

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
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

```

*/

```

```

//*****
//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", 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