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delete s;
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THIS INNOCUOUS LOOKING CODE COULD LEAK MEMORY**

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BE CALLED - THE RECTANGLE DESTRUCTOR WILL NOT!

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DERIVED CLASS OBJECTS WILL ONLY BE CLEANED  
UP IF THE BASE CLASS DESTRUCTOR IS VIRTUAL

# DERIVED CLASS OBJECTS WILL ONLY BE CLEANED UP IF THE BASE CLASS DESTRUCTOR IS VIRTUAL

```
class Shape
{
private:
public:
    string shapeType;
    virtual void print()
    {
        cout << "I am a shape" << endl;
    }
    Shape()
    {
        shapeType = "Unknown";
        cout << "Inside the Shape constructor" << endl;
        print(); //BAD!
    }
    ~Shape()
    {
        cout << "Inside the Shape destructor" << endl;
        print();
    }
};
```

**BAD**

```
class Shape
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```

**GOOD**



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**~Shape()**

**BAD**

```
{
    cout << "Inside the Shape destructor" << endl;
    print();
}
```

};

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        shapeType = "Unknown";
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        print(); //BAD!
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```

**virtual ~Shape()**

**GOOD**

```
{
    cout << "Inside the Shape destructor" << endl;
    print();
}
```

};

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Shape * s = new Rectangle();  
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**BAD**

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~Shape()  
{  
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virtual ~Shape()  
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    cout << "Inside the Shape destructor" << endl;  
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};
```

```
[Vitthals-MacBook-Pro: ~vitthalsrinivasan$ g++ -Wall Example59.cpp
```

```
Example59.cpp:54:3: warning: delete called on 'Shape' that has virtual functions but non-virtual destructor [-Wdelete-non-virtual-dtor]  
    delete s;  
    ^
```

```
1 warning generated.
```

```
Inside the Shape constructor
```

```
I am a shape
```

```
Inside the Rectangle constructor
```

```
Inside the Shape destructor
```

```
I am a shape
```

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**BAD**

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Example59.cpp:54:3: warning: delete called on 'Shape' that has virtual functions but non-virtual destructor [-Wdelete-non-virtual-dtor]  
    delete s;  
    ^  
1 warning generated.  
Inside the Shape constructor  
I am a shape  
Inside the Rectangle constructor  
Inside the Shape destructor  
I am a shape
```

**NO RECTANGLE  
DESTRUCTOR CALLED**

DERIVED CLASS OBJECTS WILL ONLY BE CLEANED UP IF THE BASE CLASS DESTRUCTOR IS VIRTUAL

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Shape * s = new Rectangle();  
delete s;
```

BAD

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~Shape()  
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    cout << "Inside the Shape destructor" << endl;  
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Shape * s = new Rectangle();  
delete s;
```

```
virtual ~Shape()  
{  
    cout << "Inside the Shape destructor" << endl;  
    print();  
}
```

GOOD

```
};
```

```
[Vitthals-MacBook-Pro:~ vitthalsrinivasan$ g++ -Wall Example59.cpp
```

```
[Vitthals-MacBook-Pro:~ vitthalsrinivasan$ ./a.out
```

```
Inside the Shape constructor
```

```
I am a shape
```

```
Inside the Rectangle constructor
```

```
Inside the Rectangle destructor
```

```
Inside the Shape destructor
```

```
I am a shape
```

NO COMPILER WARNING, AND THE RECTANGLE DESTRUCTOR IS CALLED!