**import** java.util.Scanner; //import scanner class for receiving input from console

**public** **class** Fibonacci {

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\* 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

**import** java.util.Scanner;// required for console input

**public** **class** NumberofDigits {

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\* 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 ...