```java
import java.util.Scanner; //import scanner class for receiving
input from console
public class Fibonacci {
	/** Assingment 3 - Patricia Organ 01110489
	 * The Fibonacci numbers are the integer sequence 0,1, 1, 2, 3,
5, 8, 13, 21, ...,in which each item is formed by
	 * adding the previous two. An efficient way to output a series
of numbers in the sequence is to the recurrence
	 * relation Fn = Fn-1 + Fn-2, with the first two numbers in the
sequence F1 and F2 both defined as 1.Using this
	 * recurrence relation write an application that accepts N,
where N>=1 from the user and displays the first N
	 * numbers in the Fibonacci sequence.
	 	*/

	public static void main(String[] args) {
		// declare variables for receiving input and for
calculations
			int n, toprint;
			int num1 = 1;
			int num2 = 1;

			//declare the scanner object and populate the
variable n with the integer typed by user
			Scanner input = new Scanner(System.in);
			System.out.print("This program outputs the
first N \nnumbers in the Fibonacci sequence\nEnter N: ");
			n = input.nextInt();
			System.out.printf("The first %d numbers of the
Fibonacci \nsequence are as follows:\n",n);

			// if the value entered is less than 3 or
default 0 or negative value in a switch print
			//predefined values or error
			if(n<=3 ){
				switch(n){
				case 1: System.out.print("0");
					break;
				case 2: System.out.printf("0 %d", num1);

					break;
				case 3:	System.out.printf("0 %d
%d",num1,num2);
					break;
				default: System.out.print("Input Error:
Value has to be greater than zero");
					break;
```

```
                        }//end switch
                    }//end if

                /* else has a loop through the remaining sequence
until 'n' is reached
                 and print the calculation and move up to the the
next set of number
                 for the next iteration */
                    else{
                        for(int i = 3; i < n; i++){

                            if(i==3){
                                System.out.printf("0 %d
%d",num1,num2);
                            }//end if

                          //make the calculation add previous 2
number in sequence and display it
                            toprint = num1 + num2;
                            System.out.printf(" %d",toprint);
                        // then move the value of variables to
equal the next 2 numbers in the sequence
                            //to prepare for the next iteration
                            num1 = num2;
                            num2 = toprint;

                        }// end loop
                    }//end else

    }//end main

}//end class
```

OUTPUT:

```
This program outputs the first N
numbers in the Fibonacci sequence
Enter N: 13
The first 13 numbers of the Fibonacci
sequence are as follows:
0 1 1 2 3 5 8 13 21 34 55 89 144
```

```java
import java.util.Scanner;// required for console input
public class NumberofDigits {
     /** Assingment 3 - Patricia Organ 01110489
      * a program that   counts    the number of digits in an integer entered by the user.
      * The program should repeatedly ask for input and displays the number of digits the input integer has.
      */
     public static void main(String[] args) {
          // declare variable and initialise one for number and length
          int num;
          int length =0;

          Scanner input = new Scanner(System.in);//declare object Scanner for users input

          System.out.println("This Program counts the number of digits \nin an integer "
                    + "entered by the user.\nEnter -1 to exit\n");

          //loop until the user inputs -1 or a negative number
          do{
               System.out.println("Enter Number: ");
               num= input.nextInt();// set the inputted value to our int variable

               // as the Math.log10 can not handle '0' we have to catch this number a write it specific output
               if (num==0){
                    System.out.print("Number of digits in 0 is 1\n");
               }
               else if (num == -1){
                    // if -1 display to user that program is terminated and breaking out of the do while loop
                    System.out.print("Program Terminated ...");
                    break;
               }
               else if (num < -1){
                    // break out of the loop also if any other
```

```
negative number is inputed showing error on display
                    System.out.print("Invalid input");
                    break;
               }
               else{
                    //calculating the number of digit using
the Math.log10 class and method, then display it
                    length = (int)(Math.log10(num)+1);
                    System.out.printf("Number of digits in %d
is %d\n", num, length);
               }
          }while (!(num == -1));

     }// end main method

}// end Class
```

OUTPUT:

```
This Program counts the number of digits
in an integer entered by the user.
Enter -1 to exit

Enter Number:
4321
Number of digits in 4321 is 4
Enter Number:
12346
Number of digits in 12346 is 5
Enter Number:
4
Number of digits in 4 is 1
Enter Number:
-1
Program Terminated ...
```