

PFP 2007 – Sample Quiz 2

1. What floating-point value is represented in the binary notation below:

1 10000000 100100000000000000000000

2. Convert 1001110110110010 to hex

3. Write the value -9 in the following notation (use 8-bits to represent the binary value)

(1) Sign-magnitude:

(2) 1's complement:

(3) 2's complement:

4. Given 4-bit 2's complement numbers below, state whether the operation generates an overflow or not? Justify your answer.

1000 + 1111

5. What section(s) of class' code to initialize an object's state appropriately?

6. True or False: An array is a fixed-sized collection of items that all have the same type.

7. True or False:

Assume there is a class called Widget. If we have two variables w1 and w2 of reference type Widget then `w1 == w2` is true if both variables w1 and w2 are null or if both are pointing to the same object.

8. Assume that the calc method shown below compiles. In the space below it, write the method signature for the goFigure method (write method declaration but omit the method body). Make up your own parameter name.

```
public void calc(){
    double [] info = {5.5, 10.9, 3.3};
    boolean result = goFigure(0, true, info[0], info);
    ...
    ...
}
```

9. True or False: Instance variables that are declared private can be used in any methods within same class as well as other classes.

10. Complete the constructor of the Foo class

```
public class Foo{
    private int x;

    //intialize x with input parameter x
    public Foo(int x){

        //complete the constructor

    }
}
```

12. Scope

```
public class foo{
    private int m;
    private static int n;

    public static void myMethod(){
        System.out.println(m);
    }
}
```

What is the problem with this program?

13. Array of Primitives

A WeatherStats object contains daily temperature data 3 years worth of data. For simplicity, we assume that every year has exactly 365 days. A user can query the object to find out, over a 3 year period, the average and the highest temperatures for a given day. For example, if the method highTempForDay is passed a 0, it returns the highest temperature for Jan 1 over a 3 year period. If the method avgTempForDay is passed 364, it returns the average temperature for Dec 21 over a 3 year period.

Complete the methods highTempForDay and avgTempForDay.

```
public class WeatherStats{
    private double[] yearPrev1;
    private double[] yearPrev2;
    private double[] yearPrev3;

    public WeatherStats(){
        //Assume constructor allocates memory for 3 arrays and fills in the data
        ...
    }

    public double avgTempForDay(int day){

        //complete this methods

    }

    public double highTempForDay(int day){

        //complete this methods

    }
}
} //end of class
```

14. Arrays of Objects

```
public class Dog{
    String name;
    int age;
}

public Dog(String name, int age){
    this.name = name;
    this.age = age;
}

public String getName(){ return name;}
public int getAge(){ return age;}
public void incrementAge(){ age++; }
```

1. Complete the interactions below so that the first element of the Dog array *dogs* is d1, the second is d2, and the third is d3.

```
>Dog d1 = new Dog("Lassie", 5);
>Dog d2 = new Dog("Max", 6);
>Dog d3 = new Dog("Fido" ,7);
>Dog [] dogs = new new Dog[3];
```

2. Complete the DogDB class below

```
public class DogDB{

    private Dog [] db;

    public DogDB (Dog [] d){
        //initializes db to array d
    }

    public void updateAge(){

        //updates the age of all dogs in the dog array

    }

}

} //end of class DogDB
```