Quiz 2 was given in class on Wednesday, September 16, 2009.

1. [2 pts] What is an “invariant”? (Circle one.)
   a. A condition that is true at all times during the execution of a program.
   b. A member function that does not modify the data members of an object.
   c. A language construct (for example, `const` in C++) that prevents a value from changing.
   d. A condition that is always true at a particular point in an algorithm.
   e. A value that never changes.
   f. An object whose data members cannot be modified, even though the object may not be `const`.

2. [3 pts] Write reasonable pre- and postconditions for the following function.

   ```cpp
double calc(double x)
   {
       double x2 = 2.0 * x;
       return std::sqrt(x2);
   }
```

   For preconditions, we note that this function does not work if \( x \) is negative, since we cannot take the square root of a negative number. For postconditions, we want to say what the function does, in the form of a statement. Thus, we say what the return value is.

   Pre:
   \[ x \geq 0. \]

   Post:
   Return value is \( \sqrt{2.0 \times x} \).