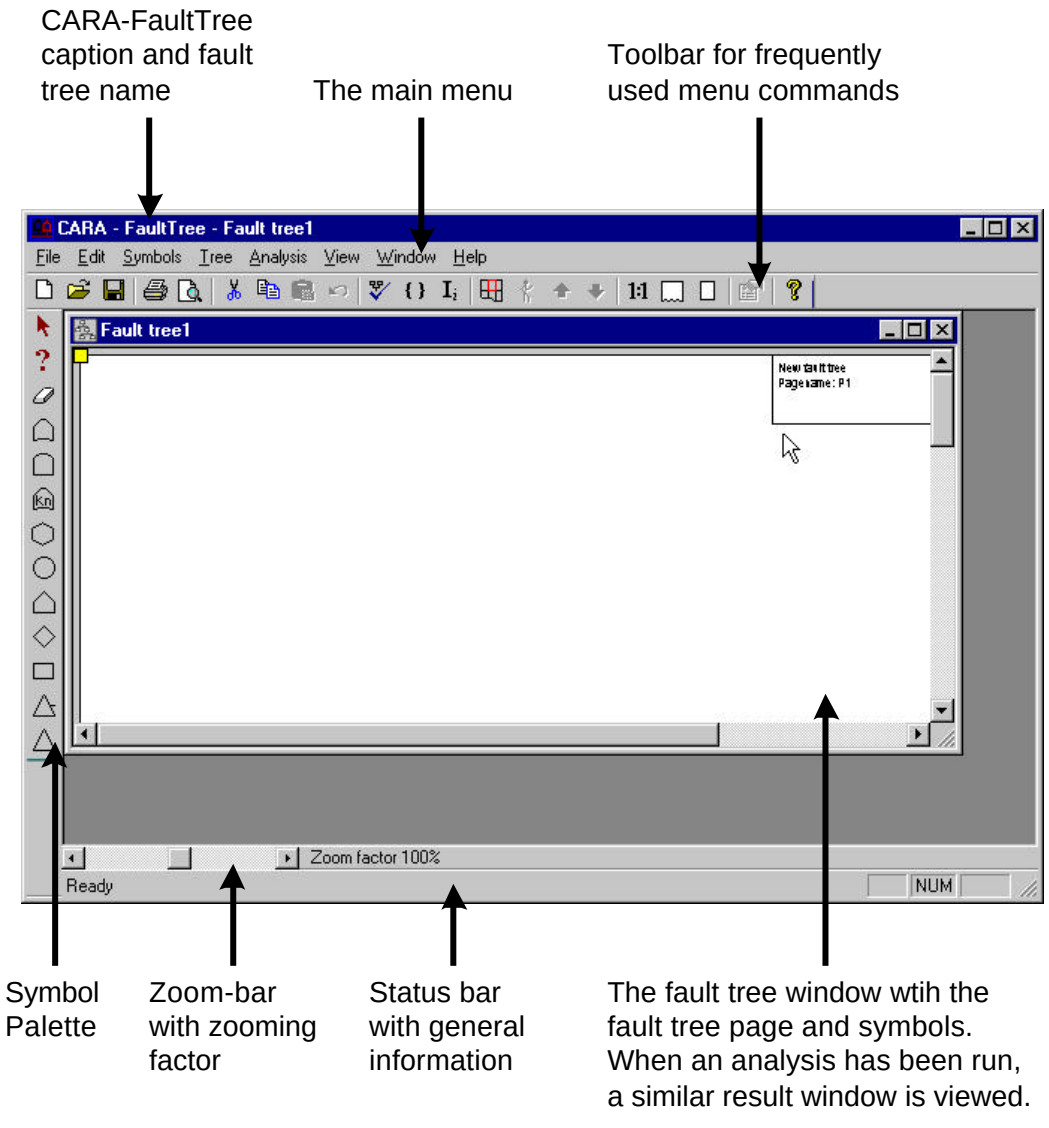
CARA-FaultTree v4.0 - Tutorial

HOW TO DRAW YOUR FIRST FAULT TREE

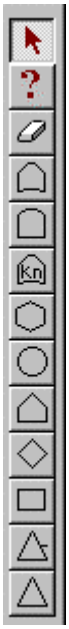
CARA-FaultTree v4.0 is a complete windows program, and it utilises the Windows interface completely. This simple walk through will describe how to construct a simple fault tree and to conduct a simple analysis.

After starting the CARA-FaultTree program, the following window is opened:



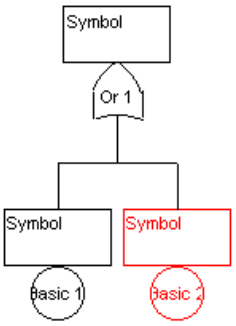
The procedure to create a new fault tree, enter some data and run an analysis is described in detail below:

1. To create a new fault tree, select “New” from the “File” - menu. A new page is shown on the screen. On the left edge of the CARA-FaultTree window, a symbol palette is displayed:

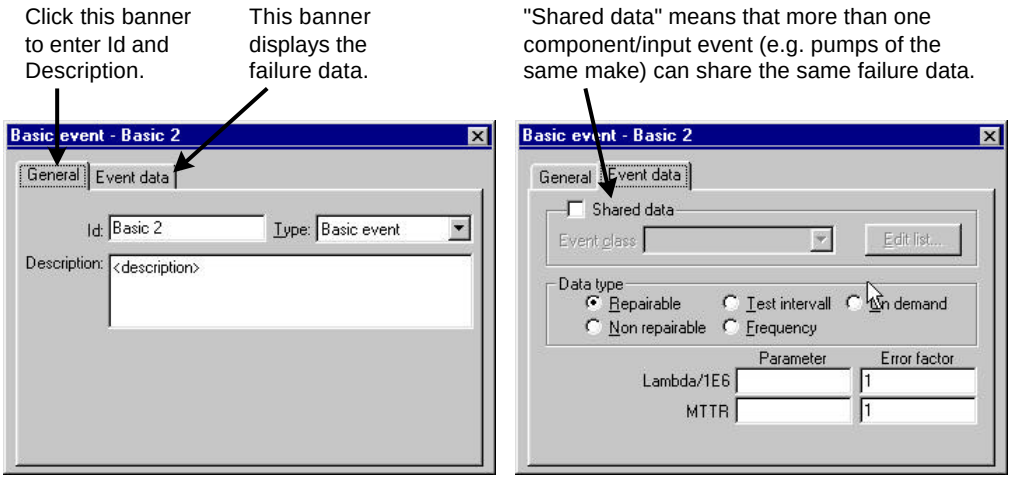


Reset the mouse pointer
Get information about a gate or primary event
Erase a sub - tree
Insert "Or"-gate
Insert "And"-gate
Insert "KooN"-gate
Insert "Inhibit"-gate
Insert "Primary event"
Insert "House" event
Insert "Undeveloped event"
Insert "Comment" rectangle
Insert "Transfer Up" symbol. This symbol indicates that this page is referred to from an other page.
Insert a "Transfer Down" symbol. This symbol is used on the top page, refer to a "Transfer Up" symbol on another page

2. To add an "Or"-gate, click the mouse on the "Or"-gate of this palette. The mouse pointer is "loaded" (i.e. an "Or"-gate is drawn at the side of the cursor). Drop the "Or"-gate on the fault tree page by clicking on the position where you want the gate to be drawn.
3. Load the cursor with a basic event, by clicking the symbol palette's "Basic event"-button.
4. Move the cursor around the fault tree page. As long as you are not pointing on the "Or"-gate, the mouse pointer will be accompanied by a "No entry" traffic sign. If you move the cursor over the Or gate, however, the cursor is again loaded with the basic event. Click on the "Or"-gate to enter a basic event below this gate. The event is automatically connected to the gate.
5. Repeat step 3 and 4 to add another basic event to the fault tree. The fault tree should now look like this:



6. To edit data, double-click on the basic event named "Basic 1". A property dialogue is created (see also figure below), where you are allowed to enter both event ID, Description and Failure data. The ID and description are available from the "General" banner, as the failure data are found under the "Basic event" banner.



7. Enter an appropriate set of failure data into the properties dialogue.
8. While leaving the property dialogue open, click on the basic event named “Basic 2”. The property dialogue is updated to display information about the new active component “Basic 2”. Enter some failure data for this component as well. If you removed the property dialogue by accident, just double-click on “Basic 2” to create it again.
9. The fault tree page and the Or-gate both have properties as well. By double-clicking on a blank part of the page, you are allowed to enter a page id and a description as well as determine the page layout. In the description field you can add any text you like, or one of the supported codes:
   - ^Date Current date
   - ^Time Current time
   - ^Page Page name
   - ^Title Fault tree title as defined by selecting the “Tree|Setup” menu
10. By clicking the right mouse button on a gate or an event, a quick menu is available. This menu differs for the different types of components. If you, e.g., add a “Transfer down” symbol to your tree, you can, by right - clicking this transfer symbol, create a new page to which the transfer symbol is connected, connect it to an already existing page or (if the transfer symbol is already linked to a page) go to that connected page.
11. Select the question mark from the symbol palette, and move it over one of the components. All the failure data is displayed in a yellow sticker on the screen. This utility, which is also available in three overview, makes it quick to verify data input.
12. To run an analysis, select e.g. “Failure Frequency distribution” from the “Analysis” menu. You will be prompted to enter some settings to run the analysis, then press “OK” to do the calculations. The report generated can be saved in RTF-format (readable for all standard word processors running under Windows). You can also mark text or graphics with the mouse, copy the text to the clipboard (with key combination **Ctrl+C**) and paste it into your word processor (with key combination **Ctrl+V**).
13. To run a new analysis, you must first make the fault tree the active window, e.g. by selecting “Fault tree 1” in the “Window” menu. Then all analyses are once again available.

14. Now, press the “Overview” button in the toolbar  . The program shows all pages of your fault tree tied together. If you load the cursor with the question mark, and place it over a fault tree page, the structure of that page is displayed.
15. Use the zoom scrollbar on the bottom of the screen to increase the zoom factor. Zoom up to 15%. Now, the structure of the fault tree is displayed within the overview window, and the question mark will display properties for all gates and events. If you want to, you can work on the fault tree with this view of the structure (add or remove components, utilise drag and drop etc.). Go to a page of your choice by pressing the “Go To”-button in the toolbar  and select the desired page from the displayed list.

CONTACT INFORMATION

You may contact Sydvest Software as given below. If you want to contact the CARA-FaultTree team directly, you may send an e-mail to cara@sydvest.com.

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