Object Oriented Programming

1. Write a java program ManyHellos.java that takes an input n (either command line argument ) and prints n Hellos. It must give the correct suffix to each hello. For example ManyHellos.java 5 should print

1st Hello 2nd Hello 3rd Hello 4th Hello 5th Hello

1. A frog is trapped in a well that is d meters deep. It tries to get out and jumps and each time gains a meters in the upward direction. However, it then slips b meters. Luckily a > b so it will eventually come out. Write a program that will ask the user for the depth of the well d. The length that the frog jumps a. The length that the frog slips b. Your program should output the number of hops the frog has to take in order to come out of the well. Note that once the frog leaps out of the well it does not slip. Thus a frog that jumps 100 meters and slips 99 meters would come out of a well of size 101 in two hops. Use a loop.

(Note: Thanks to Dr. Sarmad Abbasi for helping me design the above problem.)

1. Can you solve the above problem without using a loop?

1. What (if anything) is wrong with each of the following statements?

if (a > b) then c = 0;

if a > b { c = 0; }

if (a > b) c = 0;

if (a > b) c = 0 else b = 0;

1. Write a code fragment that prints true if the double variables x and y are both strictly **between** 0 and 1 and false otherwise.
2. What happens when you try to compile the following code fragment?

double x;

if (a >= 0) x = 3.14;

if (a < 0) x = 2.71; System.out.println(x);

1. Write a program FivePerLine.java that, using one for loop and one if statement, prints the integers from 1000 to 2000 with five integers per line.

Hint: use the % operator.

1. Write a program that takes an integer N as a command-line argument and uses Math.random() to print N uniform random variables between 0 and 1, and then prints their average value.
2. Write a program Triangle.java that takes a command-line argument N and prints an N-by-N trian-gular pattern like the one below.

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1. Write a program X.java that takes a command-line argument N and prints a (2N + 1)-by-(2N + 1) Xs like the one below. Use two for loops and one if-else statement.

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1. Write a program MyDiamond.java that takes a command-line argument N and prints a (2N + 1)-by-(2N + 1) diamond like the one below.

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1. What is the value of m and n after executing the following code?

int n = 123456789; int m = 0;

while (n != 0) {

m = (10 \* m) + (n \% 10);

n = n / 10;}

1. What does the following code print out?

int f = 0, g = 1;

for (int i = 0; i <= 15; i++) { System.out.println(f);

f = f + g;

g = f - g;

}

1. Write a code fragment that puts the binary representation of an int N into a String s. Like int N = 15 so, s would hold the value 1111.
2. Write a program GCD.java that find the greatest common divisor (gcd) of two integers x and y using Euclid's algorithm, which is an iterative computation based on the following observation: If x > y, then if y divides x, the gcd of x and y is y; otherwise the gcd of x and y is the same as the gcd of x % y and y.
3. Write a program Checkerboard.java that takes an input N and prints out a two dimensional N-by-N checkerboard pattern with alternating spaces and asterisks, like the following 4-by-4 pattern.

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1. Write a program RollDie.java that generates the result of rolling a fair six-sided die (an integer between 1 and 6). Hint: Search for Math.Random() function
2. Write a program that takes three integer command-line arguments a; b; and c and print out the number of distinct values/non-repeated (1, 2, or 3) among a; b; and c.
3. Write a program that takes five integers and prints out the median (the third largest one). (hard) Now, try to compute the median of 5 elements such that when executed, it never makes more than 6 total comparisons.
4. How can I create an infinite loop with a while loop?
5. Correct it:

boolean done = false; while (done = false) {

...

}

1. What's wrong with the following loop that is intended to compute the sum of the integers 1 through 100?

for (int i = 1; i <= N; i++) {

int sum = 0;

sum = sum + i;

}

System.out.println(sum);

1. Write a program Hurricane.java that that takes the wind speed (in miles per hour) as an integer and prints out whether it qualifies as a hurricane, and if so, whether it is a Category 1, 2, 3, 4, or 5 hurricane. Below is a table of the wind speeds according to the Sa r-Simpson scale.

Category Wind Speed (mph)

1 74 - 95

2 96 - 110

3 111 - 130

4 131 - 155

5 155 and above

1. What is wrong with the following code fragment?

double x = -32.2;

boolean isPositive = (x > 0);

if (isPositive = true)

System.out.println(x + " is positive");

else

System.out.println(x + " is not positive");

1. Change/add one character so that the following program prints out 20 x's. There are two di erent solutions.

int i = 0, n = 20;

for (i = 0; i < n; i--) System.out.print("x");

1. What does the following code fragment do?

if (x > 0);

System.out.println("positive");