

Java Application: HexByteChar

Written by: Keith Fenske, <http://kwfenske.github.io/>

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Description

HexByteChar is a Java 1.4 graphical (GUI) application to convert between binary data bytes and text characters, in different character sets or encodings. Please refer to the following web page:

http://en.wikipedia.org/wiki/Character_encoding

Data bytes are shown in hexadecimal on the left side of a split screen. Text characters are shown on the right as per the Unicode standard. You may enter hex data on the left, select an encoding, and click the “Convert Bytes to Text” button to see text on the right. You may enter text on the right, select an encoding, and click the “Convert Text to Bytes” button to see hex data on the left. Edit in the usual manner. The hex display looks best with the “Lucida Console” font installed.

This program was originally written to identify strange UTF-8 characters in e-mail messages. Success was mixed because of the number of steps required: copy and paste unknown characters as text, convert text to data bytes using the system’s default encoding, convert bytes back to text as UTF-8, convert text again as UTF-16 or UTF-32, and look up resulting byte codes to identify Unicode characters. (See any “Character Map” application.) A single button to do this would be more convenient but much too specialized. The strange character was often “U+FEFF zero width no-break space” encoded as 0xEF 0xBB 0xBF, also known as a byte-order mark.

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Installation

You must have the Java run-time environment (JRE) installed on your computer. HexByteChar was developed with Java 1.4 and should run on later versions. It may also run on earlier versions, but this has not been tested. You can download the JRE from Oracle (formerly Sun Microsystems):

JRE for end users: <http://www.java.com/download/>

SDK for programmers: <http://www.oracle.com/java/> or the OpenJDK builds

IDE for programmers: <http://www.eclipse.org/> or <http://www.netbeans.org/>

Once Java is installed, you need to put the program files for HexByteChar into a folder (directory) on your hard drive. The name of the folder and the location are your choice, except it is easier if the name does not include spaces. Assume that files will go into a “C:\Java” folder. Then create the folder and unpack the Java *.class files into this folder (if you received the program as a ZIP file). The files look something like this:

- ApacheLicense20.txt (12 KB, legal notice)
- GnuPublicLicense3.txt (35 KB, legal notice)
- HexByteChar2.class (18 KB, executable program)
- HexByteChar2.doc (32 KB, this documentation in Microsoft Word format)
- HexByteChar2.ico (87 KB, icon for Windows)
- HexByteChar2.jar (11 KB, archive file with same class files inside)
- HexByteChar2.java (51 KB, source code)
- HexByteChar2.manifest (1 KB, main class manifest for archive file)
- HexByteChar2.pdf (70 KB, this documentation in Adobe Acrobat format)
- HexByteChar2.png (41 KB, sample program image)
- HexByteChar2User.class (1 KB, helper class for main program)
- RunJavaPrograms.pdf (60 KB, more notes about running Java)
- ShowCharSets2.java (3 KB, program to generate Java character set names)
- ShowCharSets2.txt (19 KB, sample file with Java character set names)

To run the program on Windows, start a DOS command prompt, which is Start button, Programs, Accessories, Command Prompt on Windows XP/Vista/7. Change to the folder with the program files and run the program with a “java” command:

```
c:
cd \java
java HexByteChar2
```

The program name “HexByteChar2” must appear exactly as shown; uppercase and lowercase letters are different in Java names. Some systems (Macintosh) will run a main “class” file by

clicking on the class file name while viewing a directory in the file browser (Mac Finder). Many systems will run a “jar” file by clicking (or double clicking) on the jar file name (Windows Explorer). The command line is the only guaranteed way of running a Java program. Should you find this program to be popular, you can create a Start menu item or desktop shortcut on Windows XP/Vista/7 with a target of “java.exe HexByteChar2” starting in the “C:\Java” folder.

One complication may arise when trying to run this program. Java looks for an environment variable called CLASSPATH. If it finds this variable, then that is a list of folders where it looks for *.class files. It won’t look anywhere else, not even in the current directory, unless the path contains “.” as one of the choices. The symptom is an error message that says:

```
Exception in thread "main" java.lang.NoClassDefFoundError: HexByteChar2
```

To find out if your system has a CLASSPATH variable defined, type the following command in a DOS window:

```
set CLASSPATH
```

To temporarily change the CLASSPATH variable to the current directory, use the following command line:

```
java -cp . HexByteChar2
```

To permanently change the CLASSPATH, you must find where it is being set. This is in Control Panel, System, Advanced, Environment Variables on Windows XP/Vista/7.

Removal or Uninstall

To remove this program from your computer, delete the installation files listed above. If the folder that contained the files is now empty, you may also delete the folder ... if you created the folder, of course, not the system. If you created desktop shortcuts or Start menu items, then delete those too. There are no hidden configuration or preference files, and no information is stored in the Windows system registry. You don’t need an “uninstall” program.

Graphical Versus Console Application

The Java command line may contain options for the position and size of the application window, and the size of the display font. See the “-?” option for a help summary:

```
java HexByteChar2 -?
```

The command line has more options than are visible in the graphical interface. An option such as -u16 or -u18 is recommended for the font size.

Restrictions and Limitations

For copy and paste to another application on Windows, a null character (0x00) may terminate a text string, even when it appears in the middle. Both 0x0A and 0x0D are newline characters, whose exact representation depends upon the local system.

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