
  - Click “Item Description”
  - Click the “Edit” button in window
- See “A quick tour of documenting tools and toolboxes”
Sharing geoprocessing workflows

- Geoprocessing package
- Geoprocessing service
Learning Opportunities
ArcGIS Desktop

- Building Models for GIS Analysis Using ArcGIS
  - https://www.esri.com/training/catalog/57630437851d31e02a43f219/building-models-for-gis-analysis-using-arcgis/

- Creating Tools with ModelBuilder
Learning Opportunities
ArcGIS Pro

- **Building Geoprocessing Models Using ArcGIS Pro**
  - [https://www.esri.com/training/catalog/57630433851d31e02a43eebc/building-geoprocessing-models-using-arcgis-pro/](https://www.esri.com/training/catalog/57630433851d31e02a43eebc/building-geoprocessing-models-using-arcgis-pro/)

- **ModelBuilder Tutorial**
Let’s Make a Model

- Demonstration
Contact Information

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