

OOP Test 1 2016.11.16

1. (1 point) The process of filtering out unimportant details of the object so that only the important characteristics are left is known as:
 - a. inheritance
 - b. abstraction
 - c. polymorphism
 - d. finalization
2. (1 point) "The answer is:" + 42 evaluates to
 - a. "The answer is: + 42"
 - b. compilation error
 - c. "The answer is: 42"
 - d. "The answer is 42"
3. (1 point) A Java constructor (mark all what applies)
 - a. has no return type
 - b. may have a return value
 - c. may initialize objects
 - d. must have a return value
4. (1 point) To declare an array of String objects one may use:
 - a. String args[];
 - b. declare args as String[];
 - c. String[] args = {"A", "B", "C"};
 - d. String[] args;
5. (1 point) What is true after the execution of:

```
int[][] board = new int[][] {{00,01,02},{10,11},{20,21,22,23}};
```

 - a. An array of 3 rows by 3 columns is created.
 - b. An array with row 0 of length 3, row 1 of length 2, and row 2 of length 4 is created.
 - c. The array contents is:
row 0: 0, 1, 2
row 1: 10, 11
row 2: 20, 21, 22, 23
 - d. The array contents is:
row 0: 0, 1, 2, 0
row 1: 10, 11, 0, 0
row 2: 20, 21, 22, 23
6. (2 points) Data abstraction: enforcement of a _____ between the _____ of a data type and the _____ of its _____
7. (1 point) Interface is a _____ view and implementation is a _____ view.
8. (1 point) What is overloading?
.
9. (1 point) What is overriding?
.
10. (4 points) Write below the suitable modifier from the set **public, private, protected, static**:
 - a. belongs to the class _____
 - b. everyone sees it _____
 - c. seen only inside class _____
 - d. seen only inside the class and its subclasses _____

11. (3 points) Which of the following would not form good superclass–subclass pairs (generalizations), and why? Hint: look for violations of the is-a rule, poor naming, and other problems.
- a. Money – Dollars _____
 - b. Bank – Account _____
 - c. SavingsAccount – CheckingAccount _____
 - d. Account – Account12876 _____
 - e. Student – GraduateStudent _____
 - f. Continent – Country _____
12. (4 points) Which of the following items do you think should be a class, and which should be an instance? For any item that should be an instance, name a suitable class for it. If you think an item could be either a class or an instance, depending on circumstances, explain why.
- a. General Motors _____
 - b. Automobile company _____
 - c. Boeing 777 _____
 - d. Game _____
 - e. Board game _____
 - f. Chess _____
 - g. Airplane _____
 - h. The game of chess between Tom and Jane which started at 2:30 pm yesterday _____
13. (3 points) Find the error (if any) in each of the following program segments. Explain how to correct the error.
- a.
- ```
int sum(int x, int y) {
 int result;
 result = x + y;
}
```
- \_\_\_\_\_
- b.
- ```
int sum( int n ) {
    if ( n == 0 )
        return 0;
    else
        n + sum( n - 1 );
}
```
- _____
- c.
- ```
void f(float a); {
 float a;
 System.out.println(a);
}
```
- \_\_\_\_\_

**OOP Test 1 2016.11.16****Answer Section**

1. ANS: B PTS: 1
2. ANS: C PTS: 1
3. ANS: A, C PTS: 1
4. ANS: C, D PTS: 1
5. ANS: B, C PTS: 1
6. ANS:  
clear separation  
abstract properties  
concrete details  
implementation  
  
PTS: 2
7. ANS:  
public  
private  
  
PTS: 1
8. ANS:  
Writing multiple methods with the same name, but with different arguments  
  
PTS: 1
9. ANS:  
Writing a method with the same signature but with different implementation in a subclass  
  
PTS: 1
10. ANS:  
a. static      b. public      c. private      d. protected  
  
PTS: 4
11. ANS:  
a. Dollars are Money. OK.  
b. Bank has Accounts (composition, not inheritance)  
c. They are all subclasses of Account, violate is-a rule  
d. Account12876 is probably an instance of an Account (i.e. an object, not a class)  
e. A GraduateStudent is-a Student. OK.  
f. A continent has countries (composition, not inheritance)  
  
PTS: 3
12. ANS:  
a. Instance of an Automobile company  
b. class  
c. Instance of an Airplane  
d. class  
e. class (subclass of Game).  
f. class (subclass of Board game).  
g. class  
h. Instance of Chess  
  
PTS: 4

13. ANS:

a. Error: The method is supposed to return an integer, but does not.

Correction: Delete the variable `result`, and place the statement `return x + y;` in the method, or add the following statement at the end of the method body:  
`return result;`

b. Error: The result of `n + sum( n - 1 )` is not returned by this recursive method, resulting in a syntax error.

Correction: Rewrite the statement in the else clause as `return n + sum( n - 1 );`

c. Error: Both the semicolon after the right parenthesis of the parameter list is incorrect and the parameter `a` should not be redeclared in the method.

Correction: Delete the semicolon after the right parenthesis of the parameter list, and delete the declaration `float a;`

PTS: 3