Java Application: MetricSaeSizes

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Description

MetricSaeSizes is a Java 1.4 graphical (GUI) application to calculate how close metric bolt/nut/socket/wrench sizes are to fractional/inch/SAE/standard sizes. The metric range is up to 250 mm (25 cm) in unit steps from 0.1 to 10 mm (1 cm), and the SAE range is up to 10 inches with steps from 1/256 to 1/2 inch. Not surprisingly, the most interesting sizes are those of ordinary tools.

Rounding towards the nearest measurement unit ignores an obvious physical reality: a wrench that is too small is more of a problem than a wrench that is too big. A bias can be added so the rounding occurs from say 30% of a unit smaller to 70% bigger, instead of 50-50. Explaining that, or any other technical details, defeats the point of a simple chart. You would also need to justify the chosen bias. The word "rounded" is associated with damage to bolt heads and nuts, so maybe use the word "nearest" in public documentation.

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Installation

You must have the Java run-time environment (JRE) installed on your computer. MetricSaeSizes 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 MetricSaeSizes 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)
> MetricSaeSizes5.class (16 KB, executable program)
> MetricSaeSizes5.doc (31 KB, this documentation in Microsoft Word format)
> MetricSaeSizes5.ico (87 KB, icon for Windows)
> MetricSaeSizes5.jar (10 KB, archive file with same class files inside)
> MetricSaeSizes5.java (41 KB, source code)
> MetricSaeSizes5.manifest (1 KB, main class manifest for archive file)
> MetricSaeSizes5.pdf (68 KB, this documentation in Adobe Acrobat format)
> MetricSaeSizes5.png (26 KB, sample program image)
> MetricSaeSizes5User.class (1 KB, helper class for main program)
> RunJavaPrograms.pdf (60 KB, more notes about running Java)

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 MetricSaeSizes5
```

The program name "MetricSaeSizes5" 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 MetricSaeSizes5" 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: MetricSaeSizes5
```

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 . MetricSaeSizes5
```

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 MetricSaeSizes5 -?
```

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

The formatting of the output numbers is sensitive to the current locale; the parsing of the input numbers is not.