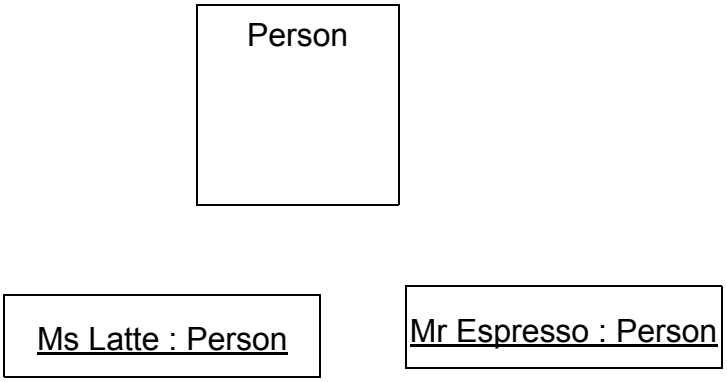
Solutions to Quick Check Questions

1

Introduction to Object-Oriented Programming and Software Development

1.1 Classes and Objects

1. Draw an object diagram for a Person class and two Person objects Ms. Latte and Mr. Espresso.



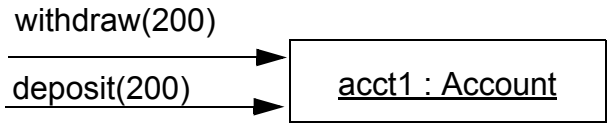
2. What must be defined before you can create an object?

   A class which the object belongs must be defined first.

1.2 Messages and Methods

1. Draw an object diagram of an Account object with instance methods deposit and withdraw.

   Here's one possible diagram of withdrawing and depositing 200.



2. Is the getObstacleDistance method an instance or a class method?

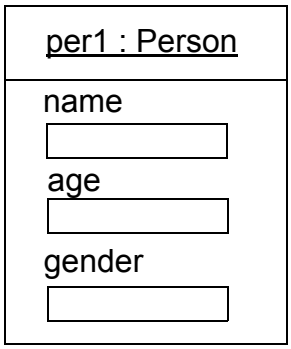
   It is an instance method.

1.3 Class and Instance Data Values

1. What is the difference between a constant and a variable?

   You can change the value of a variable, but you cannot change the value of a constant once its value is assigned at the declaration.

2. Draw an object diagram of a Person object with three instance variables name, age, and gender.

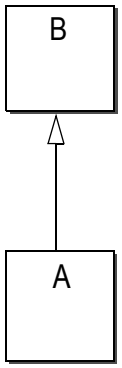


1.4 Inheritance

1. If Class A inherits from Class B, which is a superclass? Which is a subclass?

   B is the superclass, and A is the subclass.

2. Draw an object diagram that shows Class A is inheriting from Class B.



3. What are the other names for superclass and subclass?

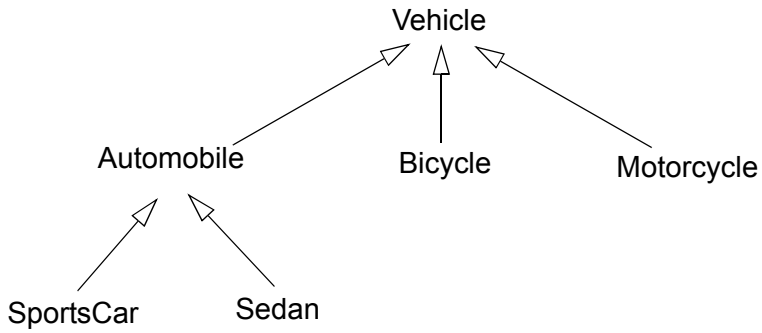
   A superclass is also an ancestor of its subclasses. A subclass is also a descendent of its superclass.

4. If we have Animal, Insect, and Mammal classes, which one will be a superclass?

   Since Insect and Mammal are subspecies of Animal, Animal should be the superclass of Insect and Mammal.

5. Model different types of vehicles, using inheritance. Include Vehicle, Automobile, Motorcycle, SportsCar, Sedan, and Bicyle?

   Here's one possible hierarchy:



1.5 Software Engineering and Software Life Cycle

1. Name the stages of the software life cycle.

   The stages are Analysis, Design, Coding, Testing, and Operation.

2. How does the quality of design affect the software maintenance cost?

   A poorly designed software is more costly to maintain than a correctly designed software.

3. What is debugging?

   An activity to locate and correct errors in software. By designing a software correctly, we can minimize the amount of time we spend on debugging.