State Transition Diagrams

State Transition Diagrams in Crystal REVS from switch-case and other constructs

Each state corresponds to a sequence of statements.

Representing a state machine n the flowchart:

1) A rectangular border is drawn around the sequence of statements that correspond to a state.

2) One or more statements in that state can trigger a transition to another state.

A transition is shown by drawing an arrow from that statement to the border of destination state.

3) You can attach a comment to a transition arrow.

Often a state machine is coded in form of a switch-case.

Expanding and collapsing a switch

1) When you double-click on a switch symbol, the whole switch will collapse to a high-level symbol indicated by a thick violet border.

2) To fully expand a switch, right-click in the high-level symbol, then click <Expand Symbol> in the pop-up menu.

If you double-click in the high-level symbol, it will expand by two levels - not full expansion.

Creating a State Transition Diagram

1) To enclose each state in a rectangular border:

a) Right-click in the switch symbol, then click: State Diagrams -> Mark All Cases as States

The body of each case becomes enclosed in a rectangular border

b) If you wish to mark only a few cases as states:

right-click in the desired case symbol, then click: State Diagrams -> Mark as State

In general, you can right-click in a for, while, do, if symbol and mark the whole body as a state.

c) When you mark some code as a state, Crystal REVS displays a "Flowchart State(s) Creation" dialog box so that you can give a logical name to that state.

If you simply click OK, Crystal REVS will continue to use the default name for that state.

2) Create a State Transition:

a) Let us say that a statement causes a transition to another state.

If the symbol that contains the trigger statement is a high-level symbol, double-click in the symbol to expand it. A state-transition can not be created from a high-level symbol.

Right-click in the symbol which contains the trigger statement. In the pop-up menu, click: State Diagrams -> Create Transition

b) In the "Flowchart State Transition" dialog box, you can specify the resulting state.

You can specify the geometric location of start and end points of the transition. This will affect the routing of the arrow.

c) You can provide a comment that will be attached to the transition arrow.

3) Change the routing of a State Transition:

a) Right-click in the symbol which contains the trigger statement. In the pop-up menu, click: State Diagrams -> Transition Route

In "Flowchart Transition Route" dialog box, change the "From" and "To" settings.

4) Provide a comment to a State Transition:

a) Right-click in the symbol that contains the trigger statement. In the pop-up menu, click: State Diagrams -> Add Comment to Transition

5) To modify the comment to a State Transition:

a) Right-click in the comment that is attached to the State Transition. In the pop-up menu, click: State Diagrams -> Transition Comment Properties

6) To display the State Transition Diagram with a desired level of detail:

a) Right-click in the switch symbol, then click: State Diagrams -> Collapse All Cases. You get a very compact view of the State Transition Diagram

b) Double-click in the switch symbol to collapse the switch, then double-click in the high-level symbol. Now the switch is expanded to two-levels of detail.

c) Double-click in the switch symbol to collapse the switch. Right-click in the switch symbol, then click Expand Symbol. You get a fully expanded State Transition Diagram.

How do you save the state transition diagram so that when you start the next session, you do not have to create it again.

Or if you edit the source file in another editor, then come back to Crystal REVS, can you view the State Transition Diagram?

Solution: Save the State Transition Diagram's information in the comment field to the right.

7) To save the State Transition Diagram:

Right-click anywhere in the flowchart window.

In the pop-up menu, click: State Diagrams -> Save & Close Flowchart.

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