

## Homework Week 2 Code

### Exercise 1

```
public class Divisors {  
    public static void main(String[] args) {  
        int a = Integer.parseInt(args[0]);  
        int divisor = 1;  
        while (divisor <= a) {  
            if (a % divisor == 0) {  
                System.out.println(divisor);  
            }  
            divisor++;  
        }  
    }  
}
```

## Exercise 2

```
public class Reverse {  
    public static void main (String[] args) {  
        String a = (args[0]);  
        String flip = "";  
        int l = a.length();  
        for (int i = (l-1) ; i == 0 ; i--){  
            flip = flip + a.charAt(i);  
        }  
        char b;  
        b = flip.charAt((flip.length()-1)/2);  
        System.out.println(flip);  
        System.out.println("The middle character is" + b);  
    }  
}
```

### Exercise 3

```
public class InOrder {  
    public static void main (String[] args) {  
        int x = 0;  
        int y = (int)(Math.random() * 10);  
        while (y >= x) {  
            System.out.println(y);  
            x = y;  
            y = (int)(Math.random() * 10);  
        }  
    }  
}
```

#### Exercise 4

```
public class Perfect {  
    public static void main (String[] args) {  
        int a = Integer.parseInt(args[0]);  
        int divisor = a - 1;  
        int sum = 0;  
        String AllDivisor = "";  
        while (divisor > 0){  
            if (a % divisor == 0) {  
                if (AllDivisor != ""){  
                    AllDivisor = AllDivisor + "+";  
                }  
                sum = sum + divisor;  
                AllDivisor = AllDivisor + divisor;  
            }  
            divisor = divisor - 1;  
        }  
        if (sum == a){  
            System.out.println(a + " is a perfect number since " + a + "=" + AllDivisor);  
        }  
        else{  
            System.out.println(a + " is not a perfect number");  
        }  
    }  
}
```

## Exercise 5

```
public class DamkaBoard {  
    public static void main(String[] args) {  
        int damka = Integer.parseInt(args[0]);  
        int count = 0;  
        for (int i = damka; i != 0; i--) {  
            System.out.println();  
            if (count % 2 != 0) {  
                System.out.print(" ");  
            }  
            for (int j = damka; j != 0; j--) {  
                System.out.print("* ");  
            }  
            count++;  
        }  
    }  
}
```

## Exercise 6

```
public class OneOfEach {
    public static void main (String[] args) {
        boolean girl = false;
        boolean boy = false;
        int count = 0;
        String children = "";
        while ((girl == false) || (boy == false)) {
            double rnd = (double) Math.random();
            if (rnd < 0.5) {
                boy = true;
                children = children + "b ";
            }
            else {
                girl = true;
                children = children + "g ";
            }
            count++;
        }
        System.out.println(children);
        System.out.println("You made it... and you now have " + count + " children");
    }
}
```

## Exercise 7

```
public class OneOfEachStats1 {
    public static void main(String[] args) {
        int T = Integer.parseInt(args[0]);
        boolean girl = false;
        boolean boy = false;
        int count = 0;
        double totalchildrencount = 0.0;
        int f2 = 0;
        int f3 = 0;
        int f4 = 0;
        for (int i = 0; i < T; i++) {
            while ((girl == false) | (boy == false)) {
                double rnd = (double) Math.random();
                if (rnd < 0.5) {
                    boy = true;
                } else {
                    girl = true;
                }
                count++;
                totalchildrencount++;
            }
            if (count == 2) f2++;
            else if (count == 3) f3++;
            else f4++;
            count = 0;
            boy = false;
            girl = false;
        }
        int common = 0;
        if ((f2 >= f3) && (f2 >= f4)) common = f2;
        else if (f3 >= f4) common = f3;
        else common = f4;
        System.out.println("Average: " + (totalchildrencount / T) + " children to get at least one of each gender.");
        System.out.println("Number of families with 2 children: " + f2);
        System.out.println("Number of families with 3 children: " + f3);
        System.out.println("Number of families with 4 or more children: " + f4);
        if ((f2 >= f3) && (f2 >= f4)) {
            System.out.println("The most common number of children is 2.");
        }
    }
}
```

## Exercise 8

```
public class OneOfEachStats {
    public static void main (String[] args) {
        int T = Integer.parseInt(args[0]);
        int seed = Integer.parseInt(args[1]);
        boolean girl = false;
        boolean boy = false;
        int count = 0;
        double totalchildrencount = 0.0;
        int f2 = 0;
        int f3 = 0;
        int f4 = 0;
        Random generator = new Random(seed);
        for (int i = 0; i < T; i++) {
            while ((girl == false) | (boy == false)) {
                double rnd = generator.nextDouble();
                if (rnd <= 0.5) {
                    boy = true;
                } else {
                    girl = true;
                }
                count++;
                totalchildrencount++;
            }
            if (count == 2) f2++;
            else if (count == 3) f3++;
            else f4++;
            count = 0;
            boy = false;
            girl = false;
        }
        int common = 0;
        if ((f2 >= f3) && (f2 >= f4)) common = f2;
        else if (f3 >= f4) common = f3;
        else common = f4;
        System.out.println("Average: " + (totalchildrencount / T) + " children to get at least one of each gender.");
        System.out.println("Number of families with 2 children: " + f2);
        System.out.println("Number of families with 3 children: " + f3);
        System.out.println("Number of families with 4 or more children: " + f4);
        if ((f2 >= f3) && (f2 >= f4)) {
            System.out.println("The most common number of children is 2.");
        }
    }
}
```