CSA0980 -- PROGRAMMING IN JAVA FOR IDL TECHNOLOGY :-

M . NAGA KESHAVA

REG NO :-192125019

1) Write a java program
i. to compare two strings lexicographically, ignoring case differences.
ii. to check whether a given string ends with the contents of another string.
iii. to print current date and time in the specified format.
iv. to get the index of all the characters of the alphabet.
v. To replace each substring of a given string that matches the given regular
expression with the given replacement. In the below string replace all the fox with
cat.
vi. to get a substring of a given string between two specified positions.
vii. to trim any leading or trailing whitespace from a given string.
viii. to convert all the characters in a string to lowercase.
ix. to get the length of a given string.
x. to check whether two String objects contain the same data
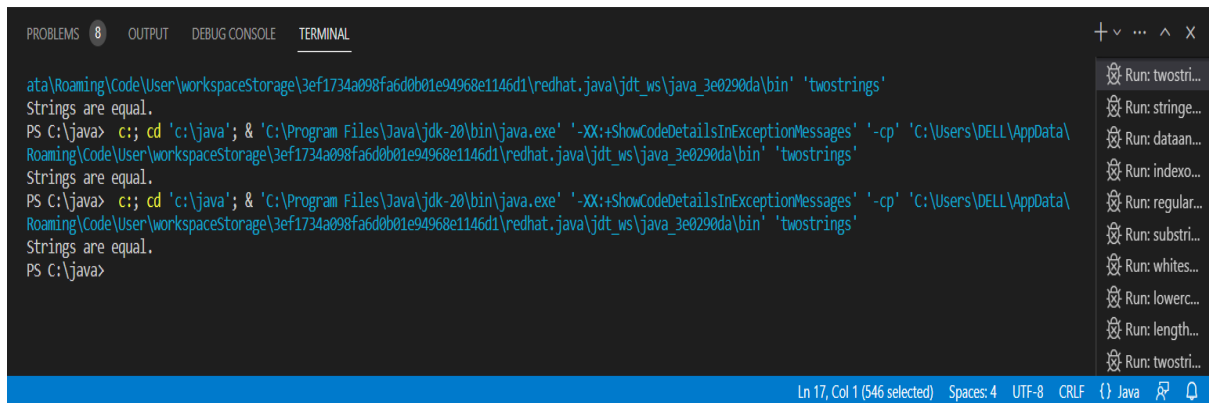Sample string: "The quick brown fox jumps over the lazy dog."

PROGRAMS :-

i. to compare two strings lexicographically, ignoring case differences.

PROGRAM :-

```java
public class twostrings {
    public static void main(String[] args) {
        String str1 = "Hello";
        String str2 = "hello";
        int result = str1.compareToIgnoreCase(str2);
        if (result == 0) {
            System.out.println("Strings are equal.");
        }
        else if (result < 0) {
            System.out.println("String 1 comes before string 2.");
        }
        else {
            System.out.println("String 1 comes after string 2.");
        }
    }
}
```
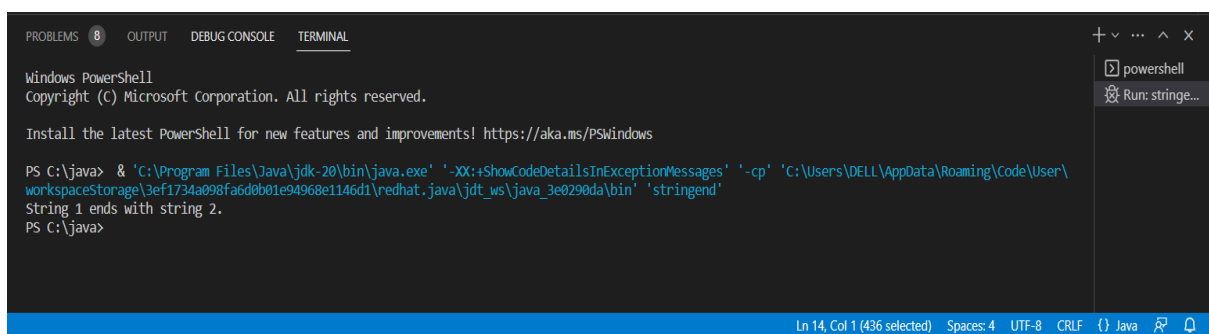
OUTPUT:-

ii. to check whether a given string ends with the contents of another string.

PROGRAM :-

```java
public class stringend {
        public static void main(String[] args) {
            String str1 = "Hello World";
            String str2 = "World";
            boolean result = str1.endsWith(str2);
            if (result) {
                System.out.println("String 1 ends with string 2.");
            }
            else {
                System.out.println("String 1 does not end with string 2.");
            }
        }
    }
```

OUTPUT :-

iii. to print current date and time in the specified format.

PROGRAM :-

```java
import java.text.SimpleDateFormat;
import java.util.Date;
public class dataandtime {
    public static void main(String[] args) {
```

```
        SimpleDateFormat formatter = new SimpleDateFormat("dd/MM/yyyy
HH:mm:ss");
        Date date = new Date();
        System.out.println(formatter.format(date));
    }
}
```

OUTPUT :-

```
PROBLEMS 8    OUTPUT    DEBUG CONSOLE    TERMINAL                                                          + ∨ ⋯ ∧ ✕

Windows PowerShell                                                                                          ▷ powershell
Copyright (C) Microsoft Corporation. All rights reserved.                                                  ⚙ Run: dataan...

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\java> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\DELL\AppData\Roaming\Code\User\
workspaceStorage\3ef1734a098fa6d0b01e94968e1146d1\redhat.java\jdt_ws\java_3e0290da\bin' 'dataandtime'
12/04/2023 21:38:35
PS C:\java>

                                                             Ln 9, Col 2 (303 selected)   Spaces: 4   UTF-8   CRLF   {} Java
```

iv. to get the index of all the characters of the alphabet.

PROGRAM :-

```java
public class indexofallcharacter {
        public static void main(String[] args) {
            String str = "The quick brown fox jumps over the lazy dog.";
            for (char ch = 'a'; ch <= 'z'; ch++) {
                int index = str.indexOf(ch);
                if (index != -1) {
                    System.out.println(ch + ": " + index);
                }
            }
        }
    }
```

OUTPUT :-

```
PROBLEMS 8    OUTPUT    DEBUG CONSOLE    TERMINAL                                                          + ∨ ⋯ ∧ ✕

Windows PowerShell                                                                                          ▷ powershell
Copyright (C) Microsoft Corporation. All rights reserved.                                                  ⚙ Run: indexo...

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\java> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\DELL\AppData\Roaming\Code\User\
workspaceStorage\3ef1734a098fa6d0b01e94968e1146d1\redhat.java\jdt_ws\java_3e0290da\bin' 'indexofallcharacter'
o: 12
p: 23
q: 4
r: 11
s: 24
t: 31
u: 5
v: 27
w: 13
x: 18
y: 38
z: 37
PS C:\java>

                                                             Ln 11, Col 7 (393 selected)   Spaces: 4   UTF-8   CRLF   {} Java
```

v. To replace each substring of a given string that matches the given regular

expression with the given replacement. In the below string replace all the fox with

cat

PROGRAM :-

```java
public class regularexpression {
        public static void main(String[] args) {
            String str = "The quick brown fox jumps over the lazy dog.";
            String newStr = str.replaceAll("fox", "cat");
            System.out.println(newStr);
        }
    }
```

OUTPUT :-

vi. to get a substring of a given string between two specified positions.

PROGRAM :-

```java
public class substringbetweentwo {
        public static void main(String[] args) {
            String str = "The quick brown fox jumps over the lazy dog.";
            String substr = str.substring(4, 15);
            System.out.println("Substring: " + substr);
        }
    }
```
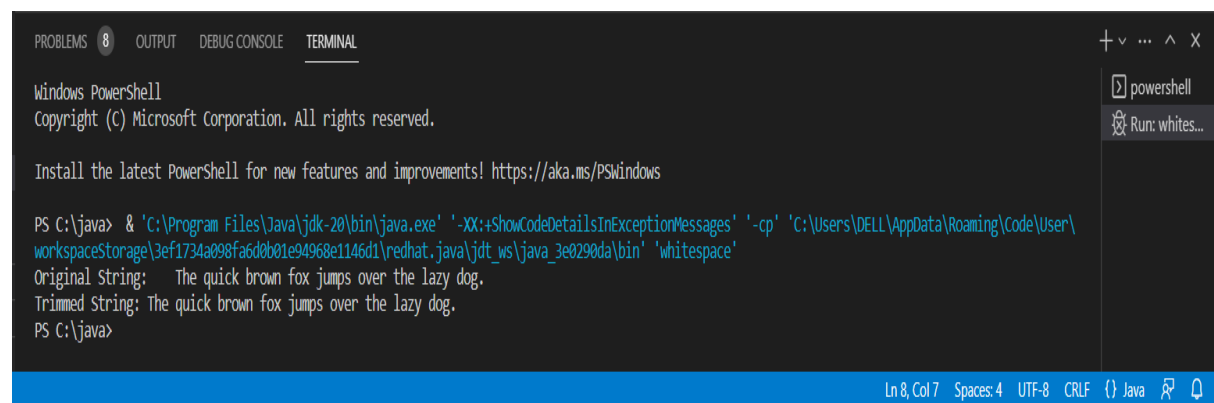
OUTPUT :-

vii. to trim any leading or trailing whitespace from a given string.

PROGRAM :-

```java
public class whitespace {
        public static void main(String[] args) {
            String str = "    The quick brown fox jumps over the lazy dog.    ";
            String trimmedStr = str.trim();
            System.out.println("Original String: " + str);
            System.out.println("Trimmed String: " + trimmedStr);
        }
    }
```
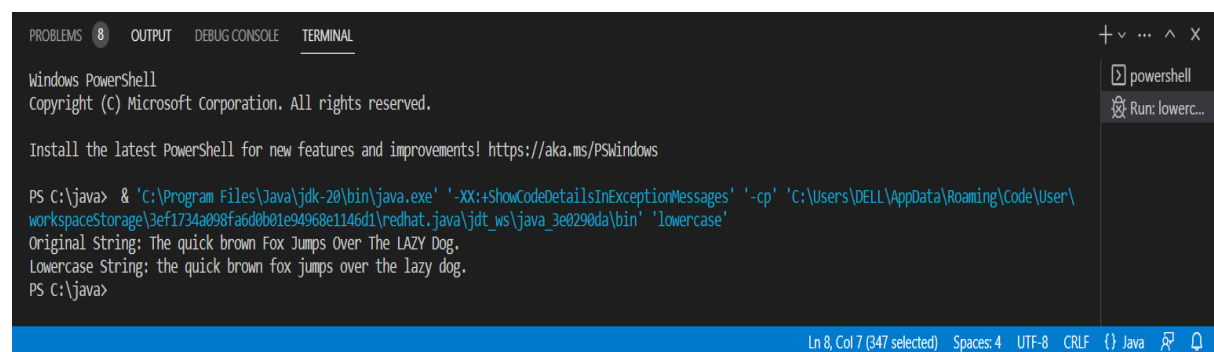
OUTPUT :-

viii. to convert all the characters in a string to lowercase.

PROGRAM :-

```java
public class lowercase {
        public static void main(String[] args) {
            String str = "The quick brown Fox Jumps Over The LAZY Dog.";
            String lowercaseStr = str.toLowerCase();
            System.out.println("Original String: " + str);
            System.out.println("Lowercase String: " + lowercaseStr);
        }
    }
```
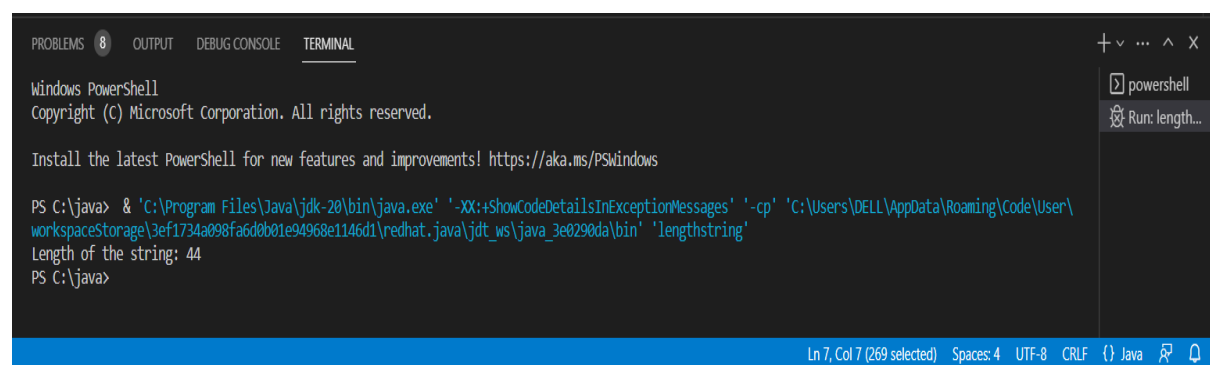**OUTPUT :-**

ix. to get the length of a given string.

PROGRAM :-

```java
public class lengthstring {
        public static void main(String[] args) {
            String str = "The quick brown fox jumps over the lazy dog.";
            int len = str.length();
            System.out.println("Length of the string: " + len);
        }
    }
```

OUTPUT :-

x. to check whether two String objects contain the same data

PROGRAM :-

```java
public class twostringobtain {
        public static void main(String[] args) {
            String str1 = "The quick brown fox jumps over the lazy dog.";
            String str2 = "The quick brown fox jumps over the lazy dog.";
            if (str1.equals(str2)) {
                System.out.println("Strings are equal.");
            }
            else {
                System.out.println("Strings are not equal.");
            }
        }
    }
```

OUTPUT :-

2) Implement a class Account. An account has
- a balance
- functions to add
- and withdraw money,
- And a function to inquire the current balance.

Condition:

1. Pass a value into a constructor to set an initial balance.

2. If no value is passed the initial balance should be set to $0.

3. Charge a $5 penalty if an attempt is made to withdraw more money than available in the account.

4. Enhance the Account class to compute interest on the current balance.

PROGRAM :-

```java
import java.util.*;
public class account {
        private double balance;
        private double interestRate;
        private static final double PENALTY = 5.0;

        public account() {
            this(0.0);
        }

        public account(double initialBalance) {
            balance = initialBalance;
            interestRate = 0.0;
        }

        public void deposit(double amount) {
            balance += amount;
        }

        public void withdraw(double amount) {
            if (balance >= amount) {
                balance -= amount;
            } else {
                balance -= PENALTY;
```

```java
                System.out.println("Withdrawal amount exceeds account balance.
A $5 penalty has been charged.");
            }
        }

        public double getBalance() {
            return balance;
        }

        public void setInterestRate(double rate) {
            interestRate = rate;
        }

        public void addInterest() {
            double interest = balance * interestRate / 100.0;
            balance += interest;
        }
    }
```

3) Questions for Debugging a code in Java

Given two strings needle and haystack, return the index of the first occurrence of
needle in haystack, or -1 if needle is not part of haystack.
Example 1:
Input: haystack = "sadbutsad", needle = "sad";
Output: 0
Explanation: "sad" occurs at index 0 and 6.
The first occurrence is at index 0, so we return 0.
Example 2:
Input: haystack = "leetcode", needle = "leeto";
Output: -1
Explanation: "leeto" did not occur in "leetcode", so we return -1.
Constraints:
1 <= haystack.length, needle.length <= 104
haystack and needle consist of only lowercase English characters.
Given a string s consisting of words and spaces, return the length of the last word in the
string.
A word is a maximal
substring
consisting of non-space characters only.
Example 1:
Input: s = "Hello World";
Output: 5
Explanation: The last word is "World" with length 5.
Example 2:
Input: s = " fly me to the moon ";
Output: 4
Explanation: The last word is "moon" with length 4.

Example 3:

Input: s = "luffy is still joyboy"

Output: 6

Explanation: The last word is "joyboy" with length 6.

Constraints:

1 <= s.length <= 104

s consists of only English letters and spaces ' '.

There will be at least one word in s.

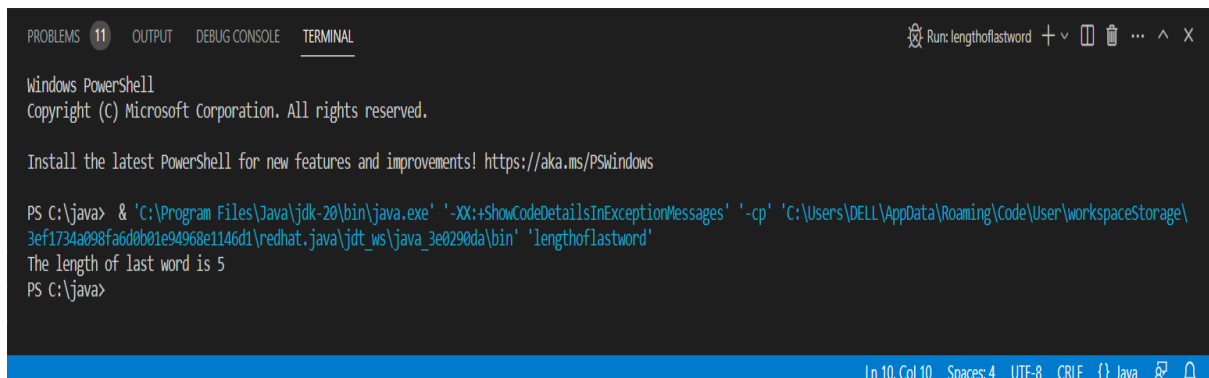**1) PROGRAM :-**

```java
public class firstoccurance {
    public int strStr(String haystack, String needle) {
        if (needle.isEmpty()) {
            return 0;
        }
        int needleLength = needle.length();
        for (int i = 0; i <= haystack.length() - needleLength; i++) {
            if (haystack.substring(i, i + needleLength).equals(needle)) {
                return i;
            }
        }
        return -1;
    }
}
```

2) PROGRAM :-

```java
import java.util.*;
public class lengthoflastword {
    public static int lengthOfLastWord(String s) {
        s = s.trim();
        int lastSpaceIndex = s.lastIndexOf(' ');
        if (lastSpaceIndex == -1) {
            return s.length();
        } else {
            return s.substring(lastSpaceIndex + 1).length();
        }
    }
    public static void main(String[] args) {
        String input = "Hello World";
        lengthoflastword a = new lengthoflastword();
        System.out.println("The length of last word is
"+a.lengthOfLastWord(input));
    }
}
```

OUTPUT :-

4) Questions for Finding error in Java to determine the factor

```java
import java.io.*;
import java.util.*;
class factor {
public static void main(String args[]) {
try {
Scanner sc=new Scanner(System.in);
in count=0,n=100,i,j=0,m=4;
int []a=new int [10];
System.out.println("Enter the number:");
n=sc.nextInt();
if(n<=0)
{
System.out.println("Enter valid number");
}
else {
for(i=1;i<=n;i--);
{
if(n%i!=0)
{
a[j] = i;

System.out.println("..." + i);

count++;

j++;
}
}
System.out.println("The number of factors:"+count);
}
System.out.println(m + "th item " + a[m-1]);
}
catch(Exception e) {
System.out.println("Enter only numbers");
}
}
}
```

PROGRAM :-

```java
import java.util.*;
public class assignment
 {
        public static void main(String[] args) {
            int count=0,n,i,j=0,m=4;
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number");
            n = sc.nextInt();
            int a[] = new int[10];
            try
            {
                if(n<=0)
                {
                    System.out.println("Enter valid number");
                }
                else
                {
                  for(i=1;i<=n;i++)
                  {
    if(n%i==0)
    {
    a[j] = i;

    System.out.println(" "+ i);

    count++;

    j++;
    }
    }
    System.out.println("The no of factors:"+count);
                }
                System.out.println(m +"th item "+ a[m-1]);
             }
            catch (Exception e)
            {
                System.out.println("Enter only numbers");
            }
        }
    }
```

OUTPUT :-

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

Enter the number
20
 1
 2
 4
 5
 10
 20
The no of factors:6
4th item 5
PS C:\java>
```