Raptor - Quick Start

WHAT IS RAPTOR

Raptor stands for "Reasoning About Programs That Ought to Run". Raptor can be used to reason that a postcondition holds given a precondition and program.

HOW DO I START A RAPTOR PROOF

The input screen has a section for the precondition, program and postcondition. The precondition and postcondition sections can only contain one line of input. The program section can contain multiple lines of code to represent a complete program; these lines should be separated by a semicolon. It is not necessary to have a precondition to your proof, in which case, NONE should be entered into the precondition section. You may declare your variables in the precondition, in which case, you must type your declarations before the precondition, separated by semicolons.

When you have input your precondition, program and postcondition you can check the validity of your input by pressing the "Check Proof" button. If it is valid, to proceed solving your proof, press the "Start Proof" button.

WHAT IS A RAPTOR PROOF

A Raptor proof is made up of at least one proof box. Each box contains a precondition, a program line and a postcondition. The program line can be followed by other proof boxes which contain a similar structure to the above. Program lines are either blue or grey (see below) and have a line number that is prefixed with a "P".

HOW DO I APPLY A RAPTOR RULE

Raptor rules are applied to program lines. A rule can only be applied to an active program line; this is identified by the blue background colour. To apply a rule, select an active program line and a Raptor rule button in either order. This applies the selected rule to the selected program line if possible. When a program line has had a rule applied to it, it will become inactive. This means it cannot be selected and is represented by having a grey background colour.

HOW DO I APPLY A NATURAL DEDUCTION RULE

Natural Deduction rules are applied to proof lines. A rule can only be applied forwards to an <empty> line or backwards to a <goal> line. To apply a rule, select a proof line and a Natural Deduction rule button in either order. For some Natural Deduction rules extra lines must be selected after this. This applies the selected rule to the first selected proof line if possible.

WHEN IS A PROOF COMPLETED

When there are no more <goal> lines in a proof box that box will turn green to show that it has been proved. When all of the proof boxes in a proof have been proved, the whole proof will turn green and the proof is completed.