Quiz 6 Answers

1. What header file must be included to perform file I/O in a C++ program?

   ```
   <fstream>
   ```

2. Assume that an input file stream named `data` has been opened properly and is connected to a text file full of integer values. Write code to properly count all of the integers in the file.

   ```
   int count = 0, num;

   data >> num;
   while (data)
      {
      count++;
      data >> num;
      }
   ```

3. Assume that the input file stream named `info` has just been opened. Write code to determine whether or not the open was successful.

   ```
   if (!info)
      {
      cout << "Error - unsuccessful open\n";
      }
   ```

4. Write the declaration for `pr`, a constant pointer to a `float`.

   ```
   float* const pr;
   ```

5. Write the declaration for `which`, a pointer to a constant `char`.

   ```
   const char* which;
   ```

6. (2) Declare a constant object of the class `Student`. Assume that the default constructor for the class will supply suitable values for the data members (i.e., you don't need to supply any).

   ```
   const Student s;
   ```

For the next four questions, assume that you have the following variable declaration, which is placed at the top of a source code file called `quiz6.cpp`, outside of any function definition:

```
int studentCount = 0;
```

7. What is the storage class of this variable?

   Static storage

8. What is the scope of this variable?

   File or global scope

9. If you wanted to use this variable in a different source code file that will be linked together with `quiz6.cpp`, what would you need to do?

   Code an extern declaration for the variable in the other source code file, e.g.:

   ```
   extern int studentCount;
   ```

10. If you wanted to make sure that any other source code file that will be linked together with `quiz6.cpp` could not use this variable, what would you need to do?

    Add the `static` keyword to the variable's declaration to change the global variable's linkage from external to internal, e.g.:

    ```
    static int studentCount = 0;
    ```

11. What does the keyword `static` do if placed in front of a local variable declaration?

    It changes the variable's storage class to static.

12. Local variables and function parameters have what scope?

    Block or local scope

13. What kinds of identifiers in C++ have class scope?

    Data members and method names

14. When are static storage class variables created and initialized and when are they destroyed?

    They are created and initialized at the beginning of the program and destroyed at the end of the program.