PAT3 (LP2) Challenge Exercise

Working with Strings

Create a new project. Copy the code below into the project . Save the file to your directory with the name StringManips. Now modify the file as follows:

1. Declare a variable of type String named middle3 (put your declaration with the other declarations near the top of the program) and use an assignment statement and the substring method to assign middle3 the substring consisting of the middle three characters of phrase (the character at the middle index together with the character to the left of that and the one to the right - use variables, not the literal indices for this particular string). Add a println statement to print out the result. Save, compile, and run to test what you have done so far.

42 Chapter 3: Using Classes and Objects

2. Add an assignment statement to replace all blank characters in switchedPhrase with an asterisk (\*). The result should be stored back in switchedPhrase (so switchedPhrase is actually changed). (Do not add another print—place your statement in the program so that this new value of switchedPhrase will be the one printed in the current println statement.) Save, compile, and run your program.

3. Declare two new variables city and state of type String. Add statements to the program to prompt the user to enter their hometown—the city and the state. Using String class methods create and print a new string that consists of the state name (all in uppercase letters) followed by the city name (all in lowercase letters) followed again by the state name (uppercase). So, if the user enters Lilesville for the city and North Carolina for the state, the program should create and print the string:

NORTH CAROLINAlilesvilleNORTH CAROLINA

Use the code on the next pages to create your program:

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

// FILE: StringManips.java: 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

// DECLARE A STRING VARIABLE NAMED middle3

// DECLARE A STRING VARLIABLE NAMED city

// DECLARE A STRING VARLIABLE NAMED 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);

// get middle 3 characters

// ASSIGN middle3 THE MIDDLE 3 CHARACTER OF THE PHRASE USING THE SUBSTRING

// METHOD (HINT SUBSTRING IS A METHOD OF THE phrase OBJECT

// concatenate the firstHalf at the end of the secondHalf

switchedPhrase = secondHalf.concat(firstHalf);

// REPLACE ALL BLANK CHARACTERS IN switchedPhrase WITH AN \*, STORE THE

// RESULTS BACK IN switchedPhrase

// 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));

// PRINT “Middle 3 characters: ” + middle3 TO CONSOLE

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

System.out.println();

// prompt for and read in the hometown city and state

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

city = scan.nextLine();

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

state = scan.nextLine();

// CONVERT city TO LOWERCASE

// CONVERT state TO UPPERCASE

// PRINT state + city + state TO THE CONSOLE

// OR PRINT state.concat(city.concat(state))

System.out.println();

}

}