```
/**
 *  Gets a command-line argument (int), and prints all the divisors
of the given number.
 */
public class Divisors {
     public static void main (String[] args) {
          //// Put your code here
          int x = Integer.parseInt(args[0]);
          int d = 1;
          while (d <= x) {
               if (x % d == 0) {
                    System.out.println(d);
               }
               d++;
          }
     }
}
```

```
/**
 * 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
          String s = args [0];
          int length = s.length() -1;

          for (int i = length ; i >= 0; i--){
               System.out.print(s.charAt(i));
          }

          char middle = s.charAt(length/2);
          System.out.println();
          System.out.println("The middle character is " + middle);

     }
}
```

```
/**
 *  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 a = (int)(Math.random() * 10);
	System.out.println(a);
	int b = a;
	while (b >= a) {
		b = (int)(Math.random() * 10);
			if (b >= a) {
			System.out.println(b);
			a = b;
			}
		}
	}
}
```

```
/**
 *  Gets a command-line argument (int), and chekcs if the given number is perfect.
 */
public class Perfect {
     public static void main (String[] args) {
          //// Put your code here

          int n = Integer.parseInt(args[0]);
          String isPerfect = (n + " is a perfect number since " + n + " = 1");
          int sum = 1;
          String add;


          for (int divisor = 2 ; divisor <= (n-1) ; divisor++) {
               if (n % divisor == 0){ //checks if divisor is a divider of n
                    add = " + " + divisor;
                    isPerfect = isPerfect + add;
                    sum = sum + divisor;

               }
          }

          if (n == sum) { //checks if n is perfect
                    System.out.println(isPerfect);
          }
          else {
                    System.out.println(n + " is not a perfect number");
```

```
            }
        }
    }
```

```
/**
 *  Gets a command-line argument n (int), and prints an n-by-n damka board.
 */
public class DamkaBoard {
	public static void main(String[] args) {
		//// Put your code here
		int n = Integer.parseInt(args[0]);
		for(int col = 1; col <= n; col++){
			for(int row = 1; row <= n; row++){
				if(col % 2 != 0){
				System.out.print("* ");
				}
				else{
				System.out.print(" *");
				}
			}
			System.out.println();

		}

	}
}
```

```
/**
 *  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) {
          //// Put your code here
          boolean boy = false;
          boolean girl = false;
          char gender;
          int sum = 0;

          while(boy == false || girl == false ){
               double child = Math.random();
               sum++;
               if(child < 0.5){
                    gender = 'b';
                    boy = true;
               }
               else{
                    gender = 'g';
                    girl = true;
               }
               System.out.print(gender + " ");
          }
          System.out.println();
          System.out.println("You made it... and you have " + sum + " children");
     }
```

```
}
```

```
/**
 *  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 one command-line argument: an int value
 *   that determines how many families to simulate.
 */
public class OneOfEachStats1 {
     public static void main (String[] args) {
          //// Put your code here
          int T = Integer.parseInt(args[0]);
          int twoChild = 0; //count the number of families with 2 kids
          int threeChild = 0; //count the number of families with 3 kids
          int fourChild = 0; //count the number of families with 4 or more kids.
          int totalChildren = 0; //count the total number of kids is all of the families

          for(int t = 1 ; t <= T ; t++){
               boolean boy = false;
               boolean girl = false;
               char gender;
               int numberOfChildren = 0; //count the number of kids of a specific family

               while(boy == false || girl == false ){
                    double child = Math.random();
                    numberOfChildren++;
```

```
                    if(child < 0.5){
                        gender = 'b';
                        boy = true;
                    }
                    else{
                        gender = 'g';
                        girl = true;
                    }

                }

                totalChildren = totalChildren + numberOfChildren;
                if(numberOfChildren >= 4){
                fourChild++;
                }
                else if(numberOfChildren == 3){
                    threeChild++;
                    }
                    else if(numberOfChildren == 2){
                        twoChild++;

                    }

            }

    double avg = (double)totalChildren / T;

    System.out.println("Average: " + avg + " children to get at
least one of each gender.");
```

```
     System.out.println("Number of families with 2 children: " +
twoChild );

     System.out.println("Number of families with 3 children: " +
threeChild);

     System.out.println("Number of families with 4 or more
children: " + fourChild);

     if((twoChild > threeChild) && (twoChild > fourChild)){ //2
children is most common

                System.out.println("The most common number of
children is 2.");

           }

           else{

                if(threeChild > fourChild){

                     System.out.println("The most common number of
children is 3.");

                }

                else{

                     System.out.println("The most common number of
children is 4 or more.");

                }

           }

     }


     }
```

```
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

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

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

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

        Random generator = new Random(seed);


          int twoChild = 0; //count the number of families with 2
kids

          int threeChild = 0; //count the number of families with 3
kids

          int fourChild = 0; //count the number of families with 4
or more kids.

          int totalChildren = 0; //count the total number of kids
is all of the families


          for(int t = 1 ; t <= T ; t++){
```

```
                boolean boy = false;
                boolean girl = false;
                char gender;
                int numberOfChildren = 0; //count the number of kids
of a specific family

                while(boy == false || girl == false ){
                      double child = generator.nextDouble();
                      numberOfChildren++;

                      if(child < 0.5){
                            gender = 'b';
                            boy = true;
                      }
                      else{
                            gender = 'g';
                            girl = true;
                      }

                }

                totalChildren = totalChildren + numberOfChildren;
                if(numberOfChildren >= 4){
                fourChild++;
                }
                else if(numberOfChildren == 3){
                      threeChild++;
                      }
                      else if(numberOfChildren == 2){
                            twoChild++;
```

```
                    }


          }


     double avg = (double)totalChildren / T;


     System.out.println("Average: " + avg + " children to get at
least one of each gender.");
     System.out.println("Number of families with 2 children: " +
twoChild );
     System.out.println("Number of families with 3 children: " +
threeChild);
     System.out.println("Number of families with 4 or more
children: " + fourChild);
     if((twoChild > threeChild) && (twoChild > fourChild)){ //2
children is most common
               System.out.println("The most common number of
children is 2.");
          }
          else{
               if(threeChild > fourChild){
                    System.out.println("The most common number of
children is 3.");
               }
               else{
                    System.out.println("The most common number of
children is 4 or more.");
               }
          }


          //// In the previous version of this program, you used a
statement like:
```

```
            //// double rnd = Math.random();
            //// Where "rnd" is the variable that stores the
generated random value.
            //// In this version of the program, replace this
statement with:
            //// double rnd = generator.nextDouble();
            //// This statement will generate a random value in the
range [0,1),
            //// just like you had in the previous version, except
that the
            //// randomization will be based on the given seed.
            //// This is the only change that you have to do in the
program.


      }
}
```