

CS 253: Problem Solving in C++ Fall 2006

Name:

Quiz 2, September 20, 2006

1. Mark the following statements as true or false:

- (a) In C++, all operators can be overloaded for user-defined types.
- (b) In C++, operators cannot be redefined for built-in types.
- (c) The function that overloads a function is called the operator function.
- (d) C++ allows users to create their own operators.
- (e) The precedence of an operator cannot be changed but its associativity can be changed.

(f) It is not necessary to overload relational operators for classes that have only `int` member variables.

(g) When writing the definition of a `friend` function, the keyword `friend` must appear in the function heading. The function head-

ing of the operator function to overload the pre-increment operator (`++`) and the post-increment operator (`++`) is the same because both operators have the same symbols.

2. What is a `friend` function?
3. Suppose that the binary operator `<<` is to be overloaded for a user-defined `class mystery`. Why must `<<` be overloaded as a `friend` function?
4. Suppose that the binary operator `+` is overloaded as a member function for a `class strange`. How many parameters does the function `operator+` have?
5. When should a class overload the assignment operator and define the copy constructor?

6. Consider the following declaration:

```
class strange
{

};
```

- (a) Write a statement that shows the declaration in the `class strange` to overload the operator `>>`.
- (b) Write a statement that shows the declaration in the `class strange` to overload the operator `=`.
- (c) Write a statement that shows the declaration in the `class strange` to overload the binary operator `+` as a member function.
- (d) Write a statement that shows the declaration in the `class strange` to overload the operator `==` as a member function.
- (e) Write a statement that shows the declaration in the `class strange` to overload the operator `++` as a member function.

7. Find the error(s) in the following code:

```
class mystery
{
    ...
    bool operator<=(mystery);
    ...
};

bool mystery::<=(mystery rightobj)
{
    ...
}
```

8. Find the error(s) in the following code:

```
class mystery
{
    ...
    bool operator<=(mystery, mystery);
    ...
};
```

9. Find the error(s) in the following code:

```
class mystery
{
    ...
    friend operator+(mystery); //overload binary +
    ...
};
```

10. How many operators are required to overload the pre-increment operator for a class as a member function?

11. How many operators are required to overload the pre-increment operator for a class as a friend function?
12. How many operators are required to overload the post-increment operator for a class as a member function?
13. How many operators are required to overload the post-increment operator for a class as a friend function?
14. Does a nonmember function have to be a friend to access a class's members?
15. Mark the following statements as true or false.
 - (a) In C++, `pointer` is a reserved word.
 - (b) In C++, pointer variables are declared using the word `pointer`.
 - (c) The statement `delete p` deallocates the variable `pointer p`.
 - (d) The statement `delete p` deallocates the dynamic variable that is pointed to by `p`.