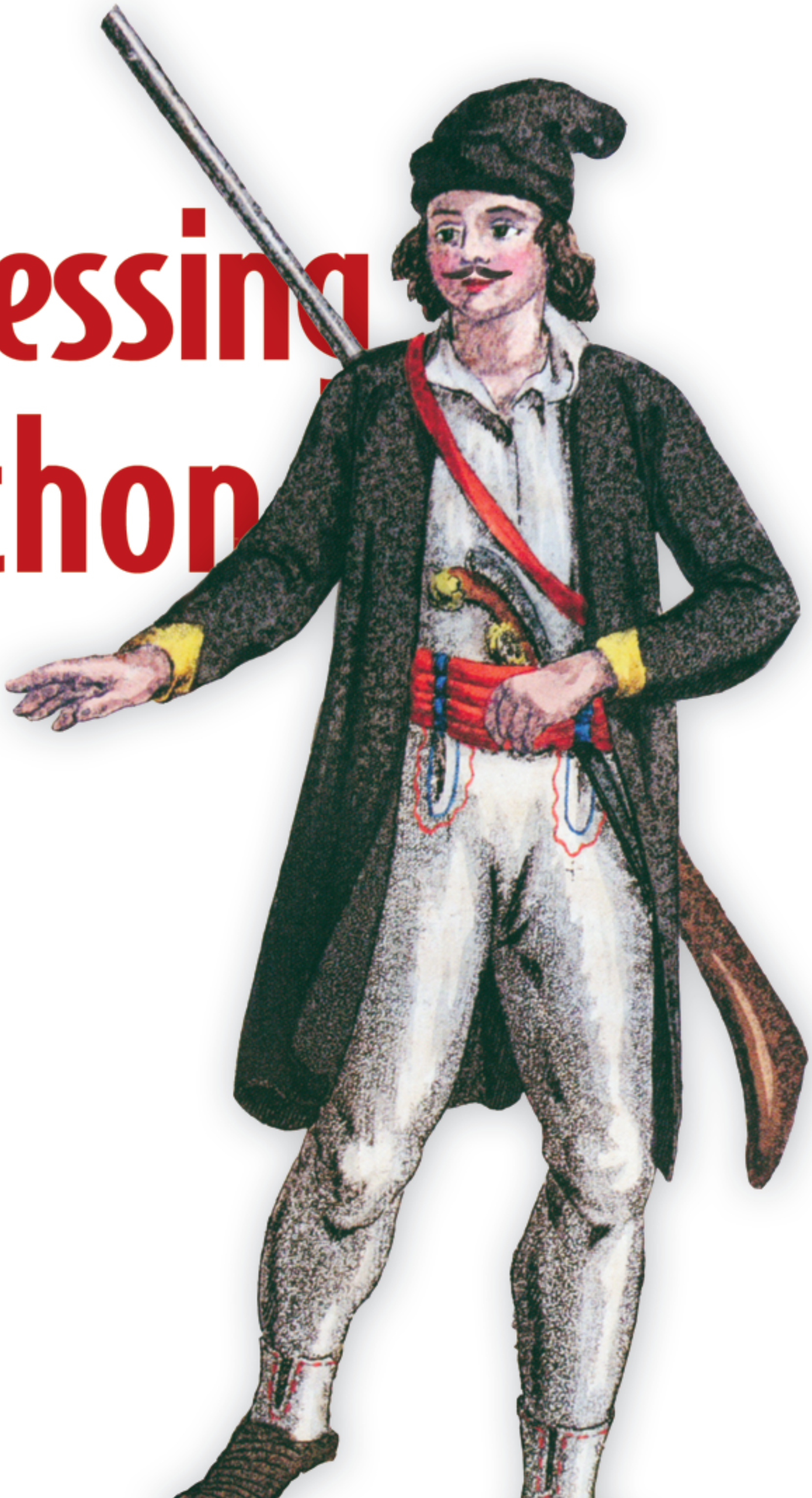
Geoprocessing with Python

Chris Garrard



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C.2 DataSource class

CopyLayer(Layer src_layer, string new_name, string options = None) -> Layer

Duplicates an existing layer.

This function creates a new layer, duplicates the field definitions of the source layer, and then duplicates each features of the source layer. The papszOptions argument can be used to control driver-specific creation options. These options are normally documented in the format-specific documentation. The source layer may come from another dataset.

- src_layer: Handle to the source layer.
- new_name: The name of the layer to create.
- options: A list of name=value option strings. Options are driver-specific.

Returns a handle to the layer, or None if an error occurs.

CreateLayer(string name, SpatialReference srs = None, OGRwkbGeometryType geom_type = wkbUnknown, string options = None) -> Layer

This function attempts to create a new layer on the data source with the indicated name, coordinate system, geometry type.

The papszOptions argument can be used to control driver specific creation options. These options are normally documented in the format specific documentation.

- name: The name for the new layer. This should ideally not match any existing layer on the data source.
- srs: Handle to the coordinate system to use for the new layer, or None if no coordinate system is available.
- geom_type: The geometry type for the layer. Use wkbUnknown if no constraints exist on the types geometry to be written.
- options: A list of name=value option strings. Options are driver specific, and driver information can be found at http://www.gdal.org/ogr/ogr_formats.html.

None on failure, or a new OGRLayer handle on success.

DeleteLayer(value)

Deletes the layer given an index or layer name.

Dereference()

For backward compatibility only.

Destroy()

Once called, self has effectively been destroyed. Do not access. For backward compatibility only.

ExecuteSQL(string statement, Geometry spatialFilter = None, string dialect = "") -> Layer

Executes an SQL statement against the data store.

For more information on the SQL dialect supported internally by OGR review, see the OGR SQL document. Several drivers (that is, Oracle and PostGIS) pass the SQL directly through to the underlying RDBMS.

- statement: The SQL statement to execute.
- spatialFilter: Handle to a geometry which represents a spatial filter. Can be None.
- dialect: Allows control of the statement dialect. If set to None, the OGR SQL engine will be used, except for RDBMS drivers that will use their dedicated SQL engine, unless OGRSQL is explicitly passed as the dialect.

Returns a handle to an OGRLayer containing the results of the query. Deallocate with OGR_DS_ReleaseResultSet().

GetDriver() -> Driver

Returns the driver that the dataset was opened with.

Returns None if driver info isn't available, or pointer to a driver owned by the OGRSFDriverManager.

GetLayer(iLayer=0)

Returns the layer given an index or a name.

GetLayerByIndex(int index = 0) -> Layer

GetLayerByName(string layer_name) -> Layer

Fetches a layer by name.

The returned layer remains owned by the OGRDataSource and shouldn't be deleted by the application.

- layer_name: The layer name of the layer to fetch.

Returns a handle to the layer, or None if the layer isn't found or an error occurs.

GetLayerCount() -> int

Gets the number of layers in this data source.

Returns layer count.

GetName() -> char

Returns the name of the data source.

This string should be sufficient to open the data source if passed to the same OGRSFDriver that this data source was opened with, but it need not be exactly the same string that was used to open the data source. Normally this is a filename.

Returns pointer to an internal name string that shouldn't be modified or freed by the caller.

GetRefCount() -> int

GetStyleTable() -> StyleTable

GetSummaryRefCount() -> int

Reference()

For backward compatibility only.

Release()

Once called, self has effectively been destroyed. Do not access. For backward compatibility only.

ReleaseResultSet(Layer layer)

Releases results of OGR_DS_ExecuteSQL().

This function should only be used to deallocate OGRLayers resulting from an OGR_DS_ExecuteSQL() call on the same OGRDataSource. Failure to deallocate a results set before destroying the OGRDataSource may cause errors.

- layer: Handle to the result of a previous OGR_DS_ExecuteSQL() call

SetStyleTable(StyleTable table)

SyncToDisk() -> OGRErr

Flushes pending changes to disk.

This call is intended to force the data source to flush any pending writes to disk, and leave the disk file in a consistent state. It wouldn't normally have any effect on read-only data sources.

Several data sources do not implement this method, and will still return OGRERR_NONE. An error is only returned if an error occurs while attempting to flush to disk.

The default implementation of this method calls the SyncToDisk() method on each of the layers. Conceptionally, calling SyncToDisk() on a data source should include any work that might be accomplished by calling SyncToDisk() on layers in that data source.

Returns OGRERR_NONE if no error occurs (even if nothing is done) or an error code.

TestCapability(string cap) -> bool

Tests if capability is available.

One of the following data source capability names can be passed into this function, and a True or False value will be returned indicating whether or not the capability is available for this object.

ODsCCreateLayer: True if this data source can create new layers

The #define macro forms of the capability names should be used in preference to the strings themselves to avoid misspelling.

- cap: The capability to test

Returns True if capability available otherwise False.

TestCapability(string cap) -> bool

Tests if capability is available.

One of the following data source capability names can be passed into this function, and a True or False value will be returned indicating whether or not the capability is available for this object.

ODsCCreateLayer: True if this data source can create new layers

The #define macro forms of the capability names should be used in preference to the strings themselves to avoid misspelling.

- cap: The capability to test.

Returns True if capability available otherwise False.

PROPERTIES

name

DataSource_name_get(DataSource self) -> char

C.3 *Driver class*

CopyDataSource(DataSource copy_ds, string utf8_path, string options = None) -> DataSource

Creates a new data source by copying all the layers from the source data source.

It's important to call OGR_DS_Destroy() when the data source is no longer used to ensure that all data has been properly flushed to disk.

- copy_ds: Source data source.
- utf8_path: The name for the new data source.
- options: A list of name=value option strings. Options are driver specific, and driver information can be found at http://www.gdal.org/ogr/ogr_formats.html.

Returns None is returned on failure, or a new OGRDataSource handle on success.

CreateDataSource(string utf8_path, string options = None) -> DataSource

This function attempts to create a new data source based on the passed driver.

The papszOptions argument can be used to control driver specific creation options. These options are normally documented in the format specific documentation.

It's important to call OGR_DS_Destroy() when the data source is no longer used to ensure that all data has been properly flushed to disk.

- utf8_path: The name for the new data source. UTF-8 encoded.
- options: A list of name=value option strings. Options are driver specific, and driver information can be found at http://www.gdal.org/ogr/ogr_formats.html.

Returns None is returned on failure, or a new OGRDataSource handle on success.

DeleteDataSource(string utf8_path) -> int

Deletes a data source.

Delete (from the disk, in the database, ...) the named data source. Normally it would be safest if the data source wasn't open at the time.

Whether this is a supported operation on this driver case be tested using TestCapability() on ODrCDeleteDataSource.

- utf8_path: The name of the data source to delete.

Returns OGRERR_NONE on success, and OGRERR_UNSUPPORTED_OPERATION if this isn't supported by this driver.

Deregister()

GetName() -> char

Fetches name of driver (file format). This name should be relatively short (10-40 characters), and should reflect the underlying file format. For instance, "ESRI Shapefile".

Returns driver name. This is an internal string and shouldn't be modified or freed.

Open(string utf8_path, int update = 0) -> DataSource

Attempts to open file with this driver.

- utf8_path: The name of the file, or data source to try and open.
- update: True if update access is required; otherwise, False (the default).

Returns None on error or if the pass name isn't supported by this driver; otherwise, a handle to an OGRDataSource. This OGRDataSource should be closed by deleting the object when it's no longer needed.

Register()

TestCapability(string cap) -> bool

Tests if capability is available.

One of the following data source capability names can be passed into this function, and a True or False value will be returned indicating whether or not the capability is available for this object.

ODrCCreateDataSource: True if this driver can support creating data sources.

ODrCDeleteDataSource: True if this driver supports deleting data sources.

The #define macro forms of the capability names should be used in preference to the strings themselves to avoid misspelling.

- cap: The capability to test

Returns True if capability available otherwise False.

PROPERTIES

name

Driver_name_get(Driver self) -> char

C.4 Feature class

Clone() -> Feature

Duplicates feature.

The newly created feature is owned by the caller, and will have its own reference to the OGRFeatureDefn.

Returns a handle to the new feature, exactly matching this feature.

Dereference()

Destroy()

Once called, self has effectively been destroyed. Do not access. For backward compatibility only.

DumpReadable()

Dumps this feature in a human readable form.

This dumps the attributes, and geometry; however, it doesn't definition information (other than field types and names), nor does it report the geometry spatial reference system.

- fpOut: The stream to write to, such as strout

Equal(Feature feature) -> bool

Tests if two features are the same.

Two features are considered equal if the share them (handle equality) same OGRFeatureDefn, have the same field values, and the same geometry (as tested by OGR_G_Equal()) as well as the same feature id.

- feature: Handle to the other feature to test this one against

Returns True if they are equal; otherwise, False.

ExportToJson(as_object=False, options=None)

Exports a GeoJSON object which represents the Feature. The `as_object` parameter determines whether the returned value should be a Python object instead of a string. Defaults to False. The options parameter is passed to Geometry.ExportToJson()

geometry() -> Geometry

Returns the feature's geometry.

GetDefnRef() -> FeatureDefn

Fetches feature definition.

Returns a handle to the feature definition object on which feature depends.

GetFID() -> int

Gets feature identifier.

Returns feature id or OGRNullFID if none has been assigned.

GetField(fld_index)

GetFieldAsDateTime(int id)

Fetches field value as date and time.

Currently this method only works for OFTDate, OFTTime, and OFTDateTime fields.

- id: The field to fetch, from 0 to GetFieldCount()-1
- pnYear: (including century)
- pnMonth: (1-12)
- pnDay: (1-31)
- pnHour: (0-23)
- pnMinute: (0-59)
- pnSecond: (0-59)
- pnTZFlag: (0=unknown, 1=localtime, 100=GMT, see data model for details)

Returns True on success or False on failure.

GetFieldAsDouble(string name) -> double

Fetches field value as a double.

OFTString features will be translated using atof(). OFTInteger fields will be cast to double. Other field types, or errors will result in a return value of zero.

- name: The field to fetch, from 0 to GetFieldCount()-1

Returns the field value.

GetFieldAsDoubleList(int id)

Fetches field value as a list of doubles.

Currently this function only works for OFTRealList fields.

- id: The field to fetch, from 0 to GetFieldCount()-1
- pnCount: An integer to put the list count (number of doubles) into

Returns the field value. This list is internal, and shouldn't be modified, or freed. Its lifetime may be brief. If *pnCount is zero on return, the returned pointer may be None or non-None.

GetFieldAsInteger(string name) -> int

Fetches field value as integer.

OFTString features will be translated using atoi(). OFTReal fields will be cast to integer. Other field types or errors will result in a return value of zero.

- name: The field to fetch, from 0 to GetFieldCount()-1

Returns the field value.

GetFieldAsIntegerList(int id)

Fetches field value as a list of integers.

Currently this function only works for OFTIntegerList fields.

- id: The field to fetch, from 0 to GetFieldCount()-1
- pnCount: An integer to put the list count (number of integers) into

Returns the field value. This list is internal, and shouldn't be modified, or freed. Its lifetime may be brief. If *pnCount is zero on return, the returned pointer may be None or non-None.

GetFieldAsString(string name) -> char

Fetches field value as a string.

- name: The field to fetch, from 0 to GetFieldCount()-1

Returns the field value. This string is internal, and shouldn't be modified, or freed. Its lifetime may be brief.

GetFieldAsStringList(int id) -> char

Fetches field value as a list of strings.

Currently this method only works for OFTStringList fields.

The returned list is terminated by a None pointer. The number of elements can also be calculated using CSLCount().

- id: The field to fetch, from 0 to GetFieldCount()-1

Returns the field value. This list is internal, and shouldn't be modified, or freed. Its lifetime may be brief.

GetFieldCount() -> int

Fetches number of fields on this feature. This will always be the same as the field count for the OGRFeatureDefn.

Returns count of fields.

GetFieldDefnRef(string name) -> FieldDefn

Fetches definition for this field.

- name: The field to fetch, from 0 to GetFieldCount()-1

Returns a handle to the field definition (from the OGRFeatureDefn). This is an internal reference, and shouldn't be deleted or modified.

GetFieldIndex(string name) -> int

Fetches the field index given field name.

This is a cover for the OGRFeatureDefn::GetFieldIndex() method.

- name: The name of the field to search for

Returns the field index, or -1 if no matching field is found.

GetFieldType(string name) -> OGRFieldType

GetGeomFieldCount() -> int

GetGeomFieldDefnRef(string name) -> GeomFieldDefn

GetGeomFieldIndex(string name) -> int

GetGeomFieldRef(string name) -> Geometry

GetGeometryRef() -> Geometry

Fetches a handle to feature geometry.

Returns a handle to internal feature geometry. This object shouldn't be modified.

GetStyleString() -> char

Fetches style string for this feature.

Set the OGR Feature Style Specification for details on the format of this string, and ogr_featurestyle.h for services available to parse it.

Returns a reference to a representation in string format, or None if there isn't one.

IsFieldSet(string name) -> bool

Tests if a field has ever been assigned a value or not.

- name: The field to test

Returns True if the field has been set; otherwise, false.

items() -> dictionary

Returns a dictionary containing the feature's attribute values, with field names as keys.

keys() -> list

Returns a list of attribute field names.

Reference()

SetFID(int fid) -> OGRErr

Sets the feature identifier.

For specific types of features this operation may fail on illegal features ids. Generally, it always succeeds. Feature ids should be greater than or equal to zero, with the exception of OGRNullFID (-1) indicating that the feature id is unknown.

- fid: The new feature identifier value to assign

Returns On success OGRERR_NONE, or on failure of another value.

SetField(string name, int year, int month, int day, int hour, int minute, int second, int tzflag)

SetField2(fld_index, value)

SetFieldBinaryFromHexString(string name, string pszValue)

SetFieldDoubleList(int id, int nList)
Sets field to list of doubles value.
This function currently on has an effect of OFTRealList fields.

- id: The field to set, from 0 to GetFieldCount()-1
- nList: The number of values in the list being assigned
- padfValues: The values to assign

SetFieldIntegerList(int id, int nList)
Sets field to list of integers value.
This function currently on has an effect of OFTIntegerList fields.

- id: The field to set, from 0 to GetFieldCount()-1
- nList: The number of values in the list being assigned
- panValues: The values to assign

SetFieldStringList(int id, string pList)
Sets field to list of strings value.
This function currently on has an effect of OFTStringList fields.

- id: The field to set, from 0 to GetFieldCount()-1
- pList: The values to assign

SetFrom(Feature other, int forgiving = 1) -> OGRErr
Sets one feature from another.

Overwrite the contents of this feature from the geometry and attributes of another. The hOtherFeature doesn't need to have the same OGRFeatureDefn. Field values are copied by corresponding field names. Field types don't have to exactly match. OGR_F_SetField*() function conversion rules will be applied as needed.

- other: Handle to the feature from which geometry, and field values, will be copied
- forgiving: True if the operation should continue despite lacking output fields matching some of the source fields

Returns OGRERR_NONE if the operation succeeds, even if several values aren't transferred; otherwise, an error code.

SetFromWithMap(Feature other, int forgiving, int nList) -> OGRErr

Sets one feature from another.

Overwrite the contents of this feature from the geometry and attributes of another. The hOtherFeature doesn't need to have the same OGRFeatureDefn. Field values are copied according to the provided indices map. Field types don't have to exactly match. OGR_F_SetField*() function conversion rules will be applied as needed. This is more efficient than OGR_F_SetFrom() in that this doesn't look up the fields by their names. Particularly useful when the field names don't match.

- other: Handle to the feature from which geometry, and field values will be copied.
- forgiving: Array of the indices of the destination feature's fields stored at the corresponding index of the source feature's fields. A value of -1 should be used to ignore the source's field. The array shouldn't be None and be as long as the number of fields in the source feature.
- nList: True if the operation should continue despite lacking output fields matching several of the source fields.

Returns OGRERR_NONE if the operation succeeds, even if several values aren't transferred; otherwise, an error code.

SetGeomField(string name, Geometry geom) -> OGRErr

SetGeomFieldDirectly(string name, Geometry geom) -> OGRErr

SetGeometry(Geometry geom) -> OGRErr

Sets feature geometry.

- geom: Handle to the new geometry to apply to feature

Returns OGRERR_NONE if successful, or OGR_UNSUPPORTED_GEOMETRY _TYPE if the geometry type is illegal for the OGRFeatureDefn (checking not yet implemented).

SetGeometryDirectly(Geometry geom) -> OGRErr

Sets feature geometry.

- geom: Handle to the new geometry to apply to feature

Returns OGRERR_NONE if successful, or OGR_UNSUPPORTED_GEOMETRY _TYPE if the geometry type is illegal for the OGRFeatureDefn (checking not yet implemented).

SetStyleString(string the_string)

- the_string: The style string to apply to this feature, cannot be None

UnsetField(string name)

Clears a field, marking it as unset.

- name: The field to unset

C.5 FeatureDefn class

AddFieldDefn(FieldDefn defn)

Adds a new field definition to the passed feature definition.

To add a new field definition to a layer definition, don't use this function directly, but use OGR_L_CreateField() instead.

This function should only be called while there are no OGRFeature objects in existence based on this OGRFeatureDefn. The OGRFieldDefn passed in is copied, and remains the responsibility of the caller.

- defn: Handle to the new field definition

AddGeomFieldDefn(GeomFieldDefn defn)

DeleteGeomFieldDefn(int idx) -> OGRErr

Destroy()

Once called, self has effectively been destroyed. Don't access. For backward compatibility only.

GetFieldCount() -> int

Fetches number of fields on the passed feature definition.

Returns count of fields.

GetFieldDefn(int i) -> FieldDefn

Fetches field definition of the passed feature definition.

Starting with GDAL 1.7.0, this method will also issue an error if the index isn't valid.

- i: The field to fetch, between 0 and GetFieldCount()-1

Returns a handle to an internal field definition object or None if invalid index. This object shouldn't be modified or freed by the application.

GetFieldIndex(string name) -> int

Finds field by name.

The field index of the first field matching the passed field name (case insensitively) is returned.

- name: The field name to search for

Returns the field index, or -1 if no match found.

GetGeomFieldCount() -> int

GetGeomFieldDefn(int i) -> GeomFieldDefn

GetGeomFieldIndex(string name) -> int

GetGeomType() -> OGRwkbGeometryType

Fetches the geometry base type of the passed feature definition.

Returns the base type for all geometry related to this definition.

GetName() -> char

Gets name of the OGRFeatureDefn passed as an argument.

Returns the name. This name is internal and shouldn't be modified or freed.

GetReferenceCount() -> int

Fetches current reference count.

Returns the current reference count.

IsGeometryIgnored() -> int

Determines whether the geometry can be omitted when fetching features.

Returns ignore state.

IsSame(FeatureDefn other_defn) -> int

IsStyleIgnored() -> int

Determines whether the style can be omitted when fetching features.

Returns ignore state.

SetGeomType(OGRwkbGeometryType geom_type)

Assigns the base geometry type for the passed layer (the same as the feature definition).

All geometry objects using this type must be of the defined type or a derived type. The default upon creation is wkbUnknown, which allows for any geometry type. The geometry type should generally not be changed after any OGRFeatures have been created against this definition.

- geom_type: The new type to assign

SetGeometryIgnored(int bIgnored)

Sets whether the geometry can be omitted when fetching features.

- bIgnored: Ignore state

SetStyleIgnored(int bIgnored)

Sets whether the style can be omitted when fetching features.

- bIgnored: Ignore state

SetStyleIgnored(int bIgnored)

Sets whether the style can be omitted when fetching features.

- bIgnored: Ignore state

C.6 FieldDefn class

Destroy()

Once called, self has effectively been destroyed. Don't access. For backward compatibility only.

GetFieldTypeName(OGRFieldType type) -> char

GetJustify() -> OGRJustification

Gets the justification for this field.

Returns the justification.

GetName() -> char

GetNameRef() -> char

Fetches name of this field.

Returns the name of the field definition.

GetPrecision() -> int

Gets the formatting precision for this field. This should normally be zero for fields of types other than OFTReal.

Returns the precision.

GetType() -> OGRFieldType

Fetches type of this field.

Returns field type.

GetTypeName() -> char

GetWidth() -> int

Gets the formatting width for this field.

Returns the width; zero means no specified width.

IsIgnored() -> int

Returns whether this field should be omitted when fetching features.

Returns ignore state.

SetIgnored(int bIgnored)

Sets whether this field should be omitted when fetching features.

- bIgnored: Ignore state

SetJustify(OGRJustification justify)

Sets the justification for this field.

- justify: The new justification

SetName(string name)

Resets the name of this field.

- name: The new name to apply

SetPrecision(int precision)

Sets the formatting precision for this field in characters.
This should normally be zero for fields of types other than OFTReal.

- precision: The new precision

SetType(OGRFieldType type)

Sets the type of this field. This should never be done to an OGRFieldDefn that is already part of an OGRFeatureDefn.

- type: The new field type

SetWidth(int width)

Sets the formatting width for this field in characters.

- width: The new width

SetWidth(int width)

Sets the formatting width for this field in characters.

- width: The new width

PROPERTIES

justify

Gets the justification for this field.

name

GetName(self) -> char

precision

Gets the formatting precision for this field. This should normally be zero for fields of types other than OFTReal.

type

Fetches type of this field.

width

Gets the formatting width for this field.

C.7 GeomFieldDefn class

GetName() -> char

GetNameRef() -> char

GetSpatialRef() -> SpatialReference

GetType() -> OGRwkbGeometryType

IsIgnored() -> int

SetIgnored(int bIgnored)

SetName(string name)

SetSpatialRef(SpatialReference srs)

SetType(OGRwkbGeometryType type)

SetType(OGRwkbGeometryType type)

PROPERTIES

name

GetName(self) -> char

srs

GetSpatialRef(self) -> SpatialReference

type

GetType(self) -> OGRwkbGeometryType

C.8 Geometry class

AddGeometry(Geometry other) -> OGRErr

AddGeometryDirectly(Geometry other_disown) -> OGRErr

AddPoint(double x, double y, double z = 0)

AddPoint_2D(double x, double y)

Area() -> double

AssignSpatialReference(SpatialReference reference)

Assigns spatial reference to this object.

Any existing spatial reference is replaced, but under no circumstances does this result in the object being reprojected. It's changing the interpretation of the existing geometry. Note that assigning a spatial reference increments the reference count on the OGRSpatialReference, but doesn't copy it.

This is similar to the SFCOM IGeometry::put_SpatialReference() method.

- reference: Handle on the new spatial reference system to apply

Boundary() -> Geometry

Computes boundary.

A new geometry object is created and returned containing the boundary of the geometry on which the method is invoked.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- A handle to a newly allocated geometry now owned by the caller or None on failure

Returns OGR 1.8.0

Buffer(double distance, int quadsecs = 30) -> Geometry

Computes buffer of geometry.

Builds a new geometry containing the buffer region around the geometry on which it's invoked. The buffer is a polygon containing the region within the buffer distance of the original geometry.

Certain buffer sections are properly described as curves, but are converted to approximate polygons. The nQuadSegs parameter can be used to control how many segments should be used to define a 90-degree curve—a quadrant of a circle. A value of 30 is a reasonable default. Large values result in large numbers of vertices in the resulting buffer geometry, while small numbers reduce the accuracy of the result.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- distance: The buffer distance to be applied
- quadsecs: The number of segments used to approximate a 90 degree (quadrant) of curvature

Returns the newly created geometry, or None if an error occurs.

Centroid() -> Geometry

Computes the geometry centroid.

The centroid location is applied to the passed in OGRPoint object. The centroid isn't necessarily within the geometry.

This method relates to the SFCOM ISurface::get_Centroid() method; however, the current implementation based on GEOS can operate on other geometry types such as multipoint and linestring, and geometrycollections such as multipolygons. OGC SF SQL 1.1 defines the operation for surfaces (polygons). SQL/MM-Part 3 defines the operation for surfaces and multisurfaces (multipolygons).

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

Returns OGRERR_NONE on success or OGRERR_FAILURE on error.

Clone() -> Geometry

Make a copy of this object.

This function relates to the SFCOM IGeometry::clone() method.

Returns a handle on the copy of the geometry with the spatial reference system as the original.

CloseRings()

Forces rings to be closed.

If this geometry, or any contained geometries has polygon rings that aren't closed, they will be closed by adding the starting point at the end.

Contains(Geometry other) -> bool

Tests for containment.

Tests if this geometry contains the other geometry.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if hThis contains hOther geometry; otherwise, False.

ConvexHull() -> Geometry

Computes convex hull.

A new geometry object is created and returned containing the convex hull of the geometry on which the method is invoked.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

Returns a handle to a newly allocated geometry now owned by the caller or None on failure.

Crosses(Geometry other) -> bool

Tests for crossing.

Tests if this geometry and the other geometry are crossing.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if they are crossing; otherwise, False.

Destroy()

Difference(Geometry other) -> Geometry

Computes difference.

Generates a new geometry which is the region of this geometry with the region of the other geometry removed.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry

Returns a new geometry representing the difference or None if the difference is empty or an error occurs.

Disjoint(Geometry other) -> bool

Tests for disjointedness.

Tests if this geometry and the other geometry are disjoint.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if they are disjoint; otherwise, False.

Distance(Geometry other) -> double

Computes distance between two geometries.

Returns the shortest distance between the two geometries.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare against

Returns the distance between the geometries or -1 if an error occurs.

Empty()

Clears geometry information. This restores the geometry to its initial state after construction and before assignment of actual geometry.

This function relates to the SFCOM IGeometry::Empty() method.

Equal(Geometry other) -> bool

Equals(Geometry other) -> bool

Returns True if two geometries are equivalent.

- other: Handle on the other geometry to test against

Returns True if equivalent or False otherwise.

ExportToGML(string options = None) -> retStringAndCPLFree

ExportToJson(string options = None) -> retStringAndCPLFree

ExportToKML(string altitude_mode = None) -> retStringAndCPLFree

ExportToWkb(OGRwkbByteOrder byte_order = wkbXDR) -> OGRErr

Converts a geometry into well-known binary format.

This function relates to the SFCOM IWks::ExportToWKB() method.

- byte_order: One of wkbXDR or wkbNDR indicating MSB or LSB byte order, respectively.
- pabyDstBuffer: A buffer into which the binary representation is written. This buffer must be at least OGR_G_WkbSize() byte in size.

Returns Currently OGRERR_NONE is always returned.

ExportToWkt() -> OGRErr

Converts a geometry into well-known text format.

This function relates to the SFCOM IWks::ExportToWKT() method.

- ppszSrcText: A text buffer is allocated by the program, and assigned to the passed pointer.

Returns Currently OGRERR_NONE is always returned.

FlattenTo2D()

Converts geometry to strictly 2D. In a sense this converts all Z coordinates to 0.0.

GetArea() -> double

GetBoundary() -> Geometry

Computes boundary (deprecated).

Returns Deprecated See: OGR_G_Boundary().

GetCoordinateDimension() -> int

Gets the dimension of the coordinates in this geometry.

This function corresponds to the SFCOM IGeometry::GetDimension() method.

Returns in practice this will return 2 or 3. It can also return 0 in the case of an empty point.

GetDimension() -> int

Gets the dimension of this geometry.

Returns 0 for points, 1 for lines, and 2 for surfaces.

GetEnvelope()

Computes and returns the bounding envelope for this geometry in the passed psEnvelope structure.

- psEnvelope: The structure in which to place the results

GetEnvelope3D()

Computes and returns the bounding envelope (3D) for this geometry in the passed psEnvelope structure.

- psEnvelope: The structure in which to place the results

Returns OGR 1.9.0

GetGeometryCount() -> int

GetGeometryName() -> char

Fetches WKT name for geometry type.

There's no SFCOM analog to this function.

Returns name used for this geometry type in well-known text format.

GetGeometryRef(int geom) -> Geometry

GetGeometryType() -> OGRwkbGeometryType

Fetches geometry type.

Note that the geometry type may include the 2.5D flag. To get a 2D flattened version of the geometry type, apply the wkbFlatten() macro to the return result.

Returns the geometry type code.

GetPoint(int iPoint = 0)

GetPointCount() -> int

GetPoint_2D(int iPoint = 0)

GetPoints(int nCoordDimension = 0)

GetSpatialReference() -> SpatialReference

Returns spatial reference system for geometry.

This function relates to the SFCOM IGeometry::get_SpatialReference() method.

Returns a reference to the spatial reference geometry.

GetX(int point = 0) -> double

GetY(int point = 0) -> double

GetZ(int point = 0) -> double

Intersect(Geometry other) -> bool

Intersection(Geometry other) -> Geometry

Computes intersection.

Generates a new geometry that's the region of intersection of the two geometries operated on. The OGR_G_Intersects() function can be used to test if two geometries intersect.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry

Returns a new geometry representing the intersection or None if there's no intersection or an error occurs.

Intersects(Geometry other) -> bool

Do these features intersect?

Currently this is not implemented in a rigorous fashion, and generally tests whether the envelopes of the two features intersect. Eventually this will be made rigorous.

- other: Handle on the other geometry to test against

Returns True if the geometries intersect; otherwise, False.

IsEmpty() -> bool

Tests if the geometry is empty.

Returns True if the geometry has no points; otherwise, False.

IsRing() -> bool

Test if the geometry is a ring.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always return False.

Returns True if the geometry has no points; otherwise, False.

IsSimple() -> bool

Returns True if the geometry is simple.

Returns True if the geometry has no anomalous geometric points, such as self-intersection or self-tangency. The description of each instantiable geometric class will include the specific conditions that cause an instance of that class to be classified as not simple.

If OGR is built without the GEOS library, this function will always return False.

Returns True if object is simple; otherwise, False.

IsValid() -> bool

Tests if the geometry is valid.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always return False.

Returns True if the geometry has no points; otherwise, False.

Length() -> double

Overlaps(Geometry other) -> bool

Tests for overlap.

Tests if this geometry and the other geometry overlap; that is, their intersection has a non-zero area.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if they are overlapping; otherwise, False.

PointOnSurface() -> Geometry

Segmentize(double dfMaxLength)

Modifies the geometry such that it has no segment longer then the given distance. Interpolated points will have Z and M values (if needed) set to 0. Distance computation is performed in 2D only.

- dfMaxLength: The maximum distance between 2 points after segmentization

SetCoordinateDimension(int dimension)

Sets the coordinate dimension.

This method sets the explicit coordinate dimension. Setting the coordinate dimension of a geometry to 2 should zero-out any existing Z values. Setting the dimension of a geometry collection will not necessarily affect the children geometries.

- dimension: New coordinate dimension value, either 2 or 3

SetPoint(int point, double x, double y, double z = 0)

SetPoint_2D(int point, double x, double y)

Simplify(double tolerance) -> Geometry

Computes a simplified geometry.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- tolerance: The distance tolerance for the simplification
- The simplified geometry or None if an error occurs

Returns OGR 1.8.0.

SimplifyPreserveTopology(double tolerance) -> Geometry

Computes a simplified geometry.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- tolerance: The distance tolerance for the simplification
- The simplified geometry or None if an error occurs

Returns OGR 1.9.0.

SymDifference(Geometry other) -> Geometry

Computes symmetric difference.

Generates a new geometry that is the symmetric difference of this geometry and the other geometry.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry
- A new geometry representing the symmetric difference or None if the difference is empty or an error occurs.

Returns OGR 1.8.0.

SymmetricDifference(Geometry other) -> Geometry

Compute symmetric difference (deprecated).

Returns Deprecated See: OGR_G_SymmetricDifference().

Touches(Geometry other) -> bool

Tests for touching.

Tests if this geometry and the other geometry are touching.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if they are touching; otherwise, False.

Transform(CoordinateTransformation trans) -> OGRErr

Applies arbitrary coordinate transformation to geometry.

This function will transform the coordinates of a geometry from their current spatial reference system to a new target spatial reference system. Normally this means reprojecting the vectors, but it could include datum shifts and changes of units.

Note that this function does not require that the geometry already have a spatial reference system. It will be assumed that it can be treated as having the source spatial reference system of the OGRCoordinateTransformation object, and the actual SRS of the geometry will be ignored. On successful completion, the output OGRSpatialReference of the OGRCoordinateTransformation will be assigned to the geometry.

- trans: Handle on the transformation to apply

Returns OGRERR_NONE on success or an error code.

TransformTo(SpatialReference reference) -> OGRErr

Transforms geometry to new spatial reference system.

This function will transform the coordinates of a geometry from their current spatial reference system to a new target spatial reference system. Normally this means reprojecting the vectors, but it could include datum shifts and changes of units.

This function will only work if the geometry already has an assigned spatial reference system, and if it is transformable to the target coordinate system.

- reference: Handle on the spatial reference system to apply

Returns OGRERR_NONE on success, or an error code.

Union(Geometry other) -> Geometry

Computes union.

Generates a new geometry that is the region of union of the two geometries operated on.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry

Returns a new geometry representing the union or None if an error occurs.

UnionCascaded() -> Geometry

Computes union using cascading.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

Returns a new geometry representing the union or None if an error occurs.

Within(Geometry other) -> bool

Tests for containment.

Tests if this geometry is within the other geometry.

This function is built on the GEOS library; check it for the definition of the geometry operation. If OGR is built without the GEOS library, this function will always fail, issuing a CPLE_NotSupported error.

- other: The other geometry to compare

Returns True if hThis is within hOther; otherwise, False.

WkbSize() -> int

Returns size of related binary representation.

This function returns the exact number of bytes required to hold the well-known binary representation of this geometry object. Its computation may be slightly expensive for complex geometries.

This function relates to the SFCOM IWks::WkbSize() method.

Returns size of binary representation in bytes.

WkbSize() -> int

Returns size of related binary representation.

This function returns the exact number of bytes required to hold the well-known binary representation of this geometry object. Its computation may be slightly expensive for complex geometries.

This function relates to the SFCOM IWks::WkbSize() method.

Returns size of binary representation in bytes.

next()

C.9 Layer class

AlterFieldDefn(int iField, FieldDefn field_def, int nFlags) -> OGRErr

Alters the definition of an existing field on a layer.

You must use this to alter the definition of an existing field of a real layer. Internally the OGRFeatureDefn for the layer will be updated to reflect the altered field. Applications should never modify the OGRFeatureDefn used by a layer directly.

This function should not be called while there are feature objects in existence that were obtained or created with the previous layer definition.

Not all drivers support this function. You can query a layer to check if it supports it with the OLCAlterFieldDefn capability. Certain drivers may only support this method while there are still no features in the layer. When it's supported, the existing features of the backing file/database should be updated accordingly. Certain drivers might also not support all update flags.

- iField: Index of the field whose definition must be altered.
- field_def: New field definition
- nFlags: Combination of ALTER_NAME_FLAG, ALTER_TYPE_FLAG and ALTER_WIDTH_PRECISION_FLAG to indicate which of the name and/or type and/or width and precision fields from the new field definition must be taken into account
- OGRERR_NONE on success

Returns OGR 1.9.0.

Clip(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

CommitTransaction() -> OGRErr

For data sources that support transactions, CommitTransaction commits a transaction.

If no transaction is active, or the commit fails, will return OGRERR_FAILURE. Data sources that don't support transactions will always return OGRERR_NONE.

Returns OGRERR_NONE on success.

CreateFeature(Feature feature) -> OGRErr

Creates and writes a new feature within a layer.

The passed feature is written to the layer as a new feature, rather than overwriting an existing one. If the feature has a feature id other than OGRNullFID, then the native implementation may use that as the feature id of the new feature, but not necessarily. Upon successful return the passed feature will have been updated with the new feature id.

- feature: The handle of the feature to write to disk

Returns OGRERR_NONE on success.

CreateField(FieldDefn field_def, int approx_ok = 1) -> OGRErr

Creates a new field on a layer.

You must use this to create new fields on a real layer. Internally the OGRFeatureDefn for the layer will be updated to reflect the new field. Applications should never modify the OGRFeatureDefn used by a layer directly.

This function shouldn't be called while there are feature objects in existence that were obtained or created with the previous layer definition.

Not all drivers support this function. You can query a layer to check if it supports it with the OLCCreateField capability. Certain drivers may only support this method while there are still no features in the layer. When it's supported, the existing features of the backing file/database should be updated accordingly.

- field_def: Handle of the field definition to write to disk
- approx_ok: If True, the field may be created in a slightly different form depending on the limitations of the format driver

Returns OGRERR_NONE on success.

CreateFields(fields)

Creates a list of fields on the Layer.

CreateGeomField(GeomFieldDefn field_def, int approx_ok = 1) -> OGRErr

DeleteFeature(long fid) -> OGRErr

Deletes feature from layer.

- fid: The feature id to be deleted from the layer

Returns OGRERR_NONE on success.

DeleteField(int iField) -> OGRErr

Creates a new field on a layer.

You must use this to delete existing fields on a real layer. Internally the OGRFeatureDefn for the layer will be updated to reflect the deleted field. Applications should never modify the OGRFeatureDefn used by a layer directly.

This function should not be called while there are feature objects in existence that were obtained or created with the previous layer definition.

Not all drivers support this function. You can query a layer to check if it supports it with the OLCDeleteField capability. Certain drivers may only support this method while there are still no features in the layer. When it's supported, the existing features of the backing file/database should be updated accordingly.

- iField: Index of the field to delete
- OGRERR_NONE on success

Returns OGR 1.9.0.

Dereference()

For backward compatibility only.

Erase(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

FindFieldIndex(string pszFieldName, int bExactMatch) -> int

GetExtent(int force = 1, int can_return_null = 0, int geom_field = 0)

Fetches the extent of this layer.

Returns the extent (MBR) of the data in the layer. If bForce is False, and it would be expensive to establish the extent, then OGRERR_FAILURE will be returned indicating that the extent isn't know. If bForce is True, then certain implementations will scan the entire layer once to compute the MBR of all the features in the layer.

Depending on the drivers, the returned extent may or may not take the spatial filter into account. It’s safer to call OGR_L_GetExtent() without setting a spatial filter.

Layers without any geometry may return OGRERR_FAILURE, indicating that no meaningful extents could be collected.

Note that certain implementations of this method may alter the read cursor of the layer.

- force: The structure in which the extent value will be returned
- can_return_null: Flag indicating whether the extent should be computed even if it’s expensive

Returns OGRERR_NONE on success, OGRERR_FAILURE if extent not known.

GetFIDColumn() -> char

This method returns the name of the underlying database column being used as the FID column, or "" if not supported.

Returns fid column name.

GetFeature(long fid) -> Feature

Fetches a feature by its identifier.

This function will attempt to read the identified feature. The nFID value cannot be OGRNullFID. Success or failure of this operation is unaffected by the spatial or attribute filters.

If this function returns a non-None feature, it is guaranteed that its feature id (OGR_F_GetFID()) will be the same as nFID.

The returned feature should be free with OGR_F_Destroy().

- fid: The feature id of the feature to read

Returns a handle to a feature now owned by the caller or None on failure.

GetFeatureCount(int force = 1) -> int

Fetches the feature count in this layer.

Returns the number of features in the layer. For dynamic databases the count may not be exact. If bForce is False, and it would be expensive to establish the feature count, a value of -1 may be returned indicating that the count isn't known. If bForce is True, certain implementations will scan the entire layer once to count objects.

The returned count takes the spatial filter into account.

Note that certain implementations of this method may alter the read cursor of the layer.

- force: Flag indicating whether the count should be computed even if it's expensive.

Returns feature count, -1 if count not known.

GetFeaturesRead() -> GIntBig

GetGeomType() -> OGRwkbGeometryType

Returns the layer geometry type.

- The geometry type

Returns OGR 1.8.0.

GetGeometryColumn() -> char

This method returns the name of the underlying database column being used as the geometry column, or "" if not supported.

Returns geometry column name.

GetLayerDefn() -> FeatureDefn

Fetches the schema information for this layer.

The returned handle to the OGRFeatureDefn is owned by the OGRLayer, and shouldn't be modified or freed by the application. It encapsulates the attribute schema of the features of the layer.

Returns a handle to the feature definition.

GetName() -> char

Returns the layer name.

- The layer name (must not been freed)

Returns OGR 1.8.0.

GetNextFeature() -> Feature

Fetches the next available feature from this layer.

The returned feature becomes the responsibility of the caller to delete with OGR_F_Destroy(). It's critical that all features associated with an OGRLayer (more specifically an OGRFeatureDefn) be deleted before that layer/data source is deleted.

This function implements sequential access to the features of a layer. The OGR_L_ResetReading() function can be used to start at the beginning again.

Returns a handle to a feature or None if no more features are available.

GetRefCount() -> int

GetSpatialFilter() -> Geometry

This function returns the current spatial filter for this layer.

The returned pointer is to an internally owned object, and shouldn't be altered or deleted by the caller.

Returns a handle to the spatial filter geometry.

GetSpatialRef() -> SpatialReference

Fetches the spatial reference system for this layer.

The returned object is owned by the OGRLayer and shouldn't be modified or freed by the application.

Returns spatial reference or None if there isn't one.

GetStyleTable() -> StyleTable

Identity(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

Intersection(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

Reference()

For backward compatibility only.

ReorderField(int iOldFieldPos, int iNewFieldPos) -> OGRErr

Reorders an existing field on a layer.

This function is a convenience wrapper of OGR_L_ReorderFields(), dedicated to move a single field.

You must use this to reorder existing fields on a real layer. Internally the OGRFeatureDefn for the layer will be updated to reflect the reordering of the fields. Applications should never modify the OGRFeatureDefn used by a layer directly.

This function shouldn't be called while there are feature objects in existence that were obtained or created with the previous layer definition.

The field definition that was at initial position iOldFieldPos will be moved at position iNewFieldPos, and elements between will be shuffled accordingly.

For example, suppose the fields were “0”,”1”,”2”,”3”,”4” initially. ReorderField(1, 3) will reorder them as “0”,”2”,”3”,”1”,”4”.

Not all drivers support this function. You can query a layer to check if it supports it with the OLCReorderFields capability. Certain drivers may only support this method while there are still no features in the layer. When it is supported, the existing features of the backing file/database should be updated accordingly.

- iOldFieldPos: Previous position of the field to move. Must be in the range [0,GetFieldCount()-1].
- iNewFieldPos: New position of the field to move. Must be in the range [0,GetFieldCount()-1].
- OGRERR_NONE on success.

Returns OGR 1.9.0.

ReorderFields(int nList) -> OGRErr

Reorders all the fields of a layer.

You must use this to reorder existing fields on a real layer. Internally the OGRFeatureDefn for the layer will be updated to reflect the reordering of the fields. Applications should never modify the OGRFeatureDefn used by a layer directly.

This function should not be called while there are feature objects in existence that were obtained or created with the previous layer definition.

panMap is such that, for each field definition at position i after reordering, its position before reordering was panMap[i].

For example, suppose the fields were “0”,”1”,”2”,”3”,”4” initially. ReorderFields([0,2,3,1,4]) will reorder them as “0”,”2”,”3”,”1”,”4”.

Not all drivers support this function. You can query a layer to check if it supports it with the OLCReorderFields capability. Certain drivers may only support this method while there are still no features in the layer. When it’s supported, the existing features of the backing file/database should be updated accordingly.

- nList: An array of GetLayerDefn()->GetFieldCount() elements that’s a permutation of [0, GetLayerDefn()->GetFieldCount()-1]
- OGRERR_NONE on success

Returns OGR 1.9.0.

ResetReading()

Resets feature reading to start on the first feature.

This affects GetNextFeature().

RollbackTransaction() -> OGRErr

For data sources that support transactions, RollbackTransaction will roll back a data source to its state before the start of the current transaction. If no transaction is active, or the rollback fails, will return OGRERR_FAILURE. Data sources that don't support transactions will always return OGRERR_NONE.

Returns OGRERR_NONE on success.

SetAttributeFilter(string filter_string) -> OGRErr

Sets a new attribute query.

This function sets the attribute query string to be used when fetching features via the OGR_L_GetNextFeature() function. Only features for which the query evaluates as true will be returned.

The query string should be in the format of a SQL WHERE clause; for example, "population > 1000000 and population < 5000000" where population is an attribute in the layer. The query format is a restricted form of SQL WHERE clause as defined "eq_format=restricted_where" about halfway through this document: http://ogdi.sourceforge.net/prop/6.2.CapabilitiesMetadata.html.

Note that installing a query string will generally result in resetting the current reading position (ala OGR_L_ResetReading()).

- filter_string: Query in restricted SQL WHERE format, or None to clear the current query

Returns OGRERR_NONE if successfully installed, or an error code if the query expression is in error, or another failure occurs.

SetFeature(Feature feature) -> OGRErr

Rewrites an existing feature.

This function will write a feature to the layer, based on the feature id within the OGRFeature.

- feature: The feature to write

Returns OGRERR_NONE if the operation works; otherwise, an appropriate error code.

SetIgnoredFields(string options) -> OGRErr

Sets which fields can be omitted when retrieving features from the layer.

If the driver supports this functionality (testable using OLCIgnoreFields capability), it will not fetch the specified fields in subsequent calls to GetFeature() / GetNextFeature() and thus save processing time and/or bandwidth.

Besides field names of the layers, the following special fields can be passed: "OGR_GEOMETRY" to ignore geometry and "OGR_STYLE" to ignore layer style.

By default, no fields are ignored.

- options: An array of field names terminated by None item. If None is passed, the ignored list is cleared.

Returns OGRERR_NONE if all field names have been resolved (even if the driver doesn't support this method).

SetNextByIndex(long new_index) -> OGRErr

Moves read cursor to the nIndex'th feature in the current result set.

- new_index: The index indicating how many steps into the result set to seek

Returns OGRERR_NONE on success or an error code.

SetSpatialFilter(int iGeomField, Geometry filter)

Sets a new spatial filter.

This function sets the geometry to be used as a spatial filter when fetching features via the OGR_L_GetNextFeature() function. Only features that geometrically intersect the filter geometry will be returned.

This function makes an internal copy of the passed geometry. The passed geometry remains the responsibility of the caller and may be safely destroyed.

For the time being, the passed filter geometry should be in the same SRS as the layer (as returned by OGR_L_GetSpatialRef()). In the future this may be generalized.

- iGeomField: Handle to the geometry to use as a filtering region. None may be passed indicating that the current spatial filter should be cleared, but no new one instituted.

SetSpatialFilterRect(int iGeomField, double minx, double miny, double maxx, double maxy)

Sets a new rectangular spatial filter.

This method sets a rectangle to be used as a spatial filter when fetching features via the OGR_L_GetNextFeature() method. Only features that geometrically intersect the given rectangle will be returned.

The x/y values should be in the same coordinate system as the layer as a whole (as returned by OGRLayer::GetSpatialRef()). Internally this method is normally implemented as creating a five-vertex closed rectangular polygon and passing it to OGRLayer::SetSpatialFilter(). It exists as a convenience.

The only way to clear a spatial filter set with this method is to call OGRLayer::SetSpatialFilter(None).

- iGeomField: The minimum x coordinate for the rectangular region
- minx: The minimum y coordinate for the rectangular region
- miny: The maximum x coordinate for the rectangular region
- maxx: The maximum y coordinate for the rectangular region

SetStyleTable(StyleTable table)

StartTransaction() -> OGRErr

For data sources that support transactions, StartTransaction creates a transaction.

If starting the transaction fails, will return OGRERR_FAILURE. Data sources that don't support transactions will always return OGRERR_NONE.

Returns OGRERR_NONE on success.

SymDifference(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

SyncToDisk() -> OGRErr

Flushes pending changes to disk.

This call is intended to force the layer to flush any pending writes to disk, and leave the disk file in a consistent state. It wouldn't normally have any effect on read-only data sources.

Certain layers don't implement this method, and will still return OGRERR_NONE. The default implementation returns OGRERR_NONE. An error is only returned if an error occurs while attempting to flush to disk.

Returns OGRERR_NONE if no error occurs (even if nothing is done) or an error code.

TestCapability(string cap) -> bool

Tests if this layer supported the named capability.

The capability codes that can be tested are represented as strings, but defined constants exist to ensure correct spelling. Specific layer types may implement class specific capabilities, but this can't generally be discovered by the caller.

OLCRandomRead / "RandomRead": True if the GetFeature() method is implemented in an optimized way for this layer, as opposed to the default implementation using ResetReading() and GetNextFeature() to find the requested feature id.

OLCSequentialWrite / "SequentialWrite": True if the CreateFeature() method works for this layer. Note this means that this particular layer is writable. The same OGRLayer class may return False for other layer instances that are effectively read-only.

OLCRandomWrite / "RandomWrite": True if the SetFeature() method is operational on this layer. Note this means that this particular layer is writable. The same OGRLayer class may return False for other layer instances that are effectively read-only.

OLCFastSpatialFilter / "FastSpatialFilter": True if this layer implements spatial filtering efficiently. Layers that effectively read all features, and test them with the OGRFeature intersection methods should return False. This can be used as a clue by the application whether it should build and maintain its own spatial index for features in this layer.

OLCFastFeatureCount / "FastFeatureCount": True if this layer can return a feature count (via OGR_L_GetFeatureCount()) efficiently—without counting the features. In certain cases this will return True until a spatial filter is installed after which it will return False.

OLCFastGetExtent / "FastGetExtent": True if this layer can return its data extent (via OGR_L_GetExtent()) efficiently—without scanning all the features. In some cases this will return True until a spatial filter is installed after which it will return False.

OLCFastSetNextByIndex / "FastSetNextByIndex": True if this layer can perform the SetNextByIndex() call efficiently; otherwise, False.

OLCCreateField / "CreateField": True if this layer can create new fields on the current layer using CreateField(); otherwise, False.

OLCDeleteField / "DeleteField": True if this layer can delete existing fields on the current layer using DeleteField(); otherwise, False.

OLCDeleteFeature / "DeleteFeature": True if the DeleteFeature() method is supported on this layer; otherwise, False.

OLCStringsAsUTF8 / "StringsAsUTF8": True if values of OFTString fields are assured to be in UTF-8 format. If False, the encoding of fields is uncertain, though it might still be UTF-8.

- cap: The name of the capability to test.

Returns True if the layer has the requested capability, or False otherwise. OGRLayers will return False for any unrecognized capabilities.

Union(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

Update(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

Update(Layer method_layer, Layer result_layer, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> OGRErr

next()

PROPERTIES

schema

C.10 StyleTable class

AddStyle(string pszName, string pszStyleString) -> int

Find(string pszName) -> char

GetLastStyleName() -> char

GetNextStyle() -> char

LoadStyleTable(string utf8_path) -> int

ResetStyleStringReading()

SaveStyleTable(string utf8_path) -> int

SaveStyleTable(string utf8_path) -> int

C.11 Module functions

ApproximateArcAngles(double dfCenterX, double dfCenterY, double dfZ, double dfPrimaryRadius, double dfSecondaryAxis, double dfRotation, double dfStartAngle, double dfEndAngle, double dfMaxAngleStepSizeDegrees) -> Geometry

BuildPolygonFromEdges(Geometry hLineCollection, int bBestEffort = 0, int bAutoClose = 0, double dfTolerance = 0) -> Geometry

CreateGeometryFromGML(char input_string) -> Geometry

CreateGeometryFromJson(char input_string) -> Geometry

CreateGeometryFromWkb(int len, SpatialReference reference = None) -> Geometry

CreateGeometryFromWkt(char val, SpatialReference reference = None) -> Geometry

DontUseExceptions()

ForceToLineString(Geometry geom_in) -> Geometry

ForceToMultiLineString(Geometry geom_in) -> Geometry

ForceToMultiPoint(Geometry geom_in) -> Geometry

ForceToMultiPolygon(Geometry geom_in) -> Geometry

ForceToPolygon(Geometry geom_in) -> Geometry

GeneralCmdLineProcessor(char papszArgv, int nOptions = 0) -> char

GeometryTypeToName(OGRwkbGeometryType eType) -> char

GetDriver(int driver_number) -> Driver

GetDriverByName(char name) -> Driver

GetDriverCount() -> int

GetFieldTypeName(OGRFieldType type) -> char

GetOpenDS(int ds_number) -> DataSource

GetOpenDSCount() -> int

GetUseExceptions() -> int

Open(char utf8_path, int update = 0) -> DataSource

OpenShared(char utf8_path, int update = 0) -> DataSource

RegisterAll()

SetGenerate_DB2_V72_BYTE_ORDER(int bGenerate_DB2_V72_BYTE_ORDER) -> OGRErr

TermProgress_nocb(double dfProgress, string pszMessage = None, void pData = None) -> int

UseExceptions()

C.12 Module data

ALTER_ALL_FLAG
ALTER_NAME_FLAG
ALTER_TYPE_FLAG
ALTER_WIDTH_PRECISION_FLAG
NullFID
ODrCCreateDataSource
ODrCDeleteDataSource
ODsCCreateGeomFieldAfterCreateLayer
ODsCCreateLayer
ODsCDeleteLayer
OFTBinary
OFTDate
OFTDateTime
OFTInteger
OFTIntegerList
OFTReal
OFTRealList
OFTString
OFTStringList
OFTTime
OFTWideString
OFTWideStringList
OJLeft
OJRight
OJUndefined
OLCAlterFieldDefn
OLCCreateField
OLCCreateGeomField
OLCDeleteFeature
OLCDeleteField
OLCFastFeatureCount
OLCFastGetExtent
OLCFastSetNextByIndex
OLCFastSpatialFilter
OLCIgnoreFields
OLCRandomRead
OLCRandomWrite
OLCReorderFields
OLCSequentialWrite
OLCStringsAsUTF8
OLCTransactions
TermProgress

wkb25Bit
wkb25DBit
wkbGeometryCollection
wkbGeometryCollection25D
wkbLineString
wkbLineString25D
wkbLinearRing
wkbMultiLineString
wkbMultiLineString25D
wkbMultiPoint
wkbMultiPoint25D
wkbMultiPolygon
wkbMultiPolygon25D
wkbNDR
wkbNone
wkbPoint
wkbPoint25D
wkbPolygon
wkbPolygon25D
wkbUnknown
wkbXDR

appendix D *OSR*

D.1 Summary

COORDINATETRANSFORMATION CLASS

TransformPoint()
TransformPoints()
TransformPoints()

SPATIALREFERENCE CLASS

AutoIdentifyEPSG()
Clone()
CloneGeogCS()
CopyGeogCSFrom()
EPSGTreatsAsLatLong()
EPSGTreatsAsNorthingEasting()
ExportToMICoordSys()
ExportToPCI()
ExportToPrettyWkt()
ExportToProj4()
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Fixup()
FixupOrdering()
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GetsAttrValue()
GetsAuthorityCode()
GetsAuthorityName()
GetsInvFlattening()
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GetsLinearUnitsName()
GetsNormProjParm()
GetsProjParm()
GetsSemiMajor()
GetsSemiMinor()
GetsTOWGS84()
GetsUTMZone()
ImportFromEPSG()
ImportFromEPSGA()
ImportFromERM()
ImportFromESRI()
ImportFromMICoordSys()
ImportFromOzi()
ImportFromPCI()
ImportFromProj4()
ImportFromUSGS()
ImportFromUrl()
ImportFromWkt()
ImportFromXML()
IsCompound()
IsGeocentric()
IsGeographic()
IsLocal()

IsProjected()
IsSame()
IsSameGeogCS()
IsSameVertCS()
IsVertical()
MorphFromESRI()
MorphToESRI()
SetACEA()
SetAE()
SetAngularUnits()
SetAttrValue()
SetAuthority()
SetBonne()
SetCEA()
SetCS()
SetCompoundCS()
SetEC()
SetEckertIV()
SetEckertVI()
SetEquirectangular()
SetEquirectangular2()
SetFromUserInput()
SetGEOS()
SetGH()
SetGS()
SetGaussSchreiberTMercator()
SetGeocCS()
SetGeogCS()
SetGnomonic()
SetHOM()
SetHOM2PNO()
SetIGH()
SetKrovak()
SetLAEA()
SetLCC()
SetLCC1SP()
SetLCCB()
SetLinearUnits()
SetLinearUnitsAndUpdateParameters()
SetLocalCS()
SetMC()
SetMercator()
SetMollweide()
SetNZMG()
SetNormProjParm()
SetOS()
SetOrthographic()
SetPS()
SetPolyconic()
SetProjCS()
SetProjParm()
SetProjection()
SetRobinson()
SetSOC()
SetSinusoidal()
SetStatePlane()
SetStereographic()
SetTM()
SetTMG()
SetTMSO()
SetTMVariant()
SetTOWGS84()
SetTargetLinearUnits()
SetUTM()
SetVDG()
SetVertCS()
SetWellKnownGeogCS()
StripCTParms()
Validate()
Validate()

MODULE FUNCTIONS

CreateCoordinateTransformation()
DontUseExceptions()
GetsProjectionMethods()
GetsUseExceptions()
GetsUserInputAsWKT()
GetsWellKnownGeogCSAsWKT()
UseExceptions()

D.2 CoordinateTransformation class

TransformPoint(double x, double y, double z = 0.0)

TransformPoints(int nCount)

TransformPoints(int nCount)

D.3 SpatialReference class

AutoIdentifyEPSG() -> OGRErr

Sets EPSG authority information if possible.

This method inspects a WKT definition and adds EPSG authority nodes where an aspect of the coordinate system can be easily and safely corresponded with an EPSG identifier. In practice, this method will evolve over time. In theory, it can add authority nodes for any object (that is, spheroid, datum, GEOGCS, units, and PROJCS) that could have an authority node. Mostly this is useful for inserting appropriate PROJCS codes for common formulations (such as UTM and WGS84).

If it's successful the OGRSpatialReference is updated in place, and the method returns OGRERR_NONE. If the method fails to identify the general coordinate system, OGRERR_UNSUPPORTED_SRS is returned but no error message is posted via CPLError().

Returns OGRERR_NONE or OGRERR_UNSUPPORTED_SRS.

Clone() -> SpatialReference

Makes a duplicate of this OGRSpatialReference.

Returns a new SRS, which becomes the responsibility of the caller.

CloneGeogCS() -> SpatialReference

Makes a duplicate of the GEOGCS node of this OGRSpatialReference object.

Returns a new SRS, which becomes the responsibility of the caller.

CopyGeogCSFrom(SpatialReference rhs) -> OGRErr

Copies GEOGCS from another OGRSpatialReference.

The GEOGCS information is copied into this OGRSpatialReference from another. If this object has a PROJCS root already, the GEOGCS is installed within it; otherwise, it's installed as the root.

- poSrcSRS: The spatial reference to copy the GEOGCS information from

Returns OGRERR_NONE on success or an error code.

EPSGTreatsAsLatLong() -> int

This method returns TRUE if EPSG feels this geographic coordinate system should be treated as having lat/long coordinate ordering.

Currently this returns TRUE for all geographic coordinate systems with an EPSG code set, and AXIS values set defining it as lat, long. Note that coordinate systems with an EPSG code and no axis settings will be assumed to not be lat/long.

FALSE will be returned for all coordinate systems that are not geographic, or that don't have an EPSG code set.

Returns TRUE or FALSE.

EPSGTreatsAsNorthingEasting() -> int

This method returns TRUE if EPSG feels this projected coordinate system should be treated as having northing/easting coordinate ordering.

Currently this returns TRUE for all projected coordinate systems with an EPSG code set, and AXIS values set defining it as northing, easting.

FALSE will be returned for all coordinate systems that aren't projected, or that don't have an EPSG code set.

Returns TRUE or FALSE.

Since OGR 1.10.0.

ExportToMICoordSys() -> OGRErr

ExportToPCI() -> OGRErr

ExportToPrettyWkt(int simplify = 0) -> OGRErr

ExportToProj4() -> OGRErr

ExportToUSGS() -> OGRErr

ExportToWkt() -> OGRErr

ExportToXML(string dialect = "") -> OGRErr

Fixup() -> OGRErr

Fixes up as needed.

Certain mechanisms to create WKT using OGRSpatialReference and some imported WKT aren't valid according to the OGC CT specification. This method attempts to fill in any missing defaults that are required, and fix up ordering problems (using OSRFixupOrdering()) so that the resulting WKT is valid.

This method should be expected to evolve over time as problems are discovered. The following are among the fix-up actions this method will take:

- Fix up the ordering of nodes to match the BNF WKT ordering, using the FixupOrdering() method.
- Add missing linear or angular units nodes.

Returns OGRERR_NONE on success or an error code if something goes wrong.

FixupOrdering() -> OGRErr

Corrects parameter ordering to match CT Specification.

Certain mechanisms to create WKT using OGRSpatialReference and some imported WKT fail to maintain the order of parameters required, according to the BNF definitions in the OpenGIS SF-SQL and CT Specifications. This method attempts to massage things back into the required order.

Returns OGRERR_NONE on success or an error code if something goes wrong.

GetsAngularUnits() -> double

Fetches angular geographic coordinate system units.

If no units are available, a value of "degree" and SRS_UA_DEGREE_CONV will be assumed. This method only checks directly under the GEOGCS node for units.

This method does the same thing as the C function OSRGetsAngularUnits().

- ppszName: A pointer to be updated with the pointer to the unit's name. The returned value remains internal to the OGRSpatialReference and shouldn't be freed or modified. It may be invalidated on the next OGRSpatialReference call.

Returns the value to multiply by angular distances to transform them to radians.

GetsAttrValue(string name, int child = 0) -> char

Fetches indicated attribute of named node.

This method uses GetsAttrNode() to find the named node, and then extracts the value of the indicated child. Thus, a call to GetsAttrValue("UNIT",1) would return the second child of the UNIT node, which is normally the length of the linear unit in meters.

This method does the same thing as the C function OSRGetsAttrValue().

- pszNodeName: The tree node to look for (case insensitive)
- iAttr: The child of the node to fetch (zero-based)

Returns the requested value, or NULL if it fails for any reason.

GetsAuthorityCode(string target_key) -> char

Gets the authority code for a node.

This method is used to query an AUTHORITY[] node from within the WKT tree and fetch the code value.

While in theory values may be non-numeric, for the EPSG authority all code values should be integral.

- pszTargetKey: The partial or complete path to the node to get an authority from—that is, "PROJCS", "GEOGCS", "GEOGCS|UNIT", or NULL to search for an authority node on the root element.

Returns value code from authority node, or NULL on failure. The value returned is internal and should not be freed or modified.

GetsAuthorityName(string target_key) -> char

Gets the authority name for a node.

This method is used to query an AUTHORITY[] node from within the WKT tree, and fetch the authority name value.

The most common authority is EPSG.

- pszTargetKey: The partial or complete path to the node to get an authority from. That is, "PROJCS", "GEOGCS", "GEOGCS|UNIT", or NULL to search for an authority node on the root element.

Returns value code from authority node, or NULL on failure. The value returned is internal and should not be freed or modified.

GetsInvFlattening() -> double

Gets spheroid inverse flattening.

This method does the same thing as the C function OSRGetsInvFlattening().

- pnErr: If non-NULL set to OGRERR_FAILURE if no inverse flattening can be found.

Returns inverse flattening, or SRS_WGS84_INVFLATTENING if it can't be found.

GetsLinearUnits() -> double

Fetches linear projection units.

If no units are available, a value of "Meters" and 1.0 will be assumed. This method only checks directly under the PROJCS, GEOCCS, or LOCAL_CS node for units.

This method does the same thing as the C function OSRGetsLinearUnits()/

- ppszName: A pointer to be updated with the pointer to the unit's name. The returned value remains internal to the OGRSpatialReference and shouldn't be freed or modified. It may be invalidated on the next OGRSpatialReference call.

Returns the value to multiply by linear distances to transform them to meters.

GetsLinearUnitsName() -> char

GetsNormProjParm(string name, double default_val = 0.0) -> double

Fetches a normalized projection parameter value.

- pszName: The name of the parameter to fetch, from the set of SRS_PP codes in ogr_srs_api.h.
- dfDefaultValue: The value to return if this parameter doesn't exist.
- pnErr: Place to put error code on failure. Ignored if NULL.

Returns value of parameter.

GetsProjParm(string name, double default_val = 0.0) -> double

Fetches a projection parameter value.

NOTE: This code should be modified to translate non-degree angles into degrees based on the GEOGCS unit. This hasn't yet been done.

- pszName: The name of the parameter to fetch, from the set of SRS_PP codes in ogr_srs_api.h.
- dfDefaultValue: The value to return if this parameter doesn't exist.
- pnErr: Place to put error code on failure. Ignored if NULL.

Returns value of parameter.

GetsSemiMajor() -> double

Gets spheroid semi-major axis.

This method does the same thing as the C function OSRGetsSemiMajor().

- pnErr: When non-NULL set to OGRERR_FAILURE if semi major axis can be found

Returns semi-major axis, or SRS_WGS84_SEMIMAJOR if it can't be found.

GetsSemiMinor() -> double

Gets spheroid semi-minor axis.

This method does the same thing as the C function OSRGetsSemiMinor().

- pnErr: When non-NULL set to OGRERR_FAILURE if semi minor axis can be found

Returns semi-minor axis, or WGS84 semi-minor if it can't be found.

GetsTOWGS84() -> OGRErr

Fetches TOWGS84 parameters, if available.

- padfCoeff: Array into which up to seven coefficients are placed
- nCoeffCount: Size of padfCoeff—defaults to 7

Returns OGRERR_NONE on success, or OGRERR_FAILURE if there's no TOWGS84 node available.

GetsUTMZone() -> int

Gets utm zone information.

This is the same as the C function OSRGetsUTMZone().

In SWIG bindings (Python, Java, etc.) the GetsUTMZone() method returns a zone that's negative in the southern hemisphere instead of having the pbNorth flag used in the C and C++ interface.

- pbNorth: Pointer to set to TRUE if northern hemisphere, or FALSE if southern.

Returns UTM zone number or zero if this isn't a UTM definition.

ImportFromEPSG(int arg) -> OGRErr

ImportFromEPSGA(int arg) -> OGRErr

ImportFromERM(string proj, string datum, string units) -> OGRErr

ImportFromESRI(string ppszInput) -> OGRErr

ImportFromMICoordSys(string pszCoordSys) -> OGRErr

ImportFromOzi(string datum, string proj, string projParms) -> OGRErr

ImportFromPCI(string proj, string units = "METRE", double argin = 0) -> OGRErr

ImportFromProj4(string ppszInput) -> OGRErr

ImportFromUSGS(long proj_code, long zone = 0, double argin = 0, long datum_code = 0) -> OGRErr

ImportFromUrl(string url) -> OGRErr

ImportFromWkt(string ppszInput) -> OGRErr

ImportFromXML(string xmlString) -> OGRErr

IsCompound() -> int

Checks if coordinate system is compound.

Returns TRUE if this is rooted with a COMPD_CS node.

IsGeocentric() -> int

Checks if geocentric coordinate system.

Returns TRUE if this contains a GEOCCS node indicating it's a geocentric coordinate system.

Since OGR 1.9.0.

IsGeographic() -> int

Checks if geographic coordinate system.

Returns TRUE if this spatial reference is geographic—that is, if the root is a GEOGCS node.

IsLocal() -> int

Checks if local coordinate system.

Returns TRUE if this spatial reference is local—that is, if the root is a LOCAL_CS node.

IsProjected() -> int

Checks if projected coordinate system.

Returns TRUE if this contains a PROJCS node indicating it's a projected coordinate system.

IsSame(SpatialReference rhs) -> int

Do these two spatial references describe the same system?

- poOtherSRS: The SRS being compared to

Returns TRUE if equivalent or FALSE otherwise.

IsSameGeogCS(SpatialReference rhs) -> int

Do the GeogCSs match?

- poOther: The SRS being compared against

Returns TRUE if they're the same or FALSE otherwise.

IsSameVertCS(SpatialReference rhs) -> int

Do the VertCSs match?

- poOther: The SRS being compared against

Returns TRUE if they are the same or FALSE otherwise.

IsVertical() -> int

Checks if vertical coordinate system.

Returns TRUE if this contains a VERT_CS node indicating it's a vertical coordinate system.

Since OGR 1.8.0.

MorphFromESRI() -> OGRErr

MorphToESRI() -> OGRErr

SetACEA(double stdp1, double stdp2, double clat, double clong, double fe, double fn) -> OGRErr

SetAE(double clat, double clong, double fe, double fn) -> OGRErr

SetAngularUnits(string name, double to_radians) -> OGRErr

Sets the angular units for the geographic coordinate system.

This method creates a UNIT subnode with the specified values as a child of the GEOGCS node.

This method does the same as the C function OSRSetAngularUnits().

- pszUnitsName: The unit's name to be used. Several preferred unit names can be found in ogr_srs_api.h, such as SRS_UA_DEGREE.
- dfInRadians: The value to multiple by an angle in the indicated units to transform to radians. Several standard conversion factors can be found in ogr_srs_api.h.

Returns OGRERR_NONE on success.

SetAttrValue(string name, string value) -> OGRErr

SetAuthority(string pszTargetKey, string pszAuthority, int nCode) -> OGRErr

Sets the authority for a node.

- pszTargetKey: The partial or complete path to the node to set an authority on. That is, "PROJCS", "GEOGCS", or "GEOGCS|UNIT".
- pszAuthority: Authority name, such as "EPSG".
- nCode: Code for value with this authority.

Returns OGRERR_NONE on success.

SetBonne(double stdp, double cm, double fe, double fn) -> OGRErr

SetCEA(double stdp1, double cm, double fe, double fn) -> OGRErr

SetCS(double clat, double clong, double fe, double fn) -> OGRErr

SetCompoundCS(string name, SpatialReference horizcs, SpatialReference vertcs) -> OGRErr

Sets up a compound coordinate system.

This method replaces the current SRS with a COMPD_CS coordinate system consisting of the passed-in horizontal and vertical coordinate systems.

- pszName: The name of the compound coordinate system
- poHorizSRS: The horizontal SRS (PROJCS or GEOGCS)
- poVertSRS: The vertical SRS (VERT_CS)

Returns OGRERR_NONE on success.

SetEC(double stdp1, double stdp2, double clat, double clong, double fe, double fn) -> OGRErr

SetEckertIV(double cm, double fe, double fn) -> OGRErr

SetEckertVI(double cm, double fe, double fn) -> OGRErr

SetEquirectangular(double clat, double clong, double fe, double fn) -> OGRErr

SetEquirectangular2(double clat, double clong, double pseudostdparallellat, double fe, double fn) -> OGRErr

SetFromUserInput(string name) -> OGRErr

Sets spatial reference from various text formats.

This method will examine the provided input and try to deduce the format, and then use it to initialize the spatial reference system. It may take the following forms:

- Well-known text definition - passed on to importFromWkt()
- "EPSG:n"—number passed on to importFromEPSG()
- "EPSGA:n"—number passed on to importFromEPSGA()
- "AUTO:proj_id,unit_id,lon0,lat0"—WMS auto projections
- "urn:ogc:def:crs:EPSG::n"—ogc urns
- PROJ.4 definitions—passed on to importFromProj4()
- Filename—file read for WKT, XML or PROJ.4 definition
- Well-known name accepted by SetWellKnownGeogCS(), such as NAD27, NAD83, WGS84 or WGS72
- WKT (directly or in a file) in ESRI format should be prefixed with ESRI:: to trigger an automatic morphFromESRI()
- "IGNF:xxx"—"+init=IGNF:xxx" passed on to importFromProj4()

It's expected that this method will be extended in the future to support XML and perhaps a simplified "mini-language" for indicating common UTM and state plane definitions.

This method is intended to be flexible, but by its nature it's imprecise because it must guess information about the format intended. When possible, applications should call the specific method appropriate if the input is known to be in a particular format.

This method does the same thing as the OSRSetFromUserInput() function.

- pszDefinition: Text definition to try to deduce SRS from

Returns OGRERR_NONE on success, or an error code if the name isn't recognized, the definition is corrupt, or an EPSG value can't be successfully looked up.

SetGEOS(double cm, double satelliteheight, double fe, double fn) -> OGRErr

SetGH(double cm, double fe, double fn) -> OGRErr

SetGS(double cm, double fe, double fn) -> OGRErr

SetGaussSchreiberTMercator(double clat, double clong, double sc, double fe, double fn) -> OGRErr

SetGeocCS(string name = "unnamed") -> OGRErr

Sets the user-visible GEOCCS name.

This method will ensure a GEOCCS node is created as the root, and set the provided name on it. If used on a GEOGCS coordinate system, the DATUM and PRIMEM nodes from the GEOGCS will be transferred over to the GEOGCS.

- pszName: The user-visible name to assign. Not used as a key.

Returns OGRERR_NONE on success.

Since OGR 1.9.0.

SetGeogCS(string pszGeogName, string pszDatumName, string pszEllipsoidName, double dfSemiMajor, double dfInvFlattening, string pszPMName = "Greenwich", double dfPMOffset = 0.0, string pszUnits = "degree", double dfConvertToRadians = 0.0174532925199433) -> OGRErr

Sets geographic coordinate system.

This method is used to set the datum, ellipsoid, prime meridian, and angular units for a geographic coordinate system. It can be used on its own to establish a geographic spatial reference, or applied to a projected coordinate system to establish the underlying geographic coordinate system.

This method does the same as the C function OSRSetGeogCS().

- pszGeogName: User visible name for the geographic coordinate system (not to serve as a key).
- pszDatumName: Key name for this datum. The OpenGIS specification lists known values, and otherwise EPSG datum names with a standard transformation are considered legal keys.
- pszSpheroidName: User visible spheroid name (not to serve as a key).
- dfSemiMajor: The semi-major axis of the spheroid.
- dfInvFlattening: The inverse flattening for the spheroid. This can be computed from the semi-minor axis as 1/f = 1.0 / (1.0 - semiminor/semimajor).
- pszPMName: The name of the prime meridian (not to serve as a key). If this is NULL, a default value of “Greenwich” will be used.
- dfPMOffset: The longitude of Greenwich relative to this prime meridian.
- pszAngularUnits: The angular unit’s name (see ogr_srs_api.h for some standard names). If NULL, a value of “degrees” will be assumed.
- dfConvertToRadians: Value to multiply angular units by to transform them to radians. A value of SRS_UL_DEGREE_CONV will be used if pszAngularUnits is NULL.

Returns OGRERR_NONE on success.

SetGnomonic(double clat, double clong, double fe, double fn) -> OGRErr

SetHOM(double clat, double clong, double azimuth, double recttoskew, double scale, double fe, double fn) -> OGRErr

Sets a Hotine Oblique Mercator projection using azimuth angle.

This projection corresponds to EPSG projection method 9812, also sometimes known as *Hotine Oblique Mercator (variant A)*.

This method does the same thing as the C function OSRSetHOM().

- dfCenterLat: Latitude of the projection origin
- dfCenterLong: Longitude of the projection origin
- dfAzimuth: Azimuth, measured clockwise from North, of the projection centerline
- dfRectToSkew: Angle from rectified to skew grid
- dfScale: Scale factor applies to the projection origin
- dfFalseEasting: False easting
- dfFalseNorthing: False northing

Returns OGRERR_NONE on success.

SetHOM2PNO(double clat, double dfLat1, double dfLong1, double dfLat2, double dfLong2, double scale, double fe, double fn) -> OGRErr

Sets a Hotine Oblique Mercator projection using two points on projection centerline.

This method does the same thing as the C function OSRSetHOM2PNO().

- dfCenterLat: Latitude of the projection origin
- dfLat1: Latitude of the first point on center line
- dfLong1: Longitude of the first point on center line
- dfLat2: Latitude of the second point on center line
- dfLong2: Longitude of the second point on center line
- dfScale: Scale factor applies to the projection origin
- dfFalseEasting: False easting
- dfFalseNorthing: False northing

Returns OGRERR_NONE on success.

SetIGH() -> OGRErr

SetKrovak(double clat, double clong, double azimuth, double pseudostdparallellat, double scale, double fe, double fn) -> OGRErr

SetLAEA(double clat, double clong, double fe, double fn) -> OGRErr

SetLCC(double stdp1, double stdp2, double clat, double clong, double fe, double fn) -> OGRErr

SetLCC1SP(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetLCCB(double stdp1, double stdp2, double clat, double clong, double fe, double fn) -> OGRErr

SetLinearUnits(string name, double to_meters) -> OGRErr

Sets the linear units for the projection.

This method creates a UNIT subnode with the specified values as a child of the PROJCS, GEOCCS, or LOCAL_CS node.

This method does the same as the C function OSRSetLinearUnits().

- pszUnitsName: The unit's name to be used. Several preferred unit names can be found in ogr_srs_api.h, such as SRS_UL_METER, SRS_UL_FOOT, and SRS_UL_US_FOOT.
- dfInMeters: The value to multiply by a length in the indicated units to transform to meters. Several standard conversion factors can be found in ogr_srs_api.h.

Returns OGRERR_NONE on success.

SetLinearUnitsAndUpdateParameters(string name, double to_meters) -> OGRErr

Sets the linear units for the projection.

This method creates a UNIT subnode with the specified values as a child of the PROJCS or LOCAL_CS node. It works the same as the SetLinearUnits() method, but it also updates all existing linear projection parameter values from the old units to the new units.

- pszName: The unit's name to be used. Several preferred unit names can be found in ogr_srs_api.h, such as SRS_UL_METER, SRS_UL_FOOT, and SRS_UL_US_FOOT.
- dfInMeters: The value to multiply by a length in the indicated units to transform to meters. Several standard conversion factors can be found in ogr_srs_api.h.

Returns OGRERR_NONE on success.

SetLocalCS(string pszName) -> OGRErr

Sets the user-visible LOCAL_CS name.

This method will ensure a LOCAL_CS node is created as the root, and set the provided name on it. It must be used before SetLinearUnits().

- pszName: The user-visible name to assign. Not used as a key.

Returns OGRERR_NONE on success.

SetMC(double clat, double clong, double fe, double fn) -> OGRErr

SetMercator(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetMollweide(double cm, double fe, double fn) -> OGRErr

SetNZMG(double clat, double clong, double fe, double fn) -> OGRErr

SetNormProjParm(string name, double val) -> OGRErr

Sets a projection parameter with a normalized value.

- pszName: The parameter name, which should be selected from the macros in ogr_srs_api.h, such as SRS_PP_CENTRAL_MERIDIAN.
- dfValue: Value to assign.

Returns OGRERR_NONE on success.

SetOS(double dfOriginLat, double dfCMeridian, double scale, double fe, double fn) -> OGRErr

SetOrthographic(double clat, double clong, double fe, double fn) -> OGRErr

SetPS(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetPolyconic(double clat, double clong, double fe, double fn) -> OGRErr

SetProjCS(string name = "unnamed") -> OGRErr

Sets the user-visible PROJCS name.

This method will ensure a PROJCS node is created as the root, and set the provided name on it. If used on a GEOGCS coordinate system, the GEOGCS node will be demoted to be a child of the new PROJCS root.

- pszName: The user-visible name to assign. Not used as a key.

Returns OGRERR_NONE on success.

SetProjParm(string name, double val) -> OGRErr

Sets a projection parameter value.

Adds a new PARAMETER under the PROJCS with the indicated name and value.

Please check http://www.remotesensing.org/geotiff/proj_list pages for legal parameter names for specific projections.

- pszParmName: The parameter name, which should be selected from the macros in ogr_srs_api.h, such as SRS_PP_CENTRAL_MERIDIAN.
- dfValue: Value to assign.

Returns OGRERR_NONE on success.

SetProjection(string arg) -> OGRErr

Sets a projection name.

- pszProjection: The projection name, which should be selected from the macros in ogr_srs_api.h, such as SRS_PT_TRANSVERSE_MERCATOR.

Returns OGRERR_NONE on success.

SetRobinson(double clong, double fe, double fn) -> OGRErr

SetSOC(double latitudeoforigin, double cm, double fe, double fn) -> OGRErr

SetSinusoidal(double clong, double fe, double fn) -> OGRErr

SetStatePlane(int zone, int is_nad83 = 1, string unitsname = "", double units = 0.0) -> OGRErr

State plane.

Sets state plane projection definition.

This will attempt to generate a complete definition of a state plane zone based on generating the entire SRS from the EPSG tables. If the EPSG tables are unavailable, it will produce a stubbed LOCAL_CS definition and return OGRERR_FAILURE.

- nZone: State plane zone number, in the USGS numbering scheme (as distinct from the Arc/Info and Erdas numbering scheme).
- bNAD83: TRUE if the NAD83 zone definition should be used, or FALSE if the NAD27 zone definition should be used.
- pszOverrideUnitName: Linear unit name to apply overriding the legal definition for this zone.
- dfOverrideUnit: Linear unit conversion factor to apply overriding the legal definition for this zone.

Returns OGRERR_NONE on success or OGRERR_FAILURE on failure, mostly likely due to the EPSG tables not being accessible.

SetStereographic(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetTM(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetTMG(double clat, double clong, double fe, double fn) -> OGRErr

SetTMSO(double clat, double clong, double scale, double fe, double fn) -> OGRErr

SetTMVariant(string pszVariantName, double clat, double clong, double scale, double fe, double fn) -> OGRErr

Transverse Mercator variants.

SetTOWGS84(double p1, double p2, double p3, double p4 = 0.0, double p5 = 0.0, double p6 = 0.0, double p7 = 0.0) -> OGRErr

Sets the Bursa-Wolf conversion to WGS84.

This will create the TOWGS84 node as a child of the DATUM. It will fail if there's no existing DATUM node. Unlike most OGRSpatialReference methods, it will insert itself in the appropriate order, and will replace an existing TOWGS84 node if one exists.

The parameters have the same meaning as EPSG transformation 9606 (Position Vector 7-param. transformation).

- dfDX: X child in meters
- dfDY: Y child in meters
- dfDZ: Z child in meters
- dfEX: X rotation in arc seconds (optional, defaults to zero)
- dfEY: Y rotation in arc seconds (optional, defaults to zero)
- dfEZ: Z rotation in arc seconds (optional, defaults to zero)
- dfPPM: Scaling factor (parts per million)

Returns OGRERR_NONE on success.

SetTargetLinearUnits(string target, string name, double to_meters) -> OGRErr

Sets the linear units for the projection.

This method creates a UNIT subnode with the specified values as a child of the target node.

This method does the same as the C function OSRSetTargetLinearUnits().

- pszTargetKey: The keyword to set the linear units for—that is, "PROJCS" or "VERT_CS"
- pszUnitsName: The unit's name to be used. Several preferred unit names can be found in ogr_srs_api.h such as SRS_UL_METER, SRS_UL_FOOT, and SRS_UL_US_FOOT.
- dfInMeters: The value to multiple by a length in the indicated units to transform to meters. Several standard conversion factors can be found in ogr_srs_api.h.

Returns OGRERR_NONE on success.

Since OGR 1.9.0.

SetUTM(int zone, int north = 1) -> OGRErr

Universal Transverse Mercator.

Sets UTM projection definition.

This will generate a projection definition with the full set of transverse mercator projection parameters for the given UTM zone. If no PROJCS[] description is set yet, one will be set to look like “UTM Zone %d, {Northern, Southern} Hemisphere.”

- nZone: UTM zone
- bNorth: TRUE for northern hemisphere or FALSE for southern hemisphere

Returns OGRERR_NONE on success.

SetVDG(double clong, double fe, double fn) -> OGRErr

SetVertCS(string VertCSName = "unnamed", string VertDatumName = "unnamed", int VertDatumType = 0) -> OGRErr

Sets the user-visible VERT_CS name.

This method will ensure a VERT_CS node is created if needed. If the existing coordinate system is GEOGCS or PROJCS rooted, then it will be turned into a COMPD_CS.

- pszVertCSName: The user-visible name of the vertical coordinate system. Not used as a key.
- pszVertDatumName: The user-visible name of the vertical datum. It’s helpful if this matches the EPSG name.
- nVertDatumType: The OGC vertical datum type, usually 2005.

Returns OGRERR_NONE on success.

Since OGR 1.9.0.

SetWellKnownGeogCS(string name) -> OGRErr

Sets a GeogCS based on well-known name.

This may be called on an empty OGRSpatialReference to make a geographic coordinate system, or on something with an existing PROJCS node to set the underlying geographic coordinate system of a projected coordinate system.

The following well-known text values are currently supported:

- pszName: Name of well-known geographic coordinate system.

Returns OGRERR_NONE on success, or OGRERR_FAILURE if the name isn’t recognized, the target object is already initialized, or an EPSG value can’t be successfully looked up.

StripCTParms() -> OGRErr

Strips OGC CT Parameters.

This method will remove all components of the coordinate system that are specific to the OGC CT Specification—that is, it will attempt to strip it down to compatibility with the Simple Features 1.0 specification.

- poCurrent: Node to operate on. NULL to operate on whole tree.

Returns OGRERR_NONE on success or an error code.

Validate() -> OGRErr

Validates SRS tokens.

This method attempts to verify that the spatial reference system is well formed, and consists of known tokens. The validation isn't comprehensive.

Returns OGRERR_NONE if all is fine, OGRERR_CORRUPT_DATA if the SRS isn't well formed, and OGRERR_UNSUPPORTED_SRS if the SRS is well formed, but contains non-standard PROJECTION[] values.

Validate() -> OGRErr

Validates SRS tokens.

This method attempts to verify that the spatial reference system is well formed and consists of known tokens. The validation isn't comprehensive.

Returns OGRERR_NONE if all is fine, OGRERR_CORRUPT_DATA if the SRS isn't well formed, and OGRERR_UNSUPPORTED_SRS if the SRS is well formed, but contains non-standard PROJECTION[] values.

D.4 Module functions

CreateCoordinateTransformation(SpatialReference src, SpatialReference dst) -> CoordinateTransformation

DontUseExceptions()

GetsProjectionMethods(...)

GetsUseExceptions() -> int

GetsUserInputAsWKT(char name) -> OGRErr

GetsWellKnownGeogCSAsWKT(char name) -> OGRErr

UseExceptions()

D.5 Module data

SRS_DN_NAD27
SRS_DN_NAD83
SRS_DN_WGS72
SRS_DN_WGS84
SRS_PM_GREENWICH

SRS_PP_AZIMUTH
SRS_PP_CENTRAL_MERIDIAN
SRS_PP_False_EASTING
SRS_PP_False_NORTHING
SRS_PP_FIPSZONE
SRS_PP_LANDSAT_NUMBER
SRS_PP_LATITUDE_OF_1ST_POINT
SRS_PP_LATITUDE_OF_2ND_POINT
SRS_PP_LATITUDE_OF_CENTER
SRS_PP_LATITUDE_OF_ORIGIN
SRS_PP_LATITUDE_OF_POINT_1
SRS_PP_LATITUDE_OF_POINT_2
SRS_PP_LATITUDE_OF_POINT_3
SRS_PP_LONGITUDE_OF_1ST_POINT
SRS_PP_LONGITUDE_OF_2ND_POINT
SRS_PP_LONGITUDE_OF_CENTER
SRS_PP_LONGITUDE_OF_ORIGIN
SRS_PP_LONGITUDE_OF_POINT_1
SRS_PP_LONGITUDE_OF_POINT_2
SRS_PP_LONGITUDE_OF_POINT_3
SRS_PP_PATH_NUMBER
SRS_PP_PERSPECTIVE_POINT_HEIGHT
SRS_PP_PSEUDO_STD_PARALLEL_1
SRS_PP_RECTIFIED_GRID_ANGLE
SRS_PP_SATELLITE_HEIGHT
SRS_PP_SCALE_FACTOR
SRS_PP_STANDARD_PARALLEL_1
SRS_PP_STANDARD_PARALLEL_2
SRS_PP_ZONE
SRS_PT_ALBERS_CONIC_EQUAL_AREA
SRS_PT_AZIMUTHAL_EQUIDISTANT
SRS_PT_BONNE
SRS_PT_CASSINI_SOLDNER
SRS_PT_CYLINDRICAL_EQUAL_AREA
SRS_PT_ECKERT_I
SRS_PT_ECKERT_II
SRS_PT_ECKERT_III
SRS_PT_ECKERT_IV
SRS_PT_ECKERT_V
SRS_PT_ECKERT_VI
SRS_PT_EQUIDISTANT_CONIC
SRS_PT_EQUIRECTANGULAR

SRS_PT_GALL_STEREOGRAPHIC
SRS_PT_GAUSSSCHREIBERTMERCATOR
SRS_PT_GEOSTATIONARY_SATELLITE
SRS_PT_GNOMONIC
SRS_PT_GOODE_HOMOLOSINE
SRS_PT_HOTINE_OBLIQUE_MERCATOR
SRS_PT_HOTINE_OBLIQUE_MERCATOR_AZIMUTH_CENTER
SRS_PT_HOTINE_OBLIQUE_MERCATOR_TWO_POINT_NATURAL_ORIGIN
SRS_PT_IGH
SRS_PT_IMW_POLYCONIC
SRS_PT_KROVAK
SRS_PT_LABORDE_OBLIQUE_MERCATOR
SRS_PT_LAMBERT_AZIMUTHAL_EQUAL_AREA
SRS_PT_LAMBERT_CONFORMAL_CONIC_1SP
SRS_PT_LAMBERT_CONFORMAL_CONIC_2SP
SRS_PT_LAMBERT_CONFORMAL_CONIC_2SP_BELGIUM
SRS_PT_MERCATOR_1SP
SRS_PT_MERCATOR_2SP
SRS_PT_MILLER_CYLINDRICAL
SRS_PT_MOLLWEIDE
SRS_PT_NEW_ZEALAND_MAP_GRID
SRS_PT_OBLIQUE_STEREOGRAPHIC
SRS_PT_ORTHOGRAPHIC
SRS_PT_POLAR_STEREOGRAPHIC
SRS_PT_POLYCONIC
SRS_PT_ROBINSON
SRS_PT_SINUSOIDAL
SRS_PT_STEREOGRAPHIC
SRS_PT_SWISS_OBLIQUE_CYLINDRICAL
SRS_PT_TRANSVERSE_MERCATOR
SRS_PT_TRANSVERSE_MERCATOR_MI_21
SRS_PT_TRANSVERSE_MERCATOR_MI_22
SRS_PT_TRANSVERSE_MERCATOR_MI_23
SRS_PT_TRANSVERSE_MERCATOR_MI_24
SRS_PT_TRANSVERSE_MERCATOR_MI_25
SRS_PT_TRANSVERSE_MERCATOR_SOUTH_ORIENTED
SRS_PT_TUNISIA_MINING_GRID
SRS_PT_TWO_POINT_EQUIDISTANT
SRS_PT_VANDERGRINTEN
SRS_PT_WAGNER_I
SRS_PT_WAGNER_II
SRS_PT_WAGNER_III

SRS_PT_WAGNER_IV
SRS_PT_WAGNER_V
SRS_PT_WAGNER_VI
SRS_PT_WAGNER_VII
SRS_UA_DEGREE
SRS_UA_DEGREE_CONV
SRS_UA_RADIAN
SRS_UL_CENTIMETER
SRS_UL_CENTIMETER_CONV
SRS_UL_CHAIN
SRS_UL_CHAIN_CONV
SRS_UL_DECIMETER
SRS_UL_DECIMETER_CONV
SRS_UL_FOOT
SRS_UL_FOOT_CONV
SRS_UL_INDIAN_CHAIN
SRS_UL_INDIAN_CHAIN_CONV
SRS_UL_INDIAN_FOOT
SRS_UL_INDIAN_FOOT_CONV
SRS_UL_INDIAN_YARD
SRS_UL_INDIAN_YARD_CONV
SRS_UL_INTL_CHAIN
SRS_UL_INTL_CHAIN_CONV
SRS_UL_INTL_FATHOM
SRS_UL_INTL_FATHOM_CONV
SRS_UL_INTL_FOOT
SRS_UL_INTL_FOOT_CONV
SRS_UL_INTL_INCH
SRS_UL_INTL_INCH_CONV
SRS_UL_INTL_LINK
SRS_UL_INTL_LINK_CONV
SRS_UL_INTL_NAUT_MILE
SRS_UL_INTL_NAUT_MILE_CONV
SRS_UL_INTL_STAT_MILE
SRS_UL_INTL_STAT_MILE_CONV
SRS_UL_INTL_YARD
SRS_UL_INTL_YARD_CONV
SRS_UL_KILOMETER
SRS_UL_KILOMETER_CONV
SRS_UL_LINK
SRS_UL_LINK_CONV
SRS_UL_LINK_Clarke

appendix E
GDAL

E.1 Summary

ASYNCREADER CLASS

GetBuffer()
GetNextUpdatedRegion()
LockBuffer()
UnlockBuffer()
UnlockBuffer()

BAND CLASS

Checksum()
ComputeBandStats()
ComputeRasterMinMax()
ComputeStatistics()
CreateMaskBand()
Fill()
FlushCache()
GetBand()
GetBlockSize()
GetCategoryNames()
GetColorInterpretation()
GetColorTable()
GetDefaultHistogram()
GetDefaultRAT()
GetHistogram()
GetMaskBand()
GetMaskFlags()
GetMaximum()
GetMinimum()
GetNoDataValue()
GetOffset()
GetOverview()
GetOverviewCount()
GetRasterCategoryNames()
GetRasterColorInterpretation()
GetRasterColorTable()
GetScale()
GetStatistics()
GetTiledVirtualMem()
GetTiledVirtualMemArray()
GetUnitType()
GetVirtualMem()
GetVirtualMemArray()
GetVirtualMemAuto()
GetVirtualMemAutoArray()
HasArbitraryOverviews()
ReadAsArray()
ReadBlock()
ReadRaster()
ReadRaster1()
SetCategoryNames()
SetColorInterpretation()

SetColorTable()
SetDefaultHistogram()
SetDefaultRAT()
SetNoDataValue()
SetOffset()
SetRasterCategoryNames()
SetRasterColorInterpretation()
SetRasterColorTable()
SetScale()
SetStatistics()
SetUnitType()
WriteArray()
WriteRaster()
DataType
XSize
YSize

COLORENTRY CLASS

c1
c2
c3
c4

COLORTABLE CLASS

Clone()
CreateColorRamp()
GetColorEntry()
GetColorEntryAsRGB()
GetCount()
GetPaletteInterpretation()
SetColorEntry()
SetColorEntry()

DATASET CLASS

AddBand()
BeginAsyncReader()
BuildOverviews()
CreateMaskBand()
EndAsyncReader()
FlushCache()
GetDriver()
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GetGCPCount()
GetGCPProjection()
GetGCPs()
GetGeoTransform()
GetProjection()
GetProjectionRef()
GetRasterBand()
GetSubDatasets()
GetTiledVirtualMem()
GetTiledVirtualMemArray()
GetVirtualMem()
GetVirtualMemArray()
ReadAsArray()
ReadRaster()
ReadRaster1()
SetGCPs()
SetGeoTransform()
SetProjection()
WriteRaster()
WriteRaster()
RasterCount
RasterXSize
RasterYSize

DRIVER CLASS

CopyFiles()
Create()
CreateCopy()
Delete()
Deregister()
Register()
Rename()
HelpTopic
LongName
ShortName

GCP CLASS

serialize()
GCPLine
GCPPixel
GCPX
GCPY
GCPZ
Id
Info

MAJOROBJECT CLASS

GetDescription()

GetMetadata()
GetMetadataDomainList()
GetMetadataItem()
GetMetadata_Dict()
GetMetadata_List()
SetDescription()
SetMetadata()
SetMetadataItem()

RASTERATTRIBUTETABLE CLASS

ChangesAreWrittenToFile()
Clone()
CreateColumn()
GetColOfUsage()
GetColumnCount()
GetLinearBinning()
GetNameOfCol()
GetRowCount()
GetRowOfValue()
GetTypeOfCol()
GetUsageOfCol()
GetValueAsDouble()
GetValueAsInt()
GetValueAsString()
ReadAsArray()
SetLinearBinning()
SetRowCount()
SetValueAsDouble()
SetValueAsInt()
SetValueAsString()
WriteArray()
WriteArray()

STATBUF CLASS

IsDirectory()
IsDirectory()
mode
mtime
size

TRANSFORMER CLASS

TransformGeolocations()
TransformPoint()
TransformPoints()
TransformPoints()

VIRTUALMEM CLASS

GetAddr()
Pin()
Pin()

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AllRegister()
ApplyGeoTransform()
AutoCreateWarpedVRT()
CPLBinaryToHex()
CPLHexToBinary()
ComputeMedianCutPCT()
ComputeProximity()
ContourGenerate()
DataTypeIsComplex()
Debug()
deprecation_warn()
DecToDMS()
DecToPackedDMS()
DitherRGB2PCT()
DontUseExceptions()
Error()
ErrorReset()
EscapeString()
FileFromMemBuffer()
FillNodata()
FindFile()
FinderClean()
GCPsToGeoTransform()
GDALDestroyDriverManager()
GDAL_GCP_GCPLine_get()
GDAL_GCP_GCPLine_set()
GDAL_GCP_GCPPixel_get()
GDAL_GCP_GCPPixel_set()
GDAL_GCP_GCPX_get()
GDAL_GCP_GCPX_set()
GDAL_GCP_GCPY_get()
GDAL_GCP_GCPY_set()
GDAL_GCP_GCPZ_get()
GDAL_GCP_GCPZ_set()
GDAL_GCP_Id_get()
GDAL_GCP_Id_set()
GDAL_GCP_Info_get()
GDAL_GCP_Info_set()

GDAL_GCP_get_GCPLine()
GDAL_GCP_get_GCPPixel()
GDAL_GCP_get_GCPX()
GDAL_GCP_get_GCPY()
GDAL_GCP_get_GCPZ()
GDAL_GCP_get_Id()
GDAL_GCP_get_Info()
GDAL_GCP_set_GCPLine()
GDAL_GCP_set_GCPPixel()
GDAL_GCP_set_GCPX()
GDAL_GCP_set_GCPY()
GDAL_GCP_set_GCPZ()
GDAL_GCP_set_Id()
GDAL_GCP_set_Info()
GOA2GetAccessToken()
GOA2GetAuthorizationURL()
GOA2GetRefreshToken()
GeneralCmdLineProcessor()
GetCacheMax()
GetCacheUsed()
GetColorInterpretationName()
GetConfigOption()
GetDataTypeByName()
GetDataTypeName()
GetDataTypeSize()
GetDriver()
GetDriverByName()
GetDriverCount()
GetLastErrorMsg()
GetLastErrorNo()
GetLastErrorType()
GetPaletteInterpretationName()
GetUseExceptions()
HasThreadSupport()
IdentifyDriver()
InvGeoTransform()
Mkdir()
Open()
OpenShared()
PackedDMSToDec()
ParseXMLString()
Polygonize()
PopErrorHandler()
PopFinderLocation()
PushErrorHandler()
PushFinderLocation()
RGBFile2PCTFile()
RasterizeLayer()
ReadDir()
ReadDirRecursive()
RegenerateOverview()
RegenerateOverviews()
Rename()
ReprojectImage()
Rmdir()
SerializeXMLTree()
SetCacheMax()
SetConfigOption()
SetErrorHandler()
SieveFilter()
TermProgress_nocb()
Unlink()
UseExceptions()
VSIFCloseL()
VSIFOpenL()
VSIFReadL()
VSIFSeekL()
VSIFTellL()
VSIFTruncateL()
VSIFWriteL()
VSIStatL()
VersionInfo()

E.2 AsyncReader class

GetBuffer()

GetNextUpdatedRegion(double timeout) -> GDALAsyncStatusType

Gets async IO update.

Provides an opportunity for an asynchronous IO request to update the image buffer and return an indication of the area of the buffer that has been updated.

The dfTimeout parameter can be used to wait for additional data to become available. The timeout doesn't limit the amount of time this method may spend processing available data.

- dfTimeout: The number of seconds to wait for additional updates. Use -1 to wait indefinately, or zero to not wait at all if no data is available.
- pnBufXOff: Location to return the X offset of the area of the request buffer that has been updated.
- pnBufYOff: Location to return the Y offset of the area of the request buffer that has been updated.
- pnBufXSize: Location to return the X size of the area of the request buffer that has been updated.
- pnBufYSize: Location to return the Y size of the area of the request buffer that has been updated.

Returns a GARIO_ status from the following list:

- GARIO_PENDING: No imagery was altered in the buffer, but there is still activity pending, and the application should continue to call GetNextUpdated-Region() as time permits.
- GARIO_UPDATE: Some of the imagery has been updated, but there is still activity pending.
- GARIO_ERROR: Something has gone wrong. The asynchronous request should be ended.
- GARIO_COMPLETE: An update has occurred and there is no more pending work on this request. The request should be ended and the buffer used.

LockBuffer(double timeout) -> int

Locks image buffer.

Locks the image buffer passed-into GDALDataset::BeginAsyncReader(). This is useful to ensure the image buffer isn't being modified while it's being used by the application. UnlockBuffer() should be used to release this lock when it's no longer needed.

- dfTimeout: The time in seconds to wait attempting to lock the buffer; -1.0 to wait indefinitely and 0 to not wait at all if it can't be acquired immediately. Default is -1.0 (infinite wait).

Returns TRUE if successful, or FALSE on an error.

UnlockBuffer()

Unlocks image buffer.

Releases a lock on the image buffer previously taken with LockBuffer().

UnlockBuffer()

Unlocks image buffer.

Releases a lock on the image buffer previously taken with LockBuffer().

E.3 Band class

Checksum(int xoff = 0, int yoff = 0, int xsize = None, int ysize = None) -> int

ComputeBandStats(int samplestep = 1)

ComputeRasterMinMax(int approx_ok = 0)

Computes the min/max values for a band.

If approximate is OK, then the band's GetMinimum()/GetMaximum() will be trusted. If it doesn't work, a subsample of blocks will be read to get an approximate min/max. If the band has a nodata value, it will be excluded from the minimum and maximum.

If bApprox is FALSE, then all pixels will be read and used to compute an exact range.

- bApproxOK: TRUE if an approximate (faster) answer is OK; otherwise, FALSE
- adfMinMax: The array in which the minimum (adfMinMax[0]) and the maximum (adfMinMax[1]) are returned

Returns CE_None on success or CE_Failure on failure.

ComputeStatistics(bool approx_ok, GDALProgressFunc callback = 0, void callback_data = None) -> CPLErr

Computes image statistics.

Returns the minimum, maximum, mean, and standard deviation of all pixel values in this band. If approximate statistics are sufficient, the bApproxOK flag can be set to true in which case overviews, or a subset of image tiles may be used in computing the statistics.

Once computed, the statistics will generally be "set" back on the raster band using SetStatistics().

- bApproxOK: If TRUE, statistics may be computed based on overviews or a subset of all tiles.
- pdfMin: Location into which to load image minimum (may be NULL)
- pdfMax: Location into which to load image maximum (may be NULL)
- pdfMean: Location into which to load image mean (may be NULL)

- pdfStdDev: Location into which to load image standard deviation (may be NULL)
- pfnProgress: A function to call to report progress, or NULL
- pProgressData: Application data to pass to the progress function

Returns CE_None on success, or CE_Failure if an error occurs or processing is terminated by the user.

CreateMaskBand(int nFlags) -> CPLErr

Adds a mask band to the current band.

The default implementation of the CreateMaskBand() method is implemented based on rules similar to the .ovr handling implemented using the GDALDefaultOverviews object. A TIFF file with the extension .msk will be created with the same base name as the original file, and it will have as many bands as the original image (or one for GMF_PER_DATASET). The mask images will be deflate compressed tiled images with the same block size as the original image if possible.

Note that if you got a mask band with a previous call to GetMaskBand(), it might be invalidated by CreateMaskBand(), so you have to call GetMaskBand() again.

Since GDAL 1.5.0.

Returns CE_None on success or CE_Failure on an error.

See also http://trac.osgeo.org/gdal/wiki/rfc15_nodatabitmask.

Fill(double real_fill, double imag_fill = 0.0) -> CPLErr

Fills this band with a constant value.

GDAL makes no guarantees about what values pixels in newly created files are set to, so this method can be used to clear a band to a specified “default” value. The fill value is passed-in as a double but this will be converted to the underlying type before writing to the file. An optional second argument allows the imaginary component of a complex constant value to be specified.

- dfRealValue: Real component of fill value
- dfImaginaryValue: Imaginary component of fill value, defaults to zero

Returns CE_Failure if the write fails; otherwise, CE_None.

FlushCache()

Flushes raster data cache.

This call will recover memory used to cache data blocks for this raster band, and ensure that new requests are referred to the underlying driver.

Returns CE_None on success.

GetBand() -> int

Fetches the band number.

This method returns the band that this GDALRasterBand object represents within its dataset. This method may return a value of zero to indicate GDALRasterBand objects without an apparently relationship to a dataset, such as GDALRasterBands serving as overviews.

Returns band number (1+) or zero if the band number isn't known.

GetBlockSize()

Fetches the "natural" block size of this band.

GDAL contains a concept of the natural block size of rasters so that applications can organize data access efficiently for certain file formats. The natural block size is the block size that's most efficient for accessing the format. For many formats, this is simply a whole scan line in which case *pnXSize is set to GetXSize(), and *pnYSize is set to 1.

However, for tiled images this will typically be the tile size.

Note that the X and Y block sizes don't have to divide the image size evenly, meaning that right and bottom edge blocks may be incomplete. See ReadBlock() for an example of code dealing with these issues.

- pnXSize: Integer to put the X block size into or NULL.
- pnYSize: Integer to put the Y block size into or NULL.

GetCategoryNames() -> char

Fetches the list of category names for this raster.

The return list is a "StringList" in the sense of the CPL functions. That's a NULL-terminated array of strings. Raster values without associated names will have an empty string in the returned list. The first entry in the list is for raster values of zero, and so on.

The returned string list should not be altered or freed by the application. It may change on the next GDAL call, so please copy it if it's needed for any period of time.

Returns list of names, or NULL if none.

GetColorInterpretation() -> GDALColorInterp

How should this band be interpreted as color?

GCI_Undefined is returned when the format doesn't know anything about the color interpretation.

Returns color interpretation value for band.

GetColorTable() -> ColorTable

Fetches the color table associated with band.

If it doesn't have an associated color table, the return result is NULL. The returned color table remains owned by the GDALRasterBand, and can't be depended on for long, nor should it ever be modified by the caller.

Returns internal color table, or NULL.

GetDefaultHistogram(double min_ret = None, double max_ret = None, int buckets_ret = None, int ppanHistogram = None, int force = 1, GDALProgressFunc callback = 0, void callback_data = None) -> CPLErr

Fetches default raster histogram.

The default method in GDALRasterBand will compute a default histogram. This method is overridden by derived classes (such as GDALPamRasterBand, VRTDataset, HFADataset, etc.) that could fetch efficiently an already stored histogram.

- pdfMin: Pointer to double value that will contain the lower bound of the histogram.
- pdfMax: Pointer to double value that will contain the upper bound of the histogram.
- pnBuckets: Pointer to int value that will contain the number of buckets in *ppanHistogram.
- ppanHistogram: Pointer to array into which the histogram totals are placed. To be freed with VSIFree.
- bForce: TRUE to force the computation. If FALSE and no default histogram is available, the method will return CE_Warning.
- pfnProgress: Function to report progress to completion.
- pProgressData: Application data to pass to pfnProgress.

Returns CE_None on success, CE_Failure if something goes wrong, or CE_Warning if no default histogram is available.

GetDefaultRAT() -> RasterAttributeTable

Fetches default raster attribute table.

A RAT will be returned if a default one is associated with the band; otherwise, NULL is returned. The returned RAT is owned by the band and shouldn't be deleted by the application.

Returns NULL, or a pointer to an internal RAT owned by the band.

GetHistogram(double min = -0.5, double max = 255.5, int buckets = 256, int include_out_of_range = 0, int approx_ok = 1, GDALProgressFunc callback = 0, void callback_data = None) -> CPLErr

Computes raster histogram.

Note that the bucket size is (dfMax-dfMin) / nBuckets.

For example, to compute a simple 256-entry histogram of 8-bit data, the following would be suitable. The unusual bounds are to ensure that bucket boundaries don't fall right on integer values causing possible errors due to rounding after scaling.

Note that setting bApproxOK will generally result in a subsampling of the file, and will utilize overviews if available. It should generally produce a representative histogram for the data that's suitable for use in generating histogram-based LUTs, for instance. Generally, bApproxOK is much faster than an exactly computed histogram.

- dfMin: The lower bound of the histogram
- dfMax: The upper bound of the histogram
- nBuckets: The number of buckets in panHistogram
- panHistogram: Array into which the histogram totals are placed
- bIncludeOutOfRange: If TRUE, values below the histogram range will be mapped into panHistogram[0], and values above will be mapped into panHistogram[nBuckets-1]; otherwise, out-of-range values are discarded
- bApproxOK: TRUE if an approximate, or incomplete histogram OK
- pfnProgress: Function to report progress to completion
- pProgressData: Application data to pass to pfnProgress

Returns CE_None on success, or CE_Failure if something goes wrong.

GetMaskBand() -> Band

Returns the mask band associated with the band.

The GDALRasterBand class includes a default implementation of GetMaskBand() that returns one of four default implementations:

- If a corresponding .msk file exists, it will be used for the mask band.
- If the dataset has a NODATA_VALUES metadata item, an instance of the new GDALNoDataValuesMaskBand class will be returned. GetMaskFlags() will return GMF_NODATA | GMF_PER_DATASET. Since GDAL 1.6.0.
- If there is no no-data value, but the dataset has an alpha band that seems to apply to this band (specific rules yet to be determined) and that is of type GDT_Byte, then that alpha band will be returned, and the flags GMF_PER_DATASET and GMF_ALPHA will be returned in the flags.
- If neither of the above applies, an instance of the new GDALAllValidRasterBand class will be returned that has 255 values for all pixels. The null flags will return GMF_ALL_VALID.

Note that the GetMaskBand() should always return a GDALRasterBand mask, even if all values are 255 with the flags indicating GMF_ALL_VALID.

Returns a valid mask band.

Since GDAL 1.5.0.

See also http://trac.osgeo.org/gdal/wiki/rfc15_nodatabitmask.

GetMaskFlags() -> int

Returns the status flags of the mask band associated with the band.

The GetMaskFlags() method returns an bitwise OR-ed set of status flags with the following available definitions that may be extended in the future:

- GMF_ALL_VALID(0x01): There are no invalid pixels; all mask values will be 255. When used this will normally be the only flag set.
- GMF_PER_DATASET(0x02): The mask band is shared between all bands on the dataset.

- GMF_ALPHA(0x04): The mask band is actually an alpha band and may have values other than 0 and 255.
- GMF_NODATA(0x08): Indicates the mask is actually being generated from nodata values. (mutually exclusive of GMF_ALPHA)

The GDALRasterBand class includes a default implementation of GetMaskBand() that returns one of four default implementations:

- If a corresponding .msk file exists, it will be used for the mask band.
- If the dataset has a NODATA_VALUES metadata item, an instance of the new GDALNoDataValuesMaskBand class will be returned. GetMaskFlags() will return GMF_NODATA | GMF_PER_DATASET. Since GDAL 1.6.0.
- If there is no no-data value, but the dataset has an alpha band that seems to apply to this band (specific rules yet to be determined) and that is of type GDT_Byte, then that alpha band will be returned, and the flags GMF_PER_DATASET and GMF_ALPHA will be returned in the flags.
- If neither of the above applies, an instance of the new GDALAllValidRasterBand class will be returned that has 255 values for all pixels. The null flags will return GMF_ALL_VALID.

Since GDAL 1.5.0.

Returns a valid mask band.

See also http://trac.osgeo.org/gdal/wiki/rfc15_nodatabitmask.

GetMaximum()

Fetches the maximum value for this band.

For file formats that don't know this intrinsically, the maximum supported value for the data type will generally be returned.

- pbSuccess: Pointer to a Boolean to use to indicate if the returned value is a tight maximum or not. May be NULL (default).

Returns the maximum raster value (excluding no data pixels).

GetMinimum()

Fetches the minimum value for this band.

For file formats that don't know this intrinsically, the minimum supported value for the data type will generally be returned.

- pbSuccess: Pointer to a Boolean to use to indicate if the returned value is a tight minimum or not. May be NULL (default).

Returns the minimum raster value (excluding no data pixels).

GetNoDataValue()

Fetches the no-data value for this band.

If it doesn't have out-of-data value, an out-of-range value will generally be returned. The no-data value for a band is generally a special marker value used to mark pixels that aren't valid data. Such pixels should generally not be displayed, nor contribute to analysis operations.

- pbSuccess: Pointer to a Boolean to use to indicate if a value is associated with this layer. May be NULL (default).

Returns the no-data value for this band.

GetOffset()

Fetches the raster value offset.

This value (in combination with the GetScale() value) is used to transform raw pixel values into the units returned by GetUnits(). For example, this might be used to store elevations in GUInt16 bands with a precision of 0.1, and starting from -100.

Units value = (raw value * scale) + offset

For file formats that don't know this intrinsically, a value of zero is returned.

- pbSuccess: Pointer to a Boolean to use to indicate if the returned value is meaningful or not. May be NULL (default).

Returns the raster offset.

GetOverview(int i) -> Band

Fetches overview raster band object.

- i: Overview index between 0 and GetOverviewCount()-1.

Returns overview GDALRasterBand.

GetOverviewCount() -> int

Returns the number of overview layers available.

Returns overview count, zero if none.

GetRasterCategoryNames() -> char

GetRasterColorInterpretation() -> GDALColorInterp

GetRasterColorTable() -> ColorTable

GetScale()

Fetches the raster value scale.

This value (in combination with the GetOffset() value) is used to transform raw pixel values into the units returned by GetUnits(). For example, this might be used to store elevations in GUInt16 bands with a precision of 0.1, and starting from -100.

Units value = (raw value * scale) + offset

For file formats that don't know this intrinsically, a value of one is returned.

- pbSuccess: Pointer to a Boolean to use to indicate if the returned value is meaningful or not. May be NULL (default).

Returns the raster scale.

GetStatistics(int approx_ok, int force) -> CPLErr

Fetches image statistics.

Returns the minimum, maximum, mean and standard deviation of all pixel values in this band. If approximate statistics are sufficient, the bApproxOK flag can be set to true, in which case overviews, or a subset of image tiles, may be used in computing the statistics.

If bForce is FALSE, results will only be returned if it can be done quickly (that is, without scanning the data). If bForce is FALSE and results cannot be returned efficiently, the method will return CE_Warning, but no warning will have been issued. This is a nonstandard use of the CE_Warning return value to indicate "nothing done."

Note that file formats using PAM (persistent auxiliary metadata) services will generally cache statistics in the .pam file, allowing fast fetch after the first request.

- bApproxOK: If TRUE, statistics may be computed based on overviews or a subset of all tiles
- bForce: If FALSE, statistics will only be returned if it can be done without rescanning the image
- pdfMin: Location into which to load image minimum (may be NULL)
- pdfMax: Location into which to load image maximum (may be NULL)
- pdfMean: Location into which to load image mean (may be NULL)
- pdfStdDev: Location into which to load image standard deviation (may be NULL)

Returns CE_None on success, CE_Warning if no values returned, CE_Failure if an error occurs.

GetTiledVirtualMem(GDALRWFlag eRWFlag, int nXOff, int nYOff, int nXSize, int nYSize, int nTileXSize, int nTileYSize, GDALDataType eBufType, size_t nCacheSize, string options = None) -> VirtualMem

GetTiledVirtualMemArray(eAccess=0, xoff=0, yoff=0, xsize=None, ysize=None, tilexsize=256, tileysize=256, datatype=None, cache_size=10485760, options=None)

Returns a NumPy array for the band, seen as a virtual memory mapping with a tile organization. An element is accessed with array[tiley][tilex][y][x]. Any reference to the array must be dropped before the last reference to the related dataset is also dropped.

GetUnitType() -> char

Returns raster unit type.

Returns a name for the units of this raster's values. For instance, it might be "m" for an elevation model in meters, or "ft" for feet. If no units are available, a value of "" will be returned. The returned string should not be modified, nor freed by the calling application.

Returns unit name string.

GetVirtualMem(GDALRWFlag eRWFlag, int nXOff, int nYOff, int nXSize, int nYSize, int nBufXSize, int nBufYSize, GDALDataType eBufType, size_t nCacheSize, size_t nPageSizeHint, string options = None) -> VirtualMem

GetVirtualMemArray(eAccess=0, xoff=0, yoff=0, xsize=None, ysize=None, bufxsize=None, bufysize=None, datatype=None, cache_size=10485760, page_size_hint=0, options=None)

Returns a NumPy array for the band, seen as a virtual memory mapping. An element is accessed with array[y][x]. Any reference to the array must be dropped before the last reference to the related dataset is also dropped.

GetVirtualMemAuto(GDALRWFlag eRWFlag, string options = None) -> VirtualMem

Creates a CPLVirtualMem object from a GDAL raster band object.

Only supported on Linux for now.

This method allows creating a virtual memory object for a GDALRasterBand that exposes the whole image data as a virtual array.

The default implementation relies on GDALRasterBandGetVirtualMem(), but specialized implementation, such as for raw files, may also directly use mechanisms of the operating system to create a view of the underlying file into virtual memory (CPLVirtualMemFileMapNew())

At the time of writing, the GeoTIFF driver and "raw" drivers (EHdr, for example) offer a specialized implementation with direct file mapping, provided that requirements are met:

- For all drivers, the dataset must be backed by a "real" file in the file system, and the byte ordering of multibyte data types (for example, Int16) must match the native ordering of the CPU.
- In addition, for the GeoTIFF driver, the GeoTIFF file must be uncompressed and scan line–oriented (i.e., not tiled). Strips must be organized in the file in sequential order and be equally spaced (which is generally the case). Only power-of-two bit depths are supported (8 for GDT_Bye, 16 for GDT_Int16/GDT_UInt16, 32 for GDT_Float32, and 64 for GDT_Float64)

The pointer returned remains valid until CPLVirtualMemFree() is called. CPLVirtualMemFree() must be called before the raster band object is destroyed.

If p is such a pointer and base_type the type matching GDALGetRasterDataType(), the element of image coordinates (x, y) can be accessed with *(base_type*)((GByte*)p + x * *pnPixelSpace + y * *pnLineSpace)

- eRWFlag: Either GF_Reads to read the band, or GF_Write to read/write the band.

- pnPixelSpace: Output parameter giving the byte offset from the start of one pixel value in the buffer to the start of the next pixel value within a scan line.
- pnLineSpace: Output parameter giving the byte offset from the start of one scan line in the buffer to the start of the next.
- papszOptions: NULL-terminated list of options. If a specialized implementation exists, defining USE_DEFAULT_IMPLEMENTATION=YES will cause the default implementation to be used. When requiring or falling back to the default implementation, the following options are available: CACHE_SIZE (in bytes, defaults to 40 MB), PAGE_SIZE_HINT (in bytes), SINGLE_THREAD ("FALSE" / "TRUE", defaults to FALSE).

Returns a virtual memory object that must be unreferenced by CPLVirtualMemFree(), or NULL in case of failure.

Since GDAL 1.11.

GetVirtualMemAutoArray(eAccess=0, options=None)

Returns a NumPy array for the band, seen as a virtual memory mapping. An element is accessed with array[y][x]. Any reference to the array must be dropped before the last reference to the related dataset is also dropped.

HasArbitraryOverviews() -> bool

Checks for arbitrary overviews.

This returns TRUE if the underlying data store can compute arbitrary overviews efficiently, such as is the case with OGDI over a network. Data stores with arbitrary overviews don't generally have any fixed overviews, but the RasterIO() method can be used in downsampling mode to get overview data efficiently.

Returns TRUE if arbitrary overviews available (efficiently); otherwise, FALSE.

ReadAsArray(xoff=0, yoff=0, win_xsize=None, win_ysize=None, buf_xsize=None, buf_ysize=None, buf_obj=None)

ReadBlock(int xoff, int yoff) -> CPLErr

Reads a block of image data efficiently.

This method accesses a "natural" block from the raster band without resampling, or data type conversion. For a more generalized but potentially less efficient access, use RasterIO().

See the GetLockedBlockRef() method for a way of accessing internally cached block-oriented data without an extra copy into an application buffer.

- nXBlockOff: The horizontal block offset, with zero indicating the left-most block, 1 the next block, and so forth.
- nYBlockOff: The vertical block offset, with zero indicating the left-most block, 1 the next block, and so forth.

- pImage: The buffer into which the data will be read. The buffer must be large enough to hold GetBlockXSize()*GetBlockYSize() words of type GetRasterDataType().

Returns CE_None on success or CE_Failure on an error.

ReadRaster(xoff=0, yoff=0, xsize=None, ysize=None, buf_xsize=None, buf_ysize=None, buf_type=None, buf_pixel_space=None, buf_line_space=None)

ReadRaster1(int xoff, int yoff, int xsize, int ysize, int buf_xsize = None, int buf_ysize = None, int buf_type = None, int buf_pixel_space = None, int buf_line_space = None) -> CPLErr

SetCategoryNames(string papszCategoryNames) -> CPLErr

Sets the category names for this band.

See the GetCategoryNames() method for more on the interpretation of category names.

- papszNames: The NULL-terminated StringList of category names. May be NULL to clear the existing list.

Returns CE_None on success of CE_Failure on failure. If unsupported by the driver, CE_Failure is returned, but no error message is reported.

SetColorInterpretation(GDALColorInterp val) -> CPLErr

Sets color interpretation of a band.

- eColorInterp: The new color interpretation to apply to this band

Returns CE_None on success or CE_Failure if method is unsupported by format.

SetColorTable(ColorTable arg) -> int

Sets the raster color table.

The driver will make a copy of all desired data in the color table. It remains owned by the caller after the call.

- poCT: The color table to apply. This may be NULL to clear the color table (where supported).

Returns CE_None on success or CE_Failure on failure. If the action is unsupported by the driver, a value of CE_Failure is returned, but no error is issued.

SetDefaultHistogram(double min, double max, int buckets_in) -> CPLErr

Sets default histogram.

SetDefaultRAT(RasterAttributeTable table) -> int

Sets default raster attribute table.

Associates a default RAT with the band. If not implemented for the format, a CPLE_NotSupported error will be issued. If successful, a copy of the RAT is made; the original remains owned by the caller.

- poRAT: The RAT to assign to the band.

Returns CE_None on success or CE_Failure if unsupported or otherwise failing.

SetNoDataValue(double d) -> CPLErr

Sets the no-data value for this band.

To clear the no-data value, use DeleteNoDataValue().

- dfNoData: The value to set

Returns CE_None on success or CE_Failure on failure. If unsupported by the driver, CE_Failure is returned, but no error message will have been emitted.

SetOffset(double val) -> CPLErr

Sets scaling offset.

Few formats implement this method. When not implemented, it will issue a CPLE_NotSupported error and return CE_Failure.

- dfNewOffset: The new offset

Returns CE_None or success or CE_Failure on failure.

SetRasterCategoryNames(string names) -> CPLErr

SetRasterColorInterpretation(GDALColorInterp val) -> CPLErr

SetRasterColorTable(ColorTable arg) -> int

SetScale(double val) -> CPLErr

Sets scaling ratio.

Few formats implement this method. When not implemented, it will issue a CPLE_NotSupported error and return CE_Failure.

- dfNewScale: The new scale

Returns CE_None or success or CE_Failure on failure.

SetStatistics(double min, double max, double mean, double stddev) -> CPLErr

Sets statistics on band.

This method can be used to store min/max/mean/standard deviation statistics on a raster band.

The default implementation stores them as metadata, and will only work on formats that can save arbitrary metadata. This method cannot detect whether metadata will be properly saved and so may return CE_None even if the statistics will never be saved.

- dfMin: Minimum pixel value

- dfMax: Maximum pixel value
- dfMean: Mean (average) of all pixel values
- dfStdDev: Standard deviation of all pixel values

Returns CE_None on success or CE_Failure on failure.

SetUnitType(string val) -> CPLErr

Sets unit type.

Sets the unit type for a raster band. Values should be one of "" (the default indicating it's unknown), "m" indicating meters, or "ft" indicating feet, though other nonstandard values are allowed.

- pszNewValue: The new unit type value

Returns CE_None on success or CE_Failure if not successful, or unsupported.

WriteArray(array, xoff=0, yoff=0)

WriteRaster(int xoff, int yoff, int xsize, int ysize, GIntBig buf_len, int buf_xsize = None, int buf_ysize = None, int buf_type = None, int buf_pixel_space = None, int buf_line_space = None) -> CPLErr

PROPERTIES

DataType

Band_DataType_get(Band self) -> GDALDataType

XSize

Band_XSize_get(Band self) -> int

YSize

Band_YSize_get(Band self) -> int

E.4 ColorEntry class

PROPERTIES

c1

ColorEntry_c1_get(ColorEntry self) -> short

c2

ColorEntry_c2_get(ColorEntry self) -> short

c3

ColorEntry_c3_get(ColorEntry self) -> short

c4

ColorEntry_c4_get(ColorEntry self) -> short

E.5 ColorTable class

Clone() -> ColorTable

Makes a copy of a color table.

CreateColorRamp(int nStartIndex, ColorEntry startcolor, int nEndIndex, ColorEntry endcolor)

Creates color ramp.

Automatically creates a color ramp from one color entry to another. It can be called several times to create multiples ramps in the same color table.

This function is the same as the C function GDALCreateColorRamp()

- nStartIndex: Index to start the ramp on the color table [0…255]
- psStartColor: A color entry value to start the ramp
- nEndIndex: Index to end the ramp on the color table [0…255]
- psEndColor: A color entry value to end the ramp

Returns total number of entries, -1 to report error

GetColorEntry(int entry) -> ColorEntry

Fetches a color entry from a table.

- i: Entry offset from zero to GetColorEntryCount()-1

Returns pointer to internal color entry, or NULL if index is out of range.

GetColorEntryAsRGB(int entry, ColorEntry centry) -> int

Fetches a table entry in RGB format.

In theory this method should support translation of color palettes in non-RGB color spaces into RGB on the fly, but currently it only works on RGB color tables.

- i: Entry offset from zero to GetColorEntryCount()-1
- poEntry: The existing GDALColorEntry to be overwritten with the RGB values

Returns TRUE on success or FALSE if the conversion isn’t supported.

GetCount() -> int

GetPaletteInterpretation() -> GDALPaletteInterp

Fetches palette interpretation.

The returned value is used to interpret the values in the GDALColorEntry.

Returns palette interpretation enumeration value, usually GPI_RGB.

SetColorEntry(int entry, ColorEntry centry)

Sets entry in color table.

Note that the passed-in color entry is copied, and no internal reference to it is maintained. Also, the passed-in entry must match the color interpretation of the table to which it’s being assigned.

The table is grown as needed to hold the supplied offset.

This function is the same as the C function GDALSetColorEntry().

- i: Entry offset from zero to GetColorEntryCount()-1
- poEntry: Value to assign to table

SetColorEntry(int entry, ColorEntry centry)

Sets entry in color table.

Note that the passed-in color entry is copied, and no internal reference to it is maintained. Also, the passed-in entry must match the color interpretation of the table to which it's being assigned.

The table is grown as needed to hold the supplied offset.

This function is the same as the C function GDALSetColorEntry().

- i: Entry offset from zero to GetColorEntryCount()-1
- poEntry: Value to assign to table

E.6 Dataset class

AddBand(GDALDataType datatype = GDT_Byte, string options = None) -> CPLErr

BeginAsyncReader(xoff, yoff, xsize, ysize, buf_obj=None, buf_xsize=None, buf_ysize=None, buf_type=None, band_list=None, options=[])

BuildOverviews(string resampling = "NEAREST", int overviewlist = 0, GDALProgressFunc callback = 0, void callback_data = None) -> int

CreateMaskBand(int nFlags) -> CPLErr

EndAsyncReader(AsyncReader ario)

FlushCache()

GetDriver() -> Driver

GetFileList() -> char

GetGCPCount() -> int

GetGCPProjection() -> char

GetGCPs()

GetGeoTransform(int can_return_null = None)

GetProjection() -> char

GetProjectionRef() -> char

GetRasterBand(int nBand) -> Band

GetSubDatasets()

GetTiledVirtualMem(GDALRWFlag eRWFlag, int nXOff, int nYOff, int nXSize, int nYSize, int nTileXSize, int nTileYSize, GDALDataType eBufType, int band_list, GDALTileOrganization eTileOrganization, size_t nCacheSize, string options = None) -> VirtualMem

GetTiledVirtualMemArray(eAccess=0, xoff=0, yoff=0, xsize=None, ysize=None, tilexsize=256, tileysize=256, datatype=None, band_list=None, tile_organization=2, cache_size=10485760, options=None)

Returns a NumPy array for the dataset, seen as a virtual memory mapping with a tile organization. If it has several bands and tile_organization = gdal.GTO_TIP, an element is accessed with array[tiley][tilex][y][x][band]. If it has several bands and tile_organization = gdal.GTO_BIT, an element is accessed with array[tiley][tilex][band][y][x]. If it has several bands and tile_organization = gdal.GTO_BSQ, an element is accessed with array[band][tiley][tilex][y][x]. If it has only one band, an element is accessed with array[tiley][tilex][y][x]. Any reference to the array must be dropped before the last reference to the related dataset is also dropped.

GetVirtualMem(GDALRWFlag eRWFlag, int nXOff, int nYOff, int nXSize, int nYSize, int nBufXSize, int nBufYSize, GDALDataType eBufType, int band_list, int bIsBandSequential, size_t nCacheSize, size_t nPageSizeHint, string options = None) -> VirtualMem

GetVirtualMemArray(eAccess=0, xoff=0, yoff=0, xsize=None, ysize=None, bufxsize=None, bufysize=None, datatype=None, band_list=None, band_sequential=True, cache_size=10485760, page_size_hint=0, options=None)

Returns a NumPy array for the dataset, seen as a virtual memory mapping. If it has several bands and band_sequential = True, an element is accessed with array[band][y][x]. If it has several bands and band_sequential = False, an element is accessed with array[y][x][band]. If it has only one band, an element is accessed with array[y][x]. Any reference to the array must be dropped before the last reference to the related dataset is also dropped.

ReadAsArray(xoff=0, yoff=0, xsize=None, ysize=None, buf_obj=None)

ReadRaster(xoff=0, yoff=0, xsize=None, ysize=None, buf_xsize=None, buf_ysize=None, buf_type=None, band_list=None, buf_pixel_space=None, buf_line_space=None, buf_band_space=None)

ReadRaster1(int xoff, int yoff, int xsize, int ysize, int buf_xsize = None, int buf_ysize = None, GDALDataType buf_type = None, int band_list = 0, int buf_pixel_space = None, int buf_line_space = None, int buf_band_space = None) -> CPLErr

SetGCPs(int nGCPs, string pszGCPProjection) -> CPLErr

SetGeoTransform(double argin) -> CPLErr

SetProjection(string prj) -> CPLErr

WriteRaster(xoff, yoff, xsize, ysize, buf_string, buf_xsize=None, buf_ysize=None, buf_type=None, band_list=None, buf_pixel_space=None, buf_line_space=None, buf_band_space=None)

WriteRaster(xoff, yoff, xsize, ysize, buf_string, buf_xsize=None, buf_ysize=None, buf_type=None, band_list=None, buf_pixel_space=None, buf_line_space=None, buf_band_space=None)

PROPERTIES

RasterCount

Dataset_RasterCount_get(Dataset self) -> int

RasterXSize

Dataset_RasterXSize_get(Dataset self) -> int

RasterYSize

Dataset_RasterYSize_get(Dataset self) -> int

E.7 Driver class

CopyFiles(string newName, string oldName) -> int

Copies the files of a dataset.
Copies all the files associated with a dataset.
Equivalent of the C function GDALCopyDatasetFiles().

- pszNewName: New name for the dataset
- pszOldName: Old name for the dataset

Returns CE_None on success or CE_Failure if the operation fails.

Create(string utf8_path, int xsize, int ysize, int bands = 1, GDALDataType eType = GDT_Byte, string options = None) -> Dataset

Creates a new dataset with this driver.

What argument values are legal for particular drivers is driver-specific, and you have no way to query in advance to establish legal values.

That function will try to validate the creation option list passed to the driver with the GDALValidateCreationOptions() method. This check can be disabled by defining the configuration option GDAL_VALIDATE_CREATION_OPTIONS=NO.

After you have finished working with the returned dataset, it's required to close it with GDALClose(). This not only closes the file handle, but also ensures that all the data and metadata has been written to the dataset (GDALFlushCache() isn't sufficient for that purpose).

In certain situations, the new dataset can be created in another process through the GDAL API Proxy mechanism.

In GDAL 2, the arguments nXSize, nYSize, and nBands can be passed to zero when creating a vector-only dataset for a compatible driver.

Equivalent of the C function GDALCreate().

- pszFilename: The name of the dataset to create. UTF-8 encoded.
- nXSize: Width of created raster in pixels.
- nYSize: Height of created raster in pixels.
- nBands: Number of bands.
- eType: Type of raster.
- papszOptions: List of driver-specific control parameters. The APPEND_SUBDATASET=YES option can be specified to avoid prior destruction of existing dataset.

Returns NULL on failure, or a new GDALDataset.

CreateCopy(string utf8_path, Dataset src, int strict = 1, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> Dataset

Creates a copy of a dataset.

This method will attempt to create a copy of a raster dataset with the indicated filename, and in this driver's format. Band number, size, type, projection, geotransform, and so forth are all to be copied from the provided template dataset.

Note that many sequential write-once formats (such as JPEG and PNG) don't implement the Create() method but do implement this CreateCopy() method. If the driver doesn't implement CreateCopy() but does implement Create(), then the default CreateCopy() mechanism built on calling Create() will be used.

It's intended that CreateCopy() will often be used with a source dataset that's a virtual dataset allowing configuration of band types, and other information without duplicating raster data (see the VRT driver). This is what's done by the gdal_translate utility, for example.

That function will try to validate the creation option list passed to the driver with the GDALValidateCreationOptions() method. This check can be disabled by defining the configuration option GDAL_VALIDATE_CREATION_OPTIONS=NO.

After you've finished working with the returned dataset, it's required to close it with GDALClose(). This not only closes the file handle, but also ensures that all the data and metadata has been written to the dataset (GDALFlushCache() isn't sufficient for that purpose).

In certain situations, the new dataset can be created in another process through the GDAL API proxy mechanism.

- pszFilename: The name for the new dataset. UTF-8 encoded.
- poSrcDS: The dataset being duplicated.
- bStrict: TRUE if the copy must be strictly equivalent, or more normally FALSE indicating that the copy may adapt as needed for the output format.
- papszOptions: Additional format-dependent options controlling creation of the output file. The APPEND_SUBDATASET=YES option can be specified to avoid prior destruction of existing dataset.
- pfnProgress: A function to be used to report progress of the copy.
- pProgressData: Application data passed into progress function.

Returns a pointer to the newly created dataset (may be read-only access).

Delete(string utf8_path) -> int

Deletes named dataset.

The driver will attempt to delete the named dataset in a driver-specific fashion. Full-featured drivers will delete all associated files, database objects, or whatever is appropriate. The default behavior when no driver-specific behavior is provided is to attempt to delete the passed name as a single file.

It's unwise to have open dataset handles on this dataset when it's deleted.

Equivalent of the C function GDALDeleteDataset().

- pszFilename: Name of dataset to delete

Returns CE_None on success, or CE_Failure if the operation fails.

Deregister()

Register() -> int

Rename(string newName, string oldName) -> int

Renames a dataset.

Renames a dataset. This may include moving the dataset to a new directory or even a new filesystem.

It's unwise to have open dataset handles on this dataset when it is being renamed.

Equivalent of the C function GDALRenameDataset().

- pszNewName: New name for the dataset

- pszOldName: Old name for the dataset

Returns CE_None on success or CE_Failure if the operation fails.

4PROPERTIES

4HelpTopic
Driver_HelpTopic_get(Driver self) -> char

LongName
Driver_LongName_get(Driver self) -> char

ShortName
Driver_ShortName_get(Driver self) -> char

E.8 GCP class

serialize(with_Z=0)

PROPERTIES

GCPLine
GCP_GCPLine_get(GCP self) -> double

GCPPixel
GCP_GCPPixel_get(GCP self) -> double

GCPX
GCP_GCPX_get(GCP self) -> double

GCPY
GCP_GCPY_get(GCP self) -> double

GCPZ
GCP_GCPZ_get(GCP self) -> double

Id
GCP_Id_get(GCP self) -> char

Info
GCP_Info_get(GCP self) -> char

E.9 MajorObject class

GetDescription() -> char
Fetches object description.

The semantics of the returned description are specific to the derived type. For GDALDatasets, it's the dataset name. For GDALRasterBands, it's a description (if supported) or "".

Returns non-null pointer to the internal description string.

GetMetadata(domain='')

Fetches metadata.

The returned string list is owned by the object, and may change at any time. It's formatted as a "Name=value" list with the last pointer value being NULL. Use the CPL StringList functions such as CSLFetchNameValue() to manipulate it.

Note that relatively few formats return any metadata at this time.

This method does the same thing as the C function GDALGetMetadata().

- pszDomain: The domain of interest. Use "" or NULL for the default domain.

Returns NULL or a string list.

GetMetadataDomainList() -> char

Fetches list of metadata domains.

The returned string list is the list of (non-empty) metadata domains.

This method does the same thing as the C function GDALGetMetadataDomainList().

Returns NULL or a string list. Must be freed with CSLDestroy().

Since GDAL 1.11.

GetMetadataItem(string pszName, string pszDomain = "") -> char

Fetches single metadata item.

The C function GDALGetMetadataItem() does the same thing as this method.

- pszName: The key for the metadata item to fetch
- pszDomain: The domain to fetch for; use NULL for the default domain

Returns NULL on failure to find the key, or a pointer to an internal copy of the value string on success.

GetMetadata_Dict(string pszDomain = "") -> char

GetMetadata_List(string pszDomain = "") -> char

SetDescription(string pszNewDesc)

Sets object description.

The semantics of the description are specific to the derived type. For GDALDatasets, it's the dataset name. For GDALRasterBands, it's a description (if supported) or "".

Normally application code should not set the "description" for GDALDatasets. It's handled internally.

SetMetadata(string pszMetadataString, string pszDomain = "") -> CPLErr

Sets metadata.

The C function GDALSetMetadata() does the same thing as this method

- papszMetadataIn: The metadata in name=value string list format to apply
- pszDomain: The domain of interest; use "" or NULL for the default domain

Returns CE_None on success, CE_Failure on failure, and CE_Warning if the metadata has been accepted, but is likely not maintained persistently by the underlying object between sessions.

SetMetadataItem(string pszName, string pszValue, string pszDomain = "") -> CPLErr

Sets single metadata item.

The C function GDALSetMetadataItem() does the same thing as this method.

- pszName: The key for the metadata item to fetch
- pszValue: The value to assign to the key
- pszDomain: The domain to set within; use NULL for the default domain

Returns CE_None on success, or an error code on failure.

E.10 RasterAttributeTable class

ChangesAreWrittenToFile() -> int

Determines whether changes made to this RAT are reflected directly in the dataset.

If this returns FALSE, then GDALRasterBand.SetDefaultRAT() should be called. Otherwise, this is unnecessary because changes to this object are reflected in the dataset.

Clone() -> RasterAttributeTable

Copies raster attribute table.

Creates a new copy of an existing raster attribute table. The new copy becomes the responsibility of the caller to destroy. May fail (return NULL) if the attribute table is too large to clone (GetRowCount() * GetColCount() > RAT_MAX_ELEM_FOR_CLONE).

Returns new copy of the RAT as an in-memory implementation.

CreateColumn(string pszName, GDALRATFieldType eType, GDALRATFieldUsage eUsage) -> int

Creates new column.

If the table already has rows, all row values for the new column will be initialized to the default value ("" or zero). The new column is always created as the last column, and will be column (field) "GetColumnCount()-1" after CreateColumn() has completed successfully.

- pszFieldName: The name of the field to create
- eFieldType: The field type (integer, double, or string)
- eFieldUsage: The field usage; GFU_Generic if not known

Returns CE_None on success or CE_Failure if something goes wrong.

GetColOfUsage(GDALRATFieldUsage eUsage) -> int

Fetches column index for given usage.

Returns the index of the first column of the requested usage type, or -1 if no match is found.

- eUsage: Usage type to search for

Returns column index, or -1 on failure.

GetColumnCount() -> int

Fetches table column count.

Returns the number of columns.

GetLinearBinning() -> bool

Gets linear binning information.

Returns linear binning information if any is associated with the RAT.

- pdfRow0Min: the lower bound (pixel value) of the first category
- pdfBinSize: the width of each category (in pixel value units)

Returns TRUE if linear binning information exists or FALSE if none exists.

GetNameOfCol(int iCol) -> char

Fetches name of indicated column.

- iCol: The column index (zero-based)

Returns the column name or an empty string for invalid column numbers.

GetRowCount() -> int

Fetches row count.

Returns the number of rows.

GetRowOfValue(double dfValue) -> int

GetTypeOfCol(int iCol) -> GDALRATFieldType

Fetches column type.

- iCol: The column index (zero-based)

Returns column type or GFT_Integer if the column index is illegal.

GetUsageOfCol(int iCol) -> GDALRATFieldUsage

Fetches column usage value.

- iCol: The column index (zero-based)

Returns the column usage, or GFU_Generic for improper column numbers.

GetValueAsDouble(int iRow, int iCol) -> double

Fetches field value as a double.

The value of the requested column in the requested row is returned as a double. Non-double fields will be converted to double with the possibility of data loss.

- iRow: Row to fetch (zero-based)
- iField: Column to fetch (zero-based)

Returns field value.

GetValueAsInt(int iRow, int iCol) -> int

Fetches field value as an integer.

The value of the requested column in the requested row is returned as an integer. Non-integer fields will be converted to integer with the possibility of data loss.

- iRow: Row to fetch (zero-based)
- iField: Column to fetch (zero-based)

Returns field value.

GetValueAsString(int iRow, int iCol) -> char

Fetches field value as a string.

The value of the requested column in the requested row is returned as a string. If the field is numeric, it's formatted as a string using default rules, so some precision may be lost.

The returned string is temporary and cannot be expected to be available after the next GDAL call.

- iRow: Row to fetch (zero-based)
- iField: Column to fetch (zero-based)

Returns field value.

ReadAsArray(field, start=0, length=None)

SetLinearBinning(double dfRow0Min, double dfBinSize) -> int

Sets linear binning information.

For RATs with equal-sized categories (in pixel value space) that are evenly spaced, this method may be used to associate the linear binning information with the table.

- dfRow0MinIn: The lower bound (pixel value) of the first category
- dfBinSizeIn: The width of each category (in pixel value units)

Returns CE_None on success or CE_Failure on failure.

SetRowCount(int nCount)

Sets row count.

Resizes the table to include the indicated number of rows. Newly created rows will be initialized to their default values: "" for strings, and zero for numeric fields.

- nNewCount: The new number of rows

SetValueAsDouble(int iRow, int iCol, double dfValue)

SetValueAsInt(int iRow, int iCol, int nValue)

SetValueAsString(int iRow, int iCol, string pszValue)

WriteArray(array, field, start=0)

WriteArray(array, field, start=0)

E.11 StatBuf class

IsDirectory() -> int

IsDirectory() -> int

PROPERTIES

mode
StatBuf_mode_get(StatBuf self) -> int

mtime
StatBuf_mtime_get(StatBuf self) -> GIntBig

size
StatBuf_size_get(StatBuf self) -> GIntBig

E.12 Transformer class

TransformGeolocations(Band xBand, Band yBand, Band zBand, GDALProgressFunc callback = 0, void callback_data = None, string options = None) -> int

TransformPoint(int bDstToSrc, double x, double y, double z = 0.0) -> int

TransformPoints(int bDstToSrc, int nCount) -> int

TransformPoints(int bDstToSrc, int nCount) -> int

E.13 VirtualMem class

GetAddr()

Pin(size_t start_offset = 0, size_t nsize = 0, int bWriteOp = 0)

Pin(size_t start_offset = 0, size_t nsize = 0, int bWriteOp = 0)

E.14 Module functions

AllRegister()

ApplyGeoTransform(double padfGeoTransform, double dfPixel, double dfLine)

AutoCreateWarpedVRT(Dataset src_ds, string src_wkt = None, string dst_wkt = None, GDALResampleAlg eResampleAlg = GRA_NearestNeighbour, double maxerror = 0.0) -> Dataset

CPLBinaryToHex(int nBytes) -> retStringAndCPLFree

CPLHexToBinary(char pszHex, int pnBytes) -> GByte

ComputeMedianCutPCT(Band red, Band green, Band blue, int num_colors, ColorTable colors, GDALProgressFunc callback = 0, void callback_data = None) -> int

ComputeProximity(Band srcBand, Band proximityBand, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> int

ContourGenerate(Band srcBand, double contourInterval, double contourBase, int fixedLevelCount, int useNoData, double noDataValue, OGRLayerShadow dstLayer, int idField, int elevField, GDALProgressFunc callback = 0, void callback_data = None) -> int

DataTypeIsComplex(GDALDataType eDataType) -> int

Debug(char msg_class, string message)

DecToDMS(double arg0, string arg1, int arg2 = 2) -> char

DecToPackedDMS(double dfDec) -> double

deprecation_warn(module)

DitherRGB2PCT(Band red, Band green, Band blue, Band target, ColorTable colors, GDALProgressFunc callback = 0, void callback_data = None) -> int

DontUseExceptions()

Error(CPLErr msg_class = CE_Failure, int err_code = 0, string msg = "error")

ErrorReset()

EscapeString(int len, int scheme = CPLES_SQL) -> retStringAndCPLFree

FileFromMemBuffer(char utf8_path, int nBytes)

FillNodata(Band targetBand, Band maskBand, double maxSearchDist, int smoothingIterations, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> int

FindFile(char pszClass, string utf8_path) -> char

FinderClean()

GCPsToGeoTransform(int nGCPs, int bApproxOK = 1) -> RETURN_NONE

GDALDestroyDriverManager()

GDAL_GCP_GCPLine_get(GCP gcp) -> double

GDAL_GCP_GCPLine_set(GCP gcp, double dfGCPLine)

GDAL_GCP_GCPPixel_get(GCP gcp) -> double

GDAL_GCP_GCPPixel_set(GCP gcp, double dfGCPPixel)

GDAL_GCP_GCPX_get(GCP gcp) -> double

GDAL_GCP_GCPX_set(GCP gcp, double dfGCPX)

GDAL_GCP_GCPY_get(GCP gcp) -> double

GDAL_GCP_GCPY_set(GCP gcp, double dfGCPY)

GDAL_GCP_GCPZ_get(GCP gcp) -> double

GDAL_GCP_GCPZ_set(GCP gcp, double dfGCPZ)

GDAL_GCP_Id_get(GCP gcp) -> char

GDAL_GCP_Id_set(GCP gcp, string pszId)

GDAL_GCP_Info_get(GCP gcp) -> char

GDAL_GCP_Info_set(GCP gcp, string pszInfo)

GDAL_GCP_get_GCPLine(GCP gcp) -> double

GDAL_GCP_get_GCPPixel(GCP gcp) -> double

GDAL_GCP_get_GCPX(GCP gcp) -> double

GDAL_GCP_get_GCPY(GCP gcp) -> double

GDAL_GCP_get_GCPZ(GCP gcp) -> double

GDAL_GCP_get_Id(GCP gcp) -> char

GDAL_GCP_get_Info(GCP gcp) -> char

GDAL_GCP_set_GCPLine(GCP gcp, double dfGCPLine)

GDAL_GCP_set_GCPPixel(GCP gcp, double dfGCPPixel)

GDAL_GCP_set_GCPX(GCP gcp, double dfGCPX)

GDAL_GCP_set_GCPY(GCP gcp, double dfGCPY)

GDAL_GCP_set_GCPZ(GCP gcp, double dfGCPZ)

GDAL_GCP_set_Id(GCP gcp, string pszId)

GDAL_GCP_set_Info(GCP gcp, string pszInfo)

GOA2GetAccessToken(char pszRefreshToken, string pszScope) -> retStringAndCPLFree

GOA2GetAuthorizationURL(char pszScope) -> retStringAndCPLFree

GOA2GetRefreshToken(char pszAuthToken, string pszScope) -> retStringAndCPLFree

GeneralCmdLineProcessor(char papszArgv, int nOptions = 0) -> char

GetCacheMax() -> GIntBig

GetCacheUsed() -> GIntBig

GetColorInterpretationName(GDALColorInterp eColorInterp) -> char

GetConfigOption(char pszKey, string pszDefault = None) -> char

GetDataTypeByName(char pszDataTypeName) -> GDALDataType

GetDataTypeName(GDALDataType eDataType) -> char

GetDataTypeSize(GDALDataType eDataType) -> int

GetDriver(int i) -> Driver

GetDriverByName(char name) -> Driver

GetDriverCount() -> int

GetLastErrorMsg() -> char

GetLastErrorNo() -> int

GetLastErrorType() -> int

GetPaletteInterpretationName(GDALPaletteInterp ePaletteInterp) -> char

GetUseExceptions() -> int

HasThreadSupport() -> int

IdentifyDriver(char utf8_path, string papszSiblings = None) -> Driver

InvGeoTransform(double gt_in) -> int

Mkdir(char utf8_path, int mode) -> int

Open(char utf8_path, GDALAccess eAccess = GA_ReadOnly) -> Dataset

OpenShared(char utf8_path, GDALAccess eAccess = GA_ReadOnly) -> Dataset

PackedDMSToDec(double dfPacked) -> double

ParseXMLString(char pszXMLString) -> CPLXMLNode

Polygonize(Band srcBand, Band maskBand, OGRLayerShadow outLayer, int iPixValField, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> int

PopErrorHandler()

PopFinderLocation()

PushErrorHandler(CPLErrorHandler pfnErrorHandler = 0) -> CPLErr

PushFinderLocation(char utf8_path)

RGBFile2PCTFile(src_filename, dst_filename)

RasterizeLayer(Dataset dataset, int bands, OGRLayerShadow layer, void pfnTransformer = None, void pTransformArg = None, int burn_values = 0, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> int

ReadDir(char utf8_path) -> char

ReadDirRecursive(char utf8_path) -> char

RegenerateOverview(Band srcBand, Band overviewBand, string resampling = "average", GDALProgressFunc callback = 0, void callback_data = None) -> int

RegenerateOverviews(Band srcBand, int overviewBandCount, string resampling = "average", GDALProgressFunc callback = 0, void callback_data = None) -> int

Rename(char pszOld, string pszNew) -> int

ReprojectImage(Dataset src_ds, Dataset dst_ds, string src_wkt = None, string dst_wkt = None, GDALResampleAlg eResampleAlg = GRA_NearestNeighbour, double WarpMemoryLimit = 0.0, double maxerror = 0.0, GDALProgressFunc callback = 0, void callback_data = None) -> CPLErr

Rmdir(char utf8_path) -> int

SerializeXMLTree(CPLXMLNode xmlnode) -> retStringAndCPLFree

SetCacheMax(GIntBig nBytes)

SetConfigOption(char pszKey, string pszValue)

SetErrorHandler(char pszCallbackName = None) -> CPLErr

SieveFilter(Band srcBand, Band maskBand, Band dstBand, int threshold, int connectedness = 4, string options = None, GDALProgressFunc callback = 0, void callback_data = None) -> int

TermProgress_nocb(double dfProgress, string pszMessage = None, void pData = None) -> int

Unlink(char utf8_path) -> int

UseExceptions()

VSIFCloseL(VSILFILE arg0)

VSIFOpenL(char utf8_path, string pszMode) -> VSILFILE

VSIFReadL(int nMembSize, int nMembCount, VSILFILE fp) -> int

VSIFSeekL(VSILFILE arg0, GIntBig arg1, int arg2) -> int

VSIFTellL(VSILFILE arg0) -> GIntBig

VSIFTruncateL(VSILFILE arg0, GIntBig arg1) -> int

VSIFWriteL(int nLen, int size, int memb, VSILFILE f) -> int

VSIStatL(char utf8_path, int nFlags = 0) -> int

VersionInfo(char request = "VERSION_NUM") -> char

E.15 Module data

CE_Debug
CE_Failure
CE_Fatal
CE_None
CE_Warning
CPLES_BackslashQuotable
CPLES_CSV
CPLES_SQL
CPLES_URL
CPLES_XML
CPLE_AppDefined
CPLE_AssertionFailed
CPLE_FileIO
CPLE_IllegalArg
CPLE_NoWriteAccess
CPLE_None
CPLE_NotSupported
CPLE_OpenFailed
CPLE_OutOfMemory
CPLE_UserInterrupt
CXT_Attribute
CXT_Comment
CXT_Element
CXT_Literal
CXT_Text
DCAP_CREATE
DCAP_CREATECOPY
DCAP_VIRTUALIO
DMD_CREATIONDATATYPES
DMD_CREATIONOPTIONLIST
DMD_EXTENSION
DMD_HELPTOPIC
DMD_LONGNAME
DMD_MIMETYPE

DMD_SUBDATASETS
GARIO_COMPLETE
GARIO_ERROR
GARIO_PENDING
GARIO_UPDATE
GA_ReadOnly
GA_Update
GCI_AlphaBand
GCI_BlackBand
GCI_BlueBand
GCI_CyanBand
GCI_GrayIndex
GCI_GreenBand
GCI_HueBand
GCI_LightnessBand
GCI_MagentaBand
GCI_PaletteIndex
GCI_RedBand
GCI_SaturationBand
GCI_Undefined
GCI_YCbCr_CbBand
GCI_YCbCr_CrBand
GCI_YCbCr_YBand
GCI_YellowBand
GDT_Byte
GDT_CFloat32
GDT_CFloat64
GDT_CInt16
GDT_CInt32
GDT_Float32
GDT_Float64
GDT_Int16
GDT_Int32
GDT_TypeCount
GDT_UInt16
GDT_UInt32
GDT_Unknown
GFT_Integer
GFT_Real
GFT_String
GFU_Alpha
GFU_AlphaMax
GFU_AlphaMin
GFU_Blue
GFU_BlueMax
GFU_BlueMin
GFU_Generic
GFU_Green
GFU_GreenMax
GFU_GreenMin
GFU_Max
GFU_MaxCount
GFU_Min
GFU_MinMax
GFU_Name
GFU_PixelCount
GFU_Red
GFU_RedMax
GFU_RedMin
GF_Read
GF_Write
GMF_ALL_VALID
GMF_ALPHA
GMF_NODATA
GMF_PER_DATASET
GPI_CMYK
GPI_Gray
GPI_HLS
GPI_RGB
GRA_Average
GRA_Bilinear
GRA_Cubic
GRA_CubicSpline
GRA_Lanczos
GRA_Mode
GRA_NearestNeighbour
GTO_BIT
GTO_BSQ
GTO_TIP
TermProgress
VSI_STAT_EXISTS_FLAG
VSI_STAT_NATURE_FLAG
VSI_STAT_SIZE_FLAG

PYTHON/GIS

Geoprocessing with Python

Chris Garrard

This book is about the science of reading, analyzing, and presenting geospatial data programmatically, using Python. Thanks to dozens of open source Python libraries and tools, you can take on professional geoprocessing tasks without investing in expensive proprietary packages like ArcGIS and MapInfo. The book shows you how.

Geoprocessing with Python teaches you how to access available datasets to make maps or perform your own analyses using free tools like the GDAL, NumPy, and matplotlib Python modules. Through lots of hands-on examples, you'll master core practices like handling multiple vector file formats, editing geometries, applying spatial and attribute filters, working with projections, and performing basic analyses on vector data. The book also covers how to manipulate, resample, and analyze raster data, such as aerial photographs and digital elevation models.

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- Work with vector data
- Read, write, process, and analyze raster data
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Chris Garrard works as a developer for Utah State University and teaches a graduate course on Python programming for GIS.

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