

HW02 Code – CS

Divisors.java

```
public class Divisors {  
    public static void main (String[] args) {  
        int num = Integer.parseInt(args[0]);  
        //For statement which prints the divisors of the given command  
line argument using the modulo operator %  
        for (int i = 1; i <= num; i++) {  
            if (num % i == 0) {  
                System.out.println(i);  
            }  
        }  
    }  
}
```

Reverse.java

```
public class Reverse {  
    public static void main (String[] args){  
        String input = args[0];  
        int length = input.length();  
        int mid = length/2;  
        //Print the reversed string  
        for (int i = length-1; i >= 0 ;i--) {  
            System.out.print(input.charAt(i));  
        }  
        System.out.println();  
        //Print the middle character  
        if (length % 2 == 0) {  
            System.out.println("The middle character is " + input.charAt(mid-1));  
        }  
        else {System.out.println("The middle character is " + input.charAt(mid));}  
    }  
}
```

InOrder.java

```
public class InOrder {
    public static void main(String[] args) {
        // Generate the first random number
        int num = (int) (Math.random() * 10);

        // Print the first number
        System.out.print(num);

        // A do-while loop to generate and print the next numbers
        do {
            // Generating the next random number
            int next_num = (int) (Math.random() * 10);

            // Checking if the next number is greater or equal to the current number
            if (next_num >= num) {
                //Printing the next number
                System.out.print(" " + next_num);

                //Updating the next num
                num = next_num;
            } else {
                //Getting out of the loop if the sequence isn't a decreasing one
                break;
            }
        } while (true);
    }
}
```

DamkaBoard.java

```
public class DamkaBoard {
    public static void main(String[] args) {
        int input = Integer.parseInt(args[0]);
        int index_line = 1;
        System.out.println();

        while(index_line <= input) {
            int x = 1;
            // Printing the damka board using a while loop
            while (x <= input) {
                if ((index_line % 2 == 0)) {
                    //Starting the row with a space if the line is even
                    System.out.print(" *");
                } else {
                    System.out.print("* ");
                }
                x = x+1;
            }
            System.out.println();
            index_line = index_line + 1;
        }
    }
}
```

Perfect.java

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

        // Parse the command-line argument as an integer
        int num = Integer.parseInt(args[0]);
        int sum = 1;

        // The string below will represent the divisors string.
        // We are starting with 1 cause every number is divisible by 1

        String str = "1";

        // Find divisors and add them to the sum, while skipping the trivial divisor 1
        for (int i = 2; i <= num / 2; i++) {
            if (num % i == 0) {
                sum += i;
                str += " + " + i;
            }
        }

        // Check if the sum of divisors equals the original number
        if (sum == num) {
            System.out.println(num + " is a perfect number since " + num + " = " + str);
        } else {
            System.out.println(num + " is not a perfect number");
        }
    }
}
```

OneOfEachStats.java

```
import java.util.Random;
public class OneOfEachStats {
    public static void main(String[] args) {
        int experiments = Integer.parseInt(args[0]);
        int seed = Integer.parseInt(args[1]);
        Random generator = new Random(seed); //set the seed value

        //Relevant variables for aggregating
        int two_children = 0;
        int three_children = 0;
        int four_or_more = 0;
        int total_experiments = 0;

        //Loop through the specified number of experiments
        for (int i = 0; i < experiments; i++) {
            int its_a_boy = 0;
            int its_a_girl = 0;
            int total_children = 0;
            while ((its_a_boy < 1) || (its_a_girl < 1)) {
                double which_gender = generator.nextDouble();
                if (which_gender < 0.5) {
                    its_a_boy++;
                } else {
                    its_a_girl++;
                }
            }
            //Getting the number of total children
            total_children = its_a_boy + its_a_girl;

            //Updating counters based on the total number of children
            if (total_children == 2) {
                two_children++;
            } else if (total_children == 3) {
                three_children++;
            } else if (total_children >= 4) {
                four_or_more++;
            }

            //Updating the total number of children across all experiments
            total_experiments = total_experiments + total_children;
        }

        // Display results
        double averageChildren = (double) total_experiments / experiments;
        System.out.println("Average: " + averageChildren + " children to get at least one of each gender.");
        System.out.println("Number of families with 2 children: " + two_children);
        System.out.println("Number of families with 3 children: " + three_children);
        System.out.println("Number of families with 4 or more children: " + four_or_more);

        // Most common number of children
        if ((two_children > three_children) && (two_children > four_or_more)) {
```

```
        System.out.println("The most common number of children is 2.");
    } else if ((three_children > two_children) && (three_children > four_or_more)) {
        System.out.println("The most common number of children is 3.");
    } else if ((four_or_more > two_children) && (four_or_more > three_children)) {
        System.out.println("The most common number of children is 4 or more.");
    } else if ((three_children > two_children) && (three_children == four_or_more)) {
        System.out.println("The most common number of children is 3.");
    } else if ((two_children > four_or_more) && (three_children == two_children)) {
        System.out.println("The most common number of children is 2.");
    } else if ((two_children == four_or_more) && (three_children == two_children)) {
        System.out.println("The most common number of children is 2.");
    }
    System.out.println();
}
}
```