

CS125 Spring 2009 Exam 4 Review

Before you start, please note: it is possible to get strong clues for answering some of the questions in the review by referring to other questions. In general, you should not depend on both versions of a question showing up in the exam.

Also note: this study guide is not comprehensive. I strongly suggest reviewing: the practice problems posted online, homework assignments, material from the last exam & the self check questions in the text.

1. The _____ of a computer refer(s) to the physical parts of a computer system while _____ refer(s) to the intangible components.
2. When data is processed into a meaningful form, it becomes _____.
3. The software we've programmed could be classified as _____ software since it performs specific tasks for the user.
4. The primary roles of _____ software are to run the computer & provide low level services to other programs.
5. There are _____ bits in a byte of memory.
6. ROM stands for _____
7. RAM stands for _____
8. How are the Web & the Internet related & how do they differ?
9. Define the primary operations of a computer.

10. List & briefly define the six categories into which computers are general classified.

11. List, in order, the steps of the machine processing cycle:

12. Compare & contrast the ALU with the FPU.

13. Give an example of a URL & diagram its components.

14. Given two classes, CheckingAccount & SavingsAccount which both inherit from a class BankAccount, place an --> by the statements that will print:

```
CheckingAccount ca = new CheckingAccount(100.0);
SavingsAccount sa = new SavingsAccount (200.0);
BankAccount    ba = new BankAccount (300.0);
Object         o1 = (Object)ca;
Object         o2 = (BankAccount)o1;

if(ca instanceof CheckingAccount)
    System.out.println("ca instanceof CheckingAccount");

if(sa instanceof CheckingAccount)
    System.out.println("sa instanceof BankAccount");

if(ba instanceof BankAccount)
    System.out.println("ba instanceof BankAccount");

if(ba instanceof Object)
    System.out.println("ba instanceof Object");

if(o1 instanceof Object)
    System.out.println("o1 instanceof Object");

if(o2 instanceof CheckingAccount)
    System.out.println("o2 instanceof CheckingAccount");
```

15. Say we had the following class relationships (classes are in **bold**):

SuperHero is a type of **Person**
SuperHero has a **SpecialPower**
SuperHero has a **SpecialWeakness**

Indicate which relationships denote inheritance & which denote instance fields. Draw out the corresponding UML diagram.

16. Consider the following class

```
public class RegularPerson
{
    private String name;
    public Parent(String n)
    {
        name = n;
    }
    public String getName()
    {
        return name;
    }
}
```

Make a new class called KnightedPerson that inherits from regular person. Assume the following bit of code will be used to test your class:

```
KnightedPerson k = new KnightedPerson("Jim", "Moorhead");
System.out.println( k.getName() );
System.out.println( "expected: Sir Jim of Moorhead" );
```

Make certain that you include documentation comments for your class & all of its methods/constructors.

17. What are the benefits of using inheritance in Java programming?

18. Write a bit of code that demonstrates how to get objects from two different types into the same array (hint: when we did this in class, the classes we used were Square & ImprovedSquare).

19. Consider the following code. Add the code necessary so that the constructor for **ImprovedFoo** uses **a** to set its own instance field & uses **b** to set the instance field of its parent class **Foo**.

```
public class Foo                public class ImprovedFoo
{                                {
    private int x;              private int y;
    public Foo(int a)          public Foo(int a, int b)
    {                            {
        x = a;                  // your code goes right below here
    }
}

                                // your code goes right above here
                                }
}
```