

## CSCE240 Spring 2017: Exam Review 2

28 Feb 2017

Write the output of the following C++ code segments:

1.

### Class.C

```
Class::Class() {
    cout << "Constructed" <<
endl;
    a = 0;
}
Class::Class(const Class& ref) {
    cout << "Copied" << endl;
    a = ref.a + 1;
}
Class::~~Class() {
    cout << "Deleted" << endl;
    cout << "A is " << a << endl;
}
void Class::foo() {
    a += 2;
}
void f1(Class a) {
    Class b = a;
    b.foo();
    a.foo();
}
void f2(Class& a) {
    Class *b = &a;
    a.foo();
    (*b).foo();
}
Class f3(Class a) {
    a.foo();
    Class b = a;
    return b;
}
Class f4(Class a) {
    a.foo();
    Class b = a;
    b.foo();
    return b;
}
Class& f5(Class &a) {
    return a;
}
```

### Class.h

```
class Class {
    int a;
public:
    Class();
    Class(const Class&);
    ~Class();
    void foo();
};
void f1(Class a);
void f2(Class& a);
Class f3(Class a);
Class f4(Class a);
Class& f5(Class &a);
```

### Main.C

```
int main() {
    Class *a = new Class();

    f1(*a);
    f2(*a);
    Class b;
    b = f3(*a);
    b = f4(b);
    delete a;
    Class c = f5(b);
}
```

2.

### A.C

```
int a = 3;

A::A() {
    a = 0;
    b = 1;
}

A::A(const A& ref) {
    a = ref.a + ref.b;
    b = ref.b * 2;
}

void A::foo() {
    a++;
    b--;
}

void A::bar() {
    a--;
    b++;
}

ostream& operator<<(ostream& out,
const A &a) {
    out << a.a << " " << a.b;
    return out;
}

void f1(A &a1, A &a2) {
    a--;
    a1.foo();
    a2.bar();
    if (a > 0) {
        f1(a1, a2);
    }
}
```

### Main.C

```
int main() {
    A a, b;
    b.foo();
    b = a;
    A c(b);
    f1(c, b);
    f1(a, c);
    cout << a << endl << b <<
endl << c << endl;
}
```

### A.h

```
class A {
    int a;
    int b;
public:
    A();
    A(const A&);
    void foo();
    void bar();
    friend ostream&
operator<<(ostream&, const A&);
};

void f1(A&, A&);
```

3.

**Class.C**

```
int f1() {
    return 5;
}
int f1(int a) {
    return a*2;
}
int f1(int a, int b, int c) {
    return a + b + c;
}
void f1(char a) {
    cout << a << endl;
}
```

**Class.h**

```
int f1();
int f1(int);
int f1(int, int, int = 5);
void f1(char);
```

**Main.C**

```
int main() {
    int a[] = {0,1,2,3,4,5};

    for (int i = 0; i < 6; i++) {
        a[i] = f1(a[i]);
    }
    for (int i = 0; i < 5; i++) {
        a[i] = f1(a[i], a[i +
1]);
    }
    for (int i = 0; i < 6; i++) {
        cout << a[i] << " ";
    }
    cout << endl;
}
```

4.

**Main.C**

```
int main() {
    int a = 5, b = 6, *c = &a;
    int d, e, f;
    *c = 7;
    d = f1(a);
    e = f2(b);
    f = f3(c);
    cout << a << " " << b << "
" << *c << " " << d << " "
    << e << " " << f << endl;
}
```

**Class.h**

```
int f1(int & a) {
    return a++;
}
int f2(int a) {
    return a *= 2;
}
int f3(int* a) {
    return *a += 3;
}
```

**Class.C**

```
int f1(int &);
int f2(int);
int f3(int*);
```