Inheritance

What is it?

- Inheritance can be thought of as software reusability where one class inherits another classes' data & methods and adds new functionality of its own

- Parts:
  - base class - the existing class
  - derived class - the new class with inherited members and additional behaviors

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Inheritance

- Three kinds of inheritance exist in C++:
  - Public
  - Protected
  - Private

Public Inheritance

- Every derived class object is also an object of the base class.

- As an example, if the base class is "Vehicle" then a derived class might be "Cars" and "Trucks." Cars inherit the members and behaviors of a Vehicle and add other behaviors and members

- Members of a derived class cannot directly access the private members of a base class

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Examples of Inheritance

- I would like to examine examples in the following order:
  - 1. Fig 9.4 on p. 615 (point.h)
  - 2. Fig 9.5 on pp. 616-617 (point.cpp)
  - 3. Fig 9.6 on p. 617 (pointtest.cpp)
  - 4. Fig 9.7 on p. 618 (circle.h)
  - 5. Fig 9.8 on pp. 619-620 (circle.cpp)
  - 6. Fig 9.9 on p. 621 (circletest.cpp)
  - 7. Fig 9.10 on pp. 622-623 (circle2.h)
  - 8. Fig 9.11 on pp. 623-624 (circle2.cpp)
  - 9. Fig 9.12 on p. 625 (point2.h)
  - 10. Fig 9.13 on pp. 625-626 (point2.cpp)
  - 11. Fig 9.14 on pp. 627 (circle3.h)
  - 12. Fig 9.15 on pp. 627-628 (circle3.cpp)
  - 13. Fig 9.16 on pp. 629-630 (circletest3.cpp)

Summary

- We discussed inheritance
- We covered:
  - Pages 610 - 630