
Subject: boost::multi_array

Posted by [Robbie](#) on Thu, 11 Oct 2007 08:29:11 GMT

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Does anyone have examples of interfacing IDL with the boost::multi_array C++ library? I am trying to write a set of type casting methods using templates. I'm hoping to use template resolution of assist the writing of wrappers.

Examples and notes below

Thanks,
Robbie

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```
// Takes in an integer and returns an integer
IDL_VPTR some_function_wrapper(int argc, IDL_VTPR argv[]) {
    f = some_function(idl_cast_in<int>(argv[0]));
    return(idl_cast_out<int>(f));
}
```

```
// The first argument is the 3d array input, the second argument is
the 3d array output
// Returns an integer
IDL_VPTR some_function_wrapper(int argc, IDL_VTPR argv[]) {
    multi_array<int, 3> m();
    f = some_function(idl_array_cast_in<int, 3>(argv[0]),m);
    argv[1] = idl_array_cast_out(m,argv[1]);
    return(idl_cast_out<int>(f));
}
```

```
// The first argument is the 3d array input and output
// Returns an integer
IDL_VPTR some_function_wrapper(int argc, IDL_VTPR argv[]) {
    f = some_function(idl_array_cast_in_out<int, 3>(argv[0]));
    return(idl_cast_out<int>(f));
}
```

// Casting methods

idl_array_cast_in

Turn an IDL variable into a const_multi_array_ref with the given signature.

The array can't be altered from within C++.

idl_array_cast_out

Create a multi_array and copy into an IDL variable after returning.

idl_array_cast_in_out

Turn an IDL variable into a multi_array_ref with the given signature.

The array can be altered and returned to IDL

idl_cast_in

Turn an IDL variable into a constant scalar.

The scalar can't be altered from within C++

idl_cast_out

Turn a scalar into an IDL variable.

idl_test

Returns true if a variable matches the signature

idl_array_test

Returns true if an array matches the signature

// Template definitions of casting methods

```
template<class IDL_TYPE, const unsigned int IDL_VNDIM>
```

```
    const_multi_array_ref<IDL_TYPE, IDL_VNDIM> idl_array_cast_in(IDL_VPTR  
v);
```

```
template<class IDL_TYPE, const unsigned int IDL_VNDIM>
```

```
    IDL_VPTR idl_array_cast_out(multi_array<IDL_TYPE, IDL_VNDIM> a);
```

```
template<class IDL_TYPE, const unsigned int IDL_VNDIM>
```

```
    IDL_VPTR idl_array_cast_out(multi_array<IDL_TYPE, IDL_VNDIM> a,  
IDL_VPTR v);
```

```
template<class IDL_TYPE, const unsigned int IDL_VNDIM>
```

```
    multi_array_ref<IDL_TYPE, IDL_VNDIM> idl_array_cast_in_out(IDL_VPTR v);
```

```
template<class IDL_TYPE>
```

```
    const IDL_TYPE idl_cast_in(IDL_VPTR v);
```

```
template<class IDL_TYPE>
```

```
    IDL_VPTR idl_cast_out(IDL_TYPE c);
```

```
template<class IDL_TYPE>
```

```
    IDL_VPTR idl_cast_out(IDL_TYPE c, IDL_VPTR v);
```

```
template<class IDL_TYPE>
```

```
    bool idl_test(IDL_VPTR v);
```

```
template<class IDL_TYPE, const unsigned int IDL_VNDIM>
```

```
    bool idl_array_test(IDL_VPTR v);
```

// Type conversions

Most type conversions are inferred from export.h.

uchar BYTE

short int INT

long int LONG

float FLOAT

double DOUBLE

unsigned short int UINT

unsigned long int ULONG

long long LONG64

unsigned long long ULONG64

Other type conversions

```
std::complex<float> COMPLEX
std::complex<double> DCOMPLEX
std::string STRING
bool BYTE
```

Types not supported

POINTER

OBJECT

UNDEFINED

// Structures will be supported via their own casting methods.

// Structures are always array variables.

// The structure definition is passed as a template variable

idl_struct_cast_in

Turn an IDL variable into a const_multi_array_ref with the given signature.

The array can't be altered from within C++.

idl_struct_cast_out

Create a multi_array and copy into an IDL variable after returning.

idl_struct_cast_in_out

Turn an IDL variable into a multi_array_ref with the given signature.

The array can be altered and returned to IDL

idl_struct_test

Returns true if a variable matches the signature

// Template definitions of casting methods

```
template<class IDL_S, const unsigned int IDL_VNDIM>
```

```
const_multi_array_ref<IDL_S, IDL_VNDIM> idl_struct_cast_in(IDL_VPTR v);
```

```
template<class IDL_S, const unsigned int IDL_VNDIM>
```

```
IDL_VPTR idl_array_struct_out(multi_array<IDL_S, IDL_VNDIM> a);
```

```
template<class IDL_S, const unsigned int IDL_VNDIM>
```

```
IDL_VPTR idl_array_struct_out(multi_array<IDL_S, IDL_VNDIM> a, IDL_VPTR v);
```

```
template<class IDL_S, const unsigned int IDL_VNDIM>
```

```
multi_array_ref<IDL_S, IDL_VNDIM> idl_struct_cast_in_out(IDL_VPTR v);
```

```
template<class IDL_S, const unsigned int IDL_VNDIM>
```

```
bool idl_struct_test(IDL_VPTR v);
```