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 \texttt{int} member variables.

(g) When writing the definition of a \texttt{friend} function, the keyword \texttt{friend} must appear in the function heading. The function heading of the operator function to overload the pre-increment operator (\texttt{++}) and the post-increment operator (\texttt{++}) is the same because both operators have the same symbols.

2. What is a \texttt{friend} function?

3. Suppose that the binary operator \texttt{<<} is to be overloaded for a user-defined \texttt{class mystery}. Why must \texttt{<<} be overloaded as a \texttt{friend} function?

4. Suppose that the binary operator + is overloaded as a member function for a \texttt{class strange}. How many parameters does the function \texttt{operator+} have?

5. When should a class overload the assignment operator and define the copy constructor?
6. Consider the following declaration:

```cpp
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:

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

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

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

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

```cpp
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`. 