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CS1083 Lab 03

ParseInt.java:

```
import java.util.Scanner;

// *****
// ParseInts.java
//
// Reads a line of text and prints the integers in the line.
//
// *****

/**
 * @author Anton Benfey
 * @author Paul Armstrong
 */

public class ParseInts {

    public static void main(String[] args) {
        int val, sum=0;
        Scanner scan = new Scanner(System.in);
        String line;

        System.out.println("Enter a line of text");
        Scanner scanLine = new Scanner(scan.nextLine());

        while (scanLine.hasNext()) {
            try {
                val = Integer.parseInt(scanLine.next());
                sum += val;
            } catch (NumberFormatException e){
                System.err.println("A non-integer value was encountered and skipped.");
            }
        }
        System.out.println("The sum of the integers on this line is "
                           + sum);
    }
}
```

CountLetters.java:

```
import java.util.Scanner;

// *****
// CountLetters.java
//
// Reads a words from the standard input and prints the number of
// occurrences of each letter in that word.
//
// *****

/**
 * @author Anton Benfey
 * @author Paul Armstrong
 */

public class CountLetters {

    public static void main(String[] args) {

        int[] counts = new int[26];
        Scanner scan = new Scanner(System.in);

        //get word from user
        System.out.print("Enter a single word (letters only, please): ");
        String word = scan.nextLine();

        //convert to all upper case
        word = word.toUpperCase();

        //count frequency of each letter in string
        for (int i=0; i < word.length(); i++) {
            try {
                counts[word.charAt(i)-'A']++;
            } catch (ArrayIndexOutOfBoundsException e){
                System.err.println("Not a letter: " + word.charAt(i));
            }
        }

        //print frequencies
        System.out.println();
        for (int i=0; i < counts.length; i++) {
            if (counts [i] != 0) {
                System.out.println((char)(i +'A') + ": " + counts[i]);
            }
        }
    }
}
```

Factorials.java:

```
import java.util.Scanner;

// *****
// Factorials.java
//
// Reads integers from the user and prints the factorial of each.
//
// *****

/**
 * @author Anton Benfey
 * @author Paul Armstrong
 */

public class Factorials {

    public static void main(String[] args) throws IllegalArgumentException {
        String keepGoing = "y";
        Scanner scan = new Scanner(System.in);

        while (keepGoing.equals("y") || keepGoing.equals("Y")) {
            System.out.print("Enter an integer: ");
            int val = scan.nextInt();
            try {
                if (val < 0) {
                    throw new IllegalArgumentException("Value entered was
negative");
                }

                if (val > 16) {
                    throw new IllegalArgumentException("Arithmetic overflow -
Number too large");
                }
                System.out.println("Factorial(" + val + ") = "
                                + MathUtils.factorial(val));
            } catch (IllegalArgumentException e){
                System.err.println(e.getMessage());
            }
            System.out.print("Another factorial? (y/n) ");
            keepGoing = scan.next();
        }
    }
}
```

Outputs 1, 2, 3 respectively:

```
abenfey@id415m18:Lab3-Code
File Edit View Search Terminal Help
[abenfey@id415m18 Lab3-Code]$ java CountLetters
Enter a single word (letters only, please): 1 2 3 hello 4
Not a letter: 1
Not a letter:
Not a letter: 2
Not a letter:
Not a letter: 3
Not a letter:
Not a letter:
Not a letter: 4

E: 1
H: 1
L: 2
O: 1
[abenfey@id415m18 Lab3-Code]$
```

```
abenfey@id415m18:Lab3-Code
File Edit View Search Terminal Help
[abenfey@id415m18 Lab3-Code]$ java ParseInts
Enter a line of text
We have 2 dogs and 1 cat
A non-integer value was encountered and skipped.
A non-integer value was encountered and skipped.
A non-integer value was encountered and skipped.
A non-integer value was encountered and skipped.
A non-integer value was encountered and skipped.
The sum of the integers on this line is 3
[abenfey@id415m18 Lab3-Code]$
```

File Edit View Search Terminal Help

[abenfey@id415m18 Lab3-Code]\$ java Factorials

Enter an integer: -1

Value entered was negative

* Another factorial? (y/n) y

Enter an integer: 17

Arithmetic overflow - Number too large

Another factorial? (y/n) y

Enter an integer: 5

Factorial(5) = 120

Another factorial? (y/n) n

[abenfey@id415m18 Lab3-Code]\$

ul