

Homework 2

```
/**
 * Gets a command-line argument (int), and prints all the divisors of the
 * given number.
 */
public class Divisors {
    public static void main(String[] args) {

        // Gets the int from the user:
        int x = Integer.parseInt(args[0]);

        // defines int that will contains all divisors:
        int d = 0;

        // checks if number is divisor if x
        for (int i = 1; i <= x; i++){
            if (x % i == 0) {
                d = i;
                System.out.println(i);
            }
        }
    }
}
```

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/**
 * Prints a given string, backward. Then prints the middle character in the
 * string.
 * The program expects to get one command-line argument: A string.

public class Reverse {
    public static void main (String[] args){
        //// Put your code here
        // Gets string from user:

        String s = (args[0]);
        String r = ""; // defines string that will contain reversed string

        // loop that will reverse each letter from string
        for (int i = s.length()-1; i >= 0; i--){
            r = r + s.charAt(i);
        }

        int middle = (s.length()-1)/2;
        System.out.println(r);
        System.out.println("The middle character is " + s.charAt(middle));

    }
}

```

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/**
 * Generates and prints random integers in the range [0,10),
 * as long as they form a non-decreasing sequence.
 */
public class InOrder {
    public static void main (String[] args) {
        //// Write your code here

        int first = (int) ((Math.random() * 10));
        System.out.print(first);

        int random = (int) (Math.random() * 10);

        while (first <= random){           // stay in loop while first num is
smaller or equal to second num generated
            System.out.print(" " + random);

            first = random;
            random = (int) (Math.random() * 10);

        }

    }
}

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/**
 * Gets a command-line argument (int), and chekcs if the given number is
perfect.
 */
public class Perfect {
    public static void main (String[] args) {
        int num = Integer.parseInt(args[0]); //gets number from user
        int i = 1;
        int divisor_sum = 0;
        String st = "";

        while(num >= i && i != num){
            if (num % i == 0){
                divisor_sum = divisor_sum + i ;
                st = st + i + " + ";
            }
            i++;
        }

        st = st.substring(0, st.length()-2);

        if(num == divisor_sum){
            System.out.print(num + " is a perfect number since " + num + " = "
+ st);
        }

        else{
            System.out.print(num + " is not a perfect number");
        }

    }
}

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/**
 * Simulates the formation of a family in which the parents decide
 * to have children until they have at least one child of each gender.
 */
public class OneOfEach {
    public static void main (String[] args) {

        boolean boy = false;
        boolean girl = false;

        int b = 0;
        int g = 0;

        while (boy == false || girl == false){

            int chance = (int) ((Math.random() * 10));

            if (chance % 2 == 0){
                girl = true;
                g = g + 1;
                System.out.print("g ");
            }
            else{
                boy = true;
                System.out.print("b ");
                b = b + 1;
            }
        }
        int total = g + b;
        System.out.println();
        System.out.print("You made it... and you now have " + total + "
children.");
    }
}

```

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import java.util.Random;
/**
 * Computes some statistics about families in which the parents decide
 * to have children until they have at least one child of each gender.
 * The program expects to get two command-line arguments: an int value
 * that determines how many families to simulate, and an int value
 * that serves as the seed of the random numbers generated by the program.
 * Example usage: % java OneOfEachStats 1000 1
 */
public class OneOfEachStats {
    public static void main (String[] args) {
        // Gets the two command-line arguments

        // Initailizes a random numbers generator with the given seed value

        int T = Integer.parseInt(args[0]);
        int seed = Integer.parseInt(args[1]);

        Random Generator = new Random(seed);

        int b = 0;
        int g = 0;
        double total = 0; //will receive total num of children from all
iterations

        boolean boy = false;
        boolean girl = false;
        double rnd = 0;
        int count2 = 0;
        int count3 = 0;
        int count4ormore = 0;
        String common = "";

        for (int i = 0; i < T; i++){

            while (boy == false || girl == false){

                rnd = Generator.nextDouble(); //This statement will generate a
random value in the range [0,1)

                if (rnd > 0.5){
                    girl = true;
                    g = g + 1;
                }
                else{

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        boy = true;
        b = b + 1;

    }
}
if (b + g == 2){
    count2 ++;
}
else if (b + g == 3){
    count3 ++;
}
else{
    count4ormore ++;
}
total = total + g + b; //add children received in last
g = 0; //clean g for next iteration
b = 0; //clean g for next iteration
girl = false;
boy = false;
}

    if ((count2 > count3) && (count2 > count4ormore)) common = "2.";
//most common is 2 families
    else if ((count3 > count2) && (count3 > count4ormore)) common = "3." ;
//most common is 3 families
    else common = "4 or more."; //most common is 4 or more families

    double avg = (double)(total) / T; // total children divided by number
of iterations

    System.out.println("Average: " + avg + " children to get at least one
of each gender.");
    System.out.println("Number of families with 2 children: " + count2);
    System.out.println("Number of families with 3 children: " + count3);
    System.out.println("Number of families with 4 or more children: " +
count4ormore);
    System.out.println("The most common number of children is " + common
);
}
}

```