CS 617 Object Oriented Systems
Lecture 11
Multiple Inheritance
3:30-5:00 pm, Mon Feb 11

Rushikesh K Joshi

Department of Computer Science and Engineering
Indian Institute of Technology Bombay

Outline

Outline

Inheriting Abstract Classes/Multiple Interfaces I

```
class Input {
public:
        virtual void in(int)=0;
};

class Output {
public:
        virtual int out()=0;
};

class UnsecuredIO : public Input, public Output {
int buff;
        void in(int val) { buff=val;}
        int out() { return buff;}
};
```

Inheriting Abstract Classes/Multiple Interfaces II

```
int main () {
UnsecuredIO *u = new UnsecuredIO();
Input *in = u;
Output *out = u;
        in→in(25);
        int x = out→out();
        cout << x;
}
```

Toward Sharing of State/Attributes, Implementations I

```
class Input {
int buff;
public:
        void in(int val) { buff=val;}
};

class Output {
int buff;
public:
        int out() { return buff;}
};

class UnsecuredIO : public Input, public Output { };
```

Toward Sharing of State/Attributes, Implementations II

```
int main () {
UnsecuredIO *u = new UnsecuredIO();
Input *in = u;
Output *out= u;
        in->in(25);
        int x = out->out();
        cout<< x;
}
```

Constructing a Diamond I

```
class Channel {
protected:
        int buff;
};

class Input: public Channel {
public:
        virtual void in(int val) { buff=val;}
};

class Output: public Channel {
public:
        virtual int out() { return buff;}
};

class UnsecuredIO : public Input, public Output { };
```

Constructing a Diamond II

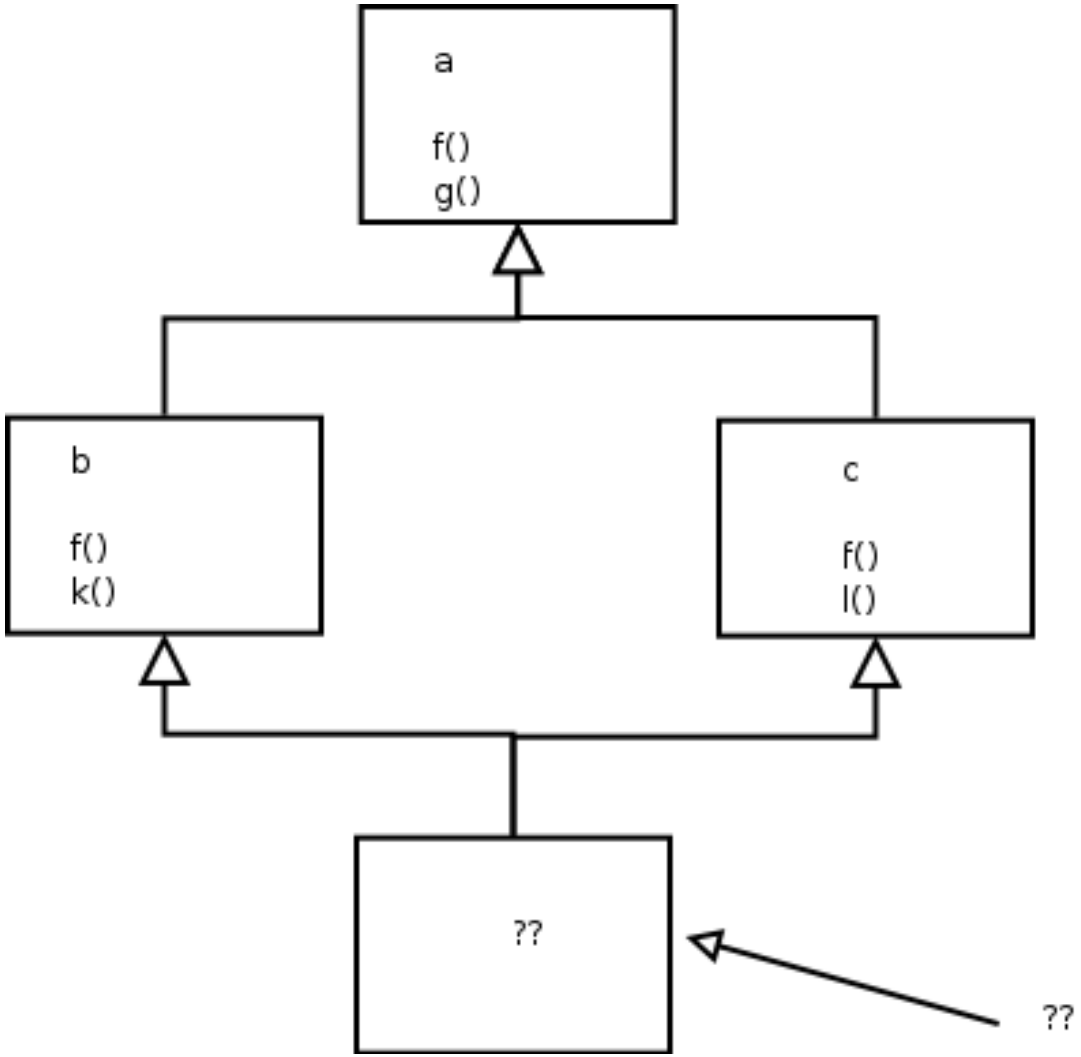
```
int main () {
UnsecuredIO *u = new UnsecuredIO();
Input *in = u;
Output *out= u;
        in->in(25);
        int x = out->out();
        cout<< x;
}
```

How many copies of "buff" in instance of most derived class? I

- one?
- two?

Outline

Repeated or Shared?



Solving Ambiguities

Member Functions

Attributes

choice of repeated vs. shared

Another Solution