Introduction to C++ - Quiz 1, 17 Feb 2010

Name: ______________________________ ID: __________

This is a *closed book* quiz. There are seven questions on two pages, for a total of 20 possible points. For each question, fill in the blank with your answer.

In the code fragments, assume that the context (e.g. appropriate header files and `using namespace` statements) has been specified correctly.

In questions that ask what a fragment would print, in each case your answer should consist of one or more decimal digits (don't worry about spaces or newlines).

1. What would the following code fragment print (4 pts)? __________

```
  int a[] = { 2, 3, 5 };
  cout << *a + 2 << *(a + 2) << endl;


*a gives us 2, so *a + 2 yields 4

a+2 yields the address of the array at index 2
So *(a+2) yields the result of 5

So it prints

45
```

2. What would the following code fragment print (4 pts)? __________

```
void clever_swap(int &x, int &y) {
  x = x - y;
  y = x + y;
  x = y - x;
}

int a = 1, b = 2;
clever_swap(a, b);

/*
step by step:
x is linked with a, y is linked with b
x has value 1, y has value 2 to start
x = x - y; //x now has value -1
y = x + y; // y now has value 1
x = y - x; // y now has value 2
Because of the links a and b now have values
of 2 and 1
*/
clever_swap(a, a);
/*Here x is linked with a, y is also linked with a
So y and x are also linked
No new space in memory is ever created.
So actually x,y,a all are the same data:
```

```
x = x - y; //assigns to x value of 0 since x and y are equal
y = x + y; // y = 0 + 0 ---> 0
x = y - x; // y = 0- 0 ---> 0
So a has value 0

b stays at 1 */

cout << a << b << endl;
//prints 01
```

3. What would the following code fragment print (4 pts)? ______________

   ```
   class myclass {
     int x;
   public:
     myclass(int x = 2) { myclass::x = x; cout << 1; }
     ~myclass() { cout << x; }
   };
   myclass *pc = new myclass();
   cout << 3;
   delete pc;
   cout << endl;
   ```

   Question is n/a for now

4. In the C++ standard library, is `cin` an object or a class (2 pts)? ______________

   object

5. Would the following code compile without errors? If no, give a brief description of the problem (3 pts).

```
int main() {
  struct example1 {
    int x, y;
  } *p, q;
  p = new example1;
  q = new example1;
}
```

No because q is declared to be a struct example1 here,
not a struct example1 pointer. So you can’t use the new operator
and store the result into q. new operator returns a pointer

6. Would the following code compile without errors? If no, give a brief description of the problem (3 pts).

```
class example2 {
private:
  int x;
public:
  // ...
  int setx(int x) const { example2::x = x; }
  int getx() const { return x; }
};
```

N/a for now