## CSCI 145 PA \_\_\_\_\_ Submission

## Due Date:\_\_Mar 15\_\_ Late (date and time):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Name(s):\_\_\_Ivan Leung\_\_\_ & \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exercise 1 -- need to submit source code and I/O  
 -- check if completely done \_\_x\_\_ ; otherwise, discuss issues below

Pseudocode below if applicable:

Source code below:

**package** pa3;

/\* Java Class: CSCI 145

Modified by: Ivan Leung

Class: Mon/Wed

Date: Mar 1 2023

Description:

I certify that the code below is my own work.

Exception(s): N/A

\*/

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//StringManips.j ava

//

//Test several methods for manipulating String objects

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**import** java.util.Scanner;

**public** **class** StringManips {

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

String phrase = **new** String("This is a String test.");

**int** phraseLength; // number of characters in the phrase String

**int** middleIndex; // index of the middle character in the String

String firstHalf; // first half of the phrase String

String secondHalf; // second half of the phrase String

String switchedPhrase; // a new phrase with original halves switched

String middle3; // contains the middle three characters of phrase

String city;

String state;

Scanner scan = **new** Scanner(System.***in***);

// compute the length and middle index of the phrase

phraseLength = phrase.length();

middleIndex = phraseLength / 2;

// get the substring for each half of the phrase

firstHalf = phrase.substring(0, middleIndex);

secondHalf = phrase.substring(middleIndex, phraseLength);

// concatenate the firstHalf at the end of the secondHalf

switchedPhrase = secondHalf.concat(firstHalf);

middle3 = phrase.substring(middleIndex - 1, middleIndex + 2);

// print information about the phrase

System.***out***.println();

System.***out***.println("Original phrase: " + phrase);

System.***out***.println("Length of the phrase: " + phraseLength + " characters");

System.***out***.println("Index of the middle: " + middleIndex);

System.***out***.println("Character at the middle index: " + phrase.charAt(middleIndex));

System.***out***.println("Characters at the middle 3 index: " + middle3);

**for** (**int** i = 0; i < switchedPhrase.length(); ++i) {

**if** (switchedPhrase.charAt(i) == ' ')

switchedPhrase = switchedPhrase.substring(0, i) + '\*' + switchedPhrase.substring(i + 1);

}

System.***out***.println("Switched phrase: " + switchedPhrase);

System.***out***.println();

System.***out***.print("Enter your city: ");

city = scan.next();

System.***out***.print("Enter your state: ");

state = scan.next();

System.***out***.printf("%s%s%s%n", state.toUpperCase(), city.toLowerCase(), state.toUpperCase());

}

}

Input/output below:  
  
Length of the phrase: 22 characters

Index of the middle: 11

Character at the middle index: t

Characters at the middle 3 index: Str

Switched phrase: tring\*test.This\*is\*a\*S

Enter your city: chino

Enter your state: california

CALIFORNIAchinoCALIFORNIA

Exercise 2 -- need to submit source code and I/O  
 -- check if completely done \_\_x\_\_ ; otherwise, discuss issues below

Pseudocode below if applicable:

Source code below:

**package** pa3;

/\* Java Class: CSCI 145

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I certify that the code below is my own work.

Exception(s): N/A

\*/

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//Distance.java

//

//Computes the distance between two points

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**import** java.util.Scanner;

**public** **class** Distance {

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

**double** x1, y1, x2, y2, x3 , y3; // coordinates of two points

**double** distance; // distance between the points

Scanner scan = **new** Scanner(System.***in***);

// Read in the two points

System.***out***.print("Enter the coordinates of the first point " + "(put a space between them): ");

x1 = scan.nextDouble();

y1 = scan.nextDouble();

System.***out***.print("Enter the coordinates of the second point: ");

x2 = scan.nextDouble();

y2 = scan.nextDouble();

scan.close();

// Compute the distance

distance = Math.*sqrt*((x2 - x1) \* (x2 - x1) + (y2 - y1) \* (y2 - y1));

// Print out the answer

System.***out***.printf("The distance between (%.0f, %.0f) and (%.0f, %.0f) is %.2f%n%n", x1, y1, x2, y2, distance);

// Added features

x3 = Math.*random*() \* 100 + 1;

y3 = Math.*random*() \* 100 + 1;

distance = Math.*sqrt*((x3 - 0) \* (x3 - 0) + (y3 - 0) \* (y3 - 0));

System.***out***.printf("The distance between (0, 0) and (%.0f, %.0f) is %.2f%n", x3, y3, distance);

}

}

Input/output below:  
Enter the coordinates of the first point (put a space between them): -33 49

Enter the coordinates of the second point: -9 -15

The distance between (-33, 49) and (-9, -15) is 68.35

The distance between (0, 0) and (75, 35) is 82.79

Exercise 3 -- need to submit source code and I/O  
 -- check if completely done \_\_x\_\_ ; otherwise, discuss issues below

Pseudocode below if applicable:

Source code below:

**package** pa3;

/\* Java Class: CSCI 145

Modified by: Ivan Leung

Class: Mon/Wed

Date: Mar 1 2023

Description:

I certify that the code below is my own work.

Exception(s): N/A

\*/

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//DeliFormat.java

//

//Computes the price of a deli item given the weight

//(in ounces) and price per pound -- prints a label,

//nicely formatted, for the item.

//

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**import** java.util.Scanner;

**import** java.text.DecimalFormat;

**import** java.text.NumberFormat;

**public** **class** DeliFormat {

// ---------------------------------------------------

// main reads in the price per pound of a deli item

// and number of ounces of a deli item then computes

// the total price and prints a "label" for the item

// ---------------------------------------------------

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

**final** **double** OUNCES\_PER\_POUND = 16.0;

**double** pricePerPound;

// price per pound

**double** weightOunces;

// weight in ounces

**double** weight;

// weight in pounds

**double** totalPrice;

// total price for the item

Scanner scan = **new** Scanner(System.***in***);

// Declare money as a NumberFormat object and use the

// getCurrencyInstance method to assign it a value

NumberFormat money = NumberFormat.*getCurrencyInstance*();

// Declare fmt as a DecimalFormat object and instantiate

// it to format numbers with at least one digit to the left of the

// decimal and the fractional part rounded to two digits.

DecimalFormat fmt = **new** DecimalFormat("#.##");

// prompt the user and read in each input

System.***out***.println("Welcome to the CS Deli! ! \n ");

System.***out***.print("Enter the price per pound of your item: ");

pricePerPound = scan.nextDouble();

System.***out***.print("Enter the weight (ounces): ");

weightOunces = scan.nextDouble();

scan.close();

// Convert ounces to pounds and compute the total price

weight = weightOunces / OUNCES\_PER\_POUND;

totalPrice = pricePerPound \* weight;

// Print the label using the formatting objects

// fmt for the weight in pounds and money for the prices

System.***out***.printf("%n\t\*\*\*\*\*CSDeli\*\*\*\*\*%n%n");

System.***out***.println("\tUnit Price: " + money.format(pricePerPound) + " per pound");

System.***out***.println("\tWeight: " + fmt.format(weight) + " pounds");

System.***out***.println();

System.***out***.println("\tTOTAL: " + money.format(totalPrice));

}

}

Input/output below:  
  
Enter the price per pound of your item: 4.25

Enter the weight (ounces): 41

\*\*\*\*\*CSDeli\*\*\*\*\*

Unit Price: $4.25 per pound

Weight: 2.56 pounds

TOTAL: $10.89

*Add more exercises as needed*

Exercise 4 -- need to submit source code and I/O  
 -- check if completely done \_\_x\_\_ ; otherwise, discuss issues below

Pseudocode below if applicable:

Source code below:

**package** pa3;

**import** java.util.Scanner;

**public** **class** IntWrapper {

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

Integer num;

String str1, str2;

Scanner scan = **new** Scanner(System.***in***);

System.***out***.print("Enter an integer: ");

num = scan.nextInt();

System.***out***.printf("The binary representation of %d is %s%n", num, Integer.*toBinaryString*(num));

System.***out***.printf("The octal representation of %d is %s%n", num, Integer.*toOctalString*(num));

System.***out***.printf("The hexadecimal representation of %d is %s%n%n", num, Integer.*toHexString*(num));

System.***out***.printf("The maximum possible Java integer value is: %d%n", Integer.***MAX\_VALUE***);

System.***out***.printf("The minimum possible Java integer value is: %d%n%n", Integer.***MIN\_VALUE***);

System.***out***.print("Enter the first integer: ");

str1 = scan.next();

System.***out***.print("Enter the second integer: ");

str2 = scan.next();

scan.close();

System.***out***.print("The sum of the two integers is: " + (Integer.*parseInt*(str1) + Integer.*parseInt*(str2)));

}

}

Input/output below:  
  
Enter an integer: 47

The binary representation of 47 is 101111

The octal representation of 47 is 57

The hexadecimal representation of 47 is 2f

The maximum possible Java integer value is: 2147483647

The minimum possible Java integer value is: -2147483648

Enter the first integer: 47

Enter the second integer: -10

The sum of the two integers is: 37

Answer for Question 1

1. First declare a character variable and a Random object
2. Second generates a random number between 0 to 25 + ‘A’
3. Then the random number is stored in the character variable
4. Last Print out uppercase character and followed by the lowercase letter with the toLowerCase method.

Answer for Question 2

The probability to generate a single random number between 2 and 12 is 0.09 for each of the numbers. However, the probabilities of each number by rolling two dice are different. For example, the probability of rolling a two is 0.02778 while the probability of rolling a seven is 0.16667. In order to simulate a roll of two dice, you must generate two random numbers individually.

   
Extra Credit – provide if applicable

Pseudocode below if applicable:

Source code below:

**package** pa3;

**public** **class** PlayCards {

**public** **enum** Rank {

***ace***, ***two***, ***three***, ***four***, ***five***, ***six***, ***seven***, ***eight***, ***nine***, ***ten***, ***jack***, ***queen***, ***king***

}

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

Rank highCard = Rank.***ace***;

Rank faceCard = Rank.***jack***;

Rank card1 = Rank.***five***;

Rank card2 = Rank.***nine***;

**int** card1Val = card1.ordinal() + 1;

**int** card2Val = card2.ordinal() + 1;

System.***out***.println("A blackjack hand: " + highCard.name() + " and " + faceCard.name());

System.***out***.println("A two card hand: " + card1.name() + " and " + card2.name());

System.***out***.println("Hand value: " + (card1Val + card2Val));

}

}

Input/output below:  
  
A blackjack hand: ace and jack

A two card hand: five and nine

Hand value: 14