Watershed Delineation Tool

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GEOG 490

Major Function

- Delineate Watersheds in a study area using the Geoprocessor method.
  - With a single click, 8 separate ArcMap tools will be run.
- The tool is accessed through a Dockable Window

Background

- Why would such a tool be needed?
  - Save Time
  - Allow inexperienced users to perform complex raster analysis
  - Scale can be adjusted quickly

Challenges & Breakthroughs

- Construction
- Design that allows use with any DEM
  - Setting the first input raster
- Debugging
  - Unexplained Crashes
    - MsgBox(“.”) & Console.writeline
- A better understanding of code construction

Geoprocessor Construction

```
Private Sub GeoprocessorWatershed()

    Dim GP As IGeoProcessor = New ESRI.ArcGIS.Geoprocessing.GeoProcessor

    'Set the workspace environment
    GP.OverwriteOutput = True
    GP.SetEnvironmentValue("workspace", TxtOutputPath.Text)

    'Set up the arry of parameters
    Dim pParam As IVariantArray = New VarArray
    pParam.Add("Fdir") 'input
    pParam.Add("StrmLink") 'input
    pParam.Add("Watershed") 'output
    pParam.Add("Value")

    'Execute the watershed tool
    GP.Execute("Watershed", pParam, Nothing)

End Sub
```

Add Raster Layer

```
Public Shared Sub BrowseRaster()
    'Use GxDialog to browse layers
    Dim pGxDialog As IGxDialog = New GxDialog
    'Set filter to inly look for RasterDataSets
    Dim pFilter As IGxObjectFilter = New GxFilterRasterDatasets
    Dim pGxObject As IEnumGxObject = New GxObjectArray
    pGxDialog.ObjectFilter = pFilter
    Dim bObjectSelected As Boolean = pGxDialog.DoModalOpen(My.ArcMap.Appl

    If bObjectSelected Then
        Dim pGxDataset As IGxDataset = pGxObject.Next
        Dim pRLayer As IRasterLayer = New RasterLayer
        pRLayer.CreateFromDataset(pGxDataset.Dataset)

        Dim pMxDoc As IMxDocument = My.ArcMap.Document
        Dim pMap As IMap = pMxDoc.FocusMap

        'Add Layer to map
        pMap.AddLayer(pRLayer)
        pMxDoc.ActiveView.Refresh()
    End If
End Sub
```

Executing Tool

```
Private Sub BtnDelineate_Click(ByVal sender As System.Object, ByVal e As System.Event

    'This button will execute all of the tools in the correct order
    Dim pMxDoc As IMxDocument = My.ArcMap.Document
    Dim pMap As IMap = pMxDoc.FocusMap
    Dim pRLayer As IRasterLayer = pMxDoc.SelectedLayer

    If pRLayer Is Nothing Then 'ask user to select a raster layer
        MsgBox(" Please Select Raster Layer")
        Exit Sub
    End If

    'Enable the spatial analyst toolbox
    BA_Enable_SAExtension(My.ArcMap.Application)

    'run tempFlowDirection Geoprocessor
    GeoprocessorTempFlowDirection(pRLayer)

    'run sink tool geoprocessor
    GeoprocessorSink()

    'run Fill tool geoprocessor
```