
Subject: Serialize of derived classes

Posted by [koldo](#) on Tue, 22 May 2012 09:15:08 GMT

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Hello all

By doing the enclosed code MyClass data is serialized but MyClassA is not used.

How it has to be done to store the data of MyClassA including the data of the parent MyClass?

```
struct MyClass {
    MyClass(int data) : data(data) {};
    int data;
    void Serialize(Stream& stream) {stream % data;}
};
```

```
struct MyClassA : public MyClass {
    MyClassA(int dataA) : dataA(dataA) {data = dataA*2;};
    int dataA;
    void Serialize(Stream& stream) {stream % dataA; MyClass::Serialize(stream);}
}
```

```
struct MyClassList {
    Array<MyClass> elems;
    void Serialize(Stream& stream) {stream % elems;}
};
```

```
...
elems.Add(new MyClassA(12));
StoreToFile(elems, "myfile");
```

Subject: Re: Serialize of derived classes

Posted by [mirek](#) on Tue, 22 May 2012 11:08:42 GMT

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koldo wrote on Tue, 22 May 2012 05:15Hello all

By doing the enclosed code MyClass data is serialized but MyClassA is not used.

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```
struct MyClass {
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```

```
struct MyClassList {  
    Array<MyClass> elems;  
    void Serialize(Stream& stream) {stream % elems;}  
};
```

```
...  
elems.Add(new MyClassA(12));  
StoreToFile(elems, "myfile");
```

This code is fundamentally wrong - elems can contain both MyClassA and MyClassB, means you need a class factory when loading the file (and then perhaps virtual Serialize).

In other words, Array::Serialize does not support polymorphic content...

Subject: Re: Serialize of derived classes
Posted by [koldo](#) on Wed, 23 May 2012 07:08:56 GMT
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Hello Mirek

I understand. Saving the file is not a problem.

However when loading, first every class is created and then the class is filled.

But as the program do not know in advance the type, it does not know what constructor to use .

So I will follow your proposal.

Subject: Re: Serialize of derived classes
Posted by [mdelfede](#) on Wed, 23 May 2012 18:40:36 GMT
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Koldo, please take a look at my Bazaar PolyXML class series.... It implements polymorphic serialization, which I guess is what you need.

PolyXML uses xml, but to convert it to use binary serialization should be trivial.

Max

Subject: Re: Serialize of derived classes
Posted by [koldo](#) on Wed, 23 May 2012 19:52:49 GMT
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Thank you Massimo

Yes. I think your package is just what I need . You will save me a lot of work.

And for sure it is not difficult to include Serialize and Jsonize support... so you will have to change package name .

Subject: Re: Serialize of derived classes
Posted by [mdelfede](#) on Wed, 23 May 2012 21:00:48 GMT
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Beware if you change it, I'm using in my TimberStruct application to save the whole documents
Please test id deeply with the PolyXMLTest application before submitting !

Ciao

Max

Subject: Re: Serialize of derived classes
Posted by [koldo](#) on Thu, 24 May 2012 06:24:27 GMT
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Oh no Massimo

I do not plan to change it . It is not difficult but it would require some package reengineering. This should have be made by you.

And there is also backwards compatibility... that has to remain absolutely.

Subject: Re: Serialize of derived classes
Posted by [mdelfede](#) on Thu, 24 May 2012 11:43:47 GMT
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Well... it should be enough to add a couple of templates :

```
template<class T> class WithPolyJson : public WithFactory<T>
template<class T> class WithPolySerial : public WithFactory<T>
```

And mimick the PolyXML series replacing Xmlize with Jsonize or Serialize.
ClassFactory template should stay unchanged, if you don't need extra features, but I guess I embedded enough of them

The best way to do it would be to add a PolySerialize package that uses my PolyXML, just for ClassFactory template.
I could also separate ClassFactory from PolyXML, if needed.

The most complicated part would be to mimick the PolyXMLUnknown class, which is used to stream in unknown objects keeping their xml code. Just seldom used, mostly if you've data from a newer version of your app that provides objects not foreseen in a previous version. It's able to stream in and out some pieces of unknown data without destroying them :

```
template<class T> class PolyXMLUnknown : public T
{
private:
    String tag;
    String rawXML;
public:
    PolyXMLUnknown(String const &_tag, String const &xml)
    {
        tag = _tag;
        rawXML = xml;
    }

    virtual String const &IsA(void) { return CLASSFACTORY_UNKNOWN; }
    String const &GetUnknownClassName(void) { return tag; }

    virtual void Xmlize(XmlIO &xml)
    {
        if(xml.IsStoring())
        {
            XmlNode node = ParseXML(rawXML);
            xml.Add();
            xml.Node() = node;
        }
    }
};
```

You should find a way to do the same with Json and binary serialization, which I don't know if it's possible.

Max

Subject: Re: Serialize of derived classes
Posted by [koldo](#) on Thu, 24 May 2012 11:52:41 GMT
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PolySerialize sounds nice. Are you going to change package name?

For a class to support XML, Json, etc, it would have to be a subclass of PolyXML, PolyJson and PolySerial?

Subject: Re: Serialize of derived classes
Posted by [mdelfede](#) on Thu, 24 May 2012 11:58:50 GMT
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mhhhh... better not.
You can either :

1) Create a new PolySerialize package, using PolyXML one and provide PolySerialize and PolyJsonize classes
Using PolyXML is needed just for ClassFactory.

2) I could split PolyXML into ClassFactory + PolyXML packages, and you could do as above but using the new ClassFactory package instead of PolyXML (cleaner solution...)

3) same as 2, put provide a couple of different packages for PolySerialize and PolyJsonize. That would be the cleanest solution, IMHO.

I'd rather not rename PolyXML package, because I'd have to patch some tenths of my source files.....

Max

Subject: Re: Serialize of derived classes
Posted by [koldo](#) on Fri, 25 May 2012 07:17:40 GMT
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Hello Massimo

In the demo, you can see this:

```
////////////////////////////////////
```

PolyXMLArray tests

```
////////////////////////////////////
```

Array content before streaming out: 4 classes:

class #0 is a 'Base'

 BaseData = 'Sample data in base class'

class #1 is a 'Derived'

```
BaseData = 'Sample data in derived class'
DerivedData = 'Another sample data in derived class'
class #2 is a 'Another'
BaseData = 'Sample data in Derived class'
DerivedData = 'Another sample data in Derived class'
AnotherData = '12345'
class #3 is a 'OneMore'
BaseData = 'Sample data in OneMore class'
DerivedData = 'Another sample data in OneMore class'
AnotherData = '12'
OneMoreData = '3.1418'
```

Streamed XML :

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<!DOCTYPE PolyXMLTest>
<PolyXMLTest>
  <Base>
    <BaseData>Sample data in base class</BaseData>
  </Base>
  <Derived>
    <BaseData>Sample data in derived class</BaseData>
  </Derived>
  <Another>
    <BaseData>Sample data in Derived class</BaseData>
  </Another>
  <OneMore>
    <BaseData>Sample data in OneMore class</BaseData>
  </OneMore>
</PolyXMLTest>
```

It seems like XML data stored only includes BaseData and does not include derived classes data.
What is wrong here?

Subject: Re: Serialize of derived classes
Posted by [mdelfede](#) on Fri, 25 May 2012 15:56:34 GMT
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uhmmmm... really weird, even more because data is correctly restored on streaming in.... I'll check it now, hope it's not because of recent changes in Xmlize....

Max

Subject: Re: Serialize of derived classes

Posted by [mdelfede](#) on Fri, 25 May 2012 16:32:14 GMT

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Hi Koldo.... got it

When

Xmlize(XmlIO xml)

was replaced with

Xmlize(XmlIO &xml)

I fixed my app and PolyXML code, but not the test app, so it was using the wrong (non-virtual) Xmlize(XmlIO xml), streaming just the base class.

Please refresh from bazaar and you'll see that now it's all ok

Ciao

Max

Subject: Re: Serialize of derived classes

Posted by [koldo](#) on Fri, 25 May 2012 19:40:58 GMT

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Thank you.
