
Subject: EDG: Using IDL_MakeTempStruct() vs. IDL_ImportArray()

Posted by Peter Rodriguez on Tue, 10 Feb 2015 22:11:51 GMT

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Hi,

My objective is to create within C an IDL_TYP_STRUCT to be returned to IDL.

The EDG and Kling's book cover IDL_ImportArray(), but that costs me coding both for the C & IDL_STRUCT_TAG_DEF structures, so that data may be mapped.

I've been successful just using IDL_MakeTempStruct(strIDLdef, 1, &one, &vIDL, IDL_TRUE) having defined my strIDLdef and populating the structure manually via,

```
char *pIDL=vIDL->value.s.arr->data +
IDL_StructTagInfoByName(strIDLdef,(char*)sTAG,IDL_MSG_LONGJM P,&vTAG);
Then employing CASE(vTAG->type) to stride and store within the data space appropriately.
```

However, upon return to IDL the structure fields are only accessible by index not tagname.

Although the in-built tag_names() works!

```
IDL> o=my_make_struct("blablabla")
```

```
IDL> help,o
```

```
** Structure <743af8>, 7 tags, length=832, data length=830, refs=1:
```

```
sSCAN      STRING  'PPI'
iANT_HGT_m   INT     320
nSWEEPs    LONG     3
fRAYres_deg  FLOAT   0.500000
fBINres_km   FLOAT   0.250000
fSWEEP_angle_deg_arr
          FLOAT  Array[40]
sSWEEP_ISO8601_arr
          STRING Array[40]
```

```
IDL> help,o.sSCAN
```

```
% Tag name SSCAN is undefined for structure <Anonymous>.
```

```
% Execution halted at: $MAIN$
```

```
IDL> help,o.(0)
```

```
<Expression>  STRING  = 'PPI'
```

```
IDL> print,tag_names(o)
```

```
sSCAN iANT_HGT_m nSWEEPs fRAYres_deg fBINres_km fSWEEP_angle_deg_arr
sSWEEP_ISO8601_arr
```

So as a work-around, I've written am IDL wrapper to rebuild/copy the structure based on determining the SIZE(TYPE) of each field.

Does anyone have insight, how in C may I manually set each structure tagname string? The magic that IDL_ImportArray() apparently does... Something along the lines of tweaking vIDL->value.s.sdef I surmise because from the EDG "the implementation of structure definitions is not public information".

Thanks, Peter Rodriguez

Subject: Re: EDG: Using IDL_MakeTempStruct() vs. IDL_ImportArray()
Posted by chris_torrence@NOSPAM on Tue, 10 Feb 2015 22:30:46 GMT
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Hi Peter,

Here's some sample code from the TIFF module, where it is creating the "info" structure:

```
static IDL_STRUCT_TAG_DEF s_tags[] = {
{ "CHANNELS", 0, (void *) IDL_TYP_LONG },
{ "DIMENSIONS", dim_dims, (void *) IDL_TYP_LONG },
{ "HAS_PALETTE", 0, (void *) IDL_TYP_INT },
{ "IMAGE_INDEX", 0, (void *) IDL_TYP_LONG },
{ "NUM_IMAGES", 0, (void *) IDL_TYP_LONG },
{ "PIXEL_TYPE", 0, (void *) IDL_TYP_INT },
{ "TYPE", 0, (void *) IDL_TYP_STRING },
{ "BITS_PER_SAMPLE", 0, (void *) IDL_TYP_LONG },
{ "ORIENTATION", 0, (void *) IDL_TYP_LONG },
{ "PLANAR_CONFIG", 0, (void *) IDL_TYP_LONG },
{ "PHOTOMETRIC", 0, (void *) IDL_TYP_LONG },
{ "POSITION", dim_dims, (void *) IDL_TYP_FLOAT },
{ "RESOLUTION", dim_dims, (void *) IDL_TYP_FLOAT },
{ "UNITS", 0, (void *) IDL_TYP_LONG },
{ "TILE_SIZE", dim_dims, (void *) IDL_TYP_LONG },
{ "DESCRIPTION", 0, (void *) IDL_TYP_STRING },
{ "DOCUMENT_NAME", 0, (void *) IDL_TYP_STRING },
{ "DATE_TIME", 0, (void *) IDL_TYP_STRING },
{ "VERSION", 0, (void *) IDL_TYP_LONG },
{ 0 }
};

typedef struct {
IDL_LONG channels;
IDL_LONG dimensions[2];
IDL_INT has_palette;
IDL_LONG image_index;
IDL_LONG num_images;
IDL_INT pixel_type;
IDL_STRING type_str;
IDL_LONG bits_per_sample;
IDL_LONG orientation;
IDL_LONG planar_config;
IDL_LONG photometric;
float position[2];
float resolution[2];
}
```

```

IDL_LONG units;
IDL_LONG tile_size[2];
IDL_STRING description;
IDL_STRING document_name;
IDL_STRING date_time;
IDL_LONG version;
} ret_struct;

s_def = IDL_MakeStruct(0, s_tags); /* create the struct */
ret = (ret_struct *)
    IDL_MakeTempStructVector(s_def, 1, &vpTmp,IDL_FALSE);

```

I'm not sure how much of this API is actually included in "idl_export.h", so you might be unsuccessful at getting this to compile. But hopefully it will give you a start!

Cheers,
Chris

Subject: Re: EDG: Using IDL_MakeTempStruct() vs. IDL_ImportArray()
Posted by Jim Pendleton on Wed, 11 Feb 2015 00:30:09 GMT

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On Tuesday, February 10, 2015 at 3:30:50 PM UTC-7, Chris Torrence wrote:

> Hi Peter,
>
> Here's some sample code from the TIFF module, where it is creating the "info" structure:
>
> static IDL_STRUCT_TAG_DEF s_tags[] = {
> { "CHANNELS", 0, (void *) IDL_TYP_LONG },
> { "DIMENSIONS", dim_dims, (void *) IDL_TYP_LONG },
> { "HAS_PALETTE", 0, (void *) IDL_TYP_INT },
> { "IMAGE_INDEX", 0, (void *) IDL_TYP_LONG },
> { "NUM_IMAGES", 0, (void *) IDL_TYP_LONG },
> { "PIXEL_TYPE", 0, (void *) IDL_TYP_INT },
> { "TYPE", 0, (void *) IDL_TYP_STRING },
> { "BITS_PER_SAMPLE", 0, (void *) IDL_TYP_LONG },
> { "ORIENTATION", 0, (void *) IDL_TYP_LONG },
> { "PLANAR_CONFIG", 0, (void *) IDL_TYP_LONG },
> { "PHOTOMETRIC", 0, (void *) IDL_TYP_LONG },
> { "POSITION", dim_dims, (void *) IDL_TYP_FLOAT },
> { "RESOLUTION", dim_dims, (void *) IDL_TYP_FLOAT },
> { "UNITS", 0, (void *) IDL_TYP_LONG },
> { "TILE_SIZE", dim_dims, (void *) IDL_TYP_LONG },
> { "DESCRIPTION", 0, (void *) IDL_TYP_STRING },
> { "DOCUMENT_NAME", 0, (void *) IDL_TYP_STRING },
> { "DATE_TIME", 0, (void *) IDL_TYP_STRING },

```

>     { "VERSION", 0, (void *) IDL_TYP_LONG },
>     { 0 }
> };
>
> typedef struct {
>     IDL_LONG channels;
>     IDL_LONG dimensions[2];
>     IDL_INT has_palette;
>     IDL_LONG image_index;
>     IDL_LONG num_images;
>     IDL_INT pixel_type;
>     IDL_STRING type_str;
>     IDL_LONG bits_per_sample;
>     IDL_LONG orientation;
>     IDL_LONG planar_config;
>     IDL_LONG photometric;
>     float position[2];
>     float resolution[2];
>     IDL_LONG units;
>     IDL_LONG tile_size[2];
>     IDL_STRING description;
>     IDL_STRING document_name;
>     IDL_STRING date_time;
>     IDL_LONG version;
> } ret_struct;
>
>     s_def = IDL_MakeStruct(0, s_tags); /* create the struct */
>     ret = (ret_struct *)
>         IDL_MakeTempStructVector(s_def, 1, &vpTmp,IDL_FALSE);
>
>
> I'm not sure how much of this API is actually included in "idl_export.h", so you might be
unsuccessful at getting this to compile. But hopefully it will give you a start!
>
> Cheers,
> Chris

```

Peter,

It looks like you just need to ensure that the tag names in your C IDL_STRUCT_TAG_DEF are uppercase only. The interpreter isn't going to handle the mixed case that you're using presently.

Jim P.

Subject: Re: EDG: Using IDL_MakeTempStruct() vs. IDL_ImportArray()
 Posted by [Peter Rodriguez](#) on Thu, 12 Feb 2015 17:05:22 GMT

Yes, thank you, thank you Jim!

Funny how a nuance like that can derail things downstream.

In hindsight I do read in the EDG: char *name must be "Null-terminated uppercase name of the tag."

Hmm, it's an immutable string, so can't patch my code with toupper().
A simple vim command on my *.h file and a uppercase cast/check before
IDL_StructTagInfoByName and I'm good.

Cheers, Peter
