

TCLTK_ON_LINUX File

Installing Tcl/Tk on Linux to Support the RAQUEL GUI/Teaching Tool

Introduction

The program code of the Raquel GUI, also known as the Raquel Teaching Tool, is written mainly in Tcl/Tk, although a few modules of it are written in C/C++. Tcl/Tk is used to manage all the screen objects of the user interface.

Thus Tcl/Tk must be installed on the user's computer, as well as a C/C++ compiler, *before* the RAQUEL GUI/Teaching Tool is installed.

This document provides background information on the installation of Tcl/Tk on Linux systems.

The Tcl/Tk software can be obtained from the Tcl/Tk website at <https://tcl.tk/software/tcltk/>.

Version of Tcl/Tk

The version of the Tcl/Tk libraries installed on the host machine should be **8.4.19 or later**. The current development version of the Raquel Teaching Tool uses the Tcl 8.5.19 and Tk 8.5.19 releases, which appear to be reliable and not "bleeding edge". (Later versions are available, e.g. Tcl 8.6.6 and Tk 8.6.6).

The Location of Tcl/Tk Files

Tcl/Tk runtime files : these are the dynamic shared library files, the Tcl/Tk interpreter executables (in principle called **libtcl.so** and **libtk.so**) needed to run Tcl/Tk applications.

They are required to be installed in either the **/usr/local/lib/** directory or the **/usr/lib/** directory; the directory may depend on the version of Tcl/Tk installed. By default the Tcl 8.5.19 and Tk 8.5.19 releases are installed in the **/usr/local/lib/** directory.

Tcl/Tk development files : these are the header files that define access to Tcl/Tk functions compiled in the runtime files. They are needed to compile a Tcl/Tk application (such as the Raquel GUI/Teaching Tool) and create an executable file.

The Tcl/Tk development files are included within the Raquel GUI/Teaching Tool distribution. There is a **.lib** subdirectory in the **TeachingTool** subdirectory which holds the Tcl.h, Tk.h and other required header files in it.

Compiling the Raquel GUI/Teaching Tool

When compiling the GUI/Teaching Tool, the compiler is given the '-ltcl' and '-ltk' parameters in order to reference the runtime library files **libtcl.so** and **libtk.so** respectively.

In practice there are often variations in the names that are given to these library files, because typically the actual file names include the Tcl/Tk version numbers, e.g. **libtcl8.5.so** or **libtcl8.5.so.0**, and **libtk8.5.so** or **libtk8.5.so.0**. Therefore a reference to just **libtcl.so** or **libtk.so** will fail.

The solution is to use softlinks. Create a softlink from **libtcl.so** to the corresponding library file that actually exists, and another from **libtk.so** to the corresponding library file that actually exists. The compiler then references the actual files via the softlinks. For example, with the shell command **ln**, in the directory **/usr/local/lib/**, execute the statements

```
ln -s libtcl8.5.so.0 /usr/local/lib/libtcl.so
ln -s libtk8.5.so.0 /usr/local/lib/libtk.so
```

to create a softlink in that directory called **libtcl.so** that points to **/usr/local/lib/libtcl8.5.so.0**, and a softlink in that directory called **libtk.so** that points to **/usr/local/lib/libtk8.5.so.0**.

Consequently check that the Tcl/Tk installation (in either the **/usr/local/lib/** directory or the **/usr/lib/** directory) contains the required dynamic runtime library files **libtcl.so** and **libtk.so**, and if not, create softlinks of those names in the installation directory to point to the actual runtime library files in the installation directory. (Note that the Tcl/Tk installation may include static library files, identifiable by the filename extension **.a**. These are not used by the Raquel Teaching Tool and can be ignored).

The Raquel GUI/Teaching Tool distribution also includes two softlinks, called **libtcl.so** and **libtk.so**, that link to actual library files appearing in the **/usr/local/lib/** directory. This is 'an insurance' against unusual Tcl/Tk installations, and can typically be ignored.

The X11 Dependency

The Tk package depends on the X11 library (the root graphics library for Linux), and therefore comes complete with header files that reference X11. When Tk is installed, check its header files correctly reference X11 in X11's actual stored location.

For all normal versions of Linux with a GUI, usually Gnome or KDU, the Linux GUI depends on X11 and so the X11 runtime files have already been installed with the operating system. If this is not the case, then X11 will have to be installed.

Other Software Dependencies

See the **SOFTWARE_DEPENDENCIES** file for other software on which the Raquel DBMS and the C/C++ components of the RAQUEL GUI/Teaching Tool depend.