Solutions to Sample JAC444 Midterm Test 1 -2016

A. Theory (10 marks = 5 marks + 5 marks)

1. When can one implement a deep cloning in Java?
see deep cloning lecture 3

2. What are the differences between ***this*** and ***this()*** ?
see this() lecture2

B. Code – Quiz 40 marks = 10 quizzes * 4 marks (1 mark for correct answer and 3 for explanation)

1. What will happen when you attempt to compile and run this code?

```
abstract class A {
    abstract public void method1();
    public void method2() {
       System.out.println("The second method");
    }
}
public class B extends A {
    public static void main(String argv[]){
      A e = new B();
      e. method2();
    }
    public void method1(){
       System.out.println("The first method");
    }
    public void method2(){
        method1 ();
    }
}
```

1) The code will compile and run, printing out the words "The first method"
2) The compiler will complain that the A class is an abstract class.
3) The code will compile and run, printing out the words "The second method "
4) The compiler will complain about the statement A e = new B();

ANSWER: A **Polymorphism**

Explanation:Given the following code, what will happen when you try to compile and run it?

```
public class Q2 {
   public static void main(String[] args) {
```

```
        boolean b1 = false; int val = 1;
        if ((b1 == true) && ((val += 1) == 2))
            System.out.println("Good: " + val);
         else
            System.out.println("Bad: " + val);
    }
}
```

A. Compilation error, attempting to perform binary comparison on logical data type.
B. Compilation and output of "Good: 1".
C. Compilation and output of "Bad: 2".
D. Compilation and output of "Bad: 1".

ANSWER: D short circuit logical operator && in java

3 Given the following code, what will be the output?

```
class Int {
    public int i = 1;
}
public class Q3 {
    public static void main(String argv[])    {
        Q3 t = new Q3();
        t.first();
    }
    public void first() {
        int i = 2;
        Int v = new Int();
        v.i = 3;
        second(v, i);
        System.out.println(v.i);
    }
    public void second(Int v, int i)  {
        i = 0;
        v.i = 4;
        Int val = new Int();
        v =  val;
        System.out.println(v.i + " " + i);
    }
}
```

A 1 1
4

B 1 0
1

C 4 0

4

D 1 0
4

ANSWER: D Polymorphism and field access in subclass (hidden)

Given the following code, what will be the output?

```
public class Q4 {
   public static void main(String args[]) {
        System.out.println('e' - 'b' + "A" + 4);
   }

}
```

A. 3A4
B. 'e' - 'b' + "A" + 4
C. Compilation error
D. None of these

ANSWER: A String concatenation

2. What will happen when you try to compile and run the following code?

```
public class Test {
    public void method()     {
        for(int i = 0; i < 3; i++) {
            System.out.print(i);
        }
        System.out.print(i);
    }
}
```

A 0122
B 0123
C Compilation error
D None of these

ANSWER: C

Test.java:6: error: cannot find symbol
System.out.print(i);

3. What is displayed when the following code is compiled and executed?

```
String s1 = new String("Test");
String s2 = new String("Test");
if (s1==s2)
    System.out.println("Same");
if (s1.equals(s2))
    System.out.println("Equals");
```

A Same
Equals
B Equals
C Same
D The code compiles, but nothing is displayed upon execution.
E The code fails to compile

ANSWER:__B result of s1.equals(s2);

4. What is displayed when the following code is compiled and executed?

```
class Parent {
    private void method1() {
        System.out.println("Parent's method1()");
    }
    public void method2() {
        System.out.println("Parent's method2()");
        method1();
    }
}
class Child extends Parent {
    public void method1() {
        System.out.println("Child's method1()");
    }
    public static void main(String args[]){
        Parent p = new Child();
        p.method2();
    }
}
```

A. Compile time error
B. Run time error
C. prints : Parent's method2()
Parent's method1()
D. prints : Parent's method2()
Child's method1()

ANSWER:__C polymorphism

C. What does the following code print? Please explain your answer.

20 marks = 5 marks + 15 marks

```
public class What {
    public static void main(String[] args) {
        System.out.println(1 + 2 + "1 + 2" + 1 + 2);
    }
}
```

31 + 212 string concatenation

```
class Dog {
    public static void bark() {
        System.out.print("woof ");
    }
}

class Basenji extends Dog {
    public static void bark() {
      System.out.println("how ");
    }
}

public class Bark {
    public static void main(String args[]) {
        Dog woofer = new Dog();
        Dog nipper = new Basenji();
        woofer.bark();
        nipper.bark();
    }
}
```

woof woof - polymorphism

D. Code – Development (Question 1 = 10 marks Question 2 = 20marks)

1. Consider the following Java expression

```
x -> { return (x > 0  &&  x < 10); }
```

If this is a valid expression in Java, explain what it does and how would you use it.

wes - it is a lambda expression - it takes an integer and returns boolean true if x is between 1 and 10

2. Write a Java program that takes two arguments on a command line. The first argument is the name of the text file, and the second is a string. Your program must read the file and print all the lines from the file where the given string is found.

   Write another Java program that takes many arguments on a command line. All arguments are the text file names, except the last, which is a string. Find how many lines in a file contain the given string. Every file must be read in a different thread.

   Use in the second program as much code as you can from first program. Please properly document your code.

see course sample Java IO