Question 1. Write a method which calculates and returns the nth Fibonacci number where n is taken as a parameter:

public static int fibonacci(int n)

Also, write a main method which reads an integer from the user, then calls this “fibonacci” method and prints the method's return value.

NOTE: Fibonacci numbers are defined as 0 1 1 2 3 5 8 ...

Input	5	6	7
Output	5	8	13

Questions 2. In this question you are expected to write several methods and combine them with the main method given below. You are supposed to write the methods named “isLower”, “isUpper”, “toLower”, and “toUpper” and call them in main method as seen below:

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

    Scanner input = new Scanner(System.in);
    char ch;
    ch = input.next().charAt(0);

    while(ch!='!'){
        if(/*call isLower function*/){
            System.out.printf("%c",/*call toUpper function*/);
        }
        if(/*call isUpper function*/){
            System.out.printf("%c",/*call toLower function*/);
        }
       if(ch==' '){
            System.out.printf(" ");
        }
        ch = input.next().charAt(0);
    }
}
```

When completed, your program will read a sequence of characters **ONE BY ONE**ending with '!' character and if the character is a:

- **Lowercase letter**, converts it to its uppercase equivalent and displays on the screen
- **Uppercase letter**, converts it to its lowercase equivalent and displays on the screen
- **Other characters**, Ignores. (Displays nothing on the screen)

The definition of the methods will be as given below:

public static boolean isLower (char ch)

public static boolean isUpper (char ch)

public static char toLower (char ch)

public static char toUpper (char ch)

Input	a * k h # " t S 7 T h E e N d !	n U M B E R # 6 !
Output	AKHTstHeEnD	Number

Questions 3. In this question you will modify the code you have written for question 2 so that the program also considers digits. You are expected to add two methods and combine them with the **new** main method given below. You are supposed to write the methods named “isDigit” and "printDigit".

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

    Scanner input = new Scanner(System.in);
    char ch;
    ch = input.next().charAt(0);

    while(ch!='!'){
        if(/*call isLower function*/){
            System.out.printf("%c",/*call toUpper function*/);
        }
        if(/*call isUpper function*/){
            System.out.printf("%c",/*call toLower function*/);
        }
        if(/*call isDigit function*/){
            /*call printDigit function*/
        }
       if(ch==' '){
            System.out.printf(" ");
        }
        ch = input.next().charAt(0);
    }
}
```

When completed, your program will read a sequence of characters **ONE BY ONE**ending with '!' character and if the character is a:

- **Lowercase letter**, converts it to its uppercase equivalent and displays on the screen
- **Uppercase letter**, converts it to its lowercase equivalent and displays on the screen
- **Digit**, displays the word equivalent of the digit on the screen (i.e., for "1", display "one")
- **Other characters**, Ignores. (Displays nothing on the screen)

The definition of the **new** methods will be as given below:

public static boolean isDigit (char ch)

public static void printDigit (char ch)

Input	a 4 * k 2 1 h # " t S 7 T h E e N d !	x f 5 2 !	n U M B E R # 6 !
Output	AfourKtwooneHTsseventHeEnD	XFfivetwo	Numbersix