***App.java***

package app;

/\*\*

\* <p><strong><em>DESCRIPTION: </em></strong>None</p>

\*

\* <p><strong><em>APPLICATION NAME: </em></strong>Lab3 Recursion</p>

\*

\* <p><strong><em>CLASS NAME: </em></strong>App</p>

\*

\* <p><strong><em>CLASS NOTES: </em></strong>client to my server</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>None</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>application executes successfully</p>

\*

\* <p><strong><em>AUTHOR: </em></strong>Daniel C. Landon Jr.</p>

\* <p><strong><em>INSTRUCTOR: </em></strong>Dr. Bob Walsh</p>

\* <p><strong><em>COURSE: </em></strong>CSCI 202 - Introduction to Software Systems</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\* <p><strong><em>DATE DUE: </em></strong>02.20.2020</p>

\*

\*/

public class App {

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>application entry point</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>main</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>application completes successfully</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param args command line arguments, not used

\* @throws Exception error trapping

\*/

public static void main(String[] args) throws Exception {

// variables

Recursion \_recursion = new Recursion();

String \_sentence = "We must be Ready in C202 for Exam 1 which Will be in 2 weeks";

int \_factoral = 8;

System.out.println("\n\*\*\*\*\*\*\*\*\*\* Factoral(" + \_factoral + ") \*\*\*\*\*\*\*\*\*\*");

\_recursion.Factoral(\_factoral);

System.out.println("\*\*\*\*\*\*\*\*\*\* Factoral(" + \_factoral + ") \*\*\*\*\*\*\*\*\*\*");

int \_powerBase = 2;

int powerExp = 10;

System.out.println("\n\*\*\*\*\*\*\*\*\*\* Power(" + \_powerBase + ", " + +powerExp + ") \*\*\*\*\*\*\*\*\*\*");

\_recursion.Power(\_powerBase, powerExp);

System.out.println("\*\*\*\*\*\*\*\*\*\* Power(" + \_powerBase + ", " + +powerExp + ") \*\*\*\*\*\*\*\*\*\*");

int \_fibonacci = 7;

System.out.println("\n\*\*\*\*\*\*\*\*\*\* Fibonacci(" + \_fibonacci + ") \*\*\*\*\*\*\*\*\*\*");

System.out.println("Final Number of the Fibonacci Sequence Is: " + \_recursion.Fibonacci(\_fibonacci));

System.out.println("\*\*\*\*\*\*\*\*\*\* Fibonacci(" + \_fibonacci + ") \*\*\*\*\*\*\*\*\*\*");

System.out.println("\n\*\*\*\*\*\*\*\*\*\* sumOfDigits \*\*\*\*\*\*\*\*\*\*");

int \_digitSum = 0;

System.out.println("sumOfDigits (" + \_digitSum + "): " + \_recursion.sumOfDigits(\_digitSum));

\_digitSum = 101;

System.out.println("sumOfDigits (" + \_digitSum + "): " + \_recursion.sumOfDigits(\_digitSum));

\_digitSum = 1;

System.out.println("sumOfDigits (" + \_digitSum + "): " + \_recursion.sumOfDigits(\_digitSum));

\_digitSum = 231214;

System.out.println("sumOfDigits (" + \_digitSum + "): " + \_recursion.sumOfDigits(\_digitSum));

\_digitSum = 734;

System.out.println("sumOfDigits (" + \_digitSum + "): " + \_recursion.sumOfDigits(\_digitSum));

System.out.println("\*\*\*\*\*\*\*\*\*\* sumOfDigits \*\*\*\*\*\*\*\*\*\*");

System.out.println("\n\*\*\*\*\*\*\*\*\*\* DigitCount \*\*\*\*\*\*\*\*\*\*");

int \_digitCount = 0;

System.out.println("Number of digits found (" + \_digitCount + "): " + \_recursion.DigitCount(\_digitCount));

\_digitCount = 101;

System.out.println("Number of digits found (" + \_digitCount + "): " + \_recursion.DigitCount(\_digitCount));

\_digitCount = 1;

System.out.println("Number of digits found (" + \_digitCount + "): " + \_recursion.DigitCount(\_digitCount));

\_digitCount = 231214;

System.out.println("Number of digits found (" + \_digitCount + "): " + \_recursion.DigitCount(\_digitCount));

\_digitCount = 734;

System.out.println("Number of digits found (" + \_digitCount + "): " + \_recursion.DigitCount(\_digitCount));

System.out.println("\*\*\*\*\*\*\*\*\*\* DigitCount \*\*\*\*\*\*\*\*\*\*");

System.out.println("\n\*\*\*\*\*\*\*\*\*\* countUpperCase \*\*\*\*\*\*\*\*\*\*");

System.out.println("\nNumber of Upper Case Letters Found: " + \_recursion.countUpperCase(\_sentence));

System.out.println("\*\*\*\*\*\*\*\*\*\* countUpperCase \*\*\*\*\*\*\*\*\*\*");

System.out.println("\n\*\*\*\*\*\*\*\*\*\* countLowerCase \*\*\*\*\*\*\*\*\*\*");

System.out.println("\nNumber of Lower Case Letters Found: " + \_recursion.countLowerCase(\_sentence));

System.out.println("\*\*\*\*\*\*\*\*\*\* countLowerCase \*\*\*\*\*\*\*\*\*\*");

System.out.println("\n\*\*\*\*\*\*\*\*\*\* countDigits \*\*\*\*\*\*\*\*\*\*");

System.out.println("\nNumber of Digits Found: " + \_recursion.countDigits(\_sentence));

System.out.println("\*\*\*\*\*\*\*\*\*\* countDigits \*\*\*\*\*\*\*\*\*\*");

} // end main

} // end App

***Recursion.java***

package app;

/\*\*

\* <p><strong><em>DESCRIPTION: </em></strong>contains various methods demonstreating different types of recursive tasks</p>

\*

\* <p><strong><em>APPLICATION NAME: </em></strong>Lab3\_Recursion</p>

\*

\* <p><strong><em>CLASS NAME: </em></strong>Recursion</p>

\*

\* <p><strong><em>CLASS NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>AUTHOR: </em></strong>Daniel C. Landon Jr.</p>

\* <p><strong><em>INSTRUCTOR: </em></strong>Dr. Bob Walsh</p>

\* <p><strong><em>COURSE: </em></strong>CSCI 202 - Introduction to Software Systems</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\* <p><strong><em>DATE DUE: </em></strong>02.20.2020</p>

\*

\*/

public class Recursion {

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of digits</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countDigits</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong></p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of digits</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param \_sentence sentence to review

\* @return number of digits

\*/

public int countDigits(String \_sentence) {

// call the helper class

return countDigits(\_sentence, \_sentence.length() - 1);

} // end countDigits

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of digits</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countDigits</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>HELPER METHOD</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of digits</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param str sentence to review

\* @param high the max length of the sentence

\* @return number of digits

\*/

public int countDigits(String str, int high) {

System.out.println("countDigits(" + str + ", " + high + ")");

int count = 0;

if (high >= 0){

if (Character.isDigit(str.charAt(high))) { count = 1; } // end if

else { count = 0; }

return this.countDigits(str, high - 1) + count;

} // high

else { return 0; } // end else

} // end countDigits

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of lowercase letters</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countLowerCase</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong></p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of lower case letters</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param \_sentence sentence to review

\* @return number of lowercase letters

\*/

public int countLowerCase(String \_sentence) {

// call the helper class

return countLowerCase(\_sentence, \_sentence.length() - 1);

} // end countLowerCase

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of lowercase letters</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countLowerCase</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>HELPER METHOD</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of lower case letters</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param str sentence to review

\* @param high the max length of the sentence

\* @return number of lowercase letters

\*/

public int countLowerCase(String str, int high) {

System.out.println("countLowerCase(" + str + ", " + high + ")");

int count = 0;

if (high >= 0){

if (Character.isLowerCase(str.charAt(high))) { count = 1; } // end if

else { count = 0; }

return this.countLowerCase(str, high - 1) + count;

} // high

else { return 0; } // end else

} // end countLowerCase

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of uppercase letters</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countUpperCase</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>CODE SUPPLIED BY PROFESSOR</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of upper case letters</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param \_sentence sentence to review

\* @return number of uppercase letters

\*/

public int countUpperCase(String \_sentence) {

// call the helper class

return countUpperCase(\_sentence, \_sentence.length() - 1);

} // end countUpperCase

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a sentence and counts the number of uppercase letters</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>countUpperCase</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>HELPER METHOD, CODE SUPPLIED BY PROFESSOR</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>a sentence</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>returns number of upper case letters</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param str sentence to review

\* @param high the max length of the sentence

\* @return number of uppercase letters

\*/

public int countUpperCase(String str, int high) {

System.out.println("countUppercase(" + str + ", " + high + ")");

int count =0;

if (high >= 0){

if (Character.isUpperCase(str.charAt(high))) { count = 1; } // end if

else { count =0; }

return this.countUpperCase(str, high - 1) + count;

} // high

else { return 0; } // end else

} // end countUpperCase

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>return the number of digits in a number</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>DigitCount</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong></p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param N number to count the digits

\* @return how many digitis are in a number

\*/

public int DigitCount(int N) {

return String.valueOf(N).length();

} // end DigitCount

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>finds the sum of a positive number by adding all of the other values of the number supplied to the last digit of the number</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>sumOfDigits</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>PRE-CONDITION</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>successful</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param N number to process

\* @return recursive value

\*/

public int sumOfDigits(int N) {

return (String.valueOf(N).length() == 1) ? N : (N % 10 + sumOfDigits(N / 10));

} // end sumOfDigits

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>generates Fibonacci sequence</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>Fibonacci</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>generated fibonacci sequence</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param N where to start sequence

\* @return recursive value

\*/

public int Fibonacci(int N) {

// // variables

int \_answer = 0;

if ( N < 2 ) {

\_answer = N;

} // end if

else {

// recursion

\_answer = Fibonacci(N - 1) + Fibonacci(N - 2);

System.out.printf("Calling Fibonacci(%d) ... Fibonacci(%d - 1) + Fibonacci(%d - 2) ... %d\n",

N, N, N, \_answer );

} // end else

return \_answer;

} // end Fibonacci

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>takes a base number plus an exponent and returns the value</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>Power</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>none</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param \_base base number for power

\* @param \_exp exponent to raise too

\* @return recursive value

\*/

public int Power(int \_base, int \_exp) {

// variables

int \_answer = 0;

if(\_exp == 0) {

//base case

System.out.println("Base Case: " + \_base + " " + \_exp);

\_answer = 1;

} // end if

else if(\_exp == 0) {

//base case

System.out.println("Base Case: " + \_base + " " + \_exp);

\_answer = \_base;

} // end else if

else {

// recursion

\_answer = \_base \* Power(\_base, \_exp - 1);

System.out.printf("Calling Power(%d, %d) ... %d \* Power(%d, %d -1 ) ... %d\n",

\_base, \_exp, \_base, \_base, \_exp, \_answer);

} // end else

return \_answer;

} // end Power

/\*\*

\*

\* <p><strong><em>DESCRIPTION: </em></strong>factors a value</p>

\*

\* <p><strong><em>METHOD NAME: </em></strong>Factoral</p>

\*

\* <p><strong><em>METHOD NOTES: </em></strong>none</p>

\*

\* <p><strong><em>PRE-CONDITION: </em></strong>integer to factor</p>

\*

\* <p><strong><em>POST-CONDITION: </em></strong>results</p>

\*

\* <p><strong><em>AUTHOR: </em></strong> Daniel C. Landon Jr.</p>

\* <p><strong><em>DATE STARTED: </em></strong>02.22.2020</p>

\*

\* @param N number to factor

\* @return recursive value

\*/

public int Factoral(int N) {

// variables

int \_answer = 0;

if (N <= 1) {

// base case

System.out.println("Base Case: " + N);

\_answer = 1;

} // end if

else {

// recursion

\_answer = N \* Factoral(N - 1);

System.out.printf("Calling Factoral(%d) ... %d \* Factoral(%d - 1) ... %d\n", N, N, N, \_answer);

} // end else

return \_answer;

} // end Factoral

}

***Console Output***

\*\*\*\*\*\*\*\*\*\* Factoral(8) \*\*\*\*\*\*\*\*\*\*

Base Case: 1

Calling Factoral(2) ... 2 \* Factoral(2 - 1) ... 2

Calling Factoral(3) ... 3 \* Factoral(3 - 1) ... 6

Calling Factoral(4) ... 4 \* Factoral(4 - 1) ... 24

Calling Factoral(5) ... 5 \* Factoral(5 - 1) ... 120

Calling Factoral(6) ... 6 \* Factoral(6 - 1) ... 720

Calling Factoral(7) ... 7 \* Factoral(7 - 1) ... 5040

Calling Factoral(8) ... 8 \* Factoral(8 - 1) ... 40320

\*\*\*\*\*\*\*\*\*\* Factoral(8) \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* Power(2, 10) \*\*\*\*\*\*\*\*\*\*

Base Case: 2 0

Calling Power(2, 1) ... 2 \* Power(2, 1 -1 ) ... 2

Calling Power(2, 2) ... 2 \* Power(2, 2 -1 ) ... 4

Calling Power(2, 3) ... 2 \* Power(2, 3 -1 ) ... 8

Calling Power(2, 4) ... 2 \* Power(2, 4 -1 ) ... 16

Calling Power(2, 5) ... 2 \* Power(2, 5 -1 ) ... 32

Calling Power(2, 6) ... 2 \* Power(2, 6 -1 ) ... 64

Calling Power(2, 7) ... 2 \* Power(2, 7 -1 ) ... 128

Calling Power(2, 8) ... 2 \* Power(2, 8 -1 ) ... 256

Calling Power(2, 9) ... 2 \* Power(2, 9 -1 ) ... 512

Calling Power(2, 10) ... 2 \* Power(2, 10 -1 ) ... 1024

\*\*\*\*\*\*\*\*\*\* Power(2, 10) \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* Fibonacci(7) \*\*\*\*\*\*\*\*\*\*

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(3) ... Fibonacci(3 - 1) + Fibonacci(3 - 2) ... 2

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(4) ... Fibonacci(4 - 1) + Fibonacci(4 - 2) ... 3

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(3) ... Fibonacci(3 - 1) + Fibonacci(3 - 2) ... 2

Calling Fibonacci(5) ... Fibonacci(5 - 1) + Fibonacci(5 - 2) ... 5

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(3) ... Fibonacci(3 - 1) + Fibonacci(3 - 2) ... 2

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(4) ... Fibonacci(4 - 1) + Fibonacci(4 - 2) ... 3

Calling Fibonacci(6) ... Fibonacci(6 - 1) + Fibonacci(6 - 2) ... 8

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(3) ... Fibonacci(3 - 1) + Fibonacci(3 - 2) ... 2

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(4) ... Fibonacci(4 - 1) + Fibonacci(4 - 2) ... 3

Calling Fibonacci(2) ... Fibonacci(2 - 1) + Fibonacci(2 - 2) ... 1

Calling Fibonacci(3) ... Fibonacci(3 - 1) + Fibonacci(3 - 2) ... 2

Calling Fibonacci(5) ... Fibonacci(5 - 1) + Fibonacci(5 - 2) ... 5

Calling Fibonacci(7) ... Fibonacci(7 - 1) + Fibonacci(7 - 2) ... 13

Final Number of the Fibonacci Sequence Is: 13

\*\*\*\*\*\*\*\*\*\* Fibonacci(7) \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* sumOfDigits \*\*\*\*\*\*\*\*\*\*

sumOfDigits (0): 0

sumOfDigits (101): 2

sumOfDigits (1): 1

sumOfDigits (231214): 13

sumOfDigits (734): 14

\*\*\*\*\*\*\*\*\*\* sumOfDigits \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* DigitCount \*\*\*\*\*\*\*\*\*\*

Number of digits found (0): 1

Number of digits found (101): 3

Number of digits found (1): 1

Number of digits found (231214): 6

Number of digits found (734): 3

\*\*\*\*\*\*\*\*\*\* DigitCount \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* countUpperCase \*\*\*\*\*\*\*\*\*\*

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 59)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 58)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 57)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 56)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 55)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 54)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 53)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 52)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 51)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 50)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 49)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 48)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 47)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 46)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 45)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 44)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 43)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 42)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 41)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 40)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 39)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 38)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 37)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 36)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 35)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 34)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 33)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 32)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 31)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 30)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 29)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 28)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 27)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 26)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 25)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 24)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 23)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 22)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 21)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 20)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 19)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 18)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 17)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 16)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 15)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 14)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 13)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 12)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 11)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 10)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 9)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 8)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 7)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 6)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 5)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 4)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 3)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 2)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 1)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 0)

countUppercase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, -1)

Number of Upper Case Letters Found: 5

\*\*\*\*\*\*\*\*\*\* countUpperCase \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* countLowerCase \*\*\*\*\*\*\*\*\*\*

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 59)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 58)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 57)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 56)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 55)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 54)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 53)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 52)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 51)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 50)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 49)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 48)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 47)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 46)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 45)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 44)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 43)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 42)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 41)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 40)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 39)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 38)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 37)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 36)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 35)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 34)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 33)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 32)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 31)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 30)

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countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 25)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 24)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 23)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 22)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 21)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 20)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 19)

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countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 3)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 2)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 1)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 0)

countLowerCase(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, -1)

Number of Lower Case Letters Found: 36

\*\*\*\*\*\*\*\*\*\* countLowerCase \*\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\* countDigits \*\*\*\*\*\*\*\*\*\*

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 59)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 58)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 57)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 56)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 55)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 54)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 53)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 51)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 49)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 48)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 46)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 45)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 44)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 37)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 34)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 22)

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countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 1)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, 0)

countDigits(We must be Ready in C202 for Exam 1 which Will be in 2 weeks, -1)

Number of Digits Found: 5

\*\*\*\*\*\*\*\*\*\* countDigits \*\*\*\*\*\*\*\*\*\*