

Inheritance

What does the following code print out?

```
#include <iostream>
using namespace std;

class Alpha {
    int q;
public:
    Alpha() { q = 10; cout << "a"; }
    // void Click() { cout << "X"; }
    int getq() { return q; }
    virtual void Click() { cout << "X"; }
};

class Beta:public Alpha {
    static int x;
    int y;
public:
    int gety() { y = 20; return y; }
    void Click() { cout << x++; }
};

ostream &operator<<(ostream& out, Alpha a) {
    out << "q is " << a.getq() << endl;
    return out;
}

ostream &operator<<(ostream& out, Beta b) {
    out << "y is " << b.gety() << " q is " << b.getq() << endl;
    return out;
}

int Beta::x = 1;

int main() {
    cout << "\n\n";

    Alpha A;
    Beta B;

    cout << endl << endl << "B:  " << B << endl << endl;

    A.Click();
    B.Click();

    Alpha * ptr = &A;
    ptr->Click();

    ptr = &B;
    ptr->Click();

    // A = B;
    A.Click();

    // Beta * ptr2 = &A;  // cannot do this
    Beta * ptr2 = &B;
    ptr2->Click();

    ptr2->Click();
    cout << "\n\n";

    A = B;
    cout << "A:  " << A;

    cout << endl << endl << "B:  " << B << endl << endl;

    // B = A;  // cannot do this
    return 0;
}
```

OUTPUT:

aa

B: y is 20 q is 10

X1X2X34

A: q is 10

B: y is 20 q is 10