Java Game: TicTacToe

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Description

TicTacToe is a graphical Java 1.1 AWT (GUI) applet to play the child's game of Tic-Tac-Toe, also known as Ticktacktoe, X's and O's, Naughts and Crosses. Click the mouse on a position of your choice. You are the magenta X's, and you move first. The computer has the blue O's. To win, you must have a complete horizontal line, a complete vertical line, or a complete diagonal line. There can be several diagonals. Winning lines are shown in red. You may run this program as a stand-alone application, or as an applet on the following web page:

> Tic-Tac-Toe, Ticktacktoe, X's and O's, Naughts and Crosses - by: Keith Fenske
> http://www.psc-consulting.ca/fenske/tictac4a.htm

For instructions on how best to play the game ... ask a child! The only weird part is that the number of rows and columns can be different. The computer plays a reasonably good game but can be easily beaten on a small game board. The first person to move can't lose ... unless they make a mistake. We are often blinded by our own planning. If the board has three rows and five columns, you concentrate so much on winning in one direction that you don't see the computer's move in another direction until the game is over. As the board gets larger, you have more trouble seeing all the possibilities. The computer's algorithm doesn't miss an opportunity.

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Installation

You must have the Java run-time environment (JRE) installed on your computer. TicTacToe was developed with Java 1.4 and compiled for Java 1.1, so it should run on all later versions. For Macintosh computers, the version of Java is determined by your version of MacOS. For Windows, Linux, and Solaris, you can download the JRE from Sun Microsystems:

> Sun Java
> > JRE for end users: http://www.java.com/getjava/
> > SDK for programmers: http://developers.sun.com/downloads/
> > IDE for programmers: http://www.netbeans.org/

Once Java is installed, you need to put the program files for TicTacToe 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:

> ffcccc.gif (1 KB, web page background, name must be lowercase)
> GnuPublicLicense3.txt (35 KB, legal notice)
> make-tictac4.bat (1 KB, compiles as Java 1.1 using Java 1.4 SDK)
> RunJavaPrograms.pdf (60 KB, more notes about running Java)
> tictac4a.htm (4 KB, applet web page, external links don't work)
> tictac4b.jar (8 KB, applet archive file, name must be lowercase)
> tictac4c.txt (54 KB, same source code as text for web page)
> TicTacToe4.class (13 KB, executable program)
> TicTacToe4.doc (31 KB, this documentation in Microsoft Word format)
> TicTacToe4.gif (13 KB, sample program image)
> TicTacToe4.java (53 KB, source code)
> TicTacToe4.manifest (1 KB, main class manifest for archive file)
> TicTacToe4.pdf (69 KB, this documentation in Adobe Acrobat format)
> TicTacToe4Window.class (1 KB, helper class for main program)

To run the program on Windows, start a DOS command prompt, which is Start button, Programs, Accessories, Command Prompt on Windows 2000/XP. Change to the folder with the program files and run the program with a "java" command:

> c:
> cd \java
> java TicTacToe4

The program name "TicTacToe4" must appear exactly as shown; uppercase and lowercase letters are different in Java names. Should you find this program to be popular, you can create a Start

menu item or desktop shortcut on Windows 2000/XP with a target of "java TicTacToe4" 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: TicTacToe4
```

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  .  TicTacToe4
```

To permanently change the CLASSPATH, you must find where it is being set. This may be in an old AUTOEXEC.* file in the root directory of your system disk (usually the C:\ folder), or it may be in Control Panel, System, Advanced, Environment Variables on Windows 2000/XP.

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 configuration or preference files, and no information is stored in the Windows system registry. You don't need an "uninstall" program.

Restrictions and Limitations

Web page applets are obsolete and may run as stand-alone applications with the help of a wrapper (included), although this becomes less likely after Java 9 (2017). Rewriting for Java Swing or newer JavaFX is not an easy job.

file: TicTacToe4.doc 2019-03-30