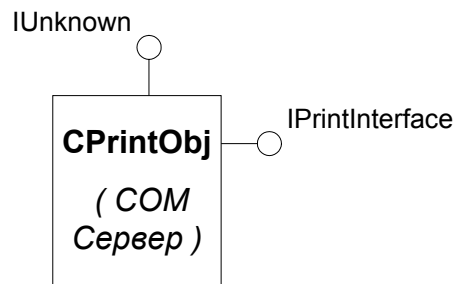


## Пример реализации COM сервера на C++ (лекция №12)

```
class IUnknown
{
public:
    virtual __stdcall HRESULT QueryInterface(REFIID iid, void** ppvObj) = 0;
    virtual __stdcall ULONG AddRef() = 0;
    virtual __stdcall ULONG Release() = 0;
};

class IPrintInterface : public IUnknown
{
public:
    virtual __stdcall HRESULT PrintObject() = 0;
};
```

```
IPrintInterface* pPrint = NULL;
if (pUnk->QueryInterface(IID_IPrintInterface, (void**)&pPrint) == NOERROR)
{
    pPrint->PrintObject();
    pPrint->Release();    // release pointer obtained via QueryInterface
}
```



```
class CPrintObj : public IPrintInterface
{
    DWORD m_dwRef;

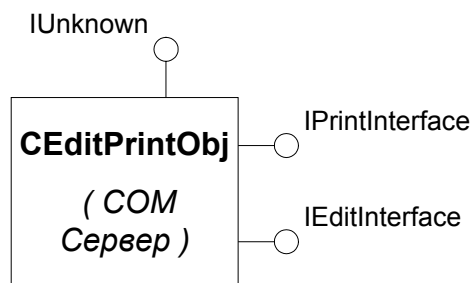
    virtual __stdcall HRESULT QueryInterface(REFIID iid, void** ppvObj);
    virtual __stdcall ULONG AddRef();
    virtual __stdcall ULONG Release();
    virtual __stdcall HRESULT PrintObject();
};
```

```
ULONG __stdcall CPrintObj::AddRef()
{
    return ++m_dwRef;
}

ULONG __stdcall CPrintObj::Release()
{
    if (--m_dwRef == 0)
    {
        delete this;
        return 0;
    }
    return m_dwRef;
}

HRESULT __stdcall CPrintObj::QueryInterface(REFIID iid,
                                             void FAR* FAR* ppvObj)
{
    if (iid == IID_IUnknown || iid == IID_IPrintInterface)
    {
        *ppvObj = this;
        AddRef();
        return NOERROR;
    }
    return ResultFromScode(E_NOINTERFACE);
}
```

```
class IEditInterface : public IUnkown
{
public:
    virtual void EditObject() = 0;
};
```



```
class CEEditPrintObj
{
public:
    CEEditPrintObj();

    HRESULT QueryInterface(REFIID iid, void**);
    ULONG AddRef();
    ULONG Release();
    DWORD m_dwRef;

    class CPrintObj : public IPrintInterface
    {
    public:
        CEEditPrintObj* m_pParent;
        virtual __stdcall HRESULT QueryInterface(REFIID iid, void** ppvObj);
        virtual __stdcall ULONG AddRef();
        virtual __stdcall ULONG Release();
    } m_printObj;

    class CEditObj : public IEditInterface
    {
    public:
        CEEditPrintObj* m_pParent;
        virtual __stdcall ULONG QueryInterface(REFIID iid, void** ppvObj);
        virtual __stdcall ULONG AddRef();
        virtual __stdcall ULONG Release();
    } m_editObj;
};
```

```
CEditPrintObj::CEditPrintObj ()
{
    m_editObj.m_pParent = this;
    m_printObj.m_pParent = this;
    m_dwRef = 0;
}

ULONG CEditPrintObj::AddRef ()
{
    return ++m_dwRef;
}

CEditPrintObj::Release ()
{
    if (--m_dwRef == 0)
    {
        delete this;
        return 0;
    }
    return m_dwRef;
}

HRESULT CEditPrintObj::QueryInterface (REFIID iid, void** ppvObj)
{
    if (iid == IID_IUnknown || iid == IID_IPrintInterface)
    {
        *ppvObj = &m_printObj;
        AddRef ();
        return NOERROR;
    }
    else if (iid == IID_IEditInterface)
    {
        *ppvObj = &m_editObj;
        AddRef ();
        return NOERROR;
    }
    return ResultFromScode (E_NOINTERFACE);
}

ULONG __stdcall CEditPrintObj::CEditObj::AddRef ()
{
    return m_pParent->AddRef ();
}

ULONG __stdcall CEditPrintObj::CEditObj::Release ()
{
    return m_pParent->Release ();
}

HRESULT __stdcall CEditPrintObj::CEditObj::QueryInterface (
    REFIID iid, void** ppvObj)
{
    return m_pParent->QueryInterface (iid, ppvObj);
}

ULONG __stdcall CEditPrintObj::CPrintObj::AddRef ()
{
    return m_pParent->AddRef ();
}
```

```
ULONG __stdcall CEditPrintObj::CPrintObj::Release()
{
    return m_pParent->Release();
}

HRESULT __stdcall CEditPrintObj::CPrintObj::QueryInterface(
    REFIID iid, void** ppvObj)
{
    return m_pParent->QueryInterface(iid, ppvObj);
}
```