PlotTool Apparatus Specification

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Publication History

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For additional information, see The LoCuS Homepage:
URL: http://cgi.cs.arizona.edu/projects/locus/labs/

LoCuS (Laboratory fOr CompUter Science) System is instructional software for teaching computer science theories through experiments (that is, laboratory exercises, as in other sciences like biology, chemistry, and physics). A locus (Latin for "place") is a "collection of points which share a property" or "the path through which a point moves to fulfill a given condition." Our goal is for LoCuS to define a new place to emphasize the science of computation as well as a new path for computer science, in the form of labs.
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1 Introduction

This apparatus is intended to be used for any lab in which displaying a graphical relationship between two variables. It will map one variable to the x-axis and another to the y-axis, then plot the relationship between them.

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2 Functionality

This apparatus visualizes pairs of points and connects them with lines to create a linear graph describing the relationship between two variables. The line is displayed on the backdrop of a grid so that the user can easily see where each point lies. Each axis is labeled with the name of the variables given to the apparatus.

The window will intelligently resize at the request of the user.

The apparatus allows to plot a regression line with a click of a button. Visibility of the button is controlled by an XML option.

The apparatus should be able to display the slope and the intercept of the line. Visibility of slope and intercept values is controlled with an XML option.

The apparatus should allow the user to plot the points manually with the mouse. The availability of this feature is controlled with an XML option.

The apparatus should allow the user to plot the points by typing in the pair of (x, y) values. The availability of this feature is also controlled with an option.

3 User Interface

The PlotTool apparatus contains a GUI containing a single panel which displays the grid and each point given to the apparatus connected with lines.

The bottom of the panel shows the exact point that the users cursor is currently hovering over in bold.

To be Implemented

4 XML Specification

The apparatus accepts parameters from locus in the form of an XML node object (passed in through setOptions(.) method. Please see Apparatus Developers Guide). Following is a sample XML node that the apparatus will accept:

```
<options>
  <xvalues>"1 2 3 4 5"</xvalues>
  <yvalues>"11 22 33 24 15"</yvalues>
  <xlabel>"Time"</xlabel>
  <ylabel>"Voltage"</ylabel>
  <chartTitle>"Time against Voltage"</chartTitle>
  <frameTitle>"PlotTool"</frameTitle>
</options>
```
(deprecated) xvalues The default way of sending data to PlotTool is via Connections mechanism (see Apparatus Developer's Guide for further details). The element lists each of the x values that will have a point at them separated by spaces. If any of the values are not able to be parsed as doubles an exception will be thrown. The default value for this element is 1 2 3 4 5 6 7 8 9 10. The apparatus will also check and ensure that the number of values given in this element is the same as the number of values given in the yvalues attribute.

(deprecated) yvalues The default way of sending data to PlotTool is via Connections mechanism (see Apparatus Developer's Guide for further details). The element lists each of the y values that will have a point at them separated by spaces. If any of the values are not able to be parsed as doubles an exception will be thrown. The default value for this element is 1 2 3 4 5 6 7 8 9 10. The apparatus will also check and ensure that the number of values given in this element is the same as the number of values given in the xvalues attribute.

xlabel element indicates the label for the x axis that will be displayed below the grid. The default value for this element is the null string, causing no label to be shown.

ylabel element indicates the label for the y axis that will be displayed to the left of the grid. The default value for this element is the null string, causing no label to be shown.

chartTitle element indicates the title for the entire graph that will be displayed above the grid. The default value for this element is the null string, causing no title to be shown.

frameTitle element indicates the title for the window. The default value for this element is PlotTool.

To Be Expanded

5 Implementation Details

To Be implemented

6 Coupling with other apparatuses

To be Implemented