

## Extending the Raquel Teaching Tool's Installation Procedure to Better Handle Tcl/Tk

### Background

The Raquel Teaching Tool is written mostly in Tcl/Tk. Therefore Tcl/Tk needs to be already installed before the Teaching Tool can be installed.

Tcl/Tk is an interpreted, not a compiled, language. The Tcl/Tk interpreter consists of dynamic shared library files.

Because the Raquel Teaching Tool is written partly in C/C++, it is compiled. The compiler is given the parameters '-ltcl' and '-ltk' in order that it can reference these Tcl/Tk library files.

These parameters assume that the library files are named **libtcl.so** and **libtk.so**. These are generic names. In practice the library files will normally have longer names which reflect the version number of the particular version of Tcl/Tk actually installed; e.g. **libtcl8.5.so**, **libtk8.5.so**.

The Raquel Teaching Tool does not need a specific version of Tcl/Tk, but can run using a wide range of versions.

### Problem

How does a particular installation of the Raquel Teaching Tool access the version of Tcl/Tk already installed ?

The problem has 2 parts :

1. How to cope with '.so' and other suffixes, plus subminor and submajor version numbers which appear in the file names of Tcl/Tk installations. (In Tcl/Tk terminology, given Tcl/Tk 8.5.x, 'x' is the subminor version number – also known as the patch number - and given Tcl/Tk 8.y.13, 'y' is the submajor version number.
2. How to cope with the completely different directory locations of the installations of different submajor versions of Tcl/Tk (e.g. Tcl/Tk 8.5 as opposed to Tcl/Tk 8.6).

The current solution is to manually add softlinks that map from **libtcl.so** and **libtk.so** to the actual Tcl/Tk library files. The softlinks are located in the directory where the Teaching Tool expects to find the Tcl/Tk library files.

### Required Solution

If Tcl/Tk is already installed, the current Raquel Teaching Tool installation procedure should be extended to incorporate the automated accessing of the Tcl/Tk runtime library files. The intent is that the Raquel Teaching Tool installer should not need to know or think about Tcl/Tk.

## Specification of Solution

The automated procedure should be incorporated into the current GNU Autotools-generated installation procedure.

The automated procedure should only make use of software that is included as standard on **every** Linux distribution. If the Raquel Teaching Tool installer has to install non-standard software in order to enable the automated procedure to work, they gain no benefit. (Manually installing softlinks is straightforward and documented in the accompanying Teaching Tool documentation).

The automated procedure should accept Tcl/Tk versions 8.4, 8.5 and 8.6 only<sup>1</sup>. It should cope with the standard default Tcl/Tk installation locations (as specified by their pathnames), including those for 32-bit and 64-bit versions of Tcl/Tk. Ideally it should handle non-standard locations specified by user-selected parameter values to the standard Tcl/Tk installation procedure.

The automated procedure should first check that an acceptable version of Tcl/Tk is installed. If one is not found, then it should output an error message to that effect (stating which versions are acceptable), and terminate without any attempt to install the Raquel Teaching Tool.

This is so that if the installer then installs Tcl/Tk, a subsequent attempt to install the Teaching Tool will not require the latter's installation procedure to cope with any after effects of the first Teaching Tool installation attempt.

The automated procedure should :

- where only one version of Tcl/Tk is already installed, use that installation, outputting its major and minor version number (and ideally its patch level number);
- where multiple versions of Tcl/Tk are already installed, output their major, minor and patch level version numbers, and allow the installer to choose which one to use.

Note : softlinks are created within Tcl/Tk's standard default installation procedure.

## Reference

See [Installing Tcl/Tk on Linux to Support the RAQUEL GUI/Teaching Tool](#) .

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<sup>1</sup> The Raquel Teaching Tool was originally tested on Tcl/Tk 8.4.19. It is assumed to work on earlier versions of 8.4. It is known to work on versions 8.5 and 8.6. Version 8.7 is not yet established (as of May 2018). It will need to be checked in future.