

DESIGN AND IMPLEMENTATION OF INTERACTIVE TUTORIALS FOCUSED ON SORTING, AND DATA STRUCTURES*

STUDENT POSTER PRESENTATION

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The Tutorial Generation Toolkit (TGT) is a set of Java classes that supports authoring of interactive tutorial applications. This abstract outlines extensions to the capabilities of the TGT and several new tutorials aimed at the Data Structures course, which were built using the toolkit. The basic form of a tutorial is an interactive slide show combining explanatory material and exercises that provide students with immediate feedback. The toolkit provides facilities for flexible sequencing of "slides", use of Java GUI components to compose slide appearance, simple animation of fixed images, voice-overs, and multiple choice self-tests with results logged to a database if desired.

The work described in this poster represents a progress report on an effort to develop tutorial materials to support teaching of the Data Structure course. These tutorials required the enhancement of TGT in two ways:

- the TGT framework should be modified to make it easier to add new tutorials; and
- the new tutorials should provide graphic visualizations based on user input.

By accomplishing these design goals the animation and display capabilities leave us with a tool that will allow development of further highly interactive tutorials in the area of data structures and algorithms.

The extended toolkit was used to build a workshop where students could attempt to piece together an algorithm for adding and removing nodes from a linked structure. The workshop allows students to step through their code, viewing the results of each line on the linked structure. These modifications to the framework will allow future topical tutorial units concerning data structures to present similar effective visualizations without significant modification.

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