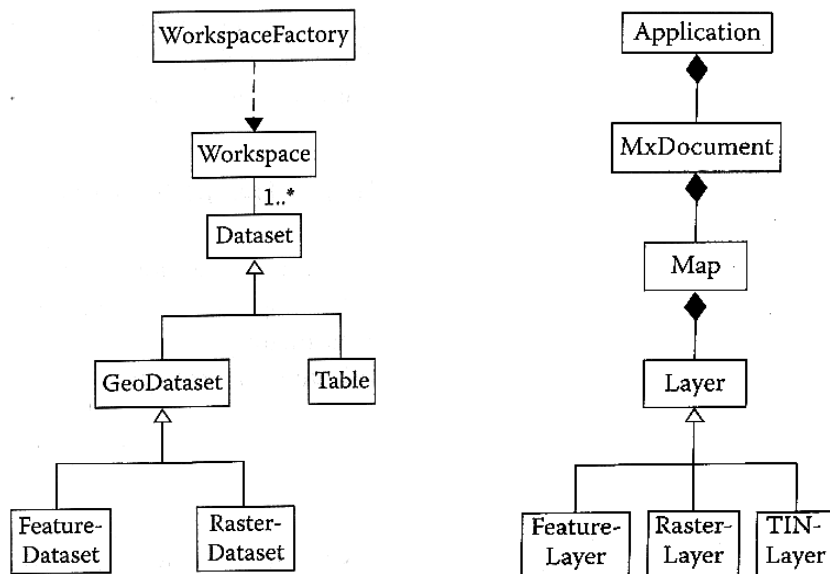
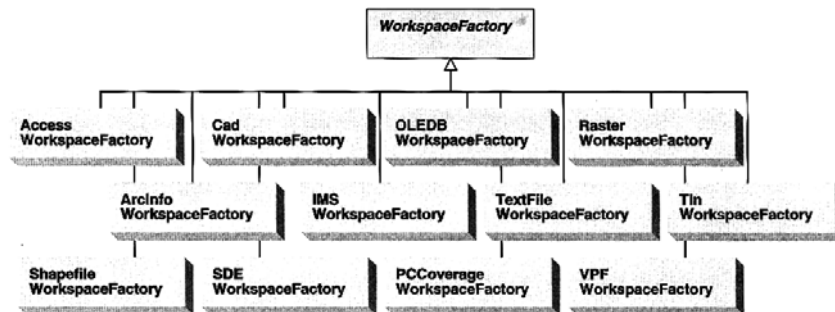


Raster

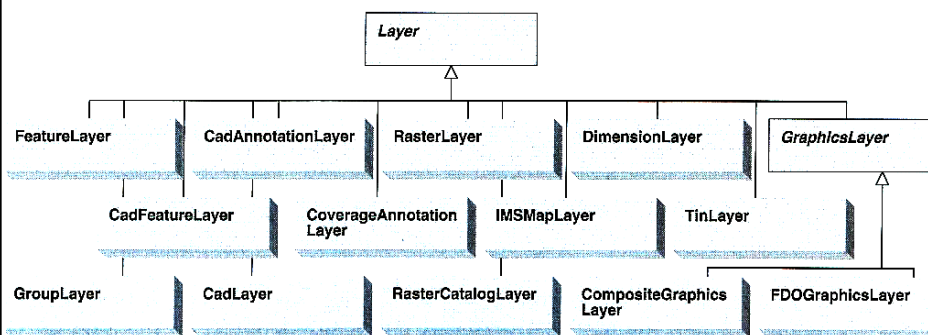
Access Raster Layer



RasterWorkspaceFactory

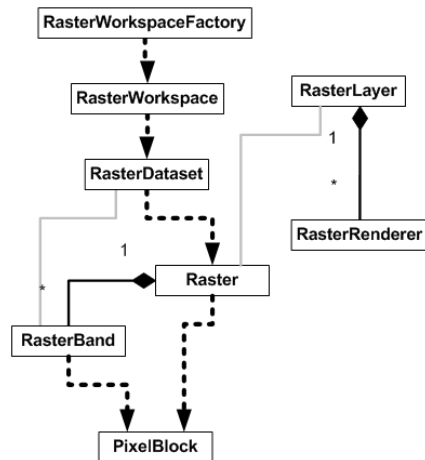


RasterLayer



Raster Objects

- **RasterDataset**: GRID, Tiff
- **Raster**: runtime virtual copy of a RasterDataset
- **RasterBand**: Bands in a RasterDataset
- **RasterLayer**: visual representation of a raster
- **PixelBlock**: A container of pixels
- **RasterDescriptor**: The “selectionset” of a raster query
- **Operator Objects**:
 - RasterExtractionOp
 - RasterReclassOp
 - RasterMathOp
 - RasterLocalOp
 - RasterNeighborhoodOp
 - RasterZonalOp



Access Raster Layers

Direct Access

```
Dim pRLayer As IRasterLayer
pRLayer.CreateFromFile "H:\GEOG490\Data\plne"
```

Via WorkspaceFactory

```
Dim pWkspFactory As IWorkspaceFactory
Set pWkspFactory = New RasterWorkspaceFactory

Dim pWksp As IRasterWorkspace
Set pWksp = pWkspFactory.OpenFromFile("H:\GEOG490\Data", 0)

Dim pRDataset As IRasterDataset
Set pRDataset = pWksp.OpenRasterDataset("plne")

Dim pRLayer As IRasterLayer
pRLayer.CreateFromDataset pRDataset
```

Via GxDialog

```
Dim pFilter As IGxObjectFilter
Set pFilter = New GxFilterRasterDatasets

Dim pGxObject As IEnumGxObject
'bObjectSelected = pGxDialog.DoModalOpen(ThisDocument.Parent.hWnd, pGxObject)
Dim pGxDataset As IGxDataset
Set pGxDataset = pGxObject.Next

Set pRLayer = New RasterLayer
pRLayer.CreateFromDataset pGxDataset.Dataset
```

RasterQuery

Get Raster Layer

```
Dim pLayer As IRasterLayer
Dim pRaster As IRaster
Set pLayer = pMap.Layer(0)
Set pRaster = pLayer.Raster
```

Setup QueryFilter

```
Dim pQFilter As IQueryFilter
Set pQFilter = New QueryFilter
pQFilter.WhereClause = "Value = 2"
```

Create RasterDescriptor

```
Dim pRasDes As IRasterDescriptor
Set pRasDes = New RasterDescriptor
pRasDes.Create pRaster, pQFilter, "value"
```

Use RasterDescriptor

```
Dim pConOp As IConditionalOp
Dim pOutputRaster As IGeoDataset
' Run conditional operation.
Set pConOp = New RasterConditionalOp
Set pOutputRaster = pConOp.Con(pRasDes, pRasDes)
```

Display OP result

```
Dim pOutputLayer As IRasterLayer
Set pOutputLayer = New RasterLayer
pOutputLayer.CreateFromRaster pOutputRaster
pOutputLayer.Name = "QueryOutput"
pMap.AddLayer pOutputLayer
```

MakePermanent

Specify output file/wksp

```
Dim pWSF As IWorkspaceFactory
Dim pWS As IRasterWorkspace
Set pWSF = New RasterWorkspaceFactory
Set pWS = pWSF.OpenFromFile _
(pGxDialog.FinalLocation.FullName, 0)
```

Get raster from layer

```
Dim pRasterLy As IRasterLayer
Dim pRaster As IRaster
Set pRasterLy = pMap.Layer(0)
Set pRaster = pRasterLy.Raster
```

Get rasterdataset from the 1st band of the raster

```
Dim pRasBandC As IRasterBandCollection
Dim pRasterDS As IRasterDataset
Set pRasBandC = pRaster
Set pRasterDS = pRasBandC.Item(0).RasterDataset
```

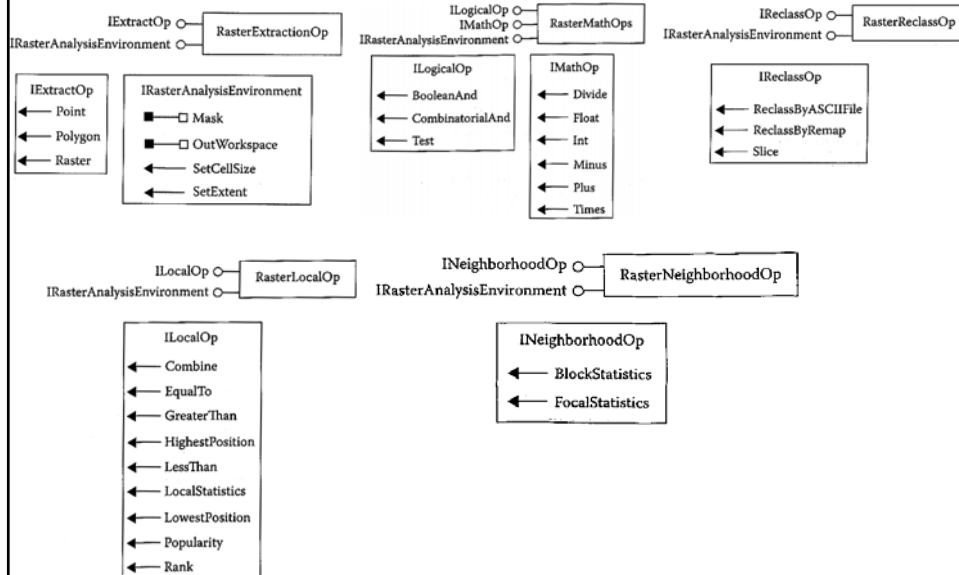
Define temporary dataset

```
Dim pTempDS As ITemporaryDataset
Set pTempDS = pRasterDS
```

Make permanent

```
' Format can be "GRID", "TIFF", or "IMAGINE Image"
' Note: format string is Case sensitive
pTempDS.MakePermanentAs pGxDialog.Name, pWS, "GRID"
```

Raster Operations



FocalStatistics Example

' Create the RasterNeighborhoodOp object

```
Dim pNbrOp As INeighborhoodOp
Set pNbrOp = New RasterNeighborhoodOp
```

' Create the neighborhood object

```
Dim pNbr As IRasterNeighborhood
Set pNbr = New RasterNeighborhood
pNbr.SetCircle 3, esriUnitsCells
```

' Call a function to open a raster dataset

```
Dim pInputDataset As IGeoDataset
Set pInputDataset = OpenRasterDataset ("D:\SpatialData\","inputraster")
```

' Create output using the method

```
Dim pOutputRaster As IRaster
Set pOutputRaster = pNbrOp.FocalStatistics(pInputDataset, _
    esriGeoAnalysisStatsMajority, pNbr, False) 'set ignore nodata to false
```

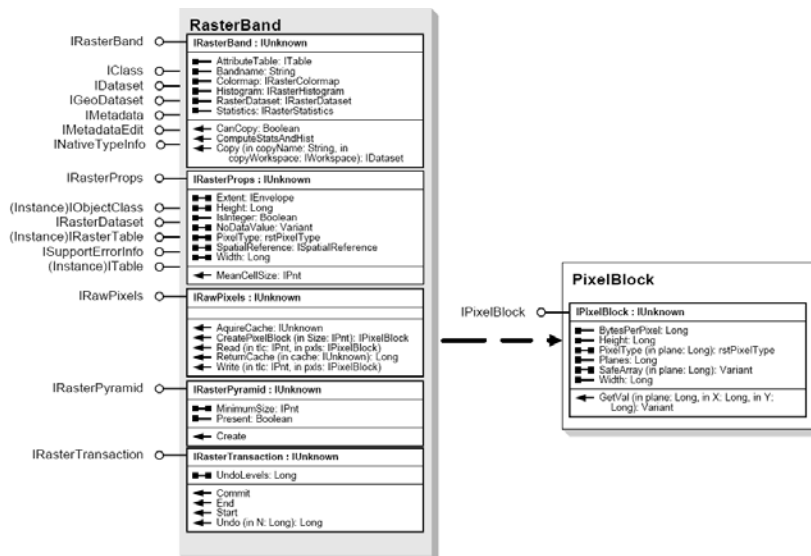
FocalStatistics - esriGeoAnalysisStatisticsEnum

esriGeoAnalysisStatisticsEnum Constants

Statistics types in GeoAnalyst.

Constant	Value	Description
esriGeoAnalysisStatsMajority	1	Majority.
esriGeoAnalysisStatsMaximum	2	Maximum.
esriGeoAnalysisStatsMean	3	Mean.
esriGeoAnalysisStatsMedian	4	Median.
esriGeoAnalysisStatsMinimum	5	Minimum.
esriGeoAnalysisStatsMinority	6	Minority.
esriGeoAnalysisStatsRange	7	Range.
esriGeoAnalysisStatsStd	8	Standard Deviation.
esriGeoAnalysisStatsSum	9	Sum.
esriGeoAnalysisStatsVariety	10	Variety.

PixelBlock



Use PixelBlock

Query Raster &
RasterBandCollection

```
Dim pRaster As IRaster
Set pRaster = pRasLyr.Raster
Dim pRasterBandCol As IRasterBandCollection
Set pRasterBandCol = pRaster
```

IRawPixel & IRasterProps

```
Dim pRawpixel As IRawPixels
Set pRawpixel = pRasterBandCol.Item(0)
Dim pRasterProps As IRasterProps
Set pRasterProps = pRawpixel
```

Specify the dimension of PB
using DblPnt

```
Dim pSize As IPnt
Set pSize = New DblPnt
pSize.SetCoords pRasterProps.Width, pRasterProps.Height
```

```
Dim pPixelBlock As IPixelBlock3
Set pPixelBlock = pRawpixel.CreatePixelBlock(pSize)
```

```
Dim pPnt As IPnt
Set pPnt = New DblPnt
pPnt.x = 0 'the origin (top left corner) of the PixelBlock
pPnt.y = 0
```

Get pixel values into PB

```
pRawpixel.Read pPnt, pPixelBlock
```

Retrieve pixel values from PB

```
Dim PixelValue, position_x, position_y
PixelValue = pPixelBlock.GetVal(0, position_x, position_y)
```

IIdentify Interface

- Provides access to members that identify features.

```
Dim pRasLyr As IRasterLayer
Dim pIdentify As IIdentify
Set pRasLyr = pMxdDoc.SelectedLayer
Set pIdentify = pRasLyr
```

```
Dim pArray As IArray
Set pArray = pIdentify.Identify(pGeom)
```

```
Dim pRasID As IRasterIdentifyObj
If TypeOf pArray.Element(0) Is _
IRasterIdentifyObj Then
    Set pRasID = pArray.Element(0)
    MsgBox pRasID.MapTip
End If
```

All	Description
← Identify	Identifies objects at the specified location.

CoClasses that implement IIdentify

CoClasses and Classes	Description
CadastralFabricLayer	Cadastral Fabric Layer Object.
CadFeatureLayer	ESRI CAD Feature Layer class.
CadLayer	ESRI CAD Layer class.
ChartRenderer	A chart renderer used to draw pie, bar, and stacked bar chart symbols.
CoverageAnnotationLayer	An ESRI coverage annotation layer.
DimensionLayer	A collection of properties for a dimension layer.
FDOGraphicsLayer	A collection of properties for an annotation layer (feature data object graphics layer).
FeatureLayer	A collection of features and their visual representation.
GDBRasterCatalogLayer	Geodatabase Raster/Catalog source and display options.
GlobeServerLayer (esriGlobeCore)	Provides programmatic access to a globe server layer.
GroupLayer	A collection of layers that behaves like a single layer.
IMXMapLayer	A container for the display and manipulation of IMS layers.
IMXSubFeatureLayer	IMS Sub-FeatureLayer class.
MACTreeLayer (esriMilitaryAnalyst)	A layer used to control the display of MA OTED Catalogs.
MapServerIdentifySublayer	Provides programmatic access to a map server sublayer with Identify capability.
MapServerLayer	Provides programmatic access to a map server layer.
MapServerQuerySublayer	Provides programmatic access to a map server sublayer with find and Identify capability.
MARasterLayer (esriMilitaryAnalyst)	A layer used to control the display of MA RPF Catalogs.
NLayer (esriNetworkAnalyst)	The layer for defining, solving and viewing network analysis results.
NetworkLayer	ESRI Network Layer CoClass.
ProcessLayer (esriGeoprocessing)	A collection of process layers that behaves like a single layer.
RasterCatalogLayer	Raster catalog source and display options.
RasterClassifyColorRampRenderer	A renderer with a color ramp for rasters with classified values.
RasterColormapRenderer	A raster colormap renderer.
RasterLayer	Raster layer source and display options.
RasterRGBRenderer	A true-color RGB renderer.