CSE3011 NETWORK PROGRAMMING

LAB EXPERIMENT 5

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LAB SLOT – L11+L12

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Experiment Description: Encoding using URLEncoder class and UTF-8 report

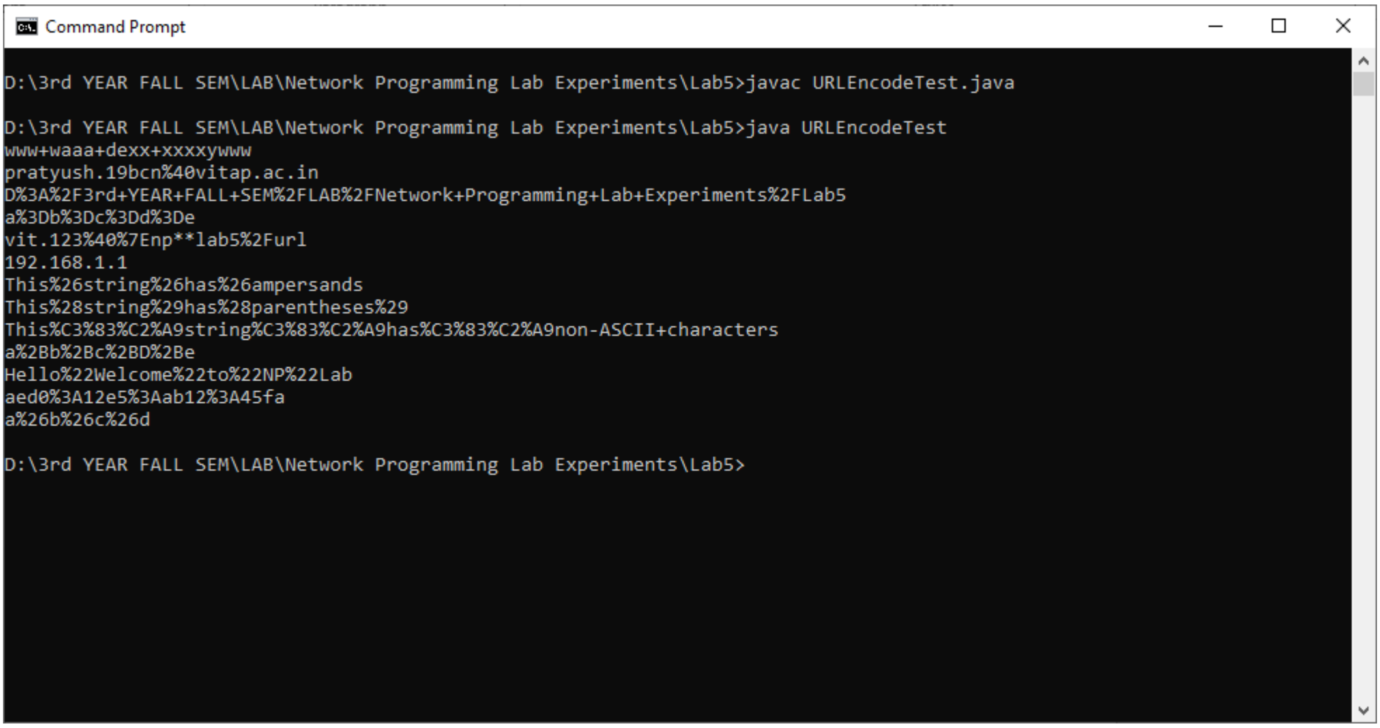
CODE

URLEncodeTest.java

```
import java.io.*;

import java.net.*;

public class URLEncodeTest{

public static void main(String[] args){

try{

//Example of a string with spaces

System.out.println(URLEncoder.encode("www waaa dexx xxxxywww","UTF-8"));

//Example of a string with . and @ characters

System.out.println(URLEncoder.encode("pratyush.19bcn@vitap.ac.in","UTF-8"));

//Example of a string with Back Slashes

System.out.println(URLEncoder.encode("D:/3rd YEAR FALL SEM/LAB/Network Programming Lab Experiments/Lab5","UTF-8"));

//Example of a string with Equality sign

System.out.println(URLEncoder.encode("a=b=c=d=e","UTF-8"));
//Example of string with tilde, asterix and at Sign with side slash
System.out.println(URLEncoder.encode("vit.123@~np**lab5/url","UTF-8"));
//Example of string with period signs
System.out.println(URLEncoder.encode("192.168.1.1","UTF-8"));
//Example of String with ampersands
System.out.println(URLEncoder.encode("This&string&has&ampersands","UTF-8"));
//Example of String with parenthesis
System.out.println(URLEncoder.encode("This(string)has(parentheses)","UTF-8"));
//Example of String with Non-Ascii Characters
System.out.println(URLEncoder.encode("Thiséstringéhasénon-ASCII characters", "UTF-8"));
//Example of String with plus sign
System.out.println(URLEncoder.encode("a+b+c+D+e", "UTF-8"));
//Example of String with quote marks
System.out.println(URLEncoder.encode("Hello\"Welcome\"to\"NP\"Lab","UTF-8"));
//Example of String with colons
System.out.println(URLEncoder.encode("aed0:12e5:ab12:45fa","UTF-8"));
//Example of String with percentage sign
System.out.println(URLEncoder.encode("a&b&c&d","UTF-8"));


}
catch (UnsupportedEncodingException ex) {
throw new RuntimeException("Broken VM does not support UTF-8");
}
```

```
}

}
```

Output:



```
D:\3rd YEAR FALL SEM\LAB\Network Programming Lab Experiments\Lab5>javac URLEncodeTest.java

D:\3rd YEAR FALL SEM\LAB\Network Programming Lab Experiments\Lab5>java URLEncodeTest
www+waaa+dexx+xxxxywww
pratyush.19bcn%40vitap.ac.in
D%3A%2F3rd+YEAR+FALL+SEM%2FLAB%2FNetwork+Programming+Lab+Experiments%2FLab5
a%3Db%3Dc%3Dd%3De
vit.123%40%7Enp**lab5%2Furl
192.168.1.1
This%26string%26has%26ampersands
This%28string%29has%28parentheses%29
This%C3%83%C2%A9string%C3%83%C2%A9has%C3%83%C2%A9non-ASCII+characters
a%2Bb%2Bc%2BD%2Be
Hello%22Welcome%22to%22NP%22Lab
aed0%3A12e5%3Aab12%3A45fa
a%26b%26c%26d

D:\3rd YEAR FALL SEM\LAB\Network Programming Lab Experiments\Lab5>
```

UTF-8 Encoding in Java

UTF-8 is the default encoding mechanism used by Java. It is a variable- width character encoding scheme specially used for electronic communication. Since it is defined by the Unicode standard, the name utf-8 is derived from Unicode or Universal Coded Character.

It is capable of encoding all 1,112,064 valid character code points in Unicode using one to four one-byte (8-bit) code units.

Code points with lower numerical values, which tend to occur more frequently, are encoded using fewer bytes. It was designed for backward compatibility with ASCII: the first 128 characters of Unicode, which correspond one-to-one with ASCII, are encoded using a single byte with the same binary value as ASCII, so that valid ASCII text is valid UTF-8-encoded Unicode as well. Since ASCII bytes do not occur when encoding non-ASCII code points into UTF-8, UTF-8 is safe to use within most programming and document languages that interpret certain ASCII characters in a special way, such as `/` (slash) in filenames, `\` (backslash) in escape sequences, and `%` in printf.

UTF-8 was designed as a superior alternative to UTF-1, a proposed variable-width encoding with partial ASCII compatibility which lacked some features including self-synchronization and fully ASCII-compatible handling of characters such as slashes. Ken Thompson and Rob Pike produced the first implementation for the Plan 9 operating system in September 1992. This led to its adoption by X/Open as its specification for *FSS-UTF*, which would first be officially presented at USENIX in January 1993 and subsequently adopted by the Internet Engineering Task Force (IETF) in RFC 2277 (BCP 18) for future Internet standards work, replacing Single Byte Character Sets such as Latin-1 in older RFCs.

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UTF-8 is defined to encode code points in one to four bytes, depending on the number of significant bits in the numerical value of the code point. The following table shows the structure of the encoding. The x characters are replaced by the bits of the code point.

Utility class for HTML form encoding. This class contains static methods for converting a String to the application/x-www-form-urlencoded MIME format. For more information about HTML form encoding, consult the HTML specification.

When encoding a String, the following rules apply:

- The alphanumeric characters "a" through "z", "A" through "Z" and "0" through "9" remain the same.
- The special characters ".", "-", "*", and "_" remain the same.
- The space character " " is converted into a plus sign "+".
- All other characters are unsafe and are first converted into one or more bytes using some encoding scheme. Then each byte is represented by the 3-character string "%*xy*", where *xy* is the two-digit hexadecimal representation of the byte. The recommended encoding scheme to use is UTF-8. However, for compatibility reasons, if an encoding is not specified, then the default encoding of the platform is used.

For example using UTF-8 as the encoding scheme the string "The string ü@foo-bar" would get converted to "The+string+%C3%BC%40foo-bar" because in UTF-8 the character ü is encoded as two bytes C3 (hex) and BC (hex), and the character @ is encoded as one byte 40 (hex).

Modifier and type

static String

Method Description

encode(String s ,String enc)

The passed string s with be encoded according the applied encoding mechanism enc. Here we can pass UTF-8 as enc and any string as s to encode String s to utf-8 encoding

```
public static String encode(String s,String enc)
                 throws UnsupportedEncodingException
```

Translates a string into application/x-www-form-urlencoded format using a specific encoding scheme. This method uses the supplied encoding scheme to obtain the bytes for unsafe characters.