Computer science home work-HW2

1. Divisors

```
public class Divisors
{
	public static void main (String[] args)
	{
		//The program get the argument
		int number = Integer.parseInt(args[0]);
		//The program start checking from 1
		int divisor= 1;
		for (int i = 0 ; i < number ; i++)
		{
			if (number % divisor == 0)
			{
				System.out.println(divisor);
			}
			divisor++;
		}
	}
}
```

2. Reversing a string

```
public class Reverse
{
	public static void main (String[] args)
	{
		String word=args[0];
		for(int n=word.length()-1;n>=0;n--)
		{
			System.out.print(word.charAt(n));
		}
		System.out.println();
		//Printing the middle of the given word
		if(word.length()%2==0)
		{
			System.out.println("The middle character is
"+word.charAt((word.length()/2)-1));
		}
		else
		{
			System.out.println("The middle character is
"+word.charAt((word.length()/2)));
		}
	}
}
```

3. Lucky streak

```
public class InOrder
{
	public static void main (String[] args)
	{
		int num = (int)((Math.random()) * 10);
		//Printing the first number
	   System.out.print(num);
		//Here, the program generates the second number, which should be bigger than the first number
		int generated_number = (int)((Math.random()) * 10);
		//Checking if the numbers are in non-decreasing sequence, which allows them to be equal.
		while (generated_number >= num)
		{
			System.out.print(" " + generated_number);
			//num is taking the value of the generated number in order to keep the sequence
			num = generated_number;
			generated_number = (int)((Math.random()) * 10);
		}
	}
}
```

4. Perfect Numbers

```
public class Perfect
{
  public static void main (String[] args)
  {
     int Perfect_number = Integer.parseInt(args[0]);
     int Total = 0;
     String DivisorString = "";
     //Number's proper divisors sum should be equal to the number
     for ( int i = 1 ; i < Perfect_number ; i ++)
     {
        if (Perfect_number % i == 0)
        {
           Total = Total + i;
        }
     }
        //The sum of proper divisors should be equal to the number
        if (Perfect_number == Total)
        {
           for (int j = 1; j < Perfect_number; j++)
           {
              // Check if j is a divisor
              if (Perfect_number % j == 0)
              {
                 //The string is not empty
                 if (DivisorString.length() > 0)
                 {
                    DivisorString = DivisorString + " + ";
                 }
                 DivisorString =DivisorString + j;
              }
```

```
            }
            System.out.print(Perfect_number + " is a perfect number since " +
Perfect_number + " = " + DivisorString);
        }
        else
        {
            System.out.println(Perfect_number + " is not a perfect number");
        }
    }
}
```

5. Damka Board

```
public class DamkaBoard
{
  public static void main(String[] args)
  {
     //Here, the program gets an argument.
     int n = Integer.parseInt(args[0]);
     for (int i = 0; i < n; i++)
     {
        for (int j = 0; j < n; j++)
        {
           // The program check if i is even
           if (i  % 2 == 0)
           {
              System.out.print("* ");
           }
           else
           {
              //If the i is not even
              System.out.print(" *");
           }
        }
        System.out.println();
     }
  }
}
```

6. One of Each

```
public class OneOfEach
{
  public static void main (String[] args)
  {
     boolean Boy = false;
     boolean Girl = false;
     int NumOfChildren = 0;

     while (Boy==false || Girl==false)
     {
        if (Math.random() <= 0.5)
        {
           System.out.print("b ");
           Boy = true;
        }
        else
        {
           System.out.print("g ");
           Girl = true;
        }
        NumOfChildren++;
     }
     System.out.println();
     if(Boy==true && Girl==true)
        System.out.println("You made it... and you now have " + NumOfChildren + "
children.");
  }
}
```

7. One of Each Stats (Past from the VS code)

```
public class OneOfEachStats1
{
   public static void main (String[] args)
   {
       // Gets the two command-line arguments
      int T = Integer.parseInt(args[0]);
      // Initializes a random numbers generator with the given seed value
      boolean Boy=false;
      boolean Girl=false;
      // Initialzing the variable which accumulates total number of children across all
families
      int TotalNumOfChildren = 0;
      // Number of children for this family
      int NumOfChildrenThisFamily=0;
      int TwoChildren = 0, ThreeChildren = 0, FourOrMoreChildren = 0;
      for (int i = 0; i < T; i++)
      {
         Boy = false;
         Girl = false;
         NumOfChildrenThisFamily = 0;
         while (Boy==false || Girl==false)
         {
            if (Math.random() <= 0.5)
            {
               Boy = true;
            }
            else
            {
               Girl = true;
            }
```

```
            //Count the number of children in this family
            NumOfChildrenThisFamily++;
        }
        //here we accumulate the number of total children
        TotalNumOfChildren += NumOfChildrenThisFamily;
        if (NumOfChildrenThisFamily == 2)
        {
            TwoChildren++;
        }
        else if (NumOfChildrenThisFamily == 3)
        {
            ThreeChildren++;
        }
        else if (NumOfChildrenThisFamily >= 4)
        {
            FourOrMoreChildren++;
        }
    }
    // Calculates the average
    double avg = (double) TotalNumOfChildren / T;
    System.out.println("Average: " + avg + " children to get at least one of each
gender.");
    System.out.println("Number of families with 2 children: " + TwoChildren);
    System.out.println("Number of families with 3 children: " + ThreeChildren);
    System.out.println("Number of families with 4 or more children: " +
FourOrMoreChildren);
    if (TwoChildren >= ThreeChildren && TwoChildren >= FourOrMoreChildren)
    {
        System.out.println("The most common number of children is 2.");
    }
    else if (ThreeChildren >= TwoChildren && ThreeChildren >= FourOrMoreChildren)
```

```
    {
        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.");
    }

  }
}
```

8. One of Each Stats (final version- paste from the VS code)

```
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]);
     // Initializes a random numbers generator with the given seed value
     Random generator = new Random(seed);
     boolean Boy=false;
     boolean Girl=false;
     // Initialzing the variable which accumulates total number of children across all
families
     int TotalNumOfChildren = 0;
     // Number of children for this family
     int NumOfChildrenThisFamily=0;
     int TwoChildren = 0, ThreeChildren = 0, FourOrMoreChildren = 0;
     for (int i = 0; i < T; i++)
     {
        Boy = false;
        Girl = false;
        NumOfChildrenThisFamily = 0;
        while (Boy==false || Girl==false)
        {
           if (generator.nextDouble() <= 0.5)
           {
              Boy = true;
           }
           else
           {
```

```
                Girl = true;
            }
            //Count the number of children in this family
            NumOfChildrenThisFamily++;
        }
        //here we accumulate the number of total children
        TotalNumOfChildren += NumOfChildrenThisFamily;
        if (NumOfChildrenThisFamily == 2)
        {
            TwoChildren++;
        }
        else if (NumOfChildrenThisFamily == 3)
        {
            ThreeChildren++;
        }
        else if (NumOfChildrenThisFamily >= 4)
        {
            FourOrMoreChildren++;
        }
    }
    // Calculates the average
    double avg = (double) TotalNumOfChildren / T;
    System.out.println("Average: " + avg + " children to get at least one of each
gender.");
    System.out.println("Number of families with 2 children: " + TwoChildren);
    System.out.println("Number of families with 3 children: " + ThreeChildren);
    System.out.println("Number of families with 4 or more children: " +
FourOrMoreChildren);
    if (TwoChildren >= ThreeChildren && TwoChildren >= FourOrMoreChildren)
    {
        System.out.println("The most common number of children is 2.");
```

```
    }
    else if (ThreeChildren >= TwoChildren && ThreeChildren >= FourOrMoreChildren)
    {
        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.");
    }
  }
}
```