COMSATS UNIVERSITY, ISLAMABAD



**Programming Fundamentals**

--CSC103--

**Name**: Talha Rizwan

**Reg no**. SP20-BSE-093

**Section**: B

**Submitted to:** Ma’am Behjat Zuhaira

*Date*: 11/20/2020

**1.Create two strings, s1 and s2. Do the following.**

**a. Check if both are same**

**b. Check if both are same, ignoring case**

**c. Display the smaller string**

**d. Display the total number of characters in each string. Determine the combined length of both strings.**

**e. Create another string, s3, by combining s1 and s2.**

**F. Create a substring of s3 starting from index 2.**

**g. Create a substring of s3 from index 1 to index 4.**

**h. Convert s1 to lower case and then upper case.**

**i. Replace all vowels in s3 with ‘z’.**

package com.company**;**public class stringTask {  
  
  
 public static void main(String[] args) {  
 String s1 = "Hello"**;** String s2 = "World"**;** System.*out*.println(s1.equals(s2))**;** int a = s1.compareTo(s2)**;** if (a > **0**)  
 System.*out*.println(s2 + " Is smaller")**;** else if (a< **0**)  
 System.*out*.println(s1 + " Is smaller")**;** else  
 System.*out*.println("Both are equal")**;** System.*out*.println("If both are equal or not: " + s1.equalsIgnoreCase(s2))**;** System.*out*.println("Length of string 1 " + s1.length())**;** System.*out*.println("Length of string 1 " + s2.length())**;** System.*out*.println("Combined length of both Strings "+ s1.length()+s2.length())**;** String s3 = s1 + s2**;** System.*out*.println("Substring of concatenated string 1 and 2 from index 0 to 2" + s3.substring(**2**))**;** System.*out*.println("Substring of concatenated string 1 and 2 from index 1 to 4" + s3.substring(**1,4**))**;** s1 = s1.toLowerCase()**;** System.*out*.println("Lowercase String 1 " + s1)**;** s1 = s1.toUpperCase()**;** System.*out*.println("Uppercase String 1 " + s1)**;** s3 = (s3.replace('a'**,** 'z'))**;** s3 = (s3.replace('e'**,** 'z'))**;** s3 = (s3.replace('i'**,** 'z'))**;** s3 = (s3.replace('o'**,** 'z'))**;** s3 = (s3.replace('u'**,** 'z'))**;** System.*out*.println("Replacing of vovels with Z in string 3 " + s3)**;** }  
  
}

**2.Create a string object, str\_obj, with the following string value:**

**“Pakistan is my homeland. I love my country.”**

**a. Tokenize (make tokens) of str\_obj delimited by the full stop into token1 and token2. Display both tokens.**

**b. Tokenize token1 delimited by space. Display tokens.**

**c. Tokenize token2 delimited by space. Display tokens.**

package com.company**;**public class stringTask2 {  
  
  
 public static void main(String[] args) {  
 String obj\_str = "I love Pakistan.Pakistan is my homeland"**;** String[] token = obj\_str.split("[.]")**;** System.*out*.println("Tokenize of str\_obj delimited by the full stop into token1 " + token[**0**])**;** System.*out*.println("Tokenize of str\_obj delimited by the full stop into token2 " + token[**1**])**;** String token1 = token[**0**]**;** String token2 = token[**1**]**;** String[] token\_space = token1.split("[ ]")**;** System.*out*.println("Tokenize token1 delimited by space. " + token\_space[**0**])**;** System.*out*.println("Tokenize token1 delimited by space. " + token\_space[**1**])**;** System.*out*.println("Tokenize token1 delimited by space. " + token\_space[**2**])**;** String[] token2\_space = token2.split("[ ]")**;** System.*out*.println("Tokenize token2 delimited by space. " +token2\_space[**0**])**;** System.*out*.println("Tokenize token2 delimited by space. " +token2\_space[**1**])**;** System.*out*.println("Tokenize token2 delimited by space. " +token2\_space[**2**])**;** System.*out*.println("Tokenize token2 delimited by space. " +token2\_space[**3**])**;** }  
  
}

**3.Take a character array and an integer, as follows:char c\_arr[ ] = {‘P’, ‘a’, ‘k’, ‘i’, ‘s’, ‘t’, ‘a’, ‘n’};**

**int num = 456;**

**Convert c\_arr into a string, s1.**

**Convert num into a string, s2.**

package com.company**;**public class stringTask3 {  
 public static void main(String[] args) {  
 char c\_arr[] = {'P'**,**'a'**,**'k'**,**'i'**,**'s'**,**'t'**,**'a'**,**'n'}**;** int num = **456;** String s1 = new String(c\_arr)**;** String s2 = Integer.*toString*(num)**;** System.*out*.println("Array to string: "+s1)**;** System.*out*.println("Int to string: " + s2)**;** }  
}

**4.Take a string, s =“4567”. Convert it into a numeric value.**

package com.company**;**public class stringTask4 {  
 public static void main (String args[]){  
 String s = "4567"**;** int num = Integer.*parseInt*(s)**;** System.*out*.println("Integer value of string is: "+ num)**;** }  
}

**5.Input a string value from user. Check and display if it is a palindrome. Keep inputting strings from user as long as he wants.**

package com.company**;**import java.util.Scanner**;**public class stringTask5 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** char n = 'y'**;** String s1**,**s2 = ""**;** while(n != 'n'){  
 System.*out*.println("Enter string to check: ")**;** s1 = scan.next()**;** s2 = ""**;** int length = s1.length()**;** for (int i = length-**1;** i>=**0 ;** i--){  
 s2 = s2 + s1.charAt(i)**;** }  
 if (s1.equalsIgnoreCase(s2)){  
 System.*out*.println("String is Palindrom")**;** }  
 else  
 System.*out*.println("String is not palindrom")**;** System.*out*.println("If you want to check anyother string press Y else press N:")**;** n = scan.next().charAt(**0**)**;** n = Character.*toLowerCase*(n)**;** }  
  
  
 }  
}

**6.Keep inputting numbers from user. Check and display if they are palindrome or not.**

package com.company**;**import java.util.Scanner**;**public class stringTask6 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** char n = 'y'**;** int num1**;** String s2 = ""**;** while (n != 'n') {  
 System.*out*.println("Enter Number to check: ")**;** num1 = scan.nextInt()**;** String s1 = Integer.*toString*(num1)**;** s2 = ""**;** int length = s1.length()**;** for (int i = length - **1;** i >= **0;** i--) {  
 s2 = s2 + s1.charAt(i)**;** }  
 if (s1.equalsIgnoreCase(s2)) {  
 System.*out*.println("Number is Palindrom")**;** } else  
 System.*out*.println("Number is not palindrom")**;** System.*out*.println("If you want to check anyother Number press Y else press N:")**;** n = scan.next().charAt(**0**)**;** n = Character.*toLowerCase*(n)**;** }  
 }  
}

**7.Dry run Listing 4.2 from book on pages.**

**Listing 4.2:**

package com.company**;**import java.util.Scanner**;**public class oderTwoCities {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.*in*)**;** // Prompt the user to enter two cities  
 System.*out*.print("Enter the first city: ")**;** String city1 = input.nextLine()**;** System.*out*.print("Enter the second city: ")**;** String city2 = input.nextLine()**;** if (city1.compareTo(city2) < **0**)  
 System.*out*.println("The cities in alphabetical order are " +  
 city1 + " " + city2)**;** else  
 System.*out*.println("The cities in alphabetical order are " +  
 city2 + " " + city1)**;** }  
}

**Text, letter

Description automatically generatedText, letter

Description automatically generated**

**8.Study following string classes and test their methods by using them in small codes.a.StringBuilder classb.StringBuffer class.**

package com.company**;**public class stringtask8 {  
 public static void main(String args[]){  
 // create a StringBuilder object  
 // usind StringBuilder() constructor  
 StringBuilder str = new StringBuilder()**;** str.append("GFG")**;** // print string  
 System.*out*.println("String = " + str.toString())**;** // create a StringBuilder object  
 // usind StringBuilder(CharSequence) constructor  
 StringBuilder str1 = new StringBuilder("JAVA")**;** // print string  
 System.*out*.println("String1 = " + str1.toString())**;** // create a StringBuilder object  
 // usind StringBuilder(capacity) constructor  
 StringBuilder str2 = new StringBuilder(**10**)**;** // print string  
 System.*out*.println("String2 capacity = " + str2.capacity())**;** // create a StringBuilder object  
 // usind StringBuilder(String) constructor  
 StringBuilder str3 = new StringBuilder(str1)**;** // print string  
 System.*out*.println("String3 = " + str3.toString())**;** //STRING BUFFER  
 StringBuffer sb=new StringBuffer("Hello ")**;** System.*out*.println(sb)**;** System.*out*.println("Inserts a char or any other type in specific location:" + sb.insert(**1,**'a'))**;** System.*out*.printf("Deletes character: " + sb.deleteCharAt(**0**))**;** }  
}

**9.Following is a string:“hello$world! This is <Pak123istan>. ”**

**Remove all characters that are neither alphabets nor numbers (non-alphanumeric characters). Display the new string. (Hint: see Listing 9.4)**

package com.company**;**public class stringTask9 {  
 public static void main (String args[]){  
 String s = "hello$world! This is <Pak123istan>."**;** String s2 = ""**;** int length = s.length()**;** for (int i = **0;** i <=length-**1;** i++){  
 if((int)s.charAt(i) >=**32** && (int)s.charAt(i) <=**47** || (int)s.charAt(i) >= **58** && (int)s.charAt(i) <= **64** || (int)s.charAt(i) >= **91** && (int)s.charAt(i) <= **96** || (int)s.charAt(i) >= **123** && (int)s.charAt(i) <= **127** ){  
 continue**;** }  
 else  
 s2 = s2 + s.charAt(i)**;** }  
 System.*out*.println(s2)**;** }  
}

**10.Understand and implement Listing 4.5.**

package com.company**;**import java.util.Scanner**;**public class LotteryUsingStrings {  
 public static void main(String[] args) {  
 // Generate a lottery as a two-digit string  
 String lottery = "" + (int)(Math.*random*() \* **10**)  
 + (int)(Math.*random*() \* **10**)**;** // Prompt the user to enter a guess  
 Scanner input = new Scanner(System.*in*)**;** System.*out*.print("Enter your lottery pick (two digits): ")**;** String guess = input.nextLine()**;** // Get digits from lottery  
 char lotteryDigit1 = lottery.charAt(**0**)**;** char lotteryDigit2 = lottery.charAt(**1**)**;** // Get digits from guess  
 char guessDigit1 = guess.charAt(**0**)**;** char guessDigit2 = guess.charAt(**1**)**;** System.*out*.println("The lottery number is " + lottery)**;** // Check the guess  
 if (guess.equals(lottery))  
 System.*out*.println("Exact match: you win $10,000")**;** else if (guessDigit2 == lotteryDigit1  
 && guessDigit1 == lotteryDigit2)  
 System.*out*.println("Match all digits: you win $3,000")**;** else if (guessDigit1 == lotteryDigit1  
 || guessDigit1 == lotteryDigit2  
 || guessDigit2 == lotteryDigit1  
 || guessDigit2 == lotteryDigit2)  
 System.*out*.println("Match one digit: you win $1,000")**;** else  
 System.*out*.println("Sorry, no match")**;** }  
}

**Output**

**Text

Description automatically generated**

**11.Input CNIC from user in the following format: NNNNN-NNNNNNN-N. Check if the user has entered CNIC in correct format or not.**

package com.company**;**import java.util.Scanner**;**public class stringTask11 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** String cnic**;** System.*out*.println("Please enter your cnic in the formatte of NNNNN-NNNNNNN-N: ")**;** cnic = scan.next()**;** if (cnic.charAt(**5**) == '-' && cnic.charAt(**13**) == '-' && cnic.length() == **15**){  
 System.*out*.println("Your intered your cnic in correct format")**;** }  
 else  
 System.*out*.println("You enetered in wrong format")**;** }  
}

**12.Write a program that checks whether a string is a valid password. Suppose the password rules are as follows:**

**a. A password must have at least eight characters.**

**b. A password consists of only letters and digits.**

**c. A password must contain at least two digits.**

package com.company**;**import java.util.Scanner**;**public class stringTask12 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** String pass**,**temp\_pass**;** while(true){  
 int digit\_count = **0 ,** letter\_count = **0;** System.*out*.println("Enter the password you should follow the criteria:" +  
 "\n a.A password must have at least eight characters." +  
 "\n b.A password consists of only letters and digits." +  
 "\n c.A password must contain at least two digits.")**;** pass = scan.next()**;** temp\_pass = pass.toLowerCase()**;** int length = pass.length()**;** if (length < **8** ){  
 System.*out*.println("Please enter 8 characheter pass;")**;** continue**;** }  
 for (int i = **0 ;** i< length **;** i++){  
 if (temp\_pass.charAt(i) >= 'a' && temp\_pass.charAt(i) <= 'z'){  
 letter\_count = letter\_count + **1;** }  
 else if (temp\_pass.charAt(i) >= '0' && temp\_pass.charAt(i) <= '9'){  
 digit\_count = digit\_count + **1;** }  
 else{  
 System.*out*.println("You entered wrong pass")**;** System.*out*.println(temp\_pass.charAt(i))**;** }  
  
  
 }  
 if (digit\_count < **2**){  
 System.*out*.println("You should enter atleast two digits")**;** }  
 else{  
 System.*out*.println("You entered correct password")**;** break**;** }  
  
 }  
  
   
 }  
}

**13.Input a string from user. Sort the characters within the string. Display the new string. For example, the user enters s1 = “good”. The new sorted string should have sorted characters: s2 = “dgoo”.**

package com.company**;**import java.util.Scanner**;**public class stringTask13 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** String s **;** System.*out*.println("Enter the string you want to sort")**;** s = scan.next()**;** int len = s.length()**;** String s1 = ""**;** char temp1 = ' '**;** char temp2 = ' '**;** for (int i = **0;** i<=len-**1;**i++){  
  
  
 for (int j= i**;** j<=len-**1;**j++){  
  
 if (s.charAt(i) > s.charAt(j)){  
 temp1 = s.charAt(i)**;** temp2 = s.charAt(j)**;** s = s.substring(**0,**i) + temp2 + s.substring(i + **1**)**;** s = s.substring(**0,**j) + temp1 + s.substring(j + **1**)**;** }  
  
 }  
  
 }  
  
 System.*out*.println("Sorted string is: " + s)**;** }  
}

**14.Input a string from user. Count and display**

**a. number of uppercase letters in the string**

**b. number of white spaces in the string**

package com.company**;**import java.util.Scanner**;**public class stringTask14 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** String s**;** System.*out*.println("Enter String:")**;** s = scan.nextLine()**;** int len = s.length()**;** int numUpper = **0,**numSpace = **0;** for (int i = **0;** i<=len-**1 ;** i++){  
 if (s.charAt(i) >= 'A' && s.charAt(i) <= 'Z'){  
 numUpper += **1;** }  
 else if (s.charAt(i) == ' '){  
 numSpace += **1;** }  
 else  
 continue**;** }  
 System.*out*.println("Number of Upper case letters are: " + numUpper)**;** System.*out*.println("Number of Spaces: "+ numSpace)**;** }  
}

**15.From a small paragraph of text, find number of lines, number of words, and number of characters in the paragraph.**

package com.company**;**import java.util.Scanner**;**public class stringTask15 {  
 public static void main (String args[]){  
 Scanner scan = new Scanner(System.*in*)**;** String s**;** System.*out*.println("Enter String:")**;** s = scan.nextLine()**;** int len = s.length()**;** int numWords = **0,**numLines = **0,** charCounts = **0;** for (int i = **0;** i<=len-**1 ;** i++){  
 if ((int)s.charAt(i) == '.'){  
 numLines += **1;** }  
 else if (s.charAt(i) == ' '){  
 numWords += **1;** }  
 else if (s.charAt(i) != ' '){  
 charCounts += **1;** }  
 else  
 continue**;** }  
 numWords += **1;** System.*out*.println("Number of Words are: " + numWords)**;** System.*out*.println("Number of Lines: "+ numLines)**;** System.*out*.println("Number of characters in a paragraph: " + charCounts )**;** }  
}