```
//  file: private_vs_public.cpp
//
//  Self-contained test file for private vs. public variables and
//   functions in C++ classes.
//
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//
//  Revision history:
//      02/10/09  original version
//
//  Notes:
//    * For compactness, we include the class prototype and
//       class definition in this file at the top
//    * We've implicitly used the default destructor by not including it.
//    * Short functions can be declared "inline" in the prototype.
//    * Note the use of a "get" method to access the value of a private
//       variable from outside the class.
//
//******************************************************************
// include files
#include <iostream>    // cout and cin
#include <iomanip>     // manipulators like setprecision

class PrivacyTest
{
  public:
    PrivacyTest (double value_passed); // constructor
    double xsq () {return (x*x);};  // a public function
    double x;                       // a public variable
    double get_y () {return (y);};  // a public "get" function

  private:
    double ysq () {return (y*y);};  // a private function
    double y;                       // a private variable
};

PrivacyTest::PrivacyTest (double value_passed)
{
  x = value_passed;     // set an internal variable to a passed value
  y = value_passed;     // set an internal variable to a passed value
}

//******************************************************************

int main ()
{
  double value_passed = 10.;
  std::cout << "Original value is " << value_passed << std::endl;

  PrivacyTest my_PrivacyTest (value_passed);   // create a PrivacyTest object

  // Try getting the value of x in the object
  std::cout << "Public x: " << my_PrivacyTest.x << std::endl;
  std::cout << "Public function for x^2: "
            << my_PrivacyTest.xsq() << std::endl;

  // Try changing the value of x in the object and printing again
  my_PrivacyTest.x = 20.;
  std::cout << "Public x is now: " << my_PrivacyTest.x << std::endl;

  // Get and print the private value of
  std::cout << "Private y is now: " << my_PrivacyTest.get_y()
            << std::endl;

}

//******************************************************************
```