

Fill in the blanks. 1pt each

40 pts

1. The term encapsulation describes the process of combining an object's data and behavior into a single software package.
2. State is the characteristic of an object that says at any particular moment, the object's instance variables have particular values.
3. When a message ~~/~~ sent to an object, the sender is referred to as the client.
4. Assuming the existence of a class named Auto, the variable auto1 in the program statement
Auto auto1 = new Auto ();
is actually a(n) reference to an Auto object, it is not an object itself.
5. Java classifies data into one of two categories, primitive data types and reference data types.
6. Java arranges classes in a hierarchy, and at the base of the hierarchy is a class called Object.
7. The class statement for ClassB, which inherits some characteristics of ClassA, would be written as:

```
public class ClassB extends Class A;
```
8. A class constructor that contains an empty parameter list is commonly called the default constructor.
9. If a method for a class needs to be visible to clients of the class, the method should be coded using the public modifier keyword.
10. The values that are passed to a method when it is invoked are called arguments or actual parameters.
11. Variables that are defined in a compound statement, and within a set of braces, and are only visible to code within those braces, are said to have block scope.

Circle T if the statement is true or F if the statement is false. 1pt each

- T (F) 1. When a Java program is executing, all class templates are in memory at all times, as are all individual objects used within the program. objects disappear when no longer needed
- (T) F 2. One characteristic of an object is behavior, which is defined by the methods of the object's class.
- T (F) 3. The sender of a message to an object needs to know intimate details concerning the workings of the receiver of the message.
- (T) F 4. A method that is used to determine the current state of an object is called an accessor.
- (T) F 5. A Java variable defined in a program as a reference type will actually contain a pointer to an object.
- (T) F 6. In Java's class hierarchy, a class that is immediately above another class is called a parent of the lower class.
- T (F) 7. Instance variables for Java classes are nearly always declared to be public to enable clients to access them directly.
- T (F) 8. If a class constructor is defined without any parameters, when an object is instantiated using that constructor, the numeric and object variables will contain unpredictable values, which could lead to a program error.

- ☐ T ☐ F 9. A method that does not return a value should be coded with the void keyword.
- ☐ T ☒ F 10. Variables defined within a method for temporary working storage are called local variables instance variables.
- ☒ T ☐ F 11. Java allows a global variable and a local variable to be defined with the same name, but it increases the likelihood of a programming errors developing.

Short Answer 1pt each

Select the best response for the following statements.

1. The JVM deletes unreferenced objects from memory during a process called garbage collection
2. Which characteristic of an object distinguishes that object from all other objects in the same program or software system? identity
3. When sending a message to an object, what term is used to define the list of methods that are supported by the server? interface
4. Messages that are used to change the state of an object are called mutators
5. Which of the following is NOT a normal component of a Java class template
 - a. methods that indicate how to initialize the object
 - ☒ b. a method to delete the object and release its memory
 - c. A description of the instance variables.
 - d. methods that indicate how the object responds to messages.
6. The process of inheritance refers to the fact that a child class inherits some of the characteristics of its super class or parent
7. What term is used to describe the class definition statement keywords public and private? visibility modifier
8. Calling one class constructor from within another class constructor is called chaining
9. What term is used to describe the parameters coded within the parentheses in a method's definition? formal parameters
10. Small, usually private, methods defined within a class to assist in some complex processing required for the class are referred to as helper methods
11. How long does a local variable retain the memory allocated for the variable?
 - ☒ a. Only as long as the method defining the variable is executing
 - b. It retains it as long as any object for that class is being referenced.
 - c. It retains it as long as the program is executing
 - d. None of the above.

Written Question 10pt

1. Write the code for three constructors for the Auto class mentioned in a previous question. The Auto class has three instance variables named make, model and year. The make and model are String objects, and the year is an integer value. Write a default constructor that initializes the make and model fields to a null value and the year variable to a value of 0. Write an initializing constructor that accepts parameters from the caller to set the values. Finally write a copy constructor that accepts an Auto object as a parameter and copies its values to a new instance of the object.

```
public Auto ()  
{  
    make = null;  
    model = null;  
    year = 0;  
}
```

```
public Auto (String ma, String mo, int y)  
{  
    make = ma;  
    model = mo;  
    year = y;  
}
```

```
public Auto (Auto a)  
{  
    make = a.make;  
    model = a.model;  
    year = a.year;  
}
```