

VisiRule Starter Guide December 2020

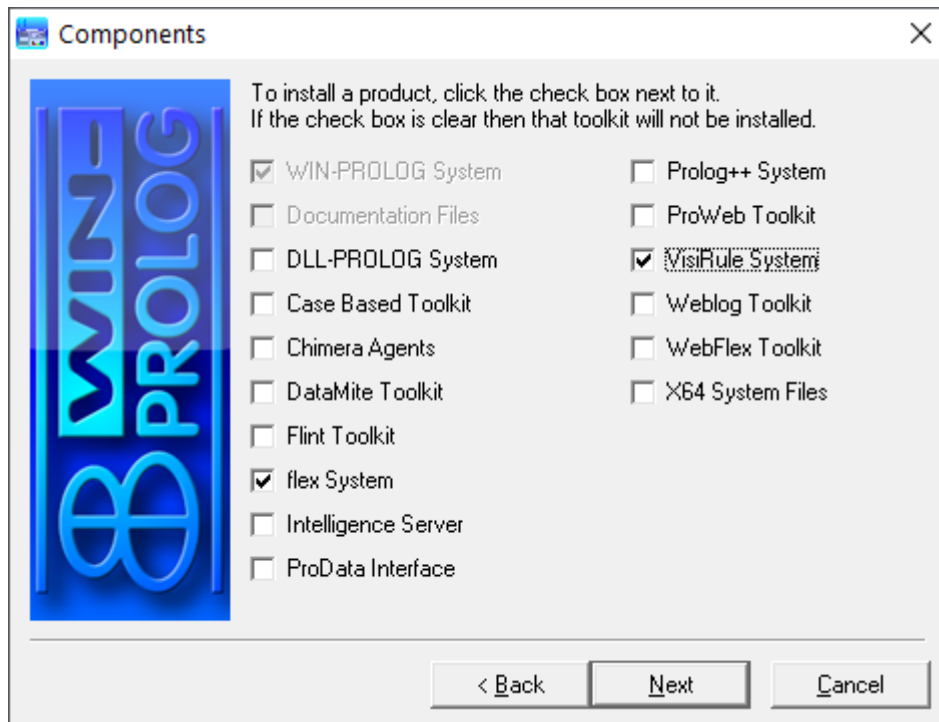
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Accessing your Download

This document is designed to help you download, install, launch and get started with your VisiRule trial. By the end of this, you hopefully will have created and run your very first VisiRule chart. You do need access to a Windows PC - if you have a Mac, you need to use an emulator or request access to VR365 which is a browser based system.

VERY IMPORTANT



You MUST select both the VisiRule AND Flex options if you want to use VisiRule.

This is because VisiRule uses, and requires Flex, to be installed.


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You should have received a long URL link to your download via email.

It will look something like:

<https://www.lpa.co.uk/scripts/sol386.exe?code=9BBEE39C406A1C63BFA8FAF68A5565744620A5DACE7F83E021332CDFB1116246A5A35A2B4AB1919FC914A13282243127D91D169C0EE34A242B21BA8E2F81E7937EE24B45444E52D946AE8606B10D4CB8E0900234>

Click on the download link and it should take you to the Free Trial page on the LPA web site.



LPA Logic Programming Associates
Home Products Support

include
exclude

90 Day Free Trial of WIN-PROLOG 7.000 and LPA Toolkits

Thank you for your interest in the 90 Day Free Trial of WIN-PROLOG 7.000 and the LPA Toolkits. We hope that you will enjoy trying out this software at your leisure! All we ask in return is that you tell us a little about yourself in the attached form.

Please fill the following form, and then click "Submit". Your form will be processed by our ProWeb-based server, which will respond by giving you details of how to download and install your software. Please note that fields marked with an asterisk (*) are compulsory.

Full Name: *	<input type="text" value="clive spenser"/>	Function:	<input type="text"/>
Email Address: *	<input type="text" value="clive@lpa.co.uk"/>	Location:	<input type="text"/>
Job Title:	<input type="text"/>	Application:	<input type="text"/>
Organisation:	<input type="text"/>		
Sector:	<input type="text"/>		

Please tick this box if you are happy for us to contact you again: ☒

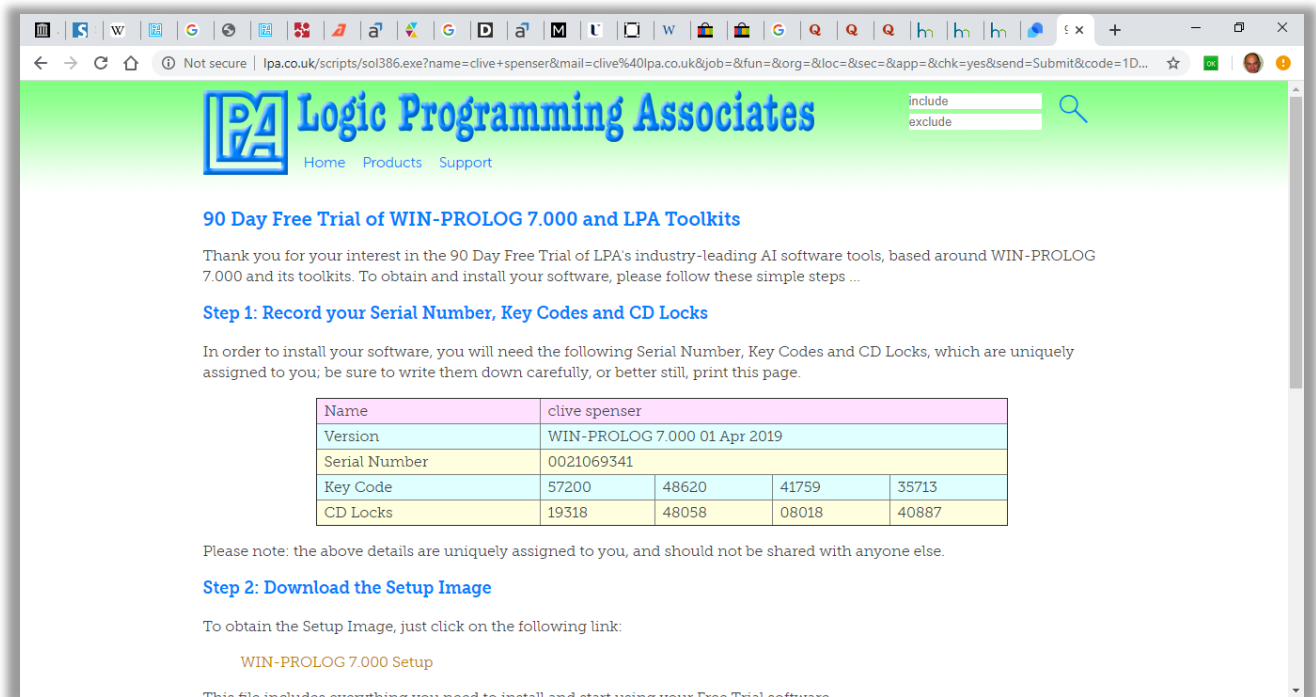
Please review your answers, and when ready, click "Submit"

Web design by Solanum
Copyright © 2019 LPA Ltd
All rights reserved

Complete & Submit the form

The more information you give the better!

You should then see a page as follows:



You will need to enter your Serial Number Key Codes and CD Locks during the install!

You could for instance take a screen shot or print it to PDF.

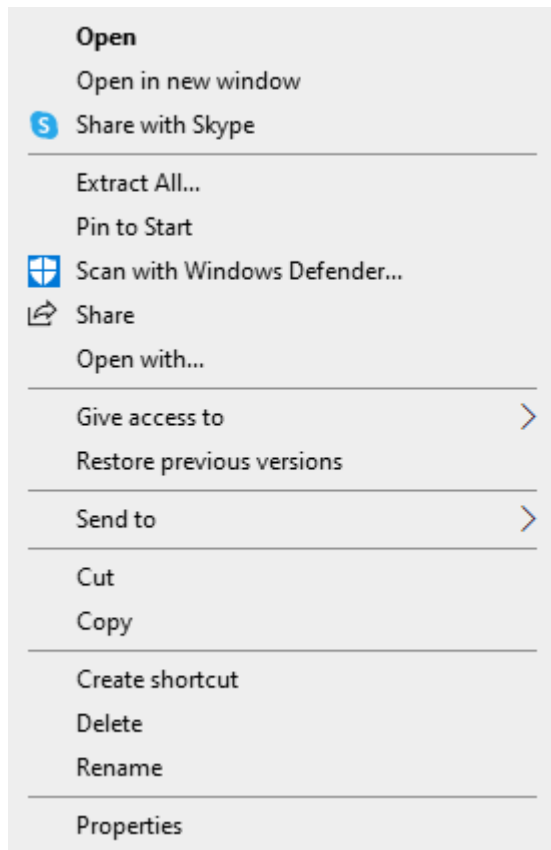
Downloading your Evaluation Software

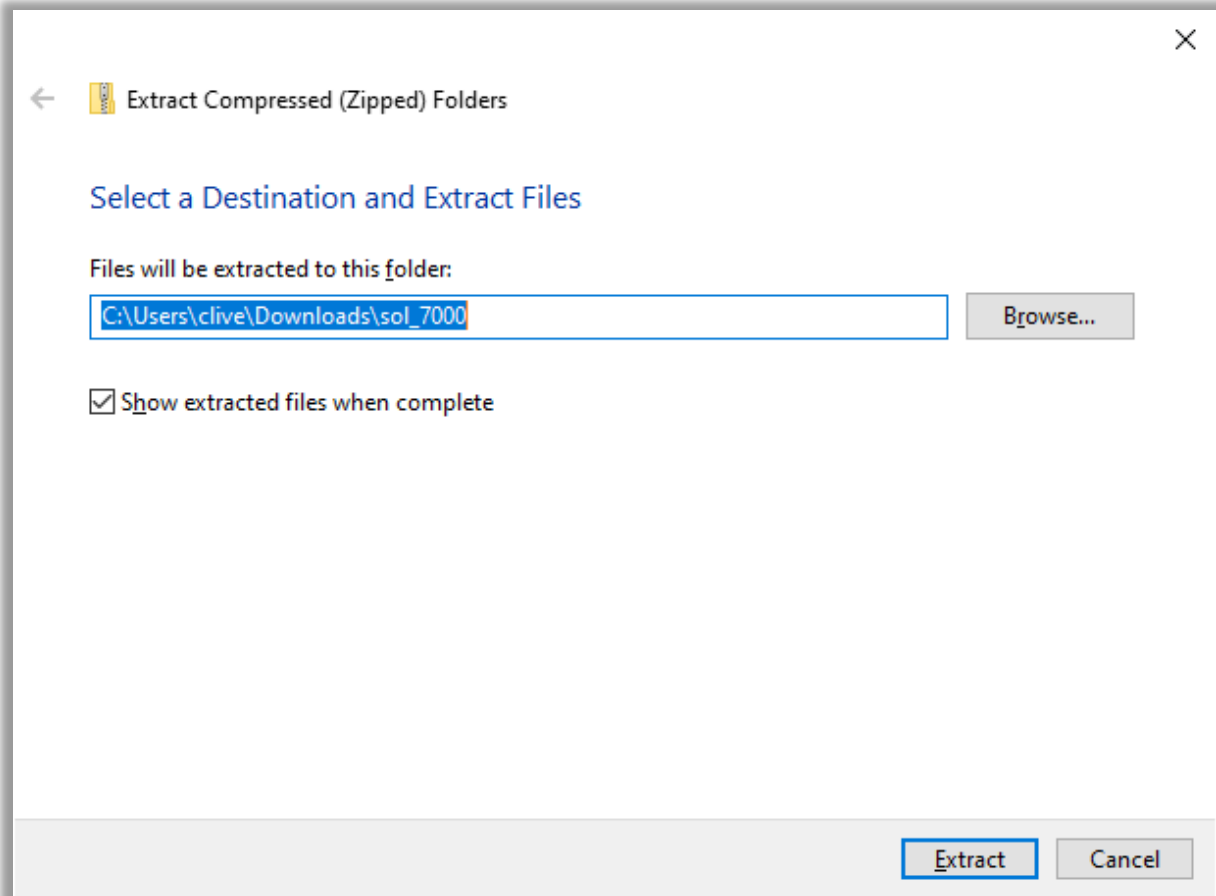
Click the Win-Prolog 7.0 link to download the Setup Image and follow the instructions.

It should download a zip file from the LPA FTP server, like:

http://www.lpa.co.uk/ftp/sol_7000.zip

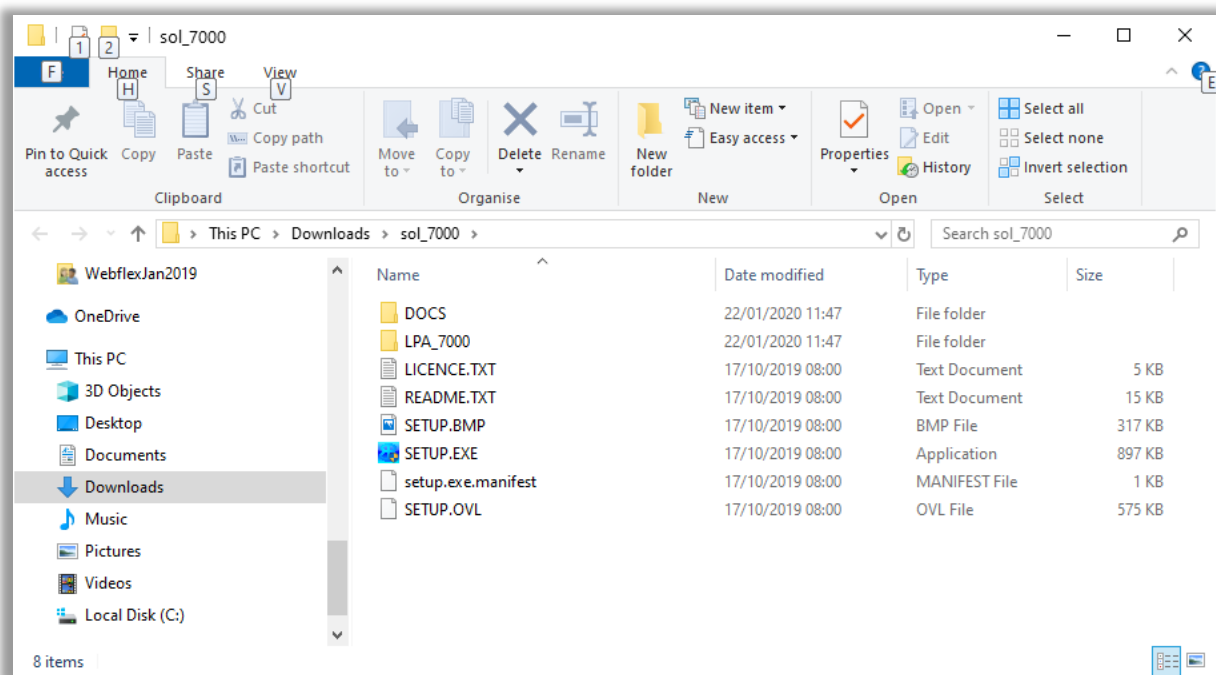
When you have downloaded the zip, right click on it, Windows will let you extract the files;





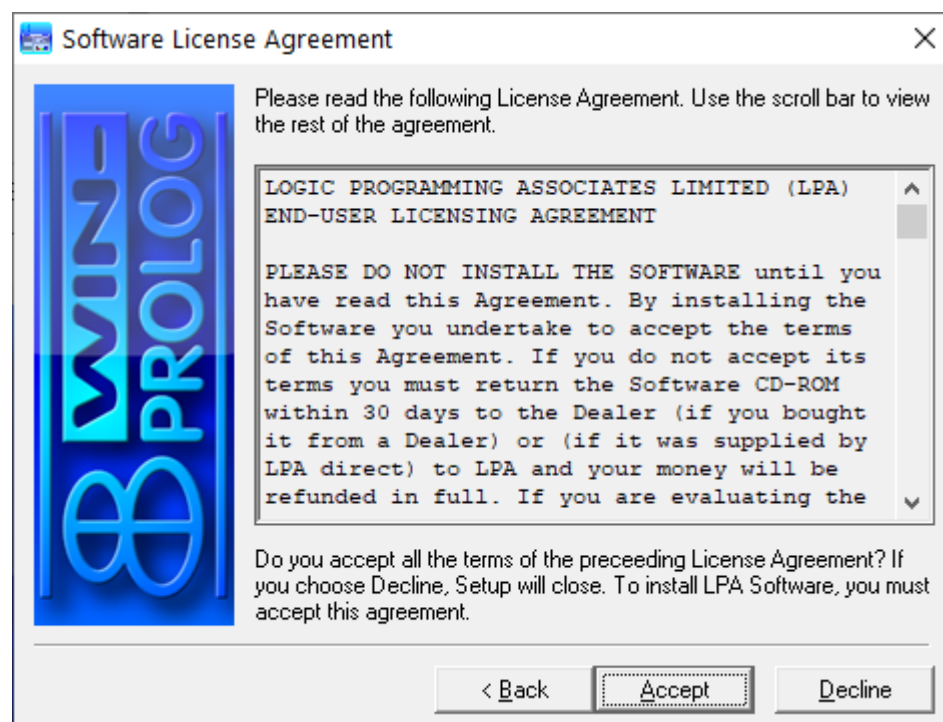
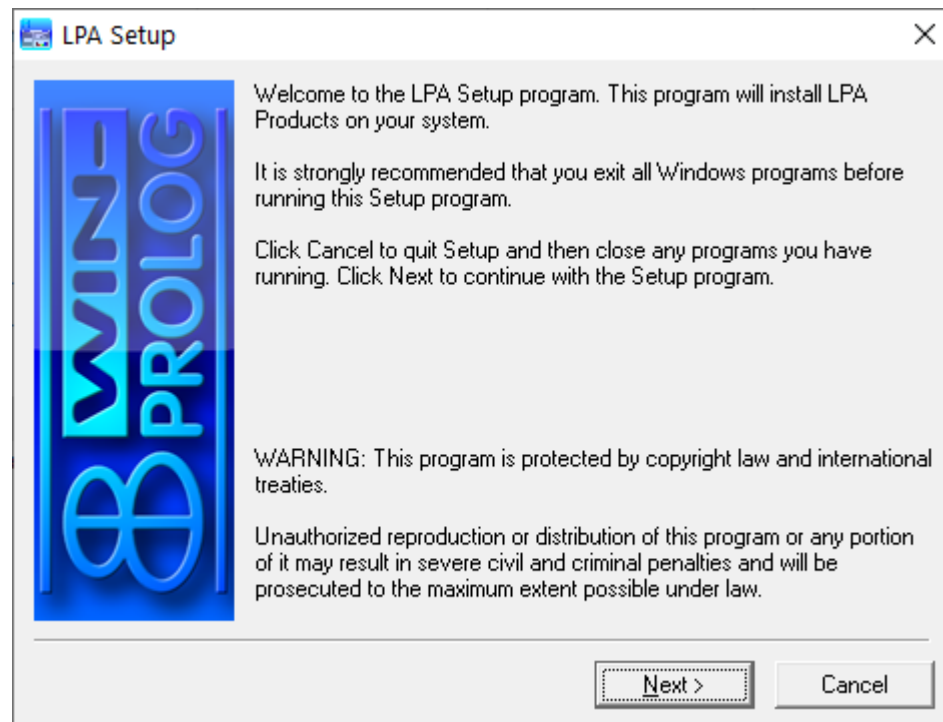
Browse to a Destination Path of your choice

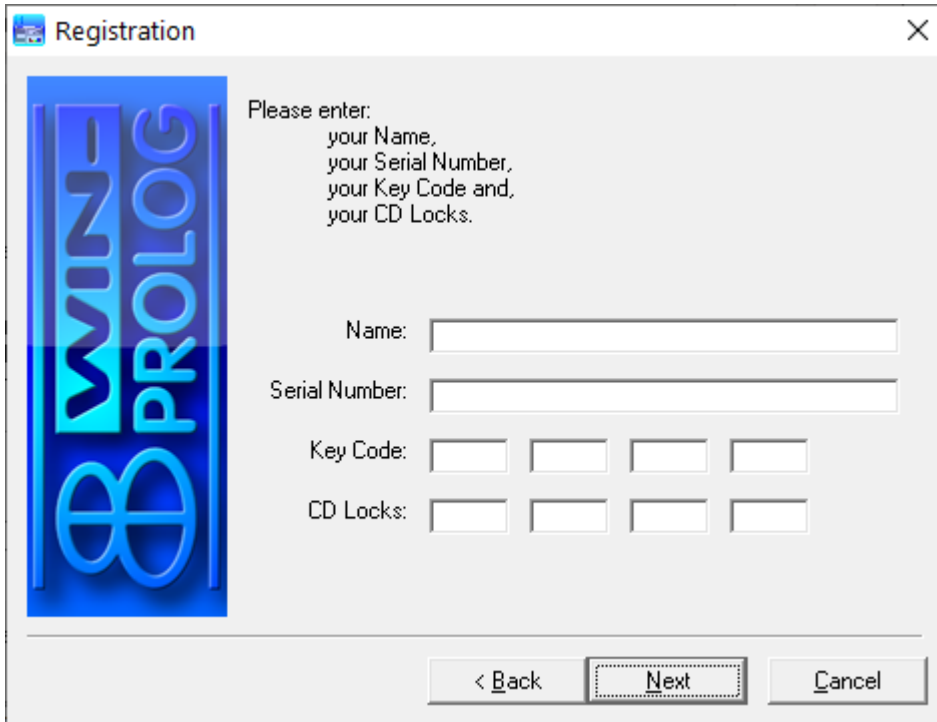
You should see the following after extraction:



Installing your Software

Double Click on SETUP.EXE to run the set-up





Registration

Please enter:
your Name,
your Serial Number,
your Key Code and,
your CD Locks.

Name:

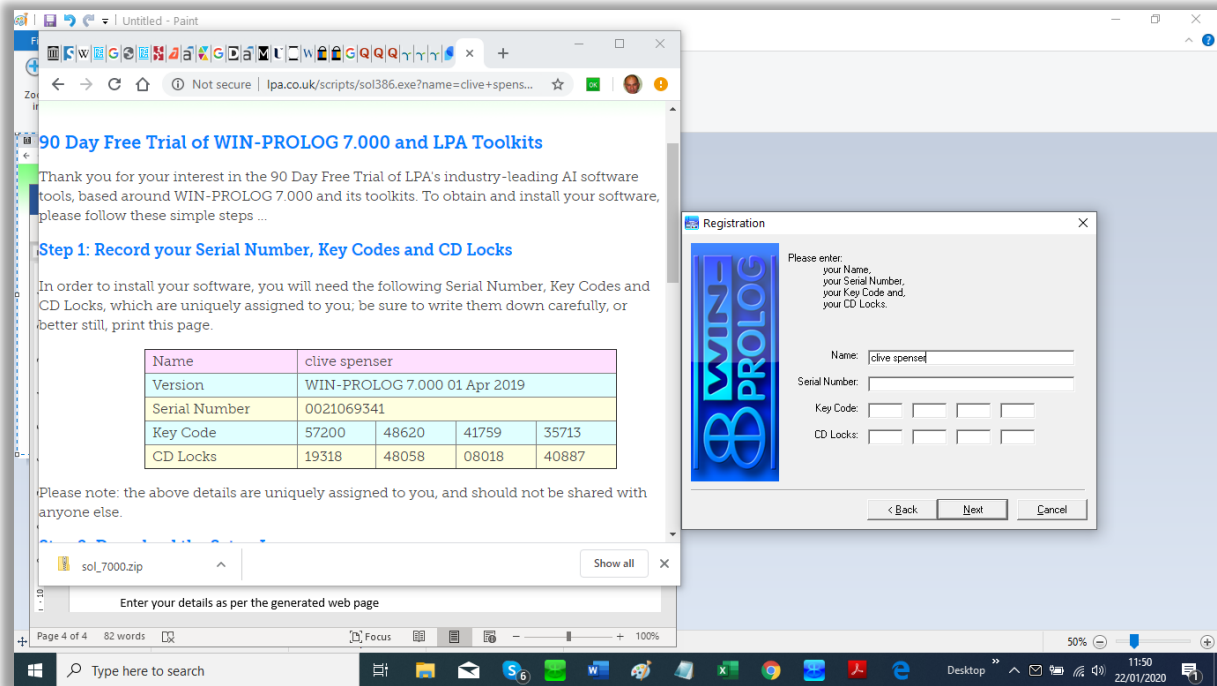
Serial Number:

Key Code:

CD Locks:

< Back Next Cancel

Enter your details as per the generated web page



90 Day Free Trial of WIN-PROLOG 7.000 and LPA Toolkits

Thank you for your interest in the 90 Day Free Trial of LPA's industry-leading AI software tools, based around WIN-PROLOG 7.000 and its toolkits. To obtain and install your software, please follow these simple steps ...

Step 1: Record your Serial Number, Key Codes and CD Locks

In order to install your software, you will need the following Serial Number, Key Codes and CD Locks, which are uniquely assigned to you; be sure to write them down carefully, or better still, print this page.

Name	clive spenser			
Version	WIN-PROLOG 7.000 01 Apr 2019			
Serial Number	0021069341			
Key Code	57200	48620	41759	35713
CD Locks	19318	48058	08018	40887

Please note: the above details are uniquely assigned to you, and should not be shared with anyone else.

sol_7000.zip Show all

Enter your details as per the generated web page

Page 4 of 4 82 words Focus 50% 11:50 22/01/2020

Registration

Please enter:
your Name,
your Serial Number,
your Key Code and,
your CD Locks.

Name:

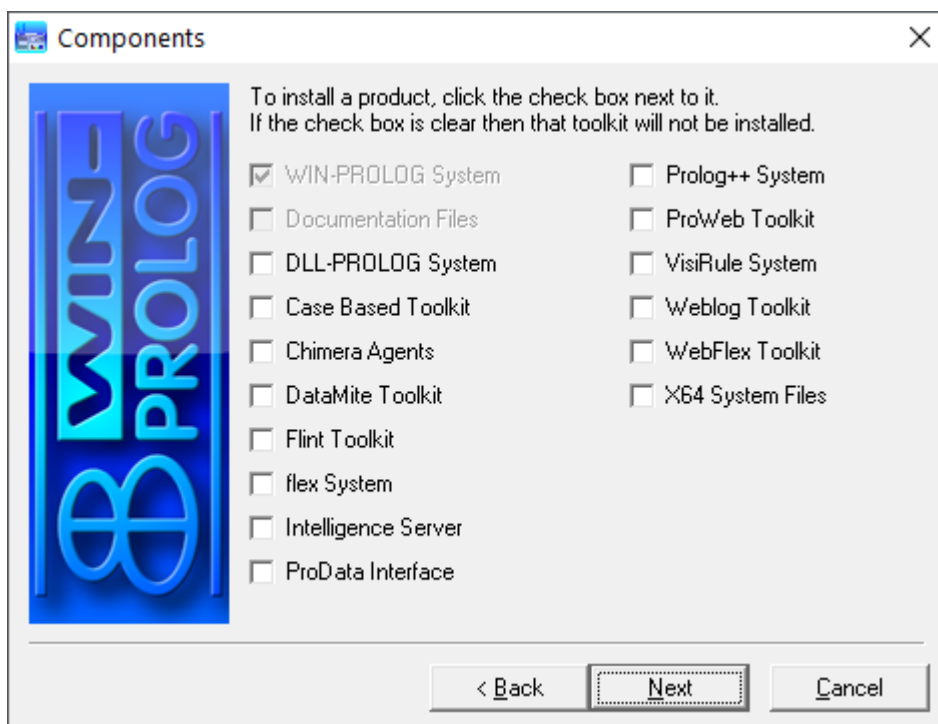
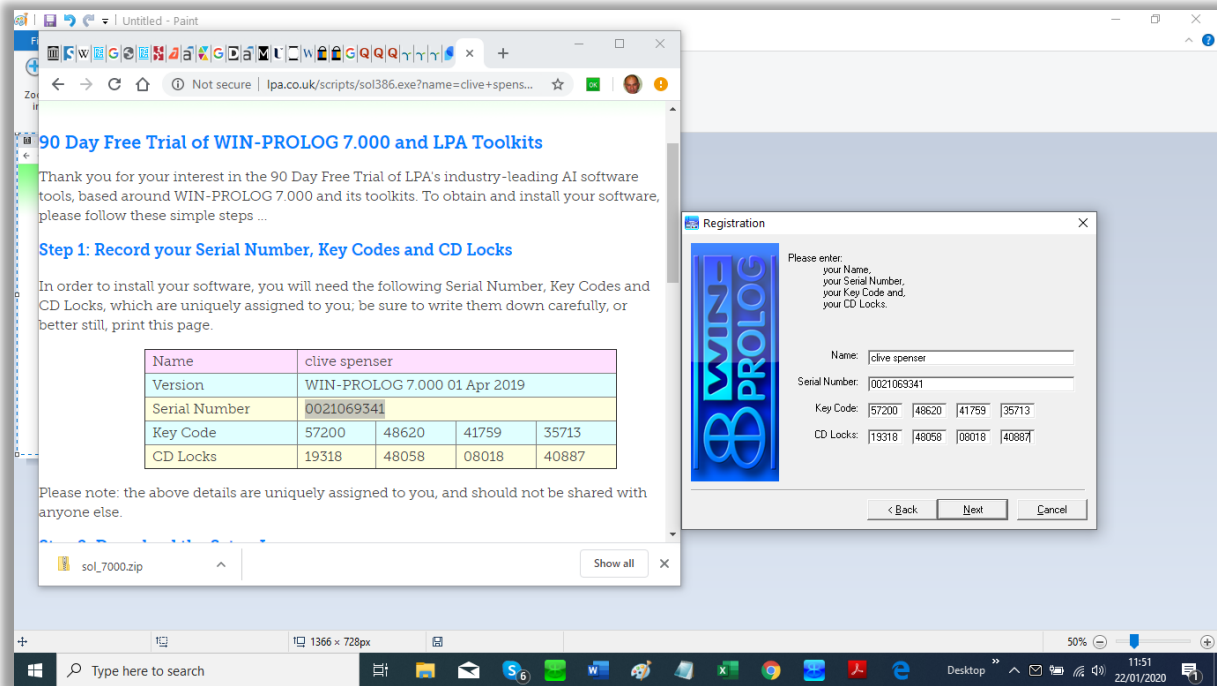
Serial Number:

Key Code:

CD Locks:

< Back Next Cancel

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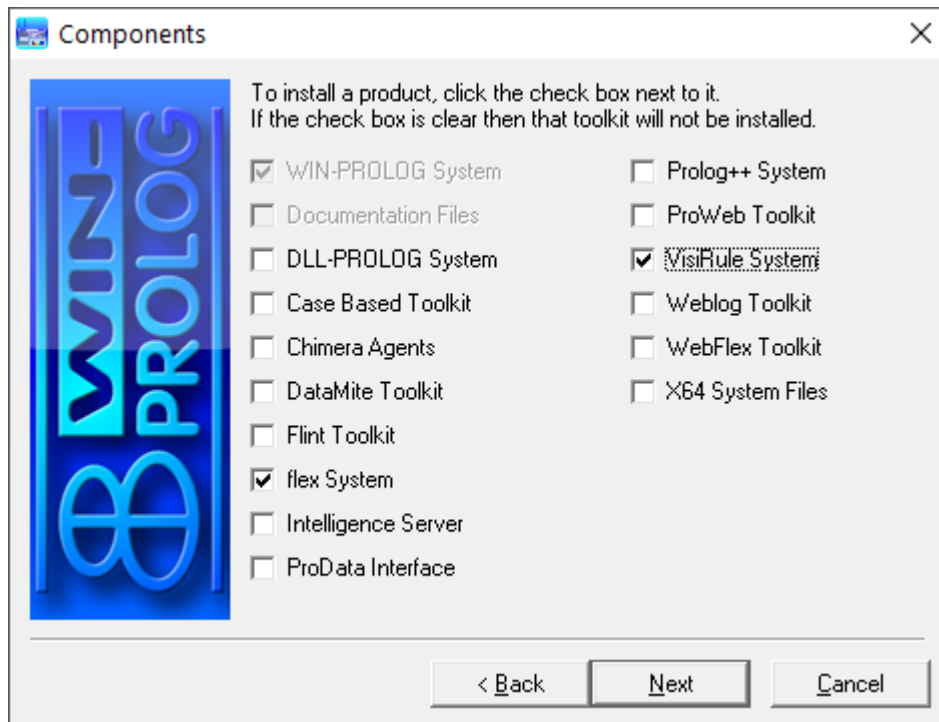


IMPORTANT

Win-PROLOG is selected by default (all tools require that).

You **SHOULD** select as a minimum both Flex and VisiRule.

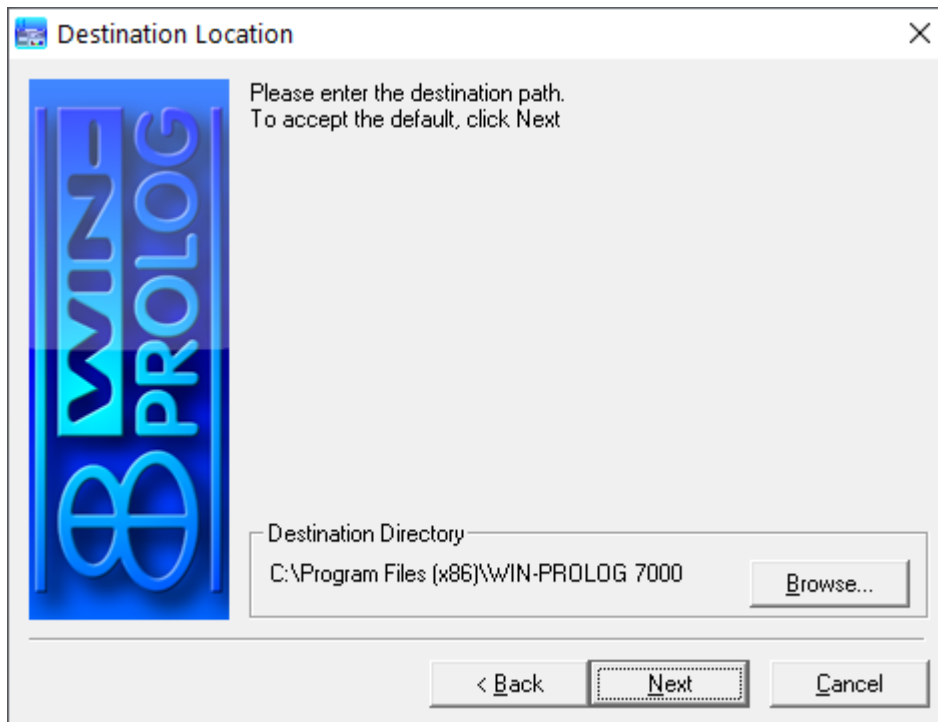
VisiRule needs Flex as it generates code in the form of Flex rules.



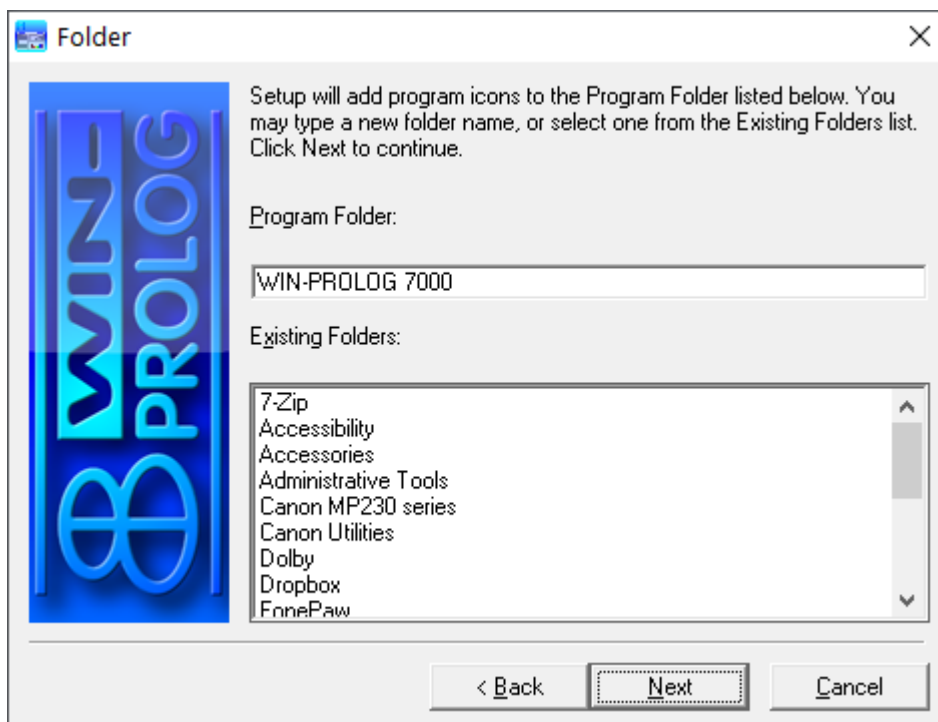
Remember – check all the tools you want to install!

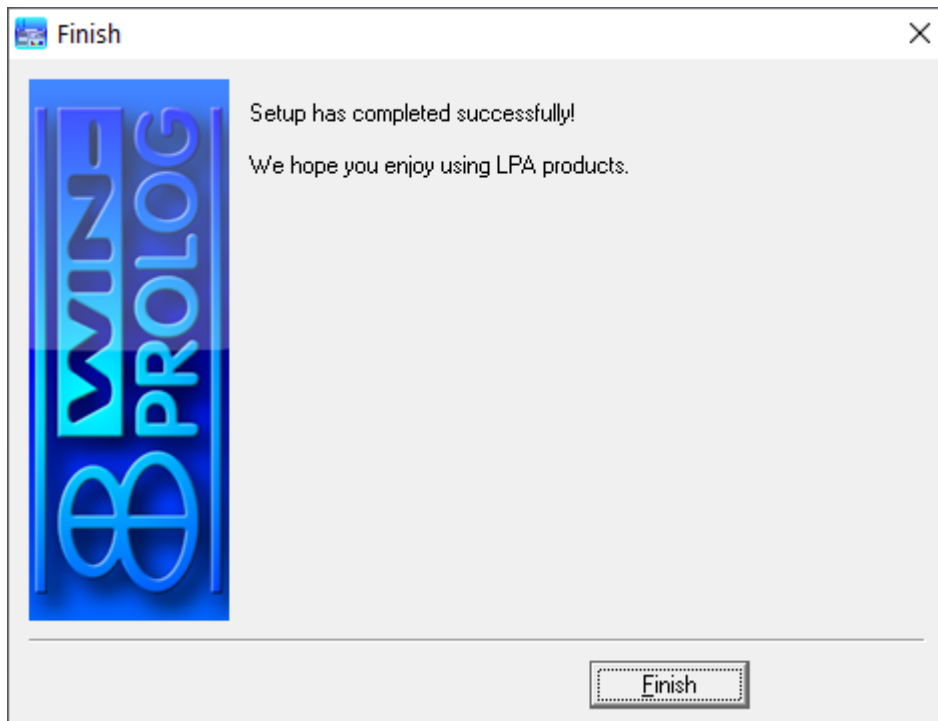
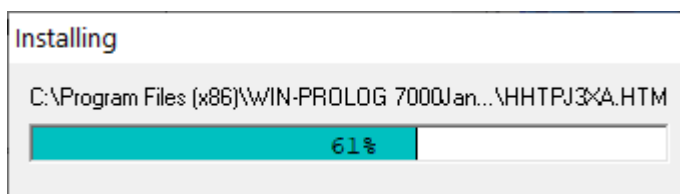
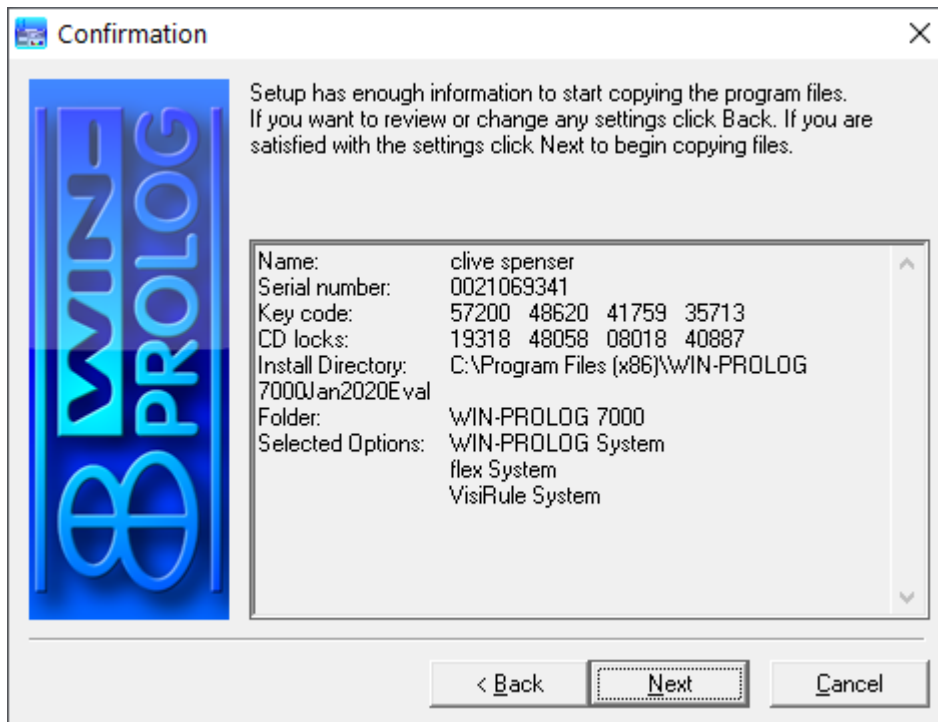
You should now choose a destination to which you have read/write access.

Make sure the PATH does not contain any Unicode characters.



As the LPA software does not affect the registry, you can always install to a temp directory and then copy that directory to the desired location. All you need to do, is update the shortcuts.



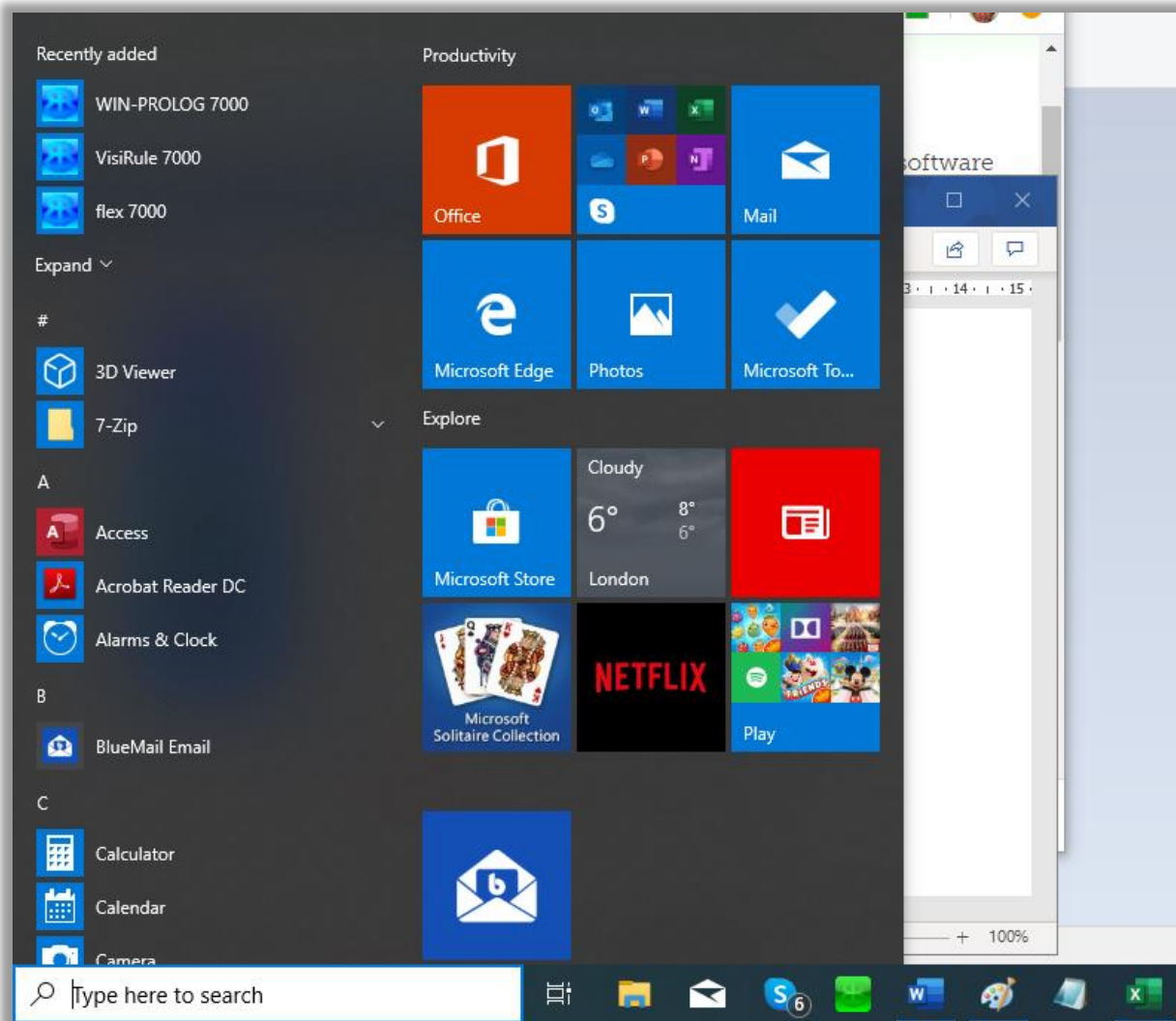


Now you have installed the LPA software.

Launching your Installed Software

You can run/launch the VisiRule software in any one of the following ways

Click on the Windows icon in the bottom left hand of the screen to see the program menu:

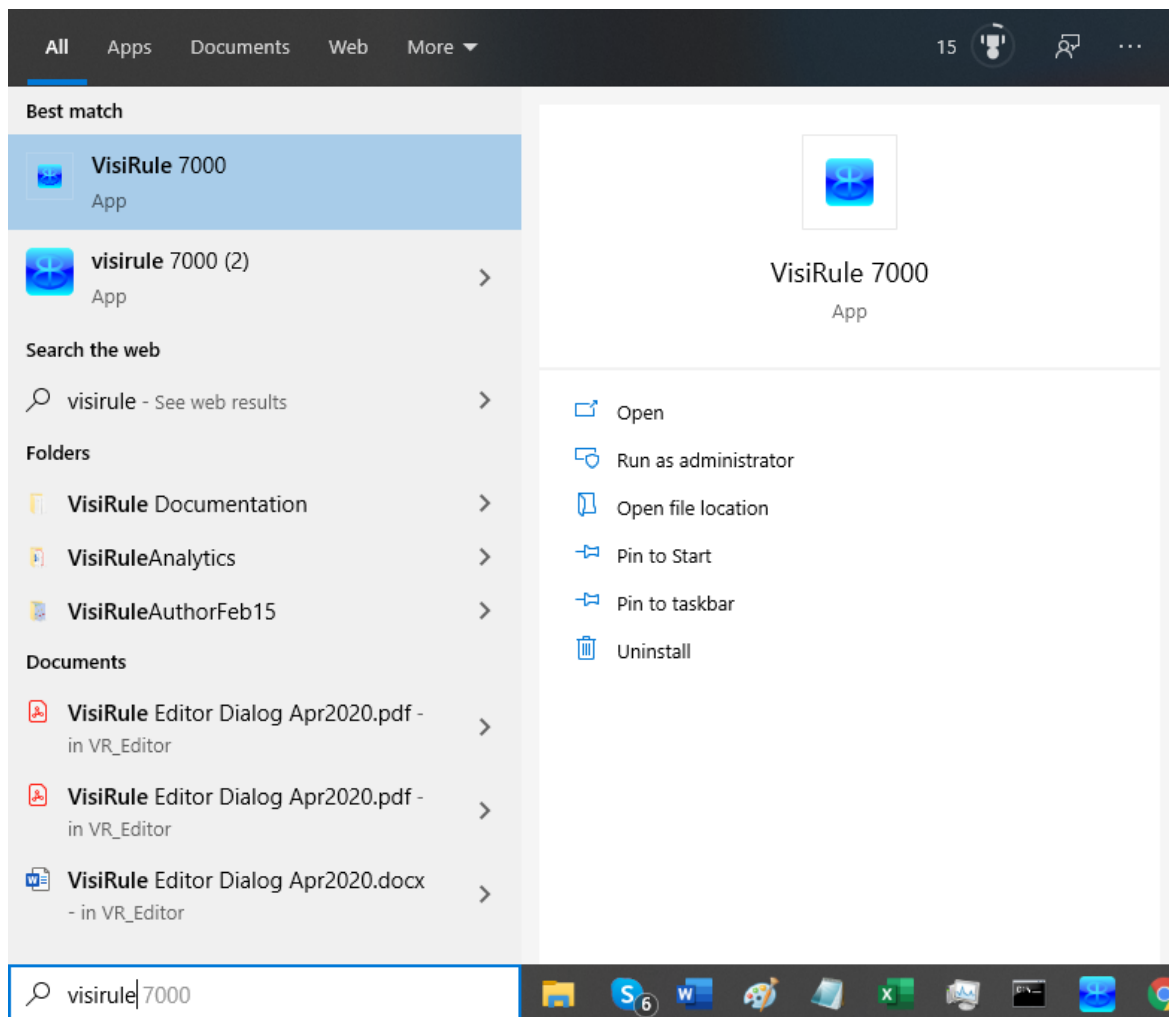


You should see the 3 shortcuts there namely: WIN-PROLOG, VisiRule and flex

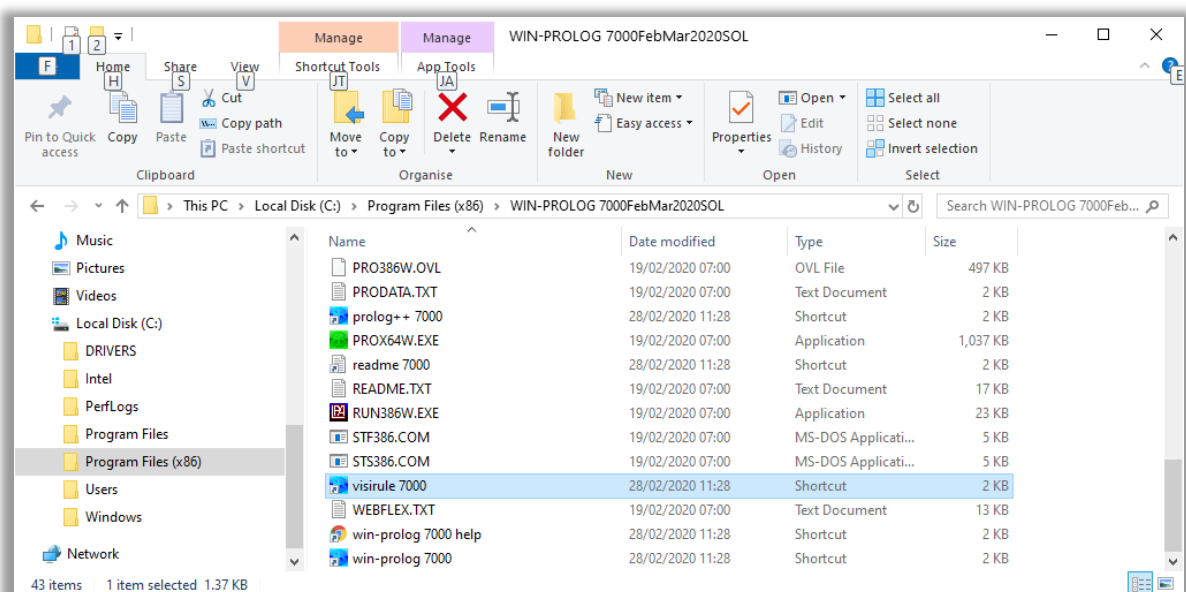
If only 1 or 2 items are there, you will need to go back and reinstall and make sure you select all 3 components.

Or search for VisiRule:

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Or navigate your way to the folder where you installed the LPA software:



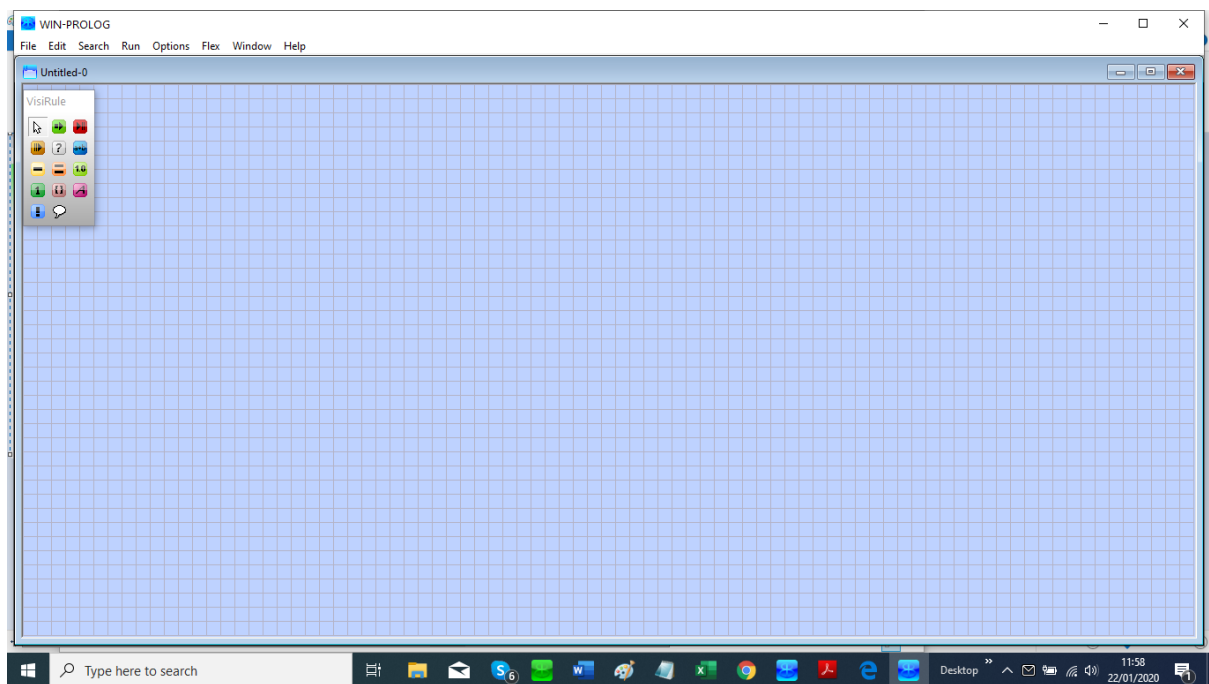
And double click on the VisiRule 7000 short cut.

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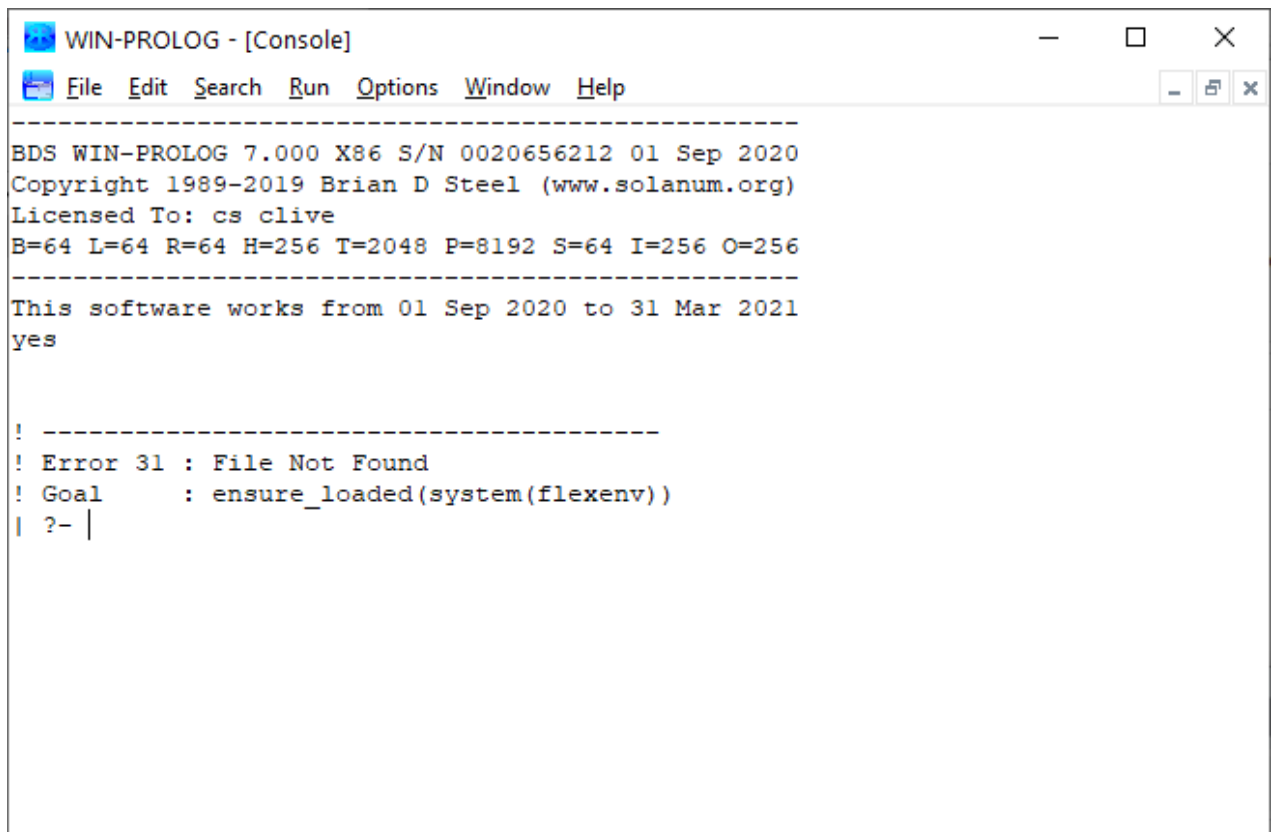
Either way you should then see:



Followed by:



If you don't and see something like this:

A screenshot of a Windows console window titled "WIN-PROLOG - [Console]". The window has a menu bar with "File", "Edit", "Search", "Run", "Options", "Window", and "Help". The console output shows the following text:

```
-----  
BDS WIN-PROLOG 7.000 X86 S/N 0020656212 01 Sep 2020  
Copyright 1989-2019 Brian D Steel (www.solanum.org)  
Licensed To: cs clive  
B=64 L=64 R=64 H=256 T=2048 P=8192 S=64 I=256 O=256  
-----  
This software works from 01 Sep 2020 to 31 Mar 2021  
yes  
  
! -----  
! Error 31 : File Not Found  
! Goal      : ensure_loaded(system(flexenv))  
! ?- |
```

Then that means you did NOT select Flex as part of the setup installation process.

You will need to go back and do so.

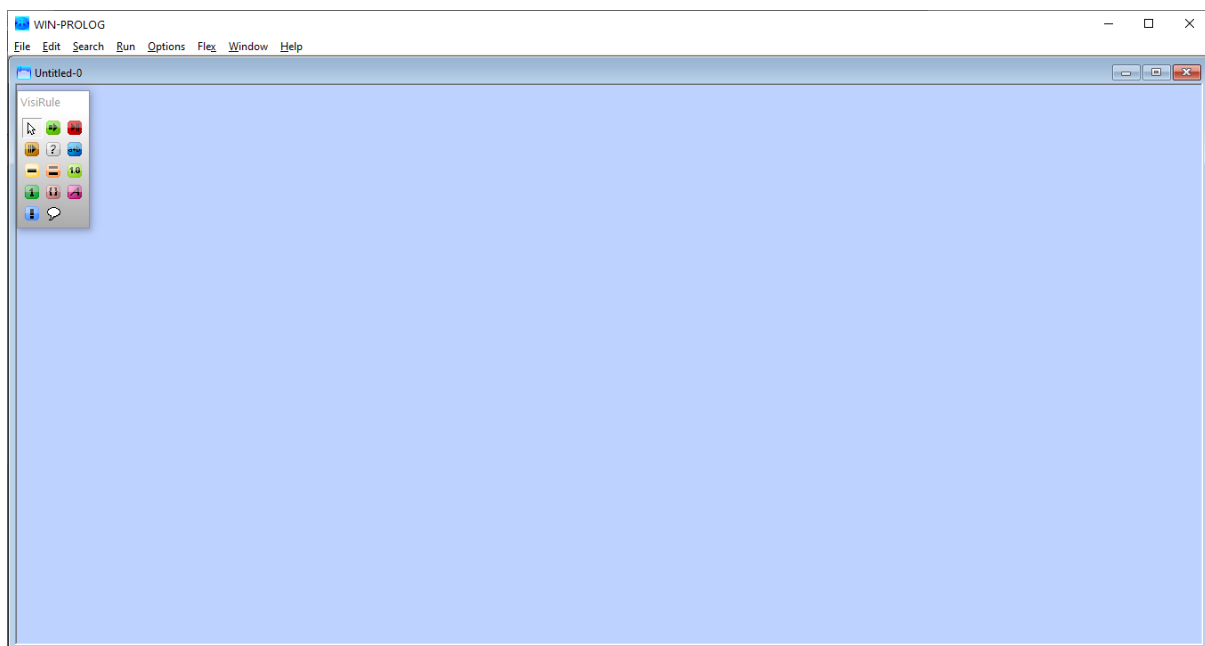
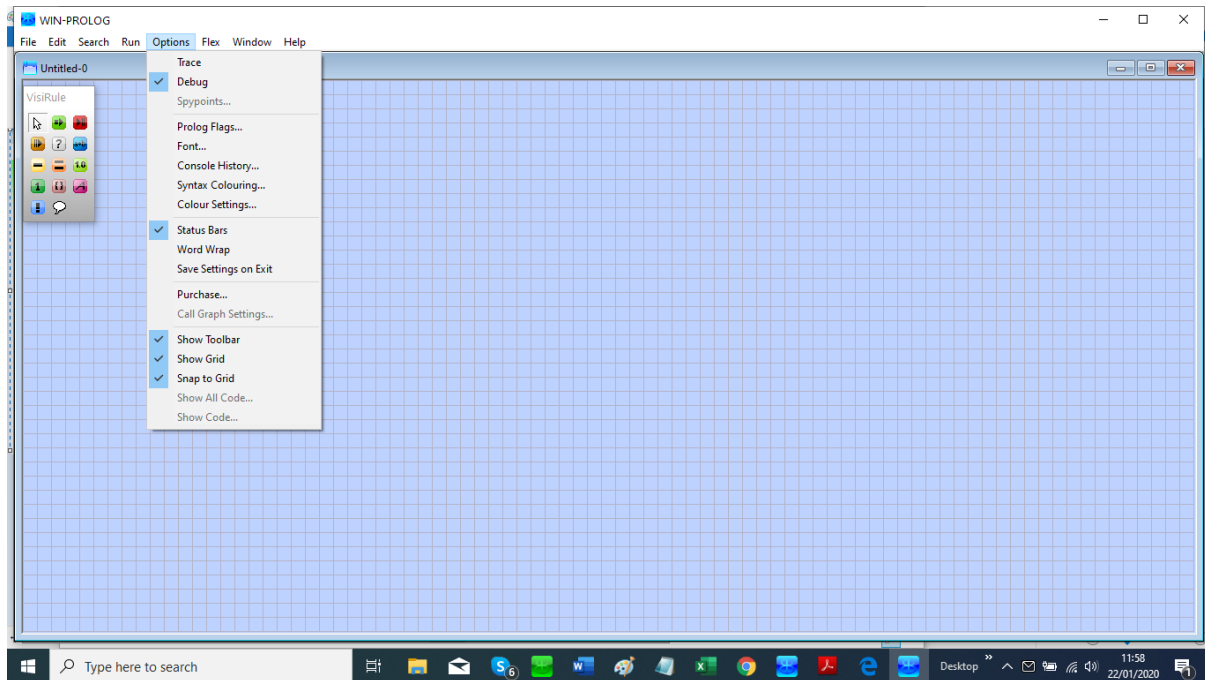
This means you have to go back and run setup.exe again

You can simply overwrite the installed directory (just remember to close the Prolog first)

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Let's turn off the grid:

Go to the Options menu and deselect the Show Grid menu item



Important Pragmatics

A VisiRule chart is composed of an arbitrary number of connected boxes or nodes of different types.

There are various steps in drawing a chart:

- creating boxes
- linking boxes
- editing the text of boxes
- aligning and resizing boxes

Finally, you have code generation and the execution thereof to run the chart.

Creating Boxes and Links

The order in which you create the boxes and links is not significant. If you know the structure of the chart, you may want to draw all the boxes first, and then make the connections. In fact, the intelligent linking tool encourages this. Alternatively, you may prefer to link items as you go.

Box Types

You may even find it quicker to create all the boxes in the same mode, and then set them to the correct box type using the Right-Click option. Or you can switch to the correct box type as you are about to create a new box.

Editing Boxes

Boxes do come with a certain amount of default pre-filled text . for instance, questions always come with a numerically generated unique question name, a prompt text called 'prompt', and an explanation text called 'explanation'. You can edit these at whatever stage you like. You may want to get the structure of the chart established before working on the actual wording. You can change the pre-defined prompts using the INI file.

Relative Positioning of Boxes

Whilst the order in which you create boxes is not significant, their physical location is as the VisiRule code generator uses a left to right depth-first search mechanism when collecting menu items to populate menus and also when working out which expression to test in which order. So, if you wanted to implement a chart with multiple solutions and use Prolog's natural backtracking to check for alternate solutions, then the physical layout would influence the order in which the solutions are found.

Box Sizes

You can drag any box to whatever size you like. You can use this to show only some of the text of say a prompt or explanation and keep boxes to the same size. One way of resizing all the boxes to the same size, is to select them all, and then without releasing the mouse, drag them to the minimum size and back out to the desired size.

Box Fields

You can suppress box fields. So, for instance, if you do not want to display question names (they are only of internal usage), you can make the first field of any, some or all questions hidden and therefore no longer visible.

Box Alignment

You may choose to leave final alignment of boxes until your chart is established. Prior to that, it does make sense to try and get boxes to line up as this keep the links vertical and/or horizontal. You are STRONGLY advised to use the right and left arrow keys to nudge selected boxes into line.

Undoing Mistakes

By accident, you may draw a box when you mean to drag a link . if you want remove the box, hit <ESC> to exit the editor and then <CNTRL><Z> to Undo the drawing. VisiRule supports multiple levels of Undo thru <CNTRL><Z>, but if you are in an active edit field, then you must exit first.

Editing Charts Offline

VisiRule charts are saved on disc as text files. This means that they can be edited offline using standard word processors or text editors. So, you can easily make global changes across, say, for instance, all explanations or question prompts.

VisiRule Toolbar



The floating VisiRule toolbar palette contains all the tools that are used to build a VisiRule chart. It can be shown or hidden using the "Options/Show Toolbar" menu item and can be moved to any position you desire. The VisiRule toolbar is a global resource, shared by all the VisiRule Worksheet windows. You can have many files open at the same time.

In Pointer Mode (when the arrow is active) the toolbar allows you to select one or more objects for moving around either by dragging or nudging.

In Create Mode (when anything other than the arrow is active), you can create or edit or link an object.

The current box type is shown as a sunken icon.

You can switch between modes by holding down the CTRL key. This way you can be in create mode, and still select objects for dragging.

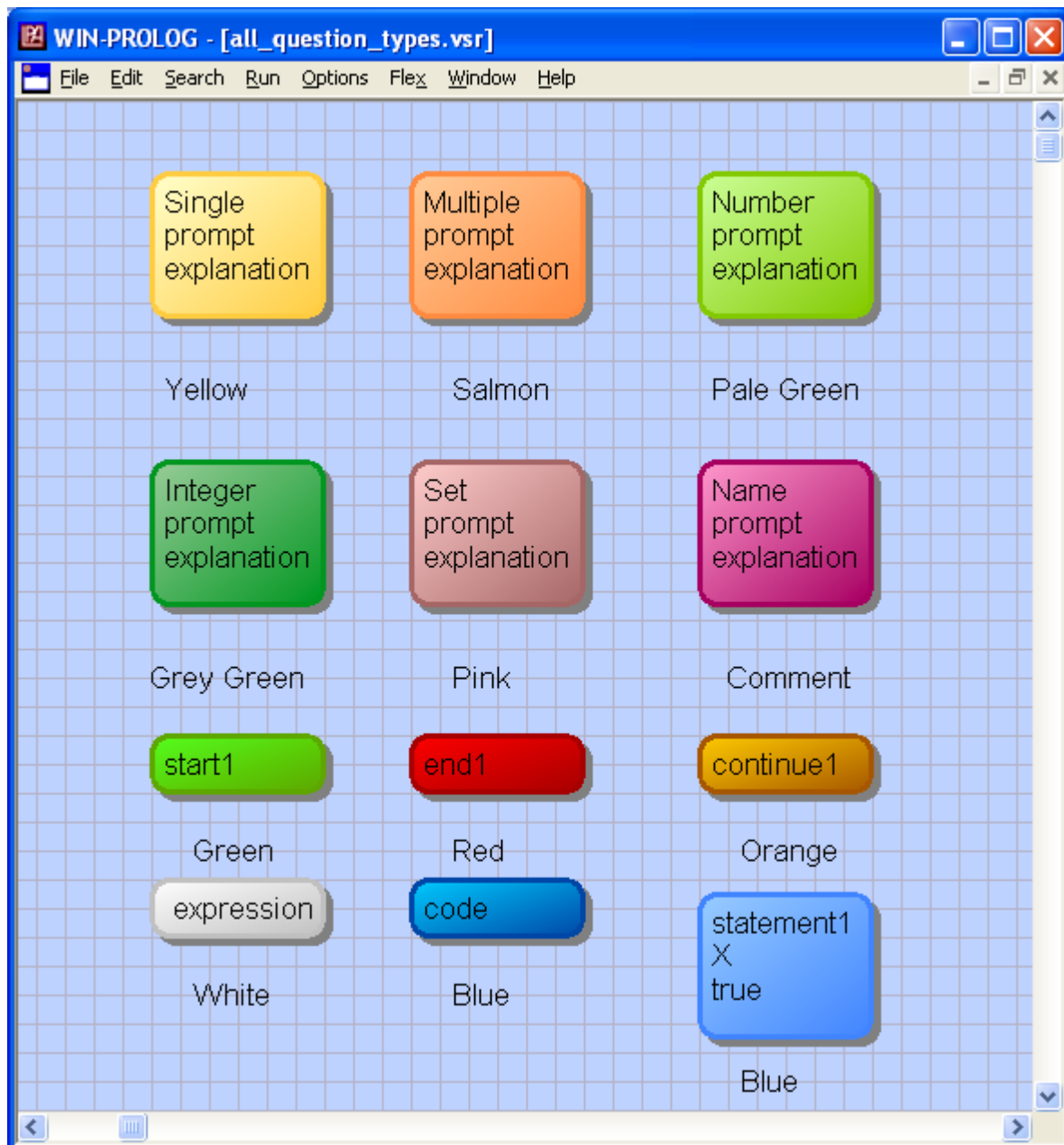
Note: in both modes, you can nudge selected objects using the arrow keys.

If you forget which icon is which, hover the mouse pointer over an icon and a tool tip will pop up to indicate what box type it is.

Within the Worksheet, the mouse works in various ways depending on where and how you click, whether or not you are in Pointer mode, and whether or not an edit field is active. Now let's build and run a simple chart

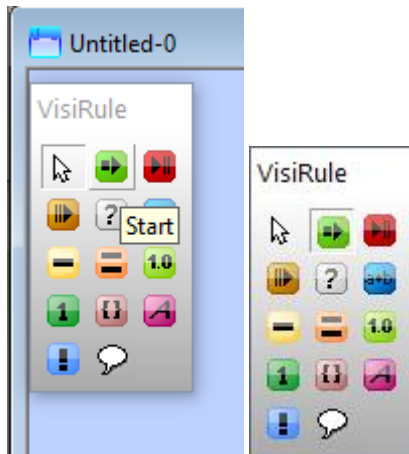
If you lose the floating VisiRule palette, you should be able to get it back from the Option menu.

1. VisiRule Box Types



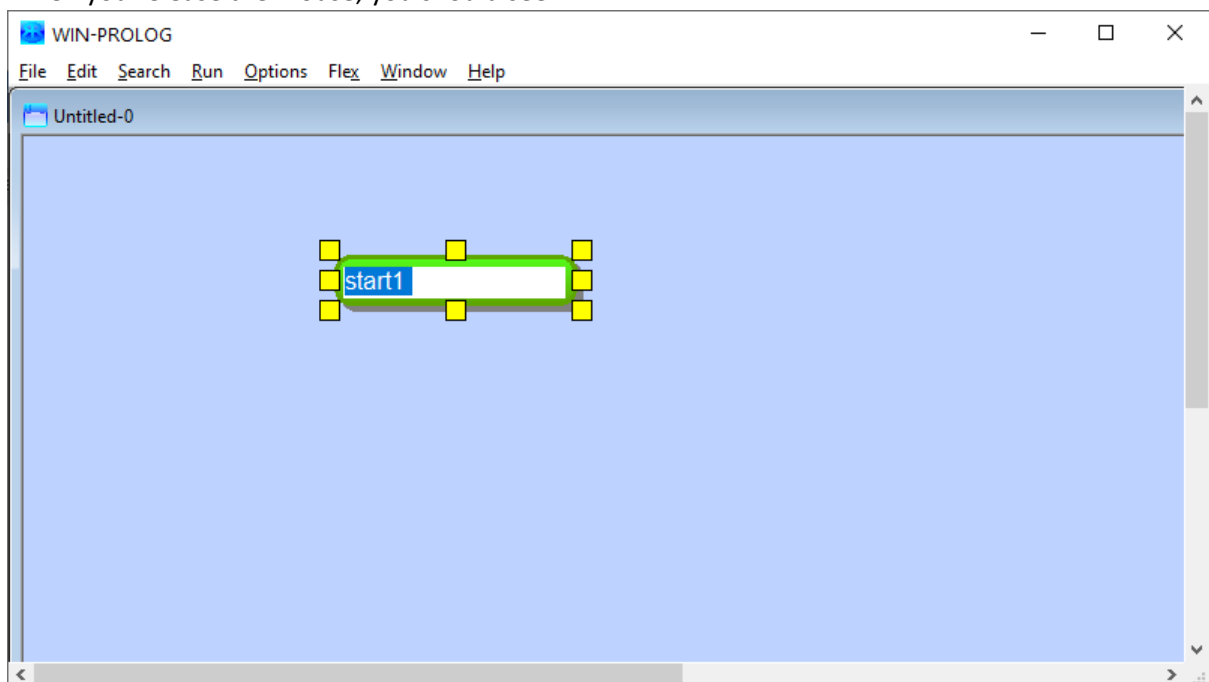
2. Creating a New VisiRule Chart

Every chart starts with a Start node – so select the Green Box (containing the right arrow graphic)



Now click in the VisiRule blue canvas and drag a rectangle

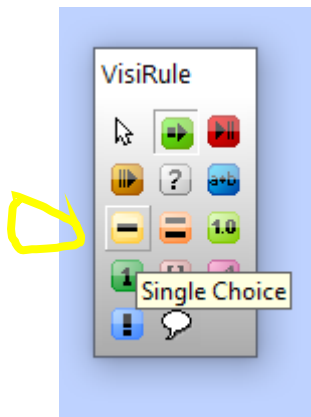
When you release the mouse, you should see:



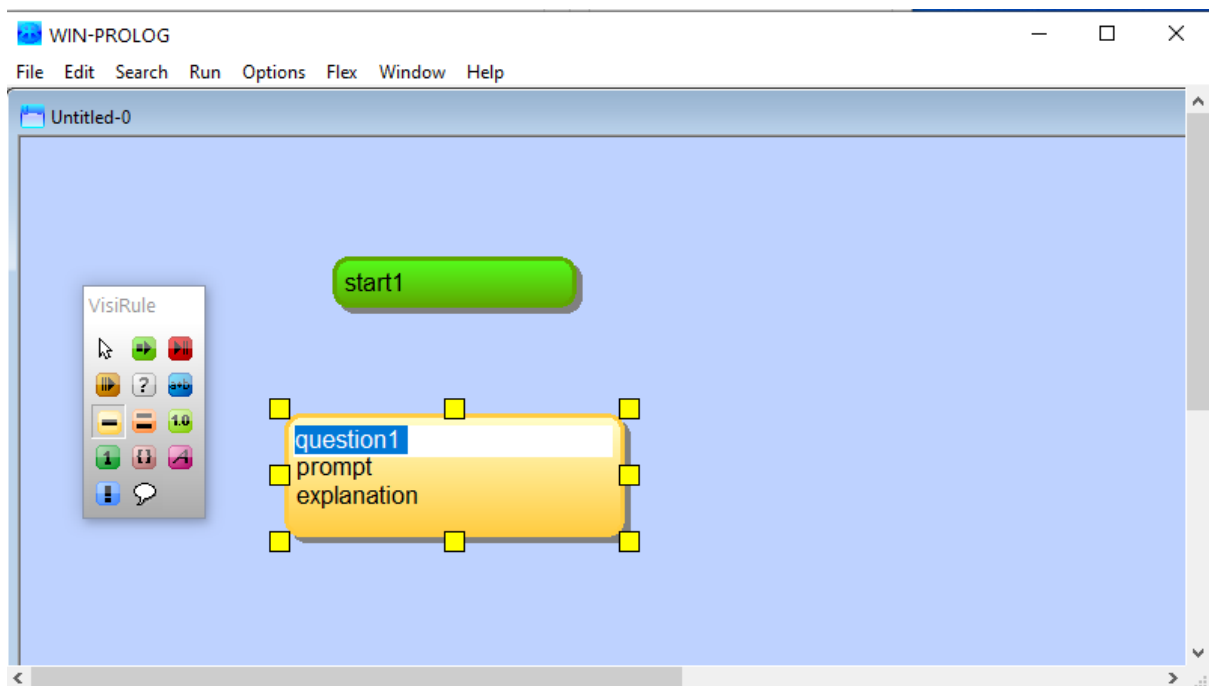
Now let's add a single choice question.

Go back to the floating tool palette and select the light brown box on the 3rd row with a single bar in it:

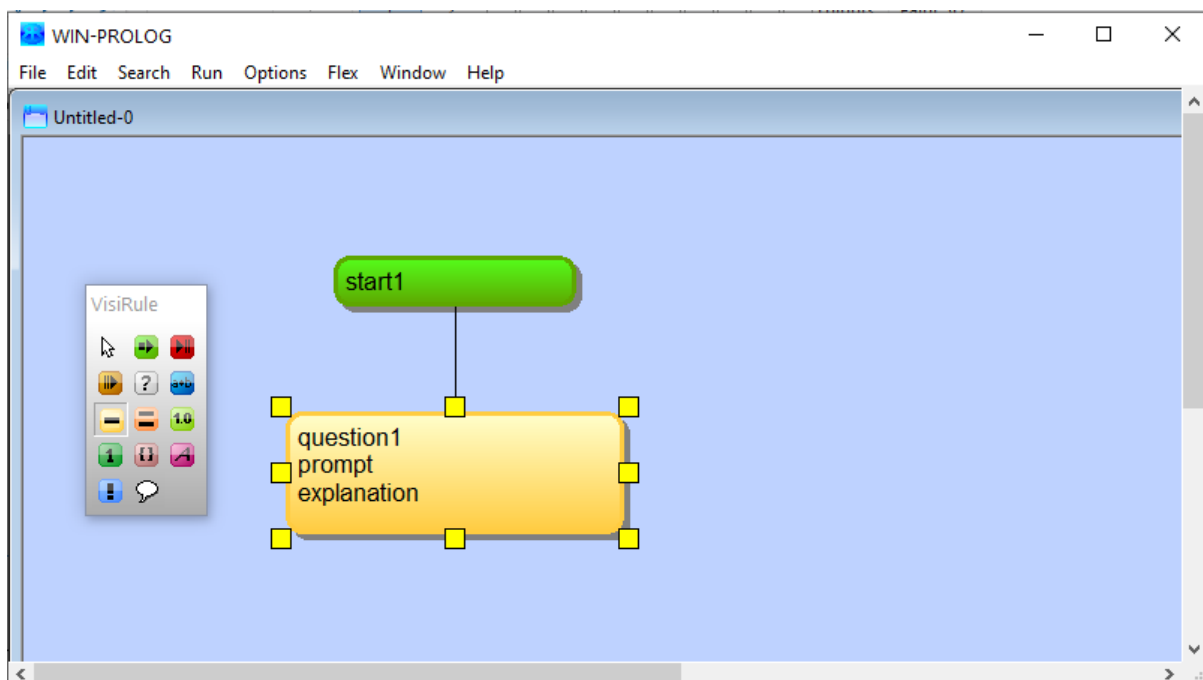
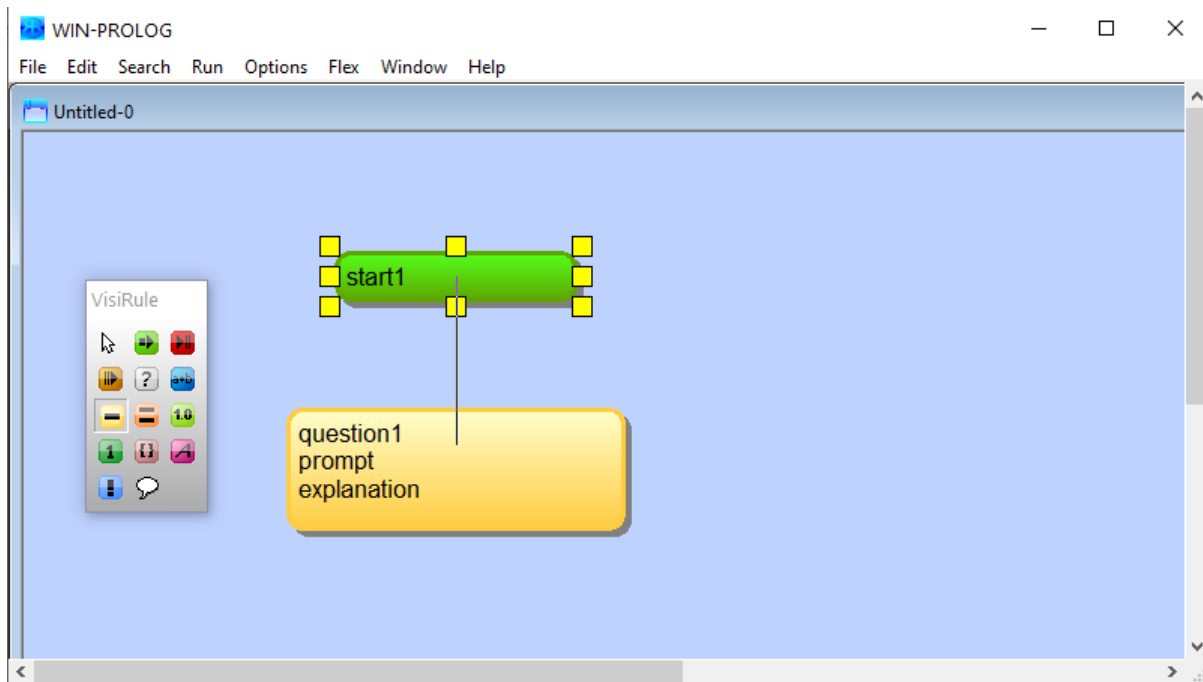
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Click and drag in the canvas



Now we can join these two up simply by clicking back in the start node and drag a line to the question node (and releasing it)



If the link is successful, you will see the Target box get selected – this is indicated by the 8 square yellow boxes.

If you do NOT see this, then you probably have missed the Target and need to delete the attempt and try again.

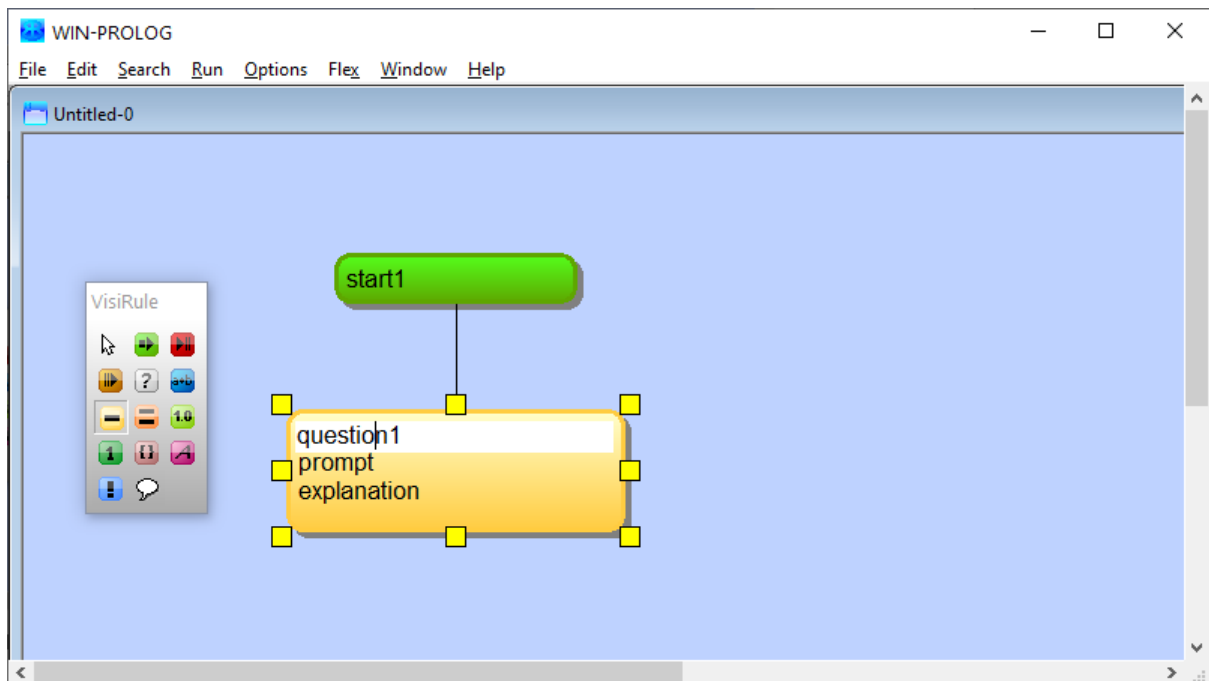
Next, we can edit the contents of the question.

Each question has 3 fields: Name, Prompt and Explanation

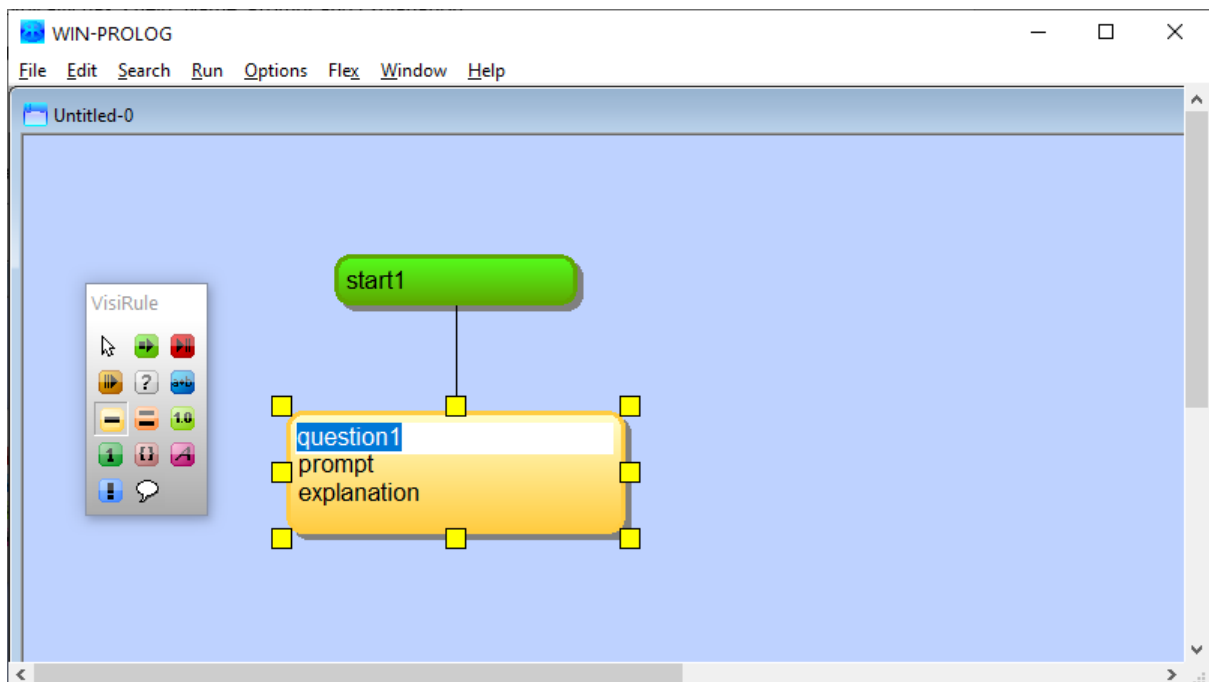
You can tab between them (or use the dedicated VREDITOR which is supplied separately)

Best practice is to name the question with something relevant and give useful prompts. Explanations can be completed later.

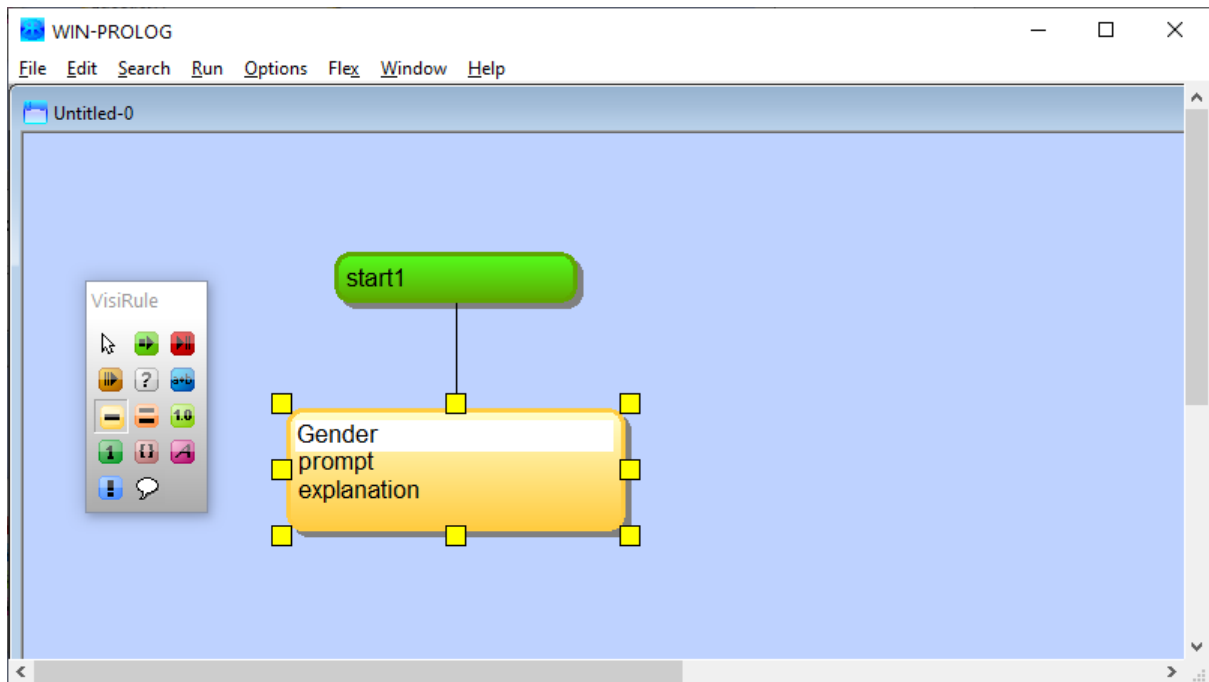
Click on the question and rename it – in this case to Gender.



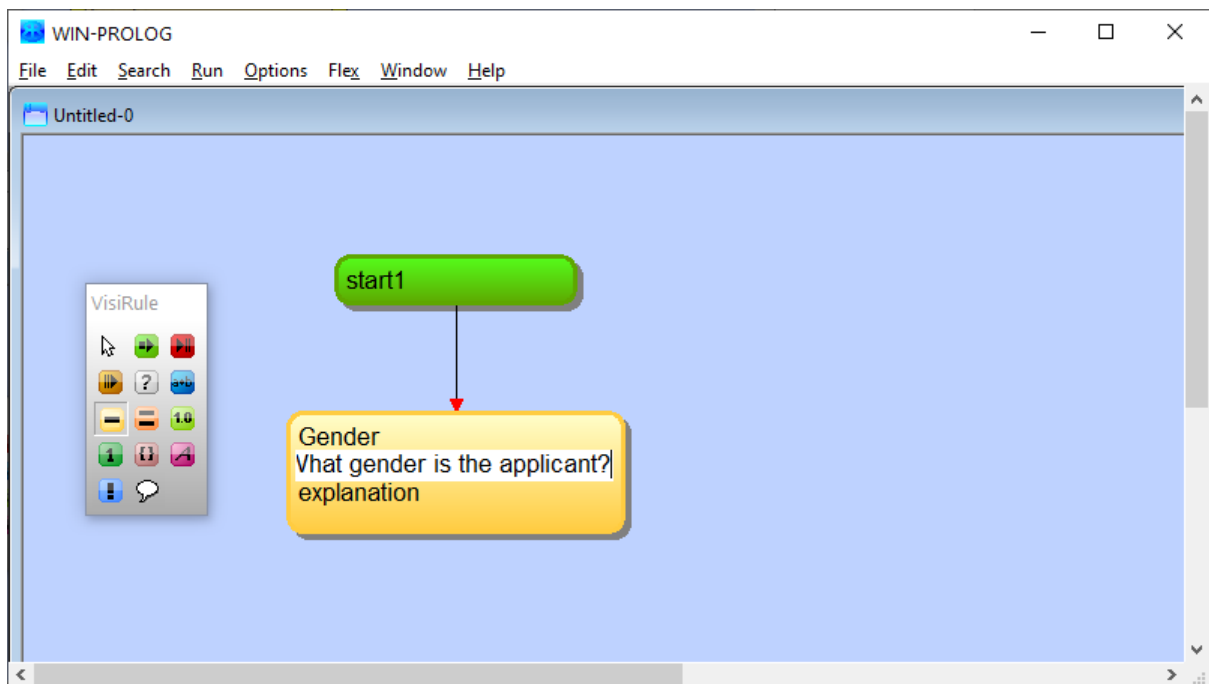
So – we need to double click on the word 'question1' and type Gender



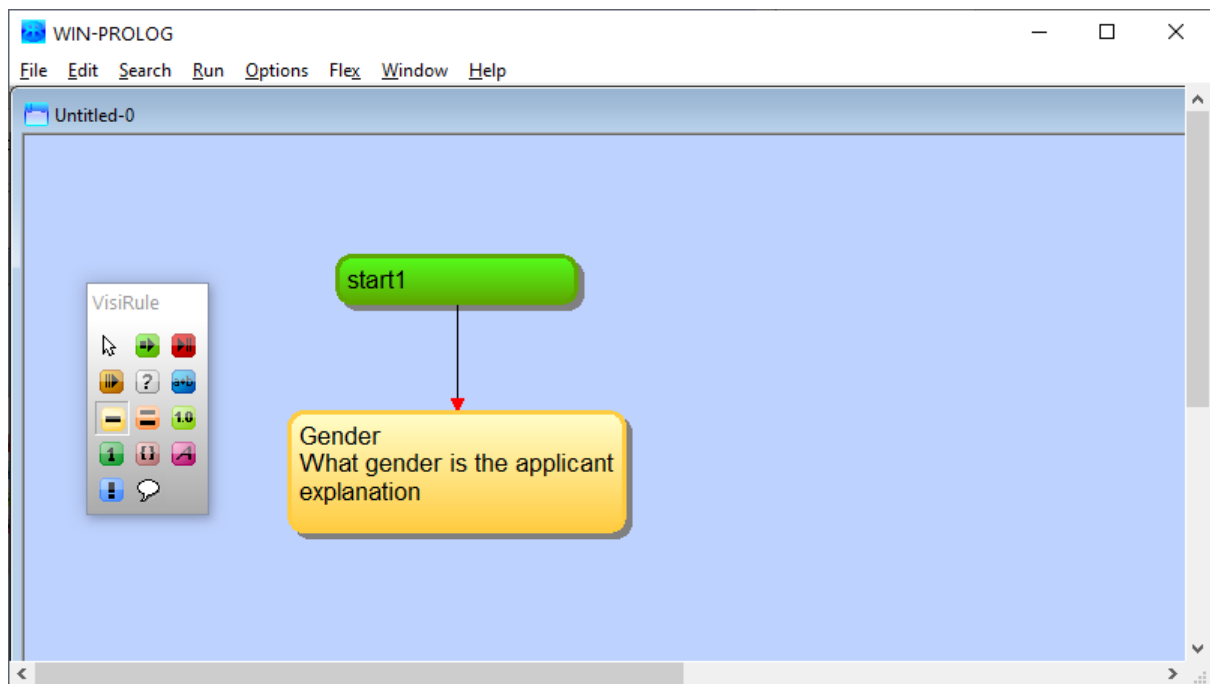
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Now tab or click to the next field – it should auto select the content so you can just type some text



Hit Return to complete – for now we will not bother with an explanation.



Now we are going to define 3 expressions: Male, Female and Neutral.

Expressions are defined using the white box with the ? mark.

VisiRule will inspect all of these and form askable questions based on its understanding of the expected answers.

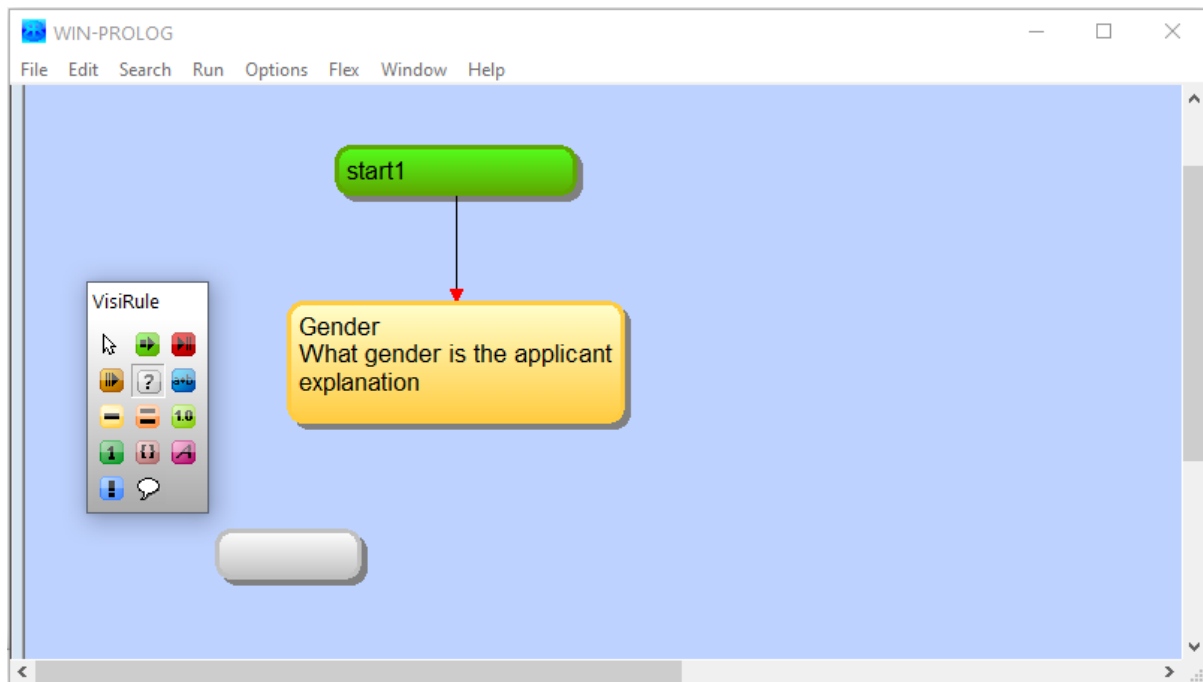
This avoids double updating problems where you have to define (a) what's in a question and (b) what happens with what answers

The order in which we do things is not significant.

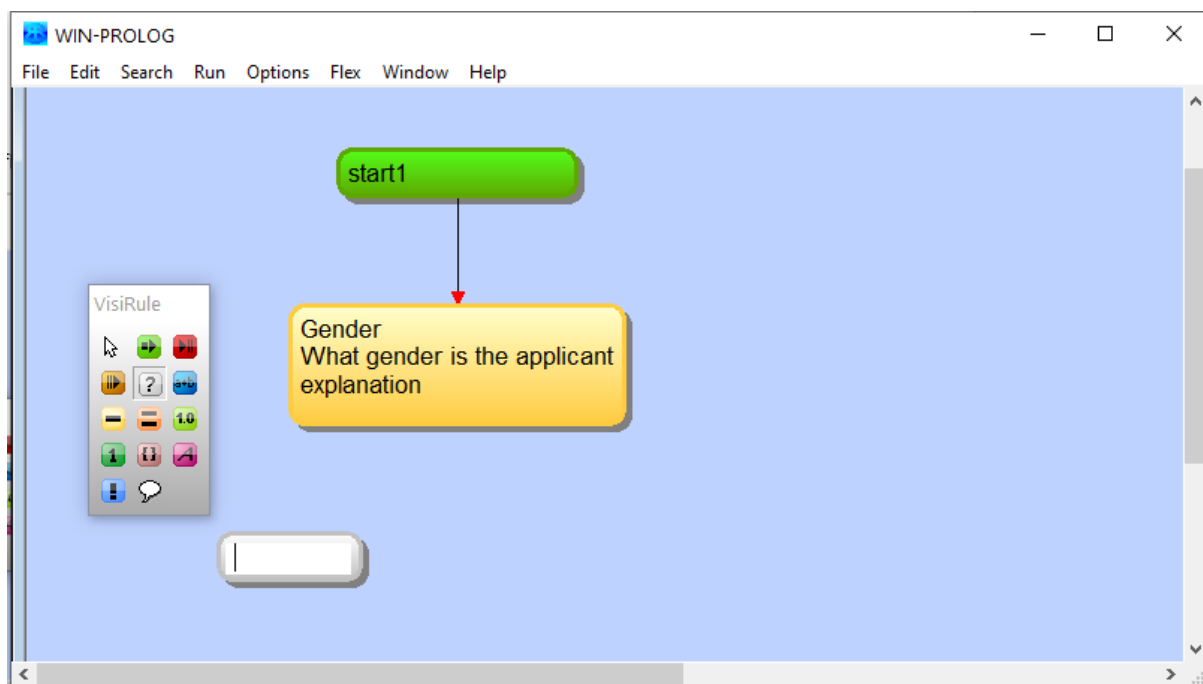
Let's scroll down our window a bit and also select the Expression box on the tool palette

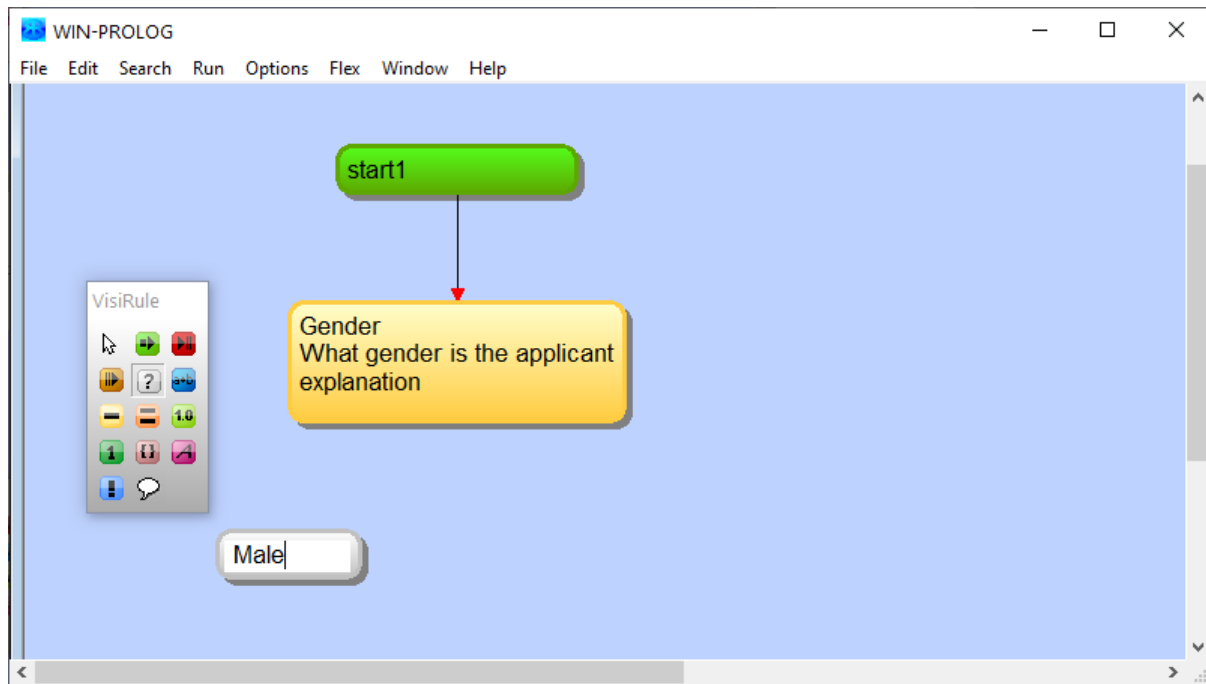


And draw our first expression box

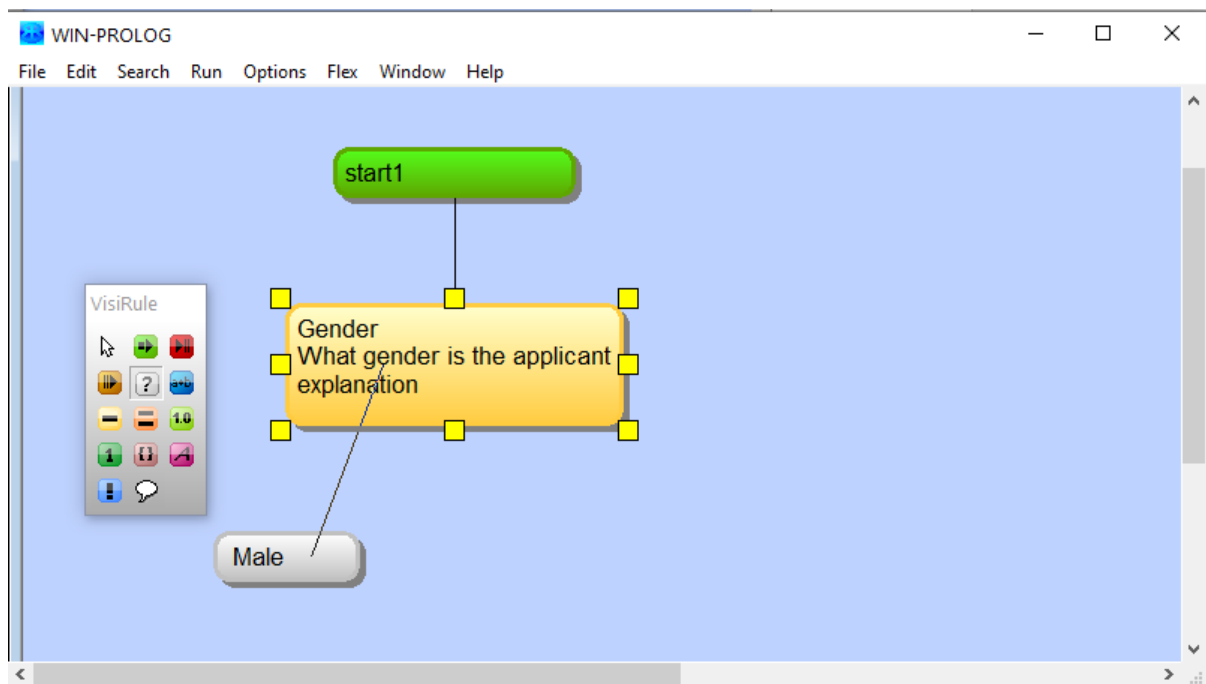


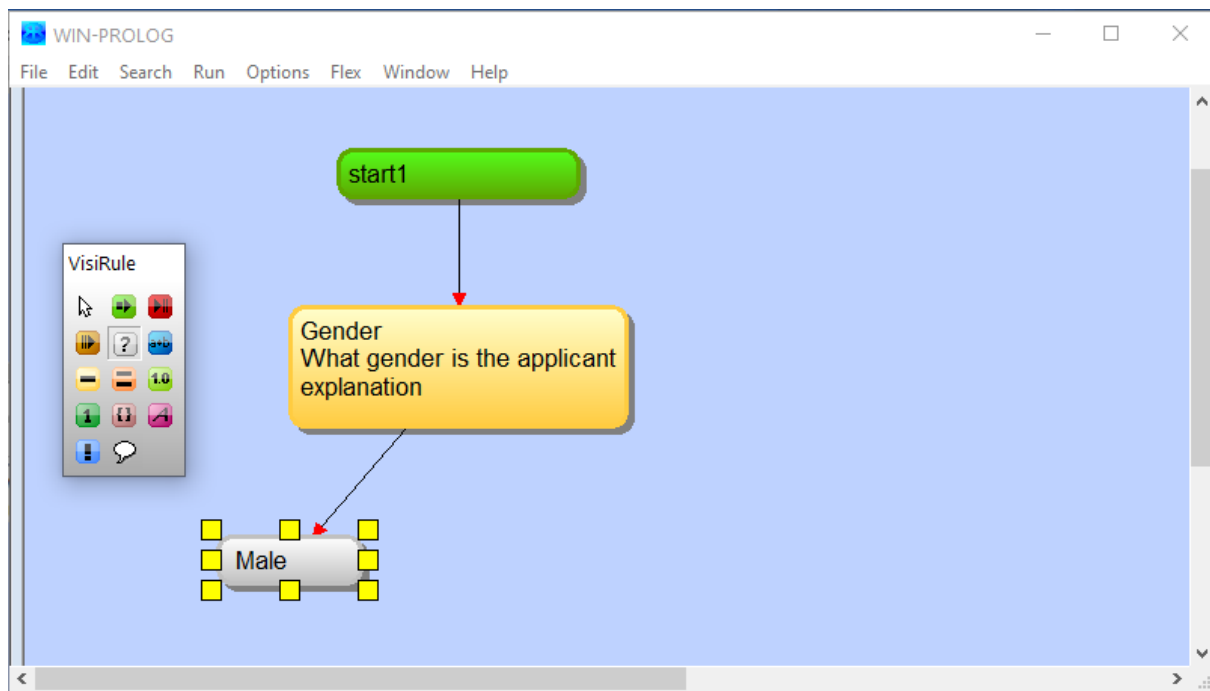
Now click on it and enter the expression





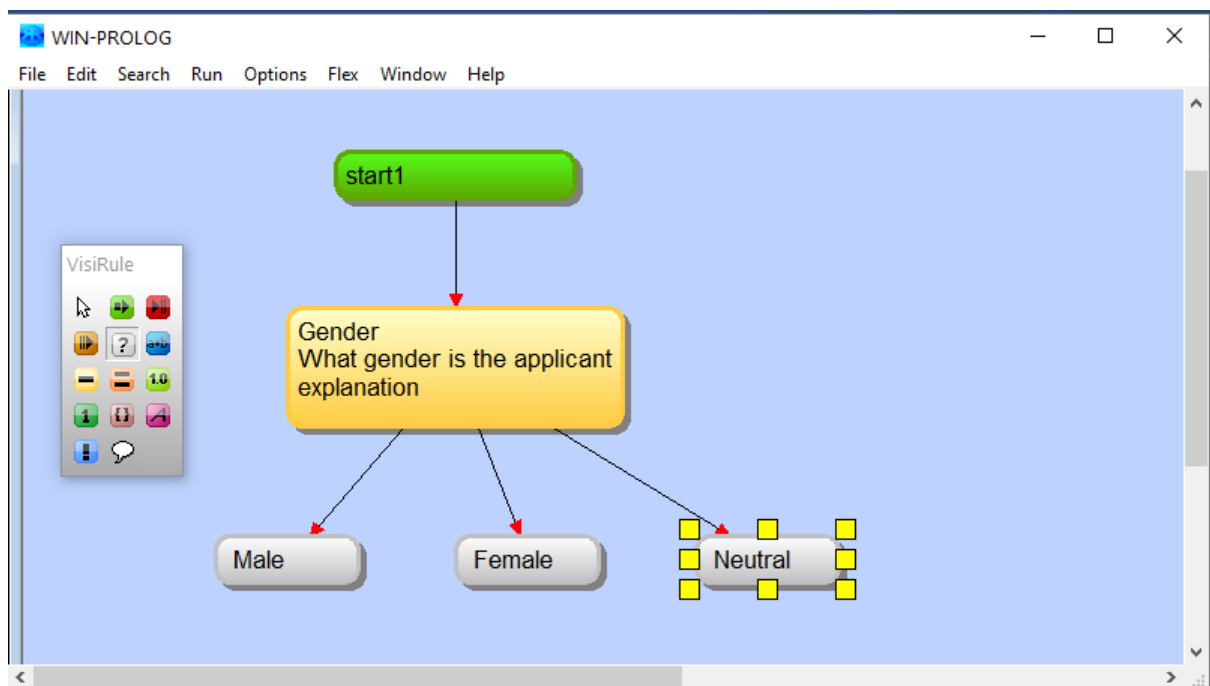
Then click on the question and drag a link to the expression and release





Now let's create the other 2 expressions and link them so

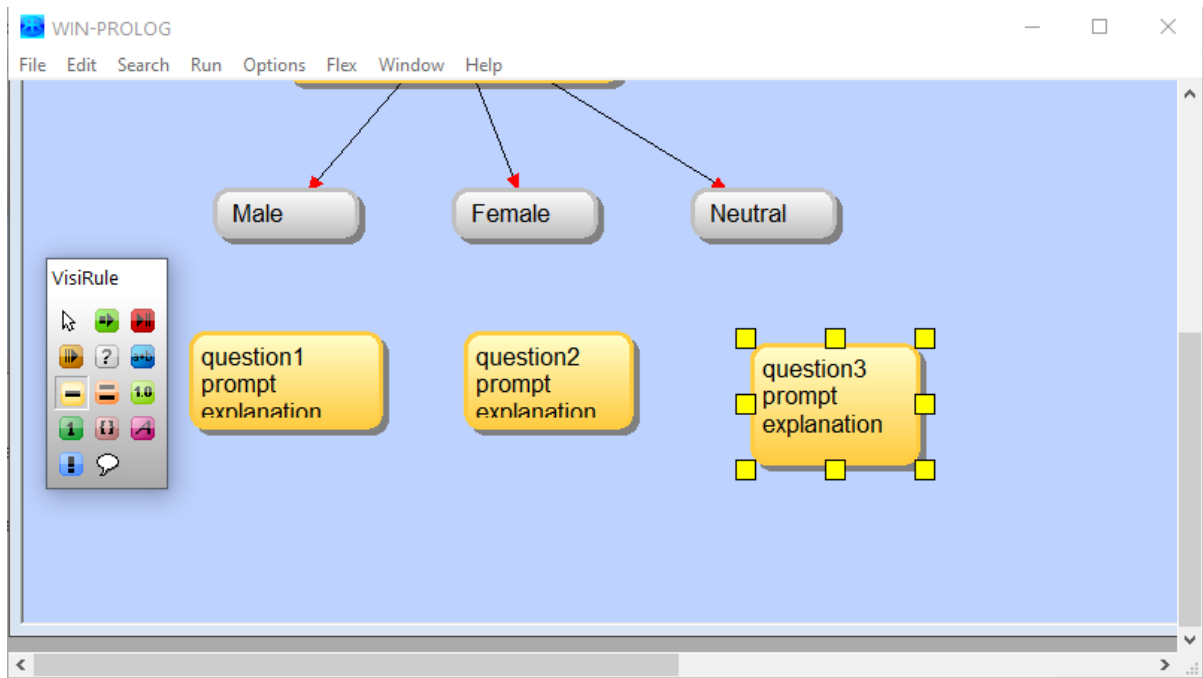
You should end up with something like:



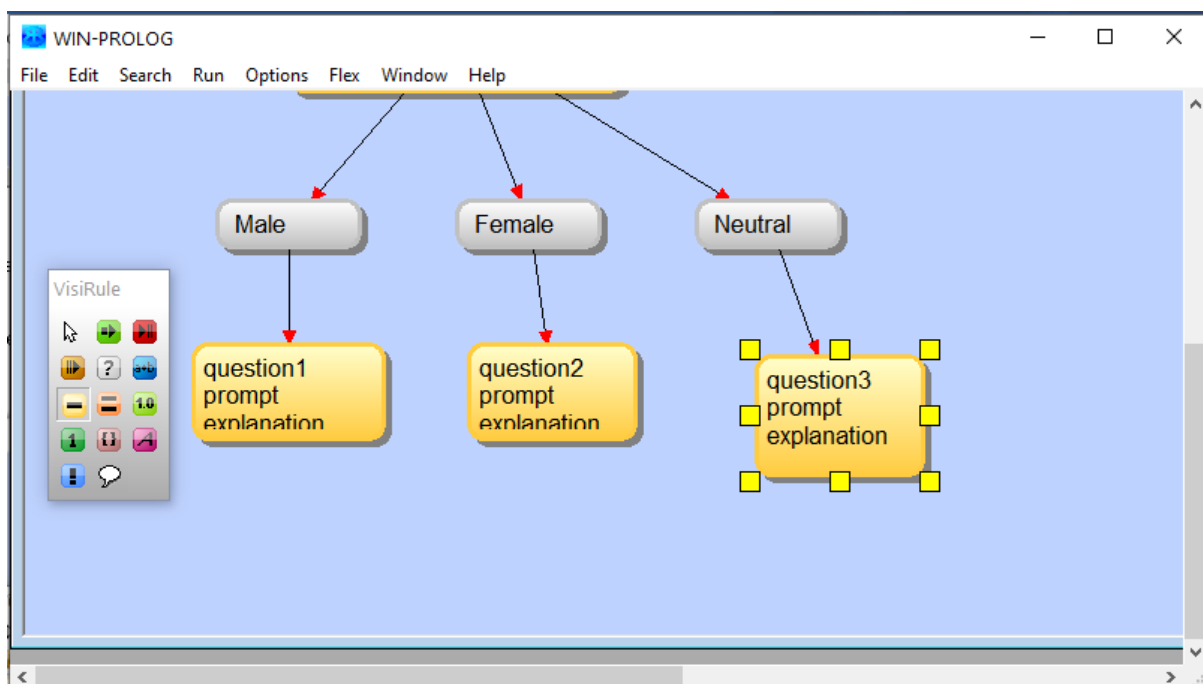
Now we will add some extra questions for each Branch

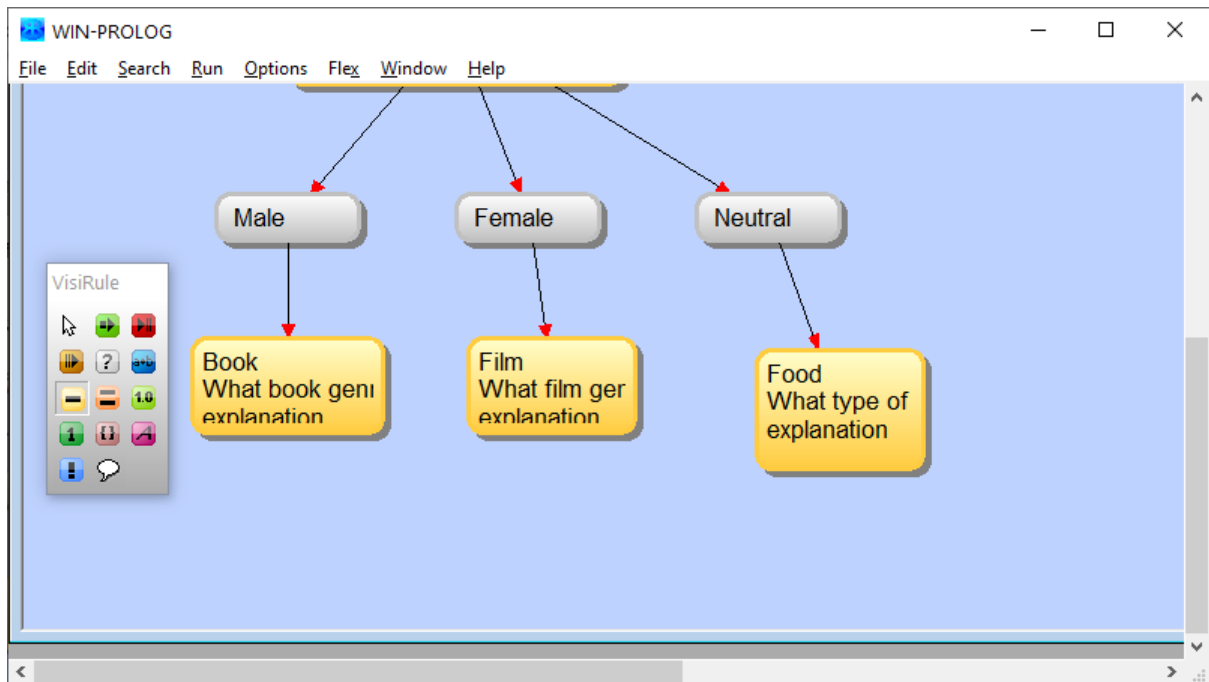
To keep it simple we will ask Male to choose a book genre and Females to choose a Film genre and Neutral to choose a food type. We show some selected screens.

Remember you can create and edit each box as you go along, then link them – or create boxes up-front link them and then edit them.

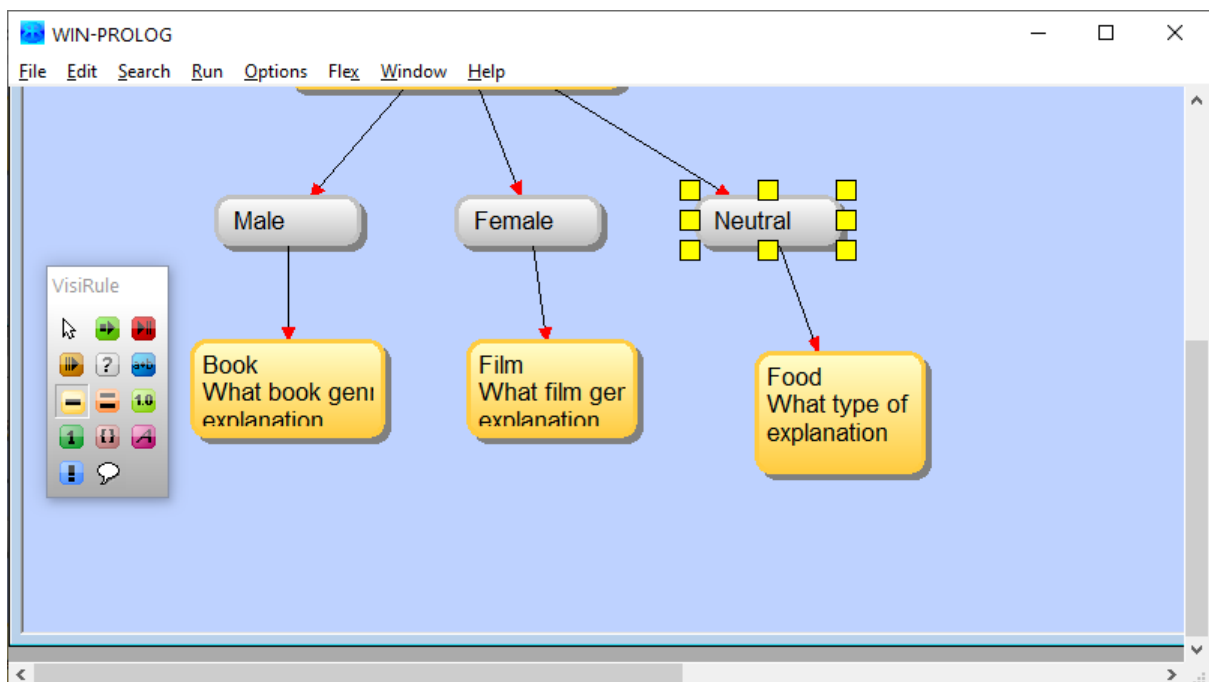


Don't worry about the size of the boxes – you can always resize them and VisiRule provides some options for auto-aligning etc.

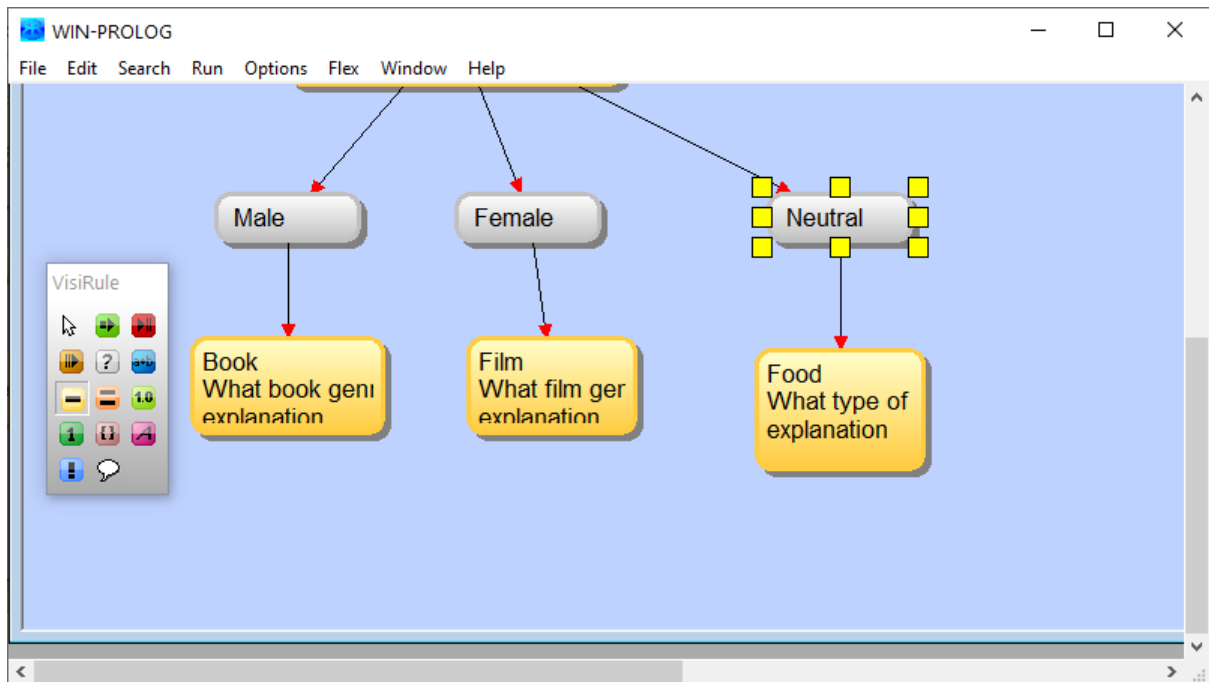




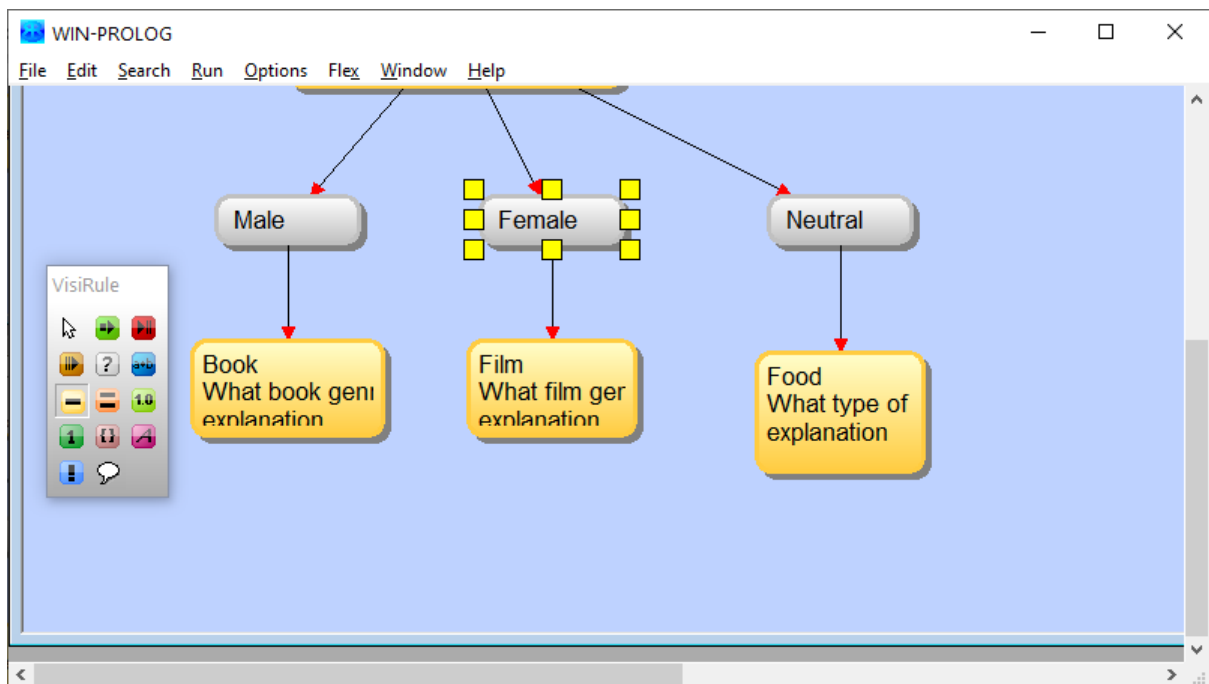
Let's move things slightly – click on Neutral and nudge it to the right using the arrow keys (normally at the bottom right hand of the keyboard)



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And also Female

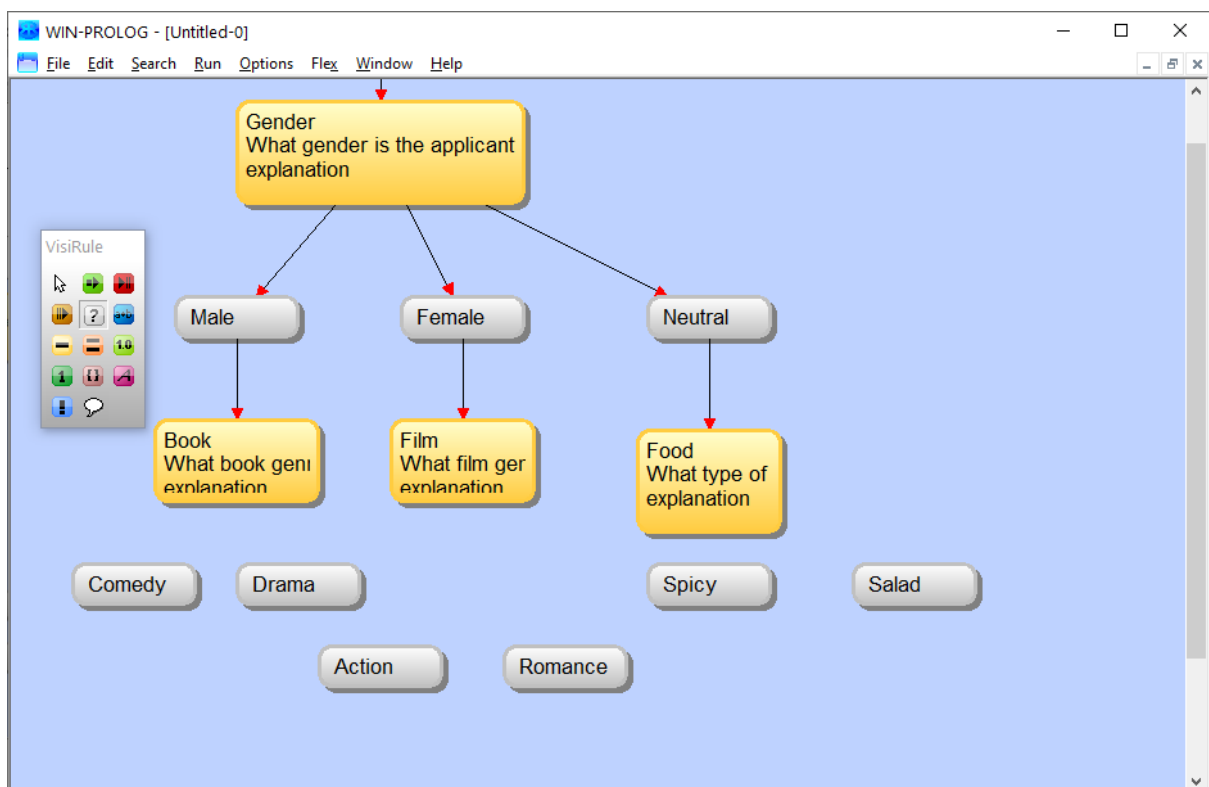
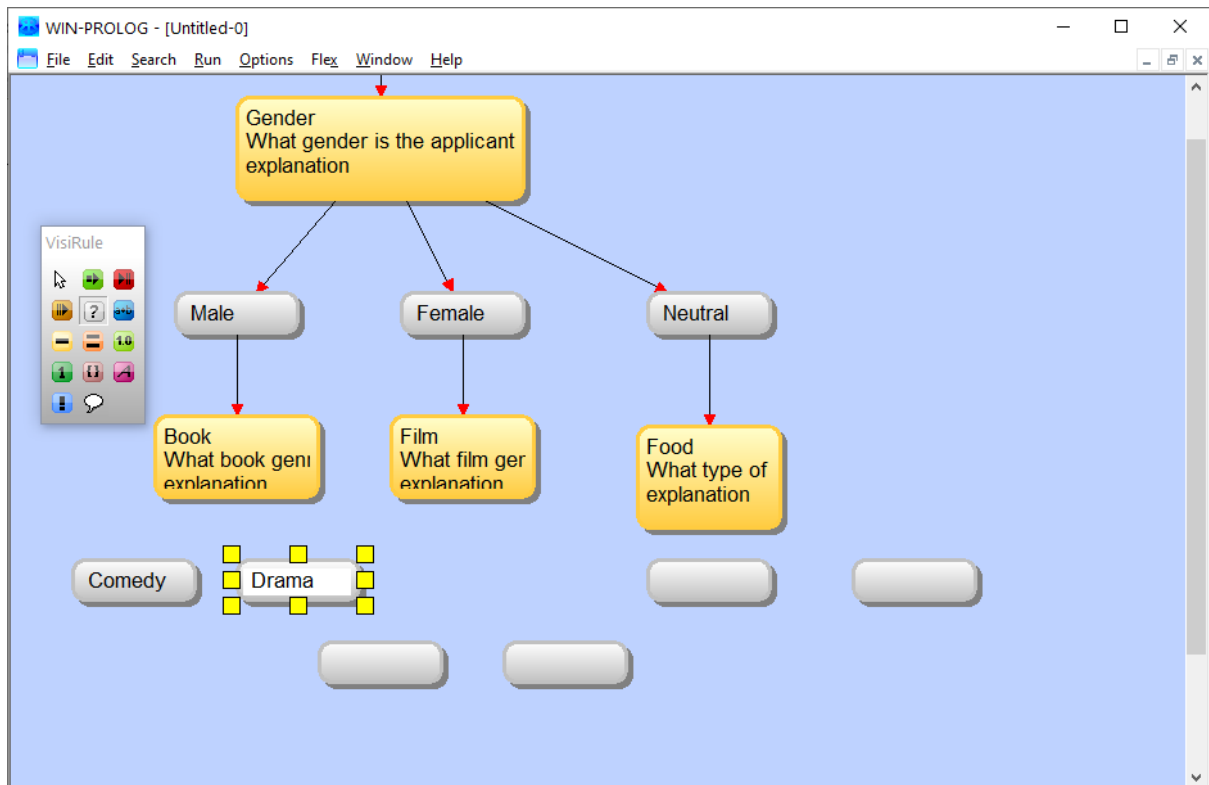


Straight lines look better!

Now let's have some options for the various questions

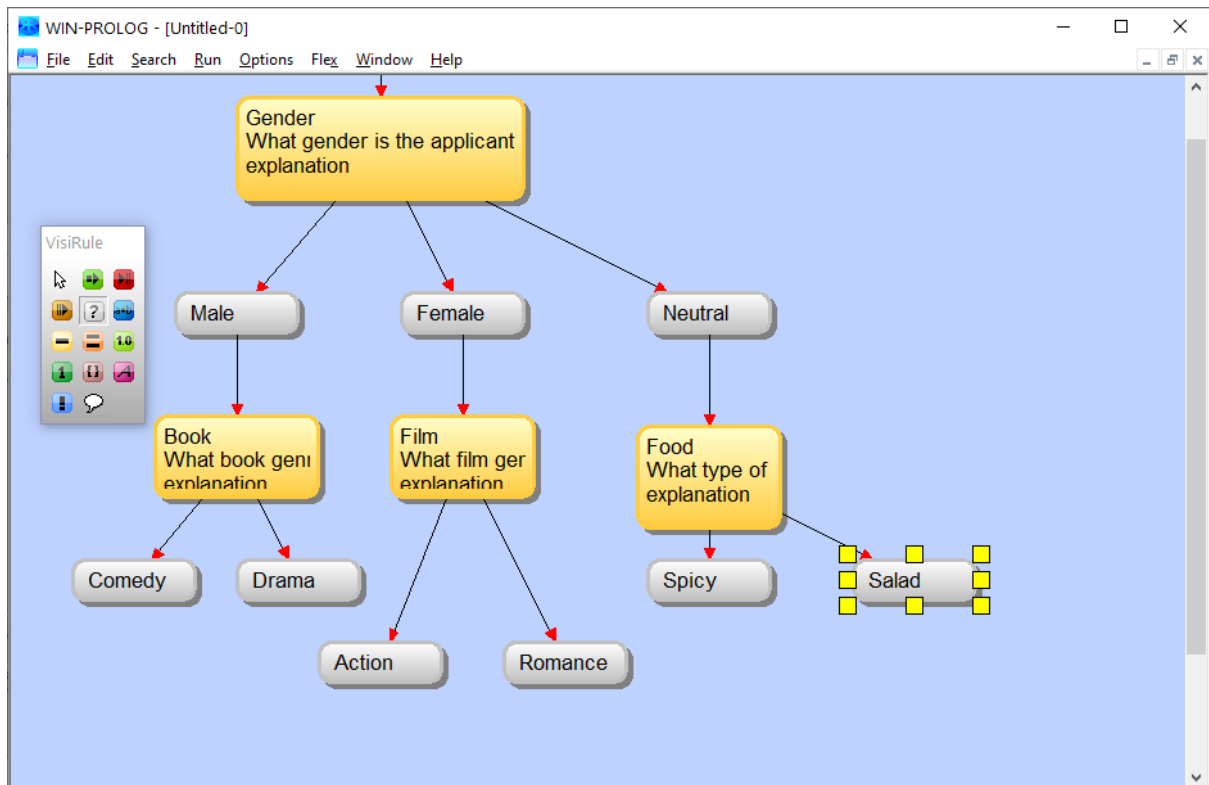
You may want to scroll down a bit – you can also make the window full size

VisiRule Starter Guide



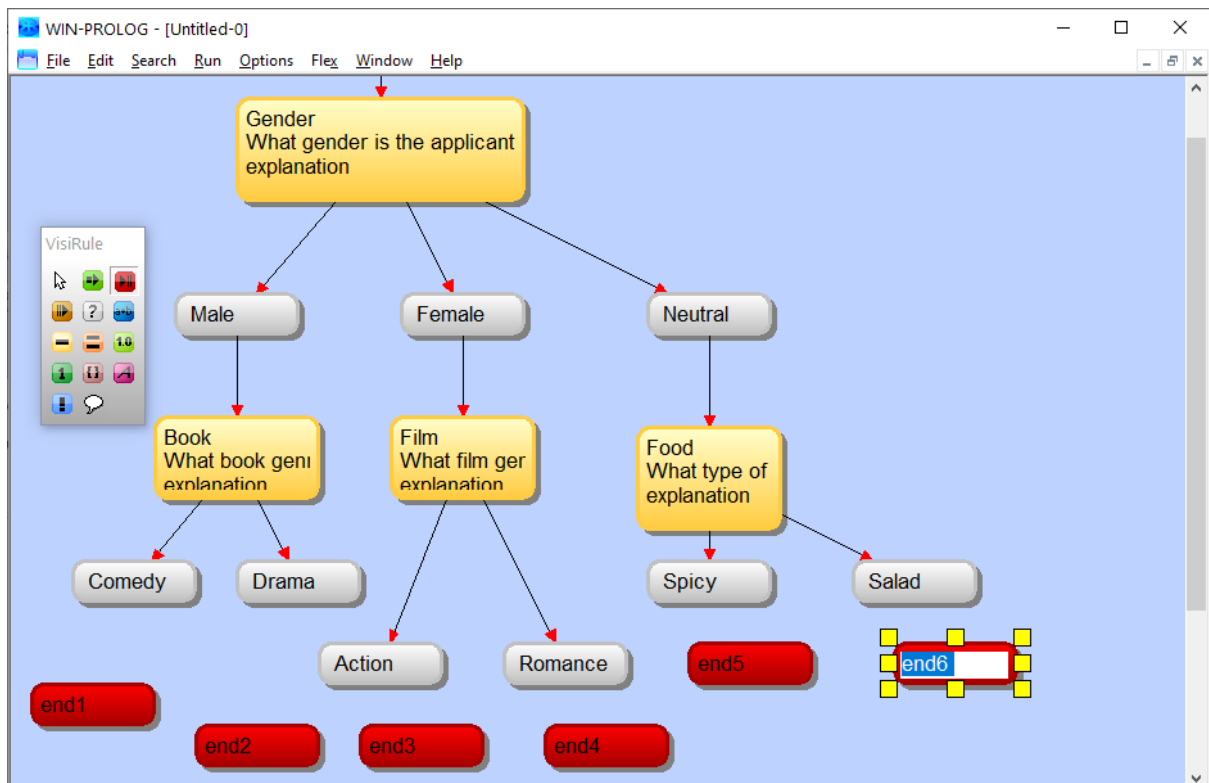
Now let's link them

VisiRule Starter Guide

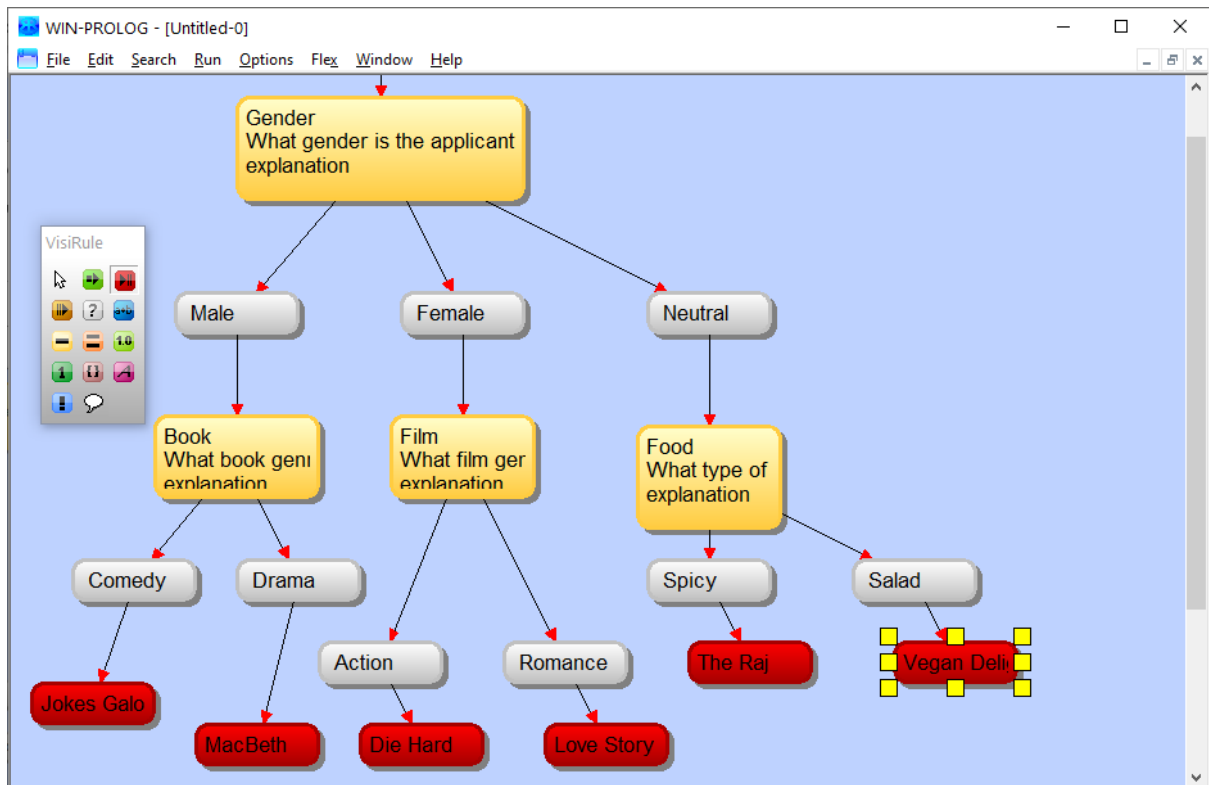


Now let's add some conclusions and that will complete the chart

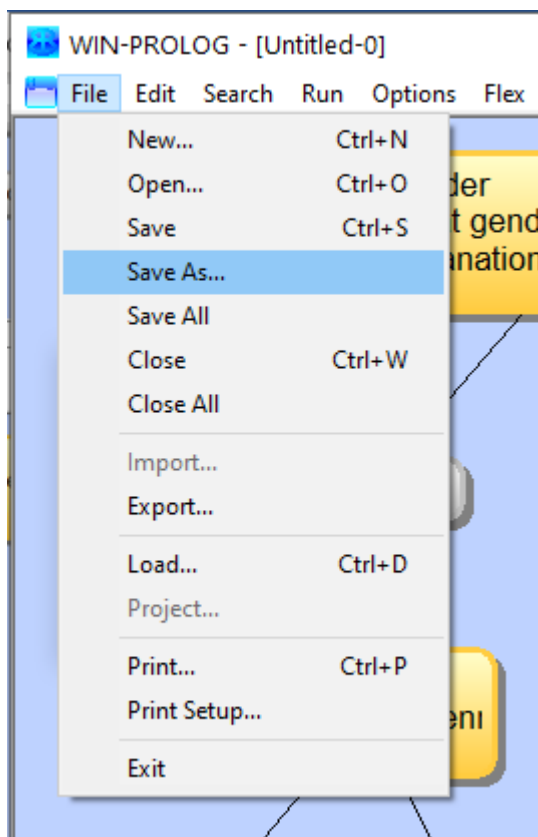
For now, we will have 6 conclusions



VisiRule Starter Guide

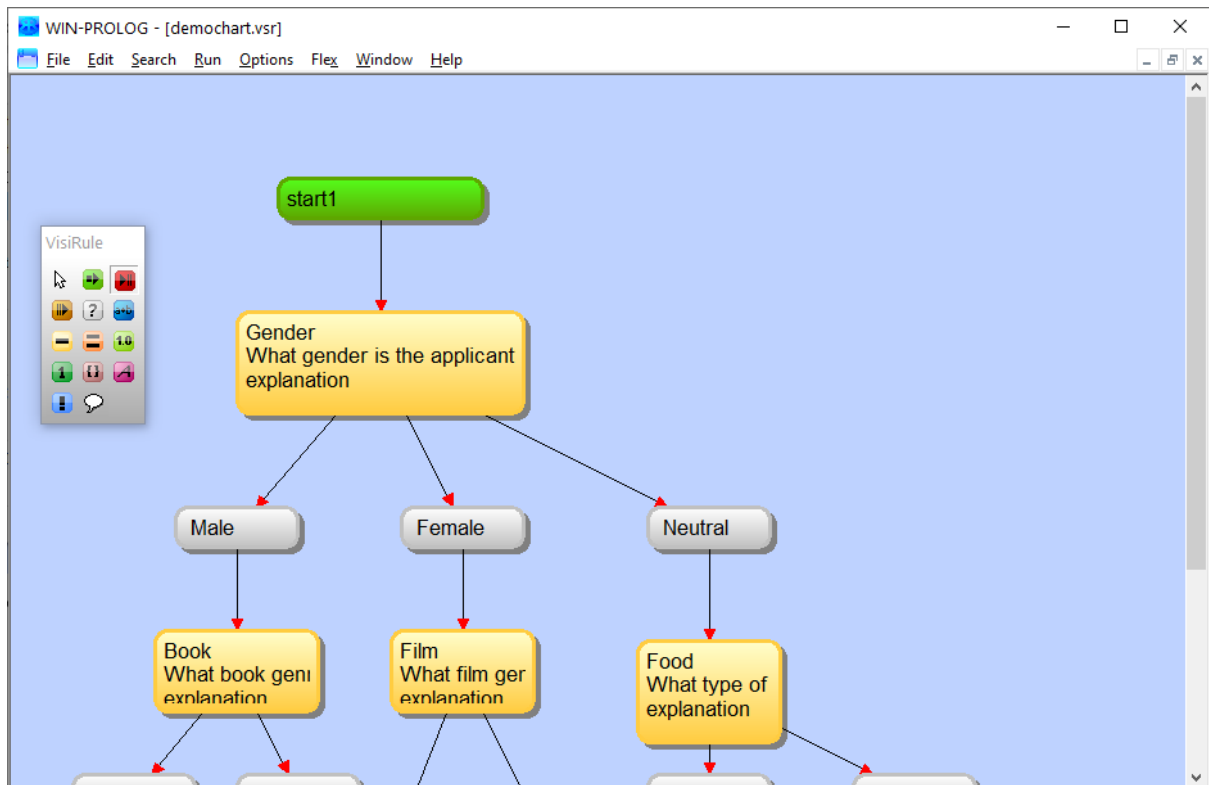


Now let's save this



Give it a suitable name say DemoChart

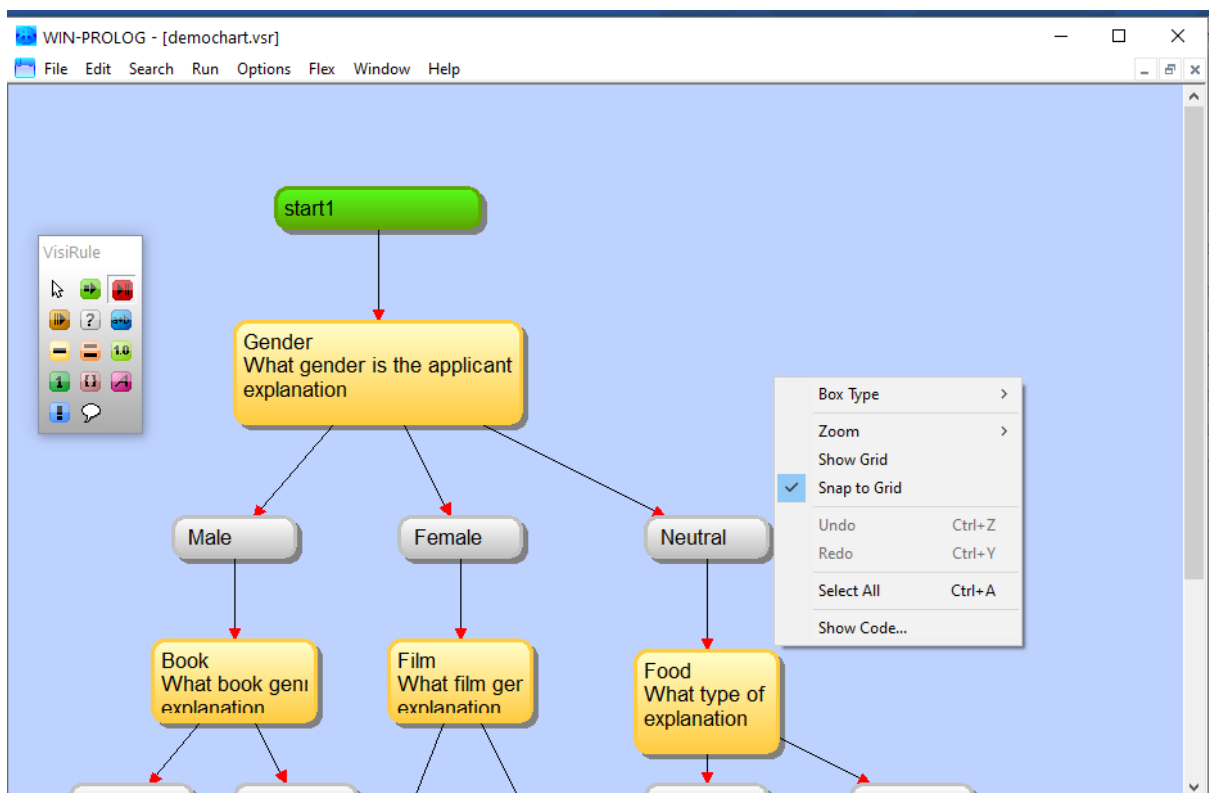
VisiRule Starter Guide



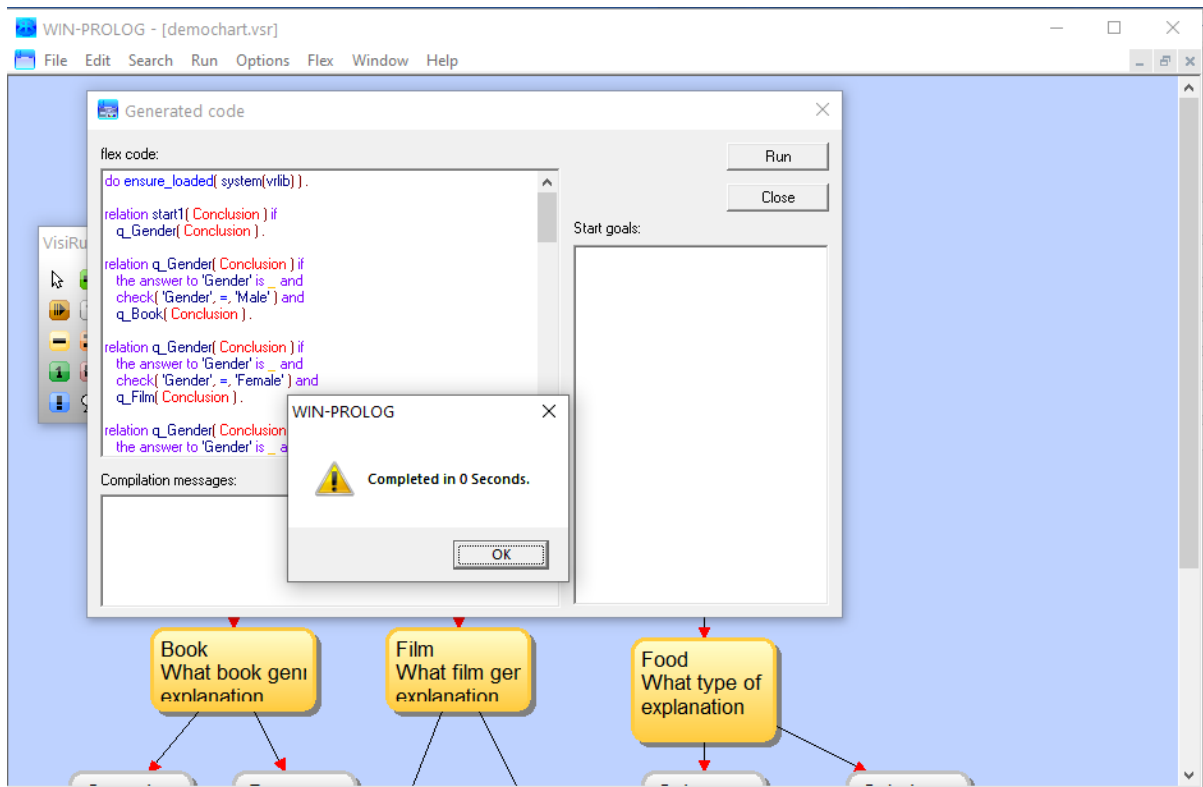
Now let's run the chart

To do this we need to generate the code

Right click on the canvas and select Show Code ...:



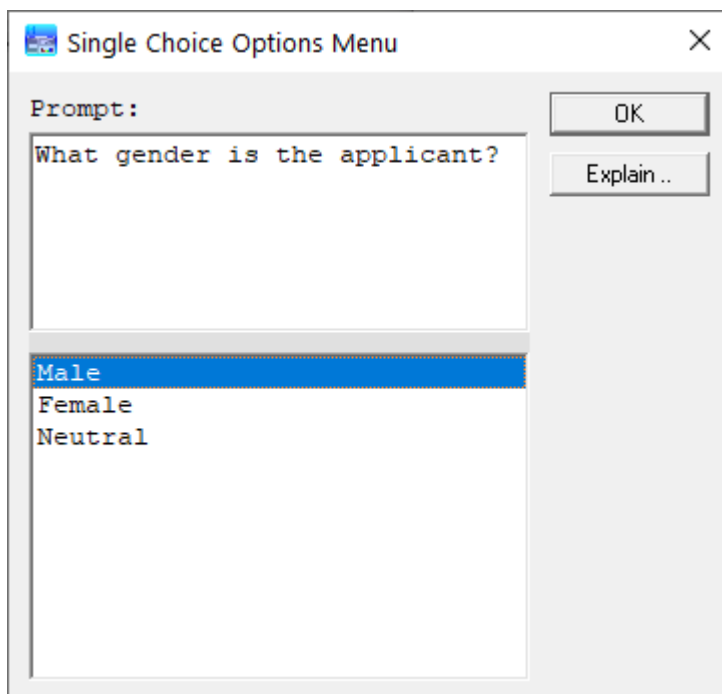
VisiRule Starter Guide



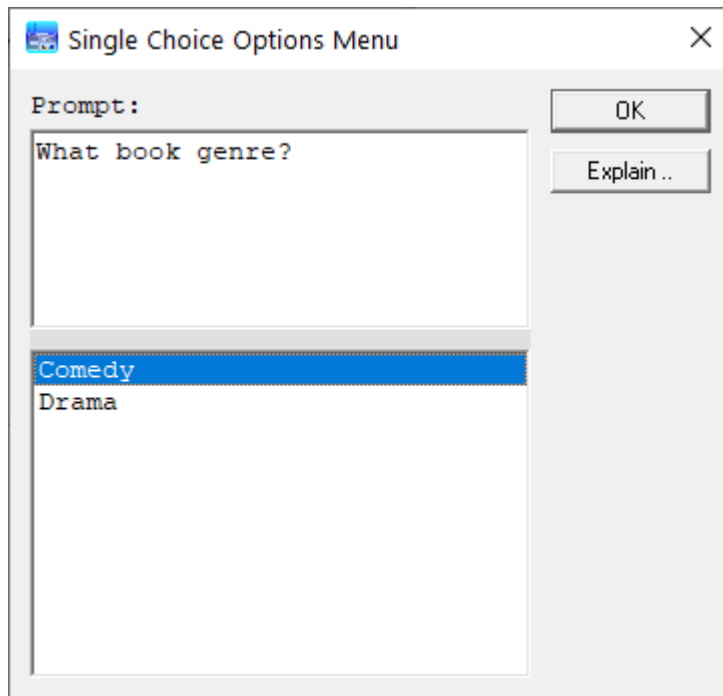
The Flex KSL rules have been generated and are in the flex code pane of the Generated code dialog.

Click the Run button and these will be compiled into an executable Prolog format and run.

This will ask the first question:



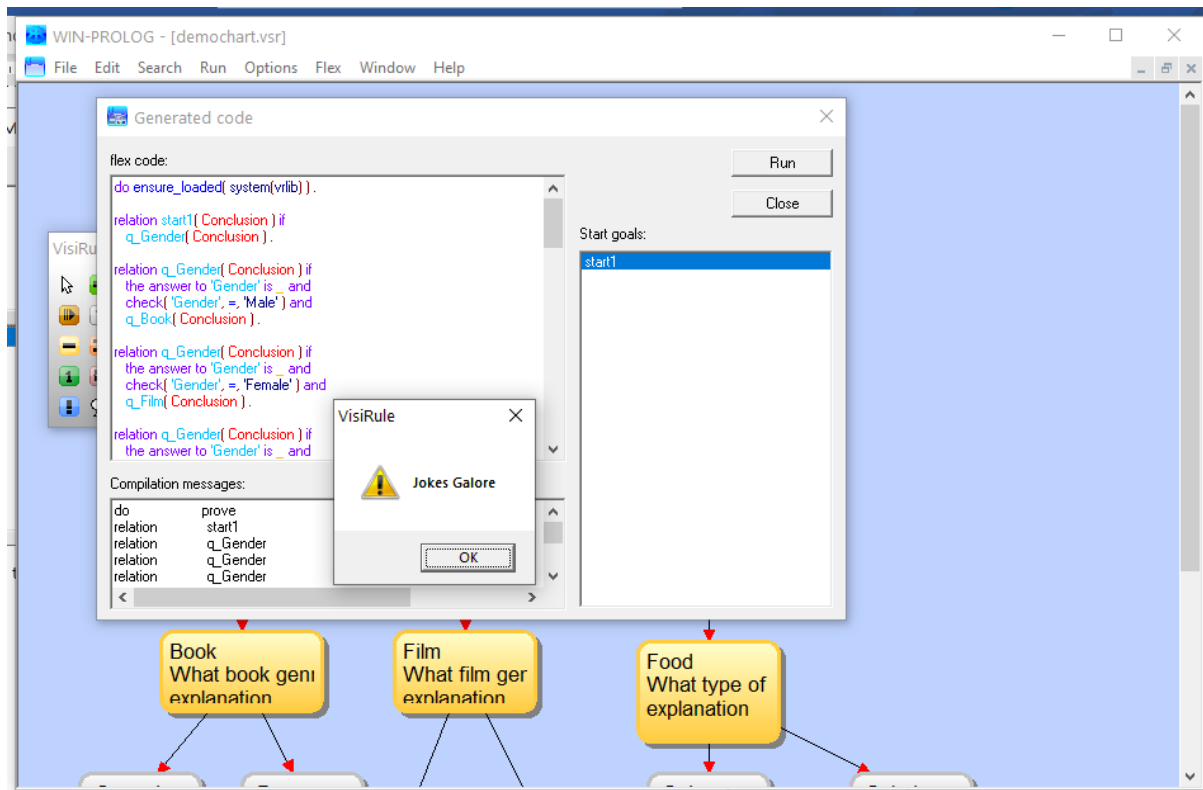
Answer Male and we get the next question:



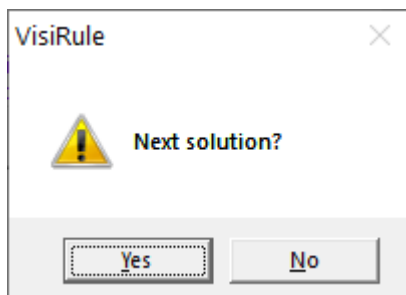
Answer that and we reach a terminating conclusion



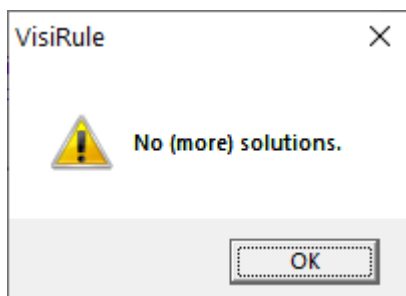
VisiRule Starter Guide



Visirule can see if there are any other solutions available for that combination of answers:



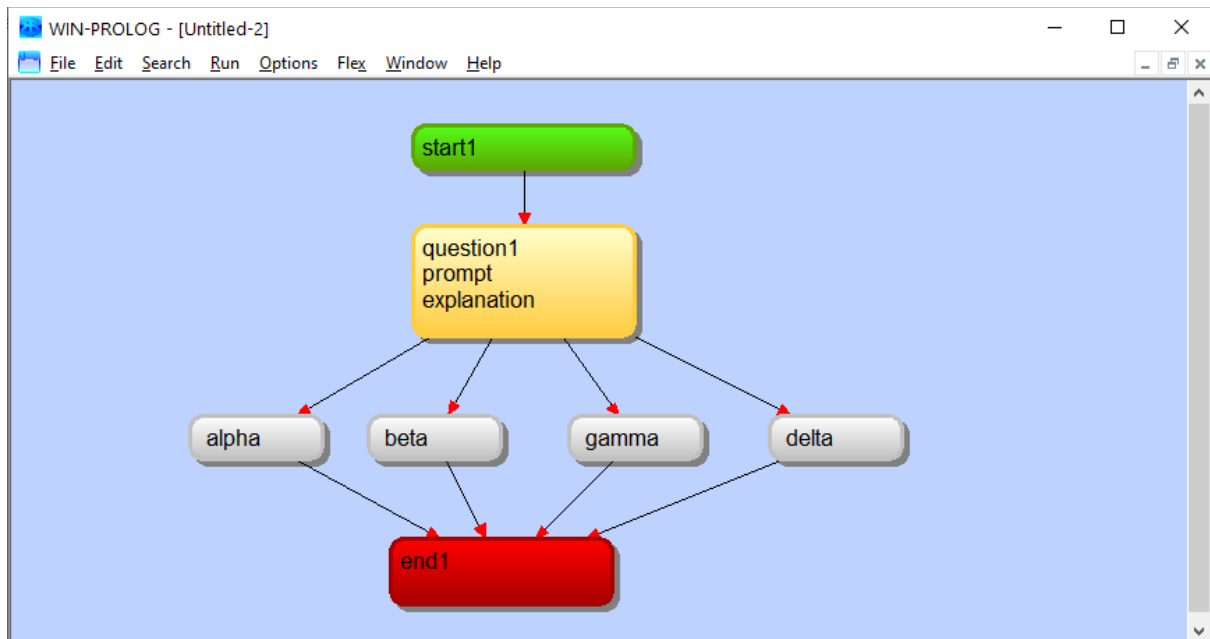
Which in this caes ther are not



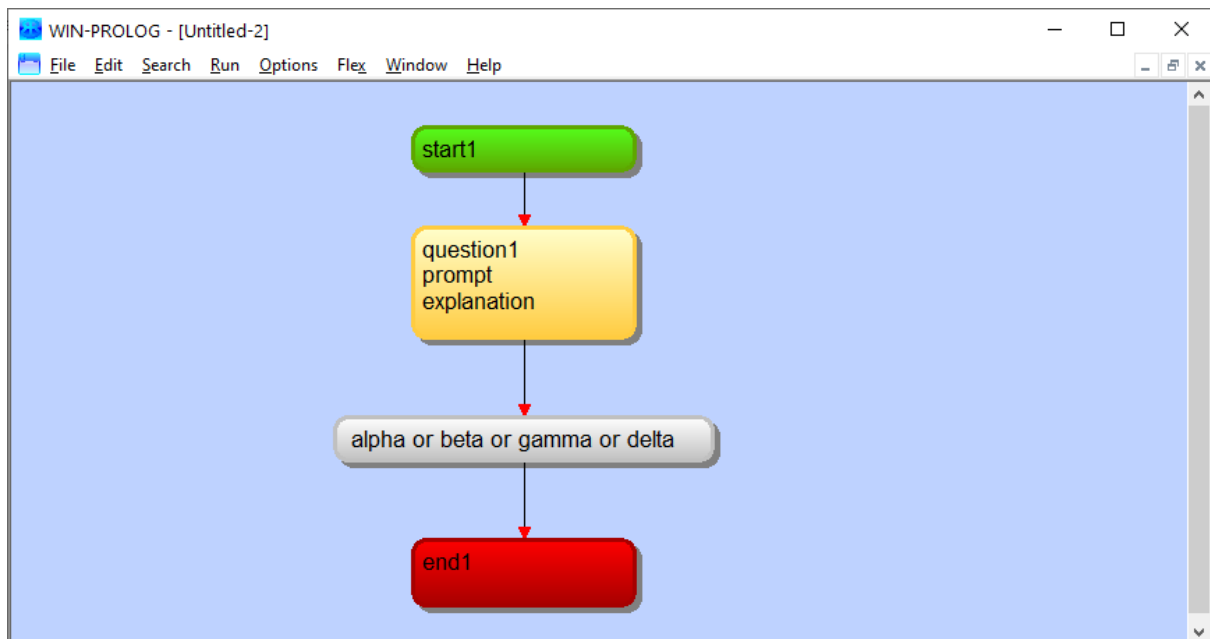
The end

3. One Expression or Two or ...? Single-choice questions

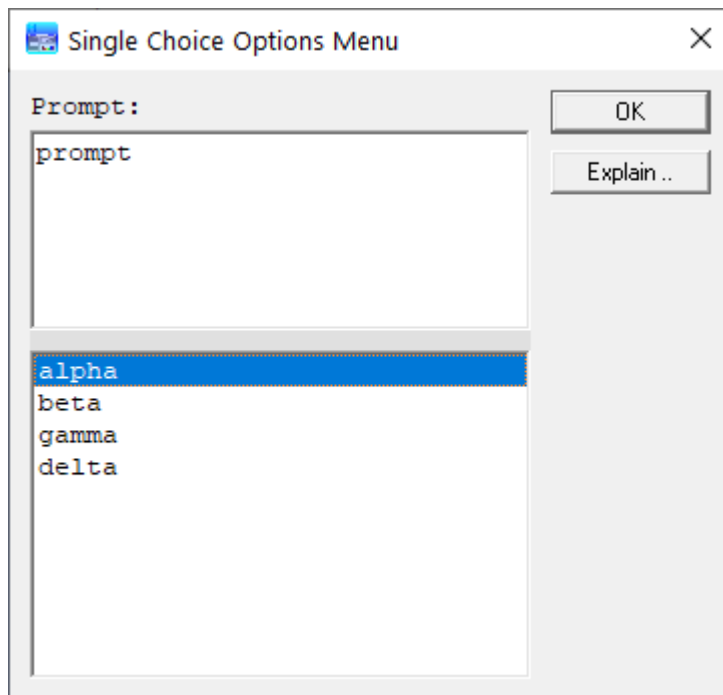
Consider a simple question with 4 answers all leading to the same next node. We can put each answer into an expression on its own:



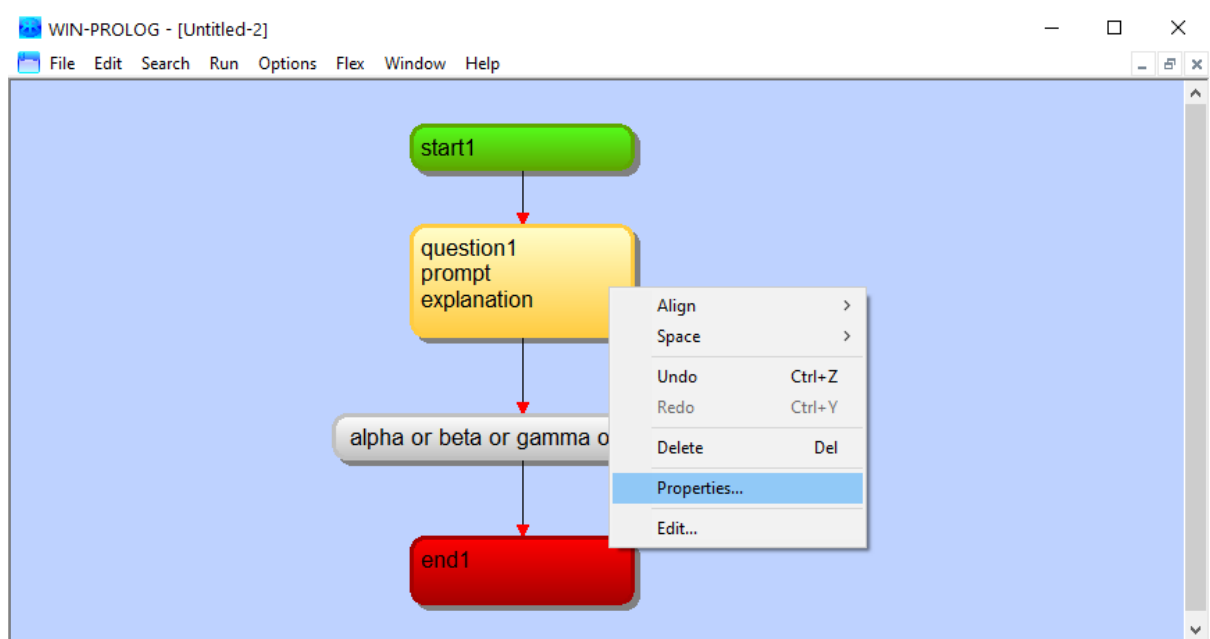
OR – because we have no branching - we can put all the options into a single expression box and have:

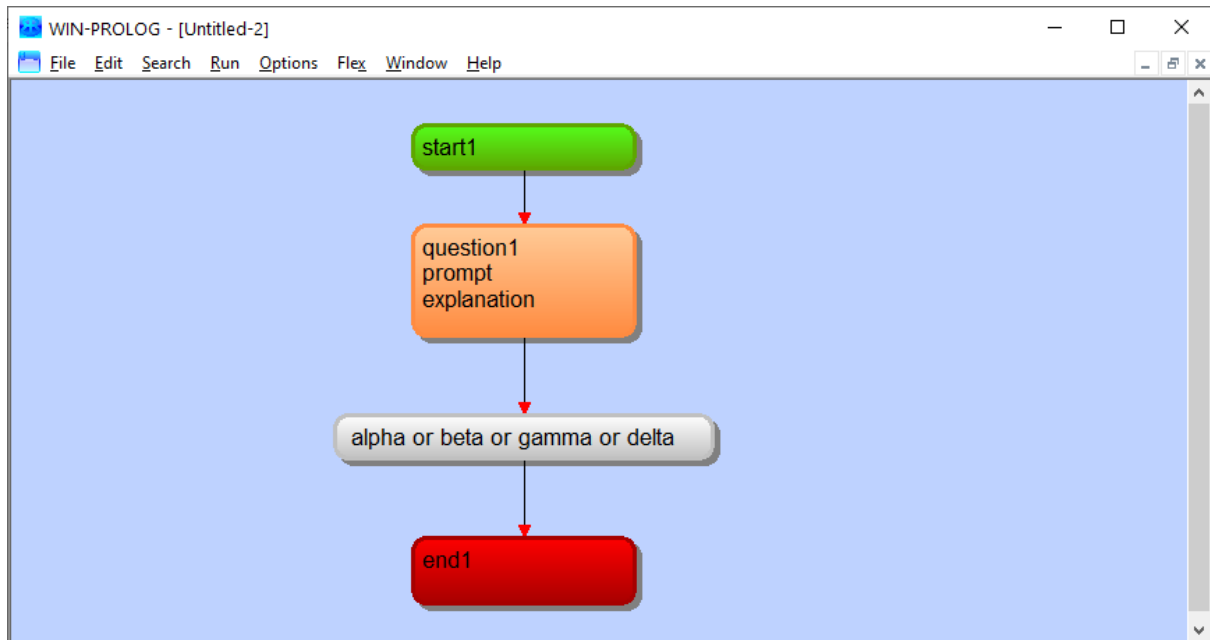
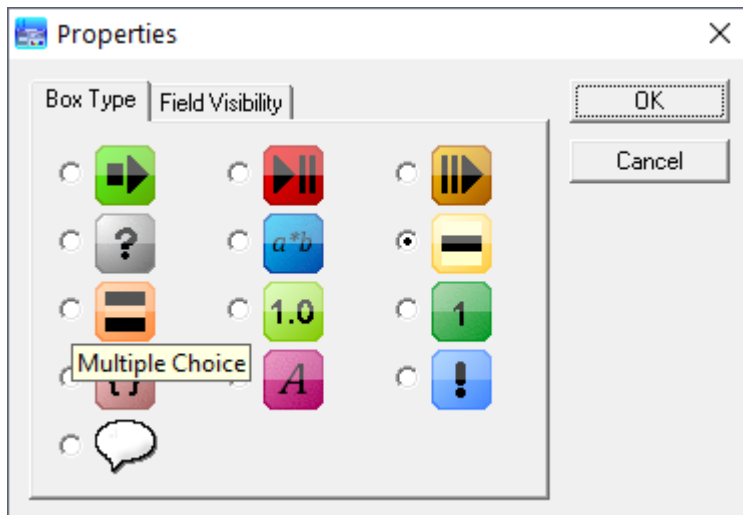


Either way we see

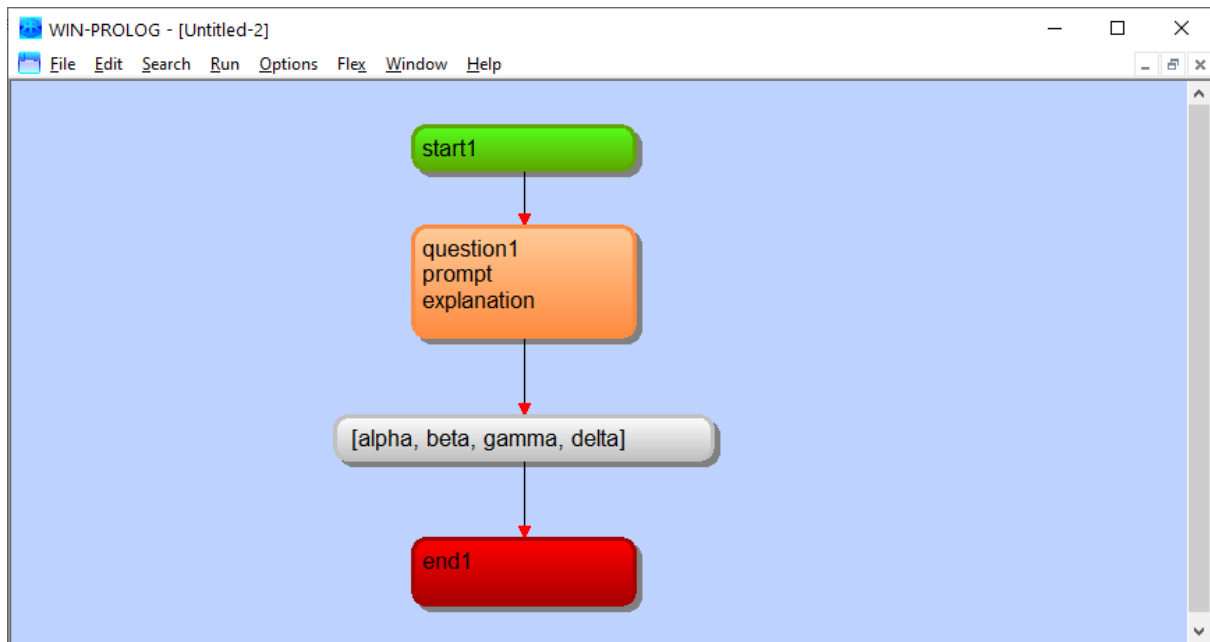


Now lets switch to multi-choice using the properties dialog

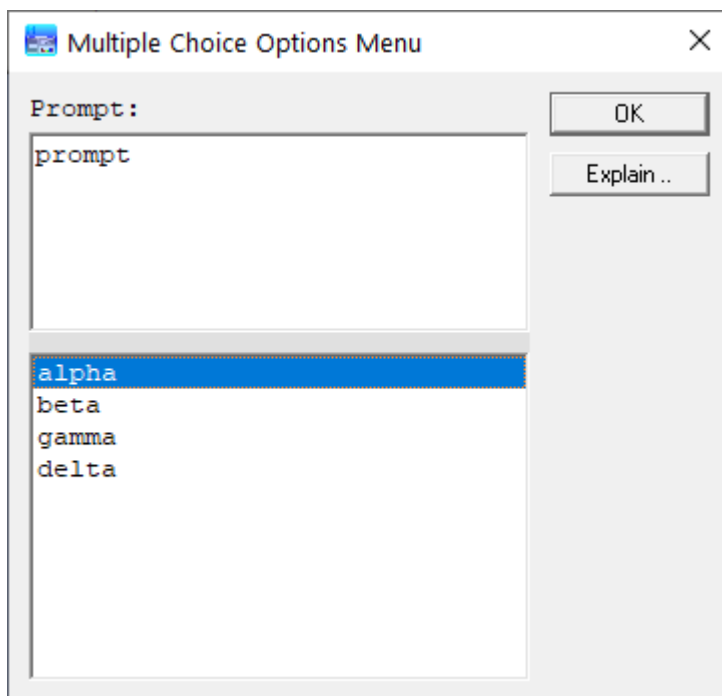




And now change the expression to a set and the 'or' to ','



This will only succeed if all 4 are selected (as = is implied)



We edit the expression so as to succeed on any selection.

The < operator has a special meaning on multi-choice questions.

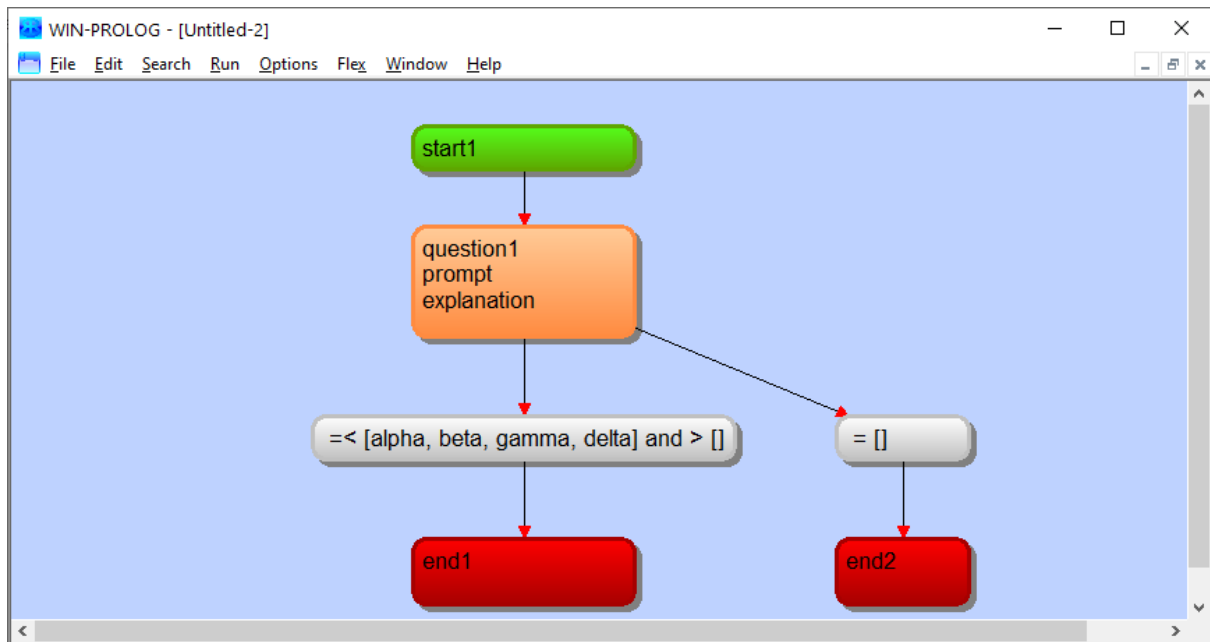
? < [a,b,c]

Will succeed if the answer is 'less than' the set [a,b,c]

i.e. a or b or c or ab or ac or bc PLUS " (no selection)

? = < [a,b,c]

also includes abc



Note: we also add an explicit test that the answer contains something and then introduce a second expression to deal with the empty set separately.

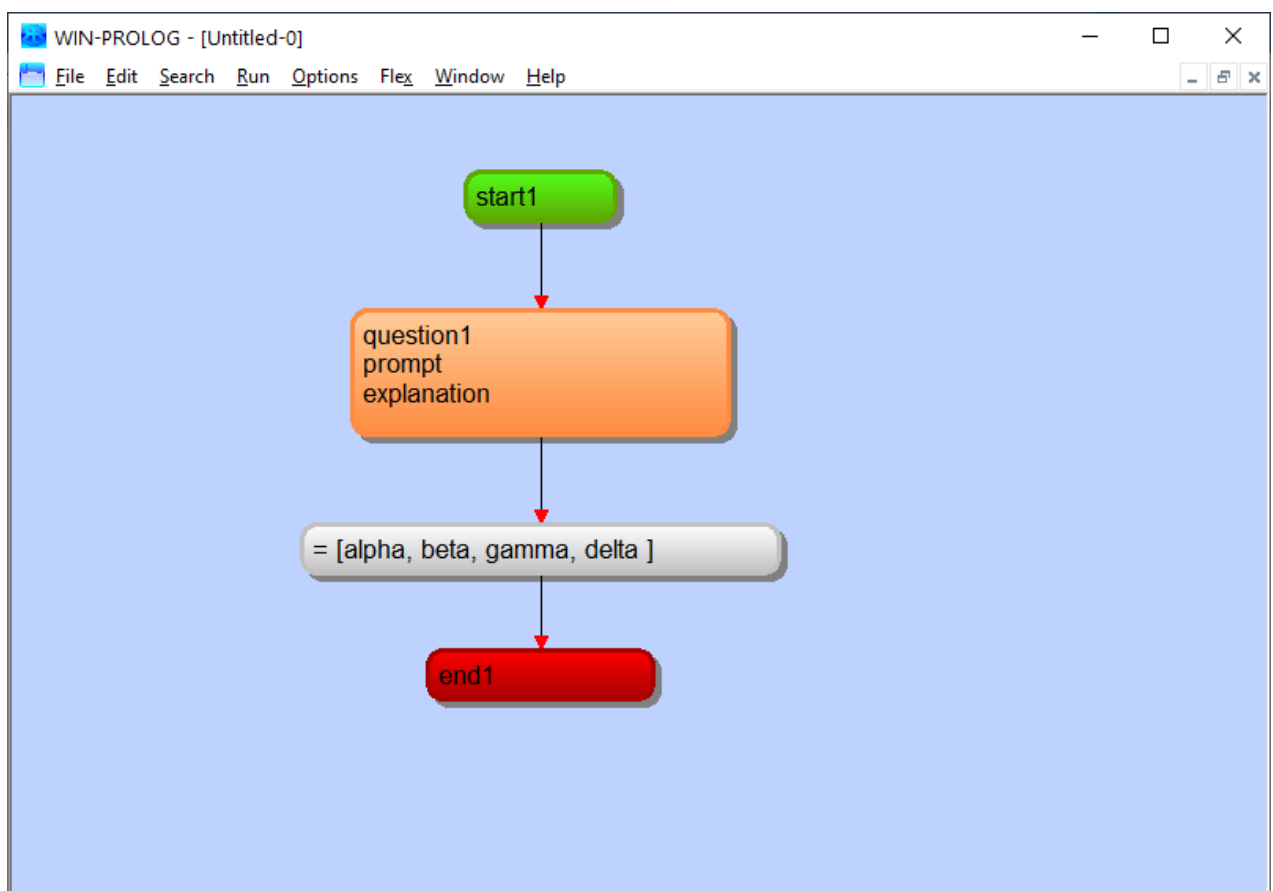
4. One Expression or Two or ...? Multi-choice questions

Now let's do something similar with multi-choice questions.

One question, 4 answers -> 16 distinct answer sets (including the empty set)

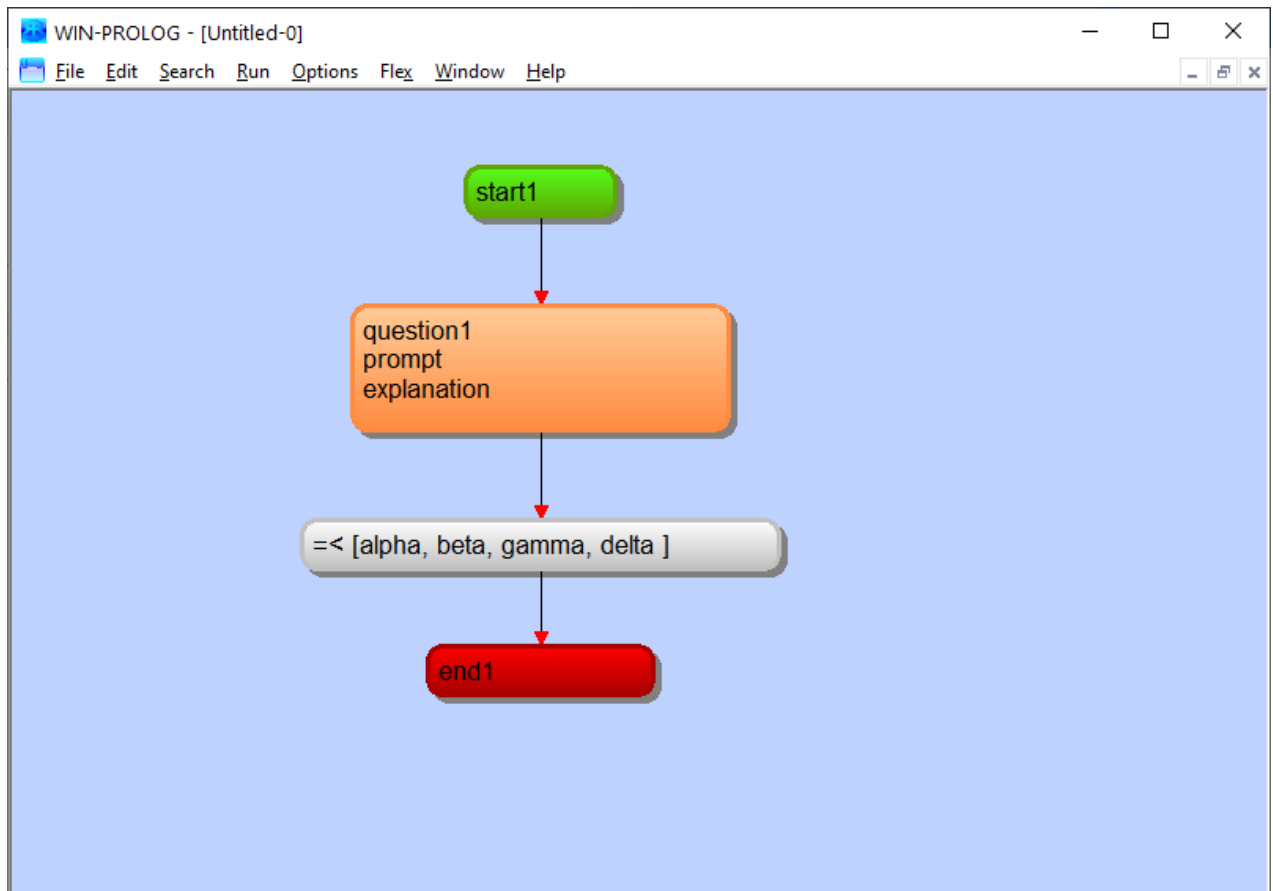
A B C D
AB AC AD BC BD CD
ABC ABD ACD BCD
ABCD

We could have 16 different expressions!

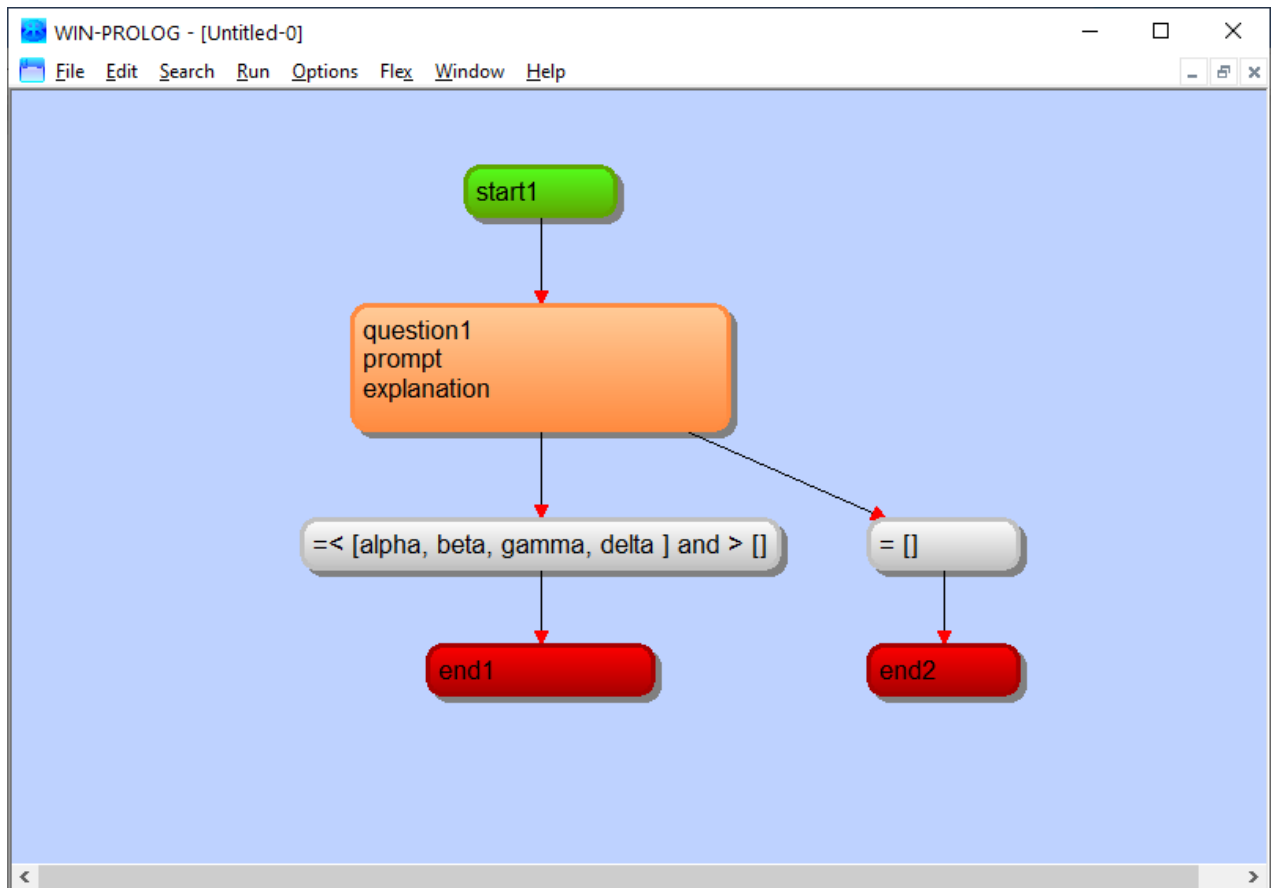


This ONLY succeeds IF the users selects all 4 options

Let's use the < operator which will guarantee we succeed

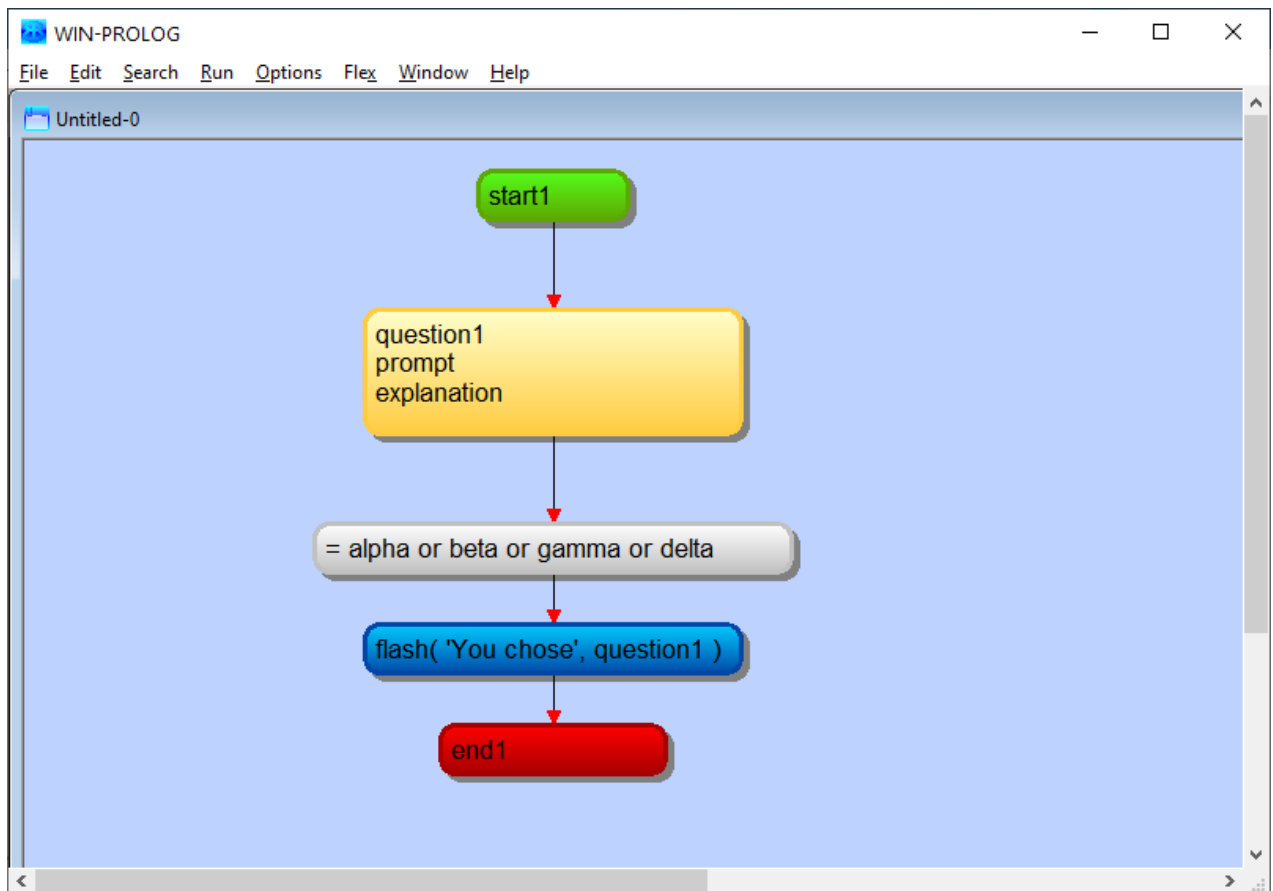


Maybe let's treat the empty set as a special case



5. Output

The easiest way to output text and or partial results is to use flash/1 in a code box.



Note the text to be output in the flash message should be quoted. This is because it contains a space.

You can separate text from values using a comma (,) or dash (-)

You can refer to questions by name and flash/1 will DEREFERENCE the label to the current answer.

VARIABLES in flash/1

Prolog uses Uppercase to denote logical variables. Their scope is local

So a code box which contains:

```
flash( 'You chose:', IndustrySector)
```

will display an uninstantiated logical variable as the 2nd argument (denoted by _Hex)

whereas:

```
flash( 'You chose:', 'IndustrySector' )
```

will display either:

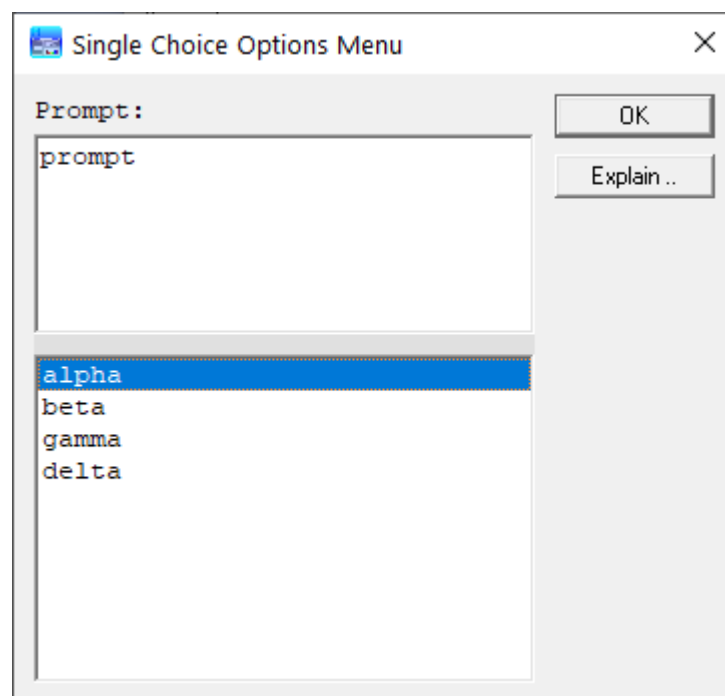
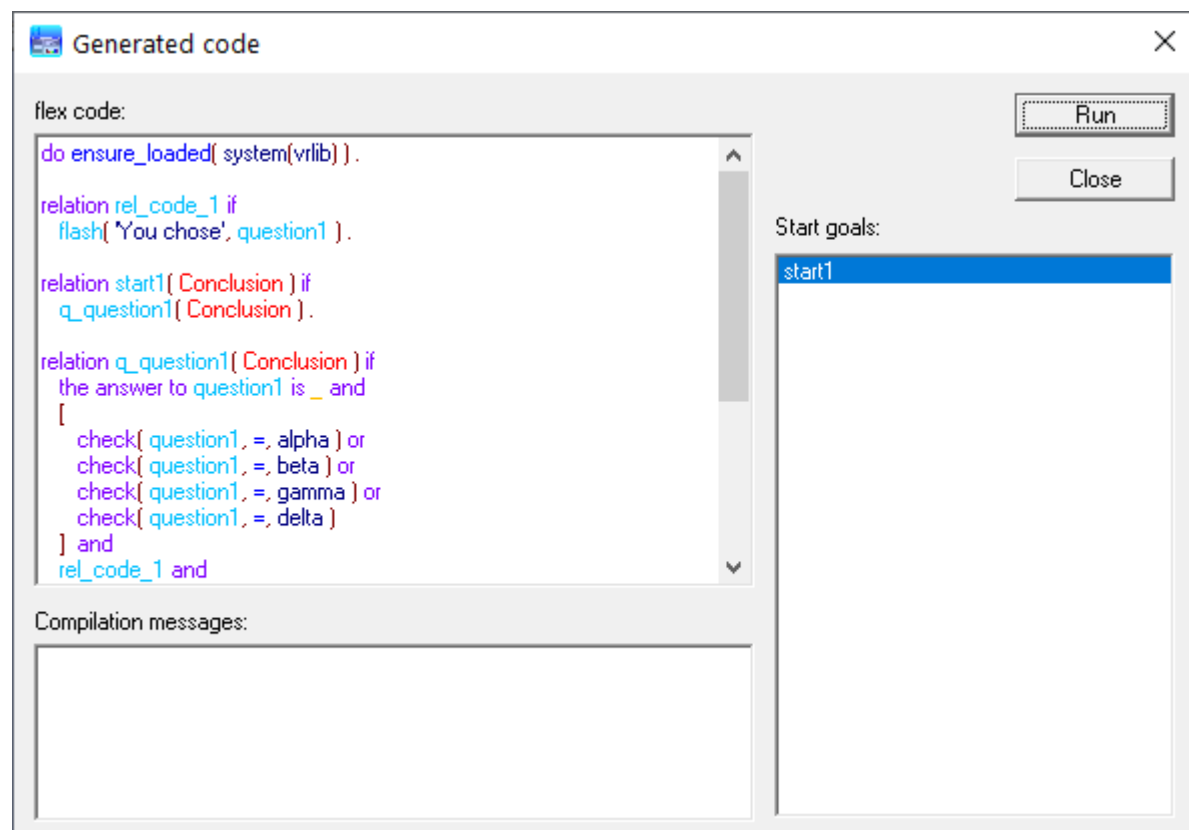
```
'You chose', 'Industry Sector'
```

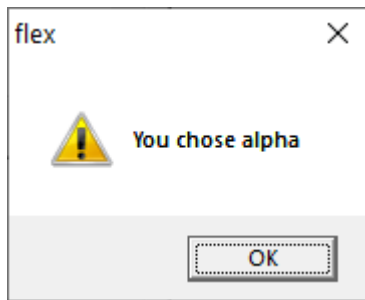
OR, if 'IndustrySector' is the name of a global variable in Flex (and questions are stored as global variables named after the question), then you would get:

```
'You chose', water
```

if the answer to the IndustrySector question was water

Now lets run the code on the Desktop. You should get a question to answer.

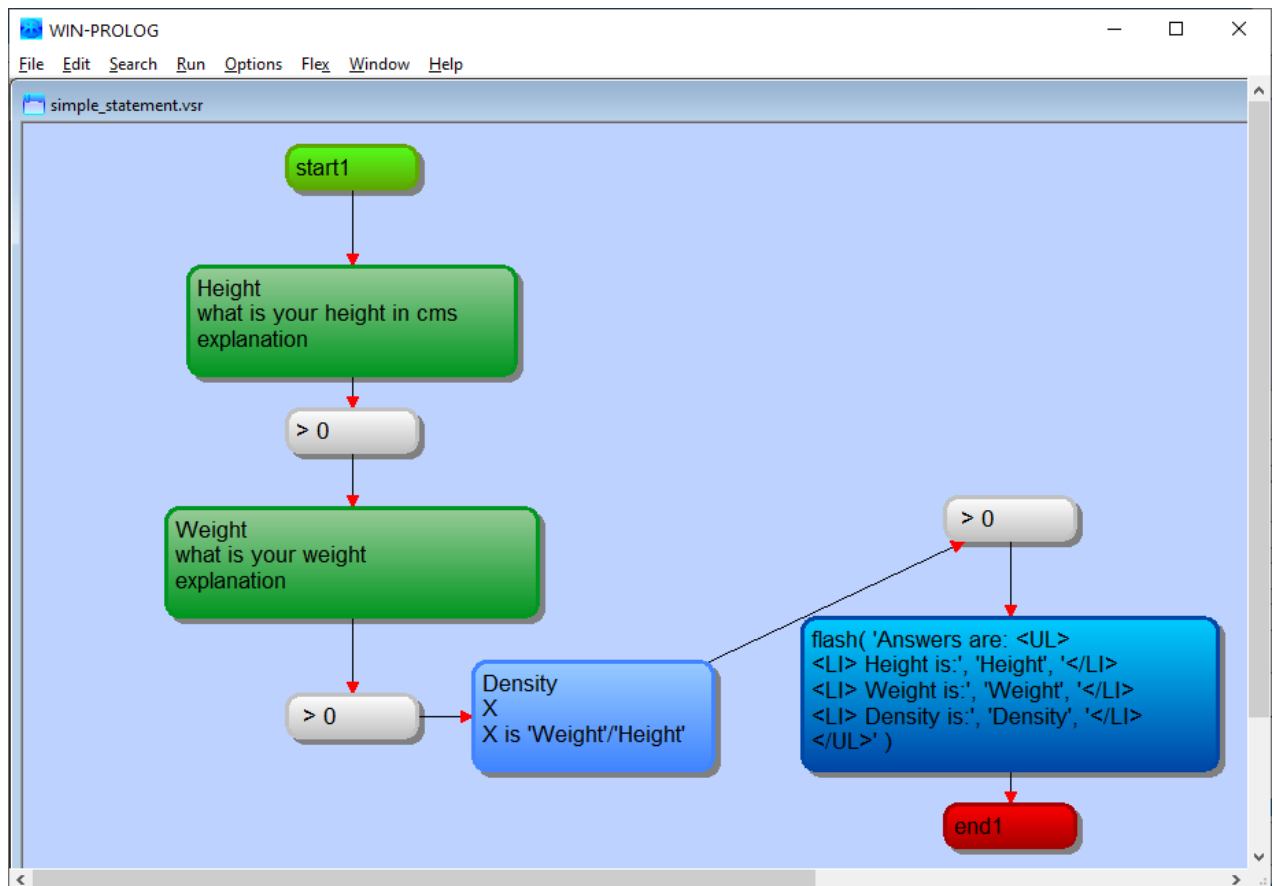




So you can output any text, and values and include HTML formatting as well.

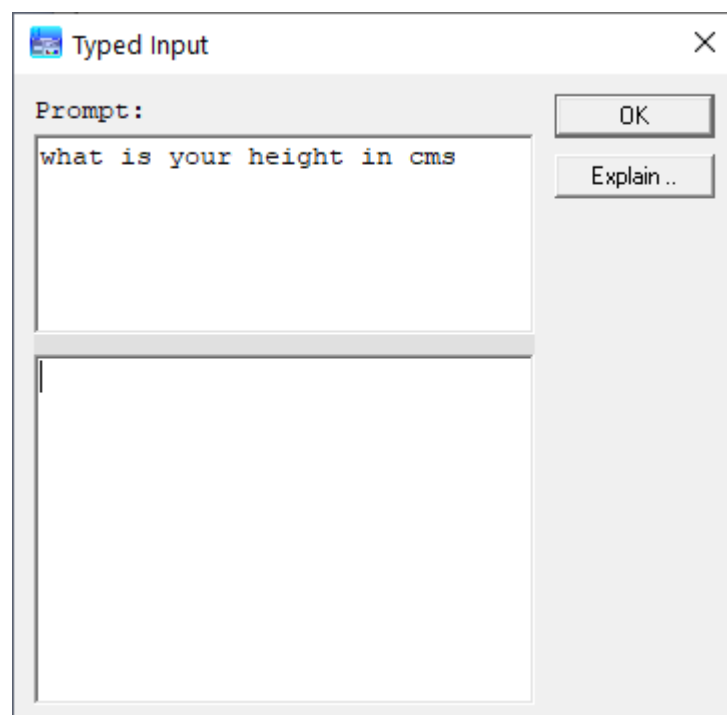
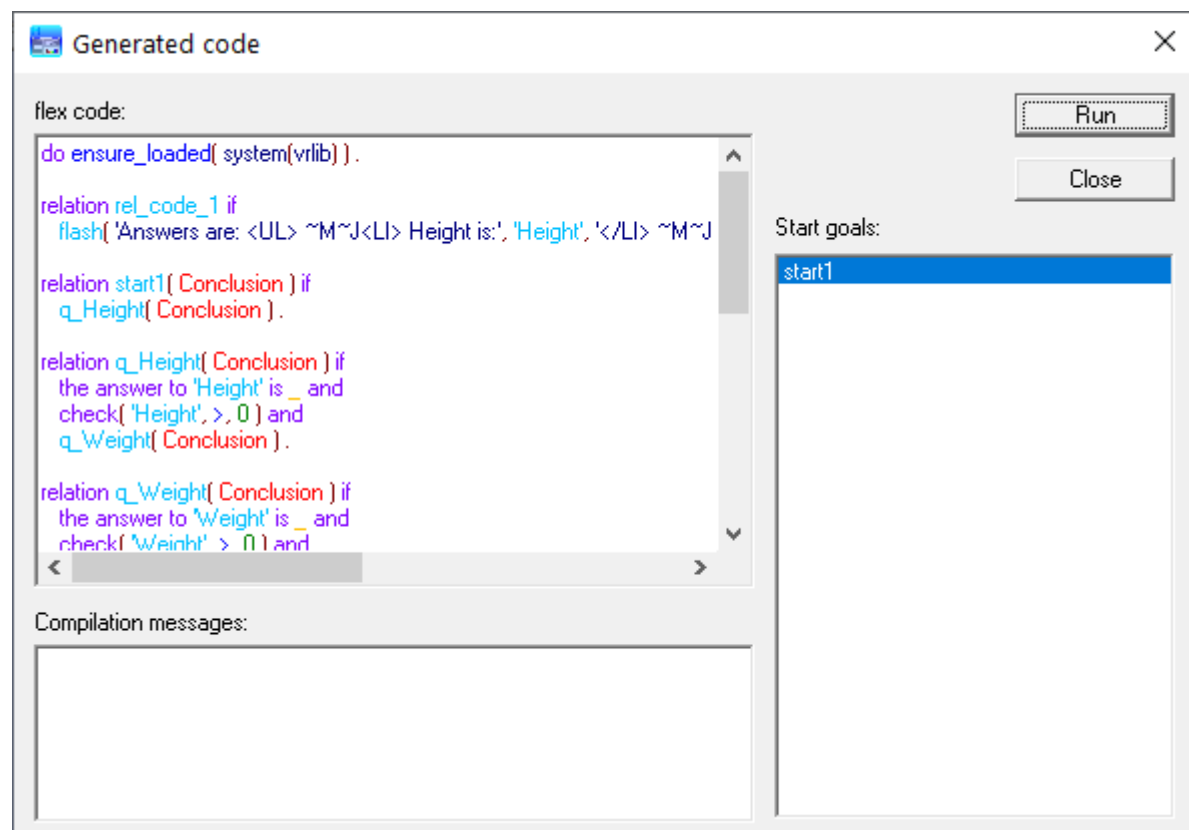
So if you use lowercase words as the names of questions, and avoid including any spaces or hyphens, then you avoid the need to quote them

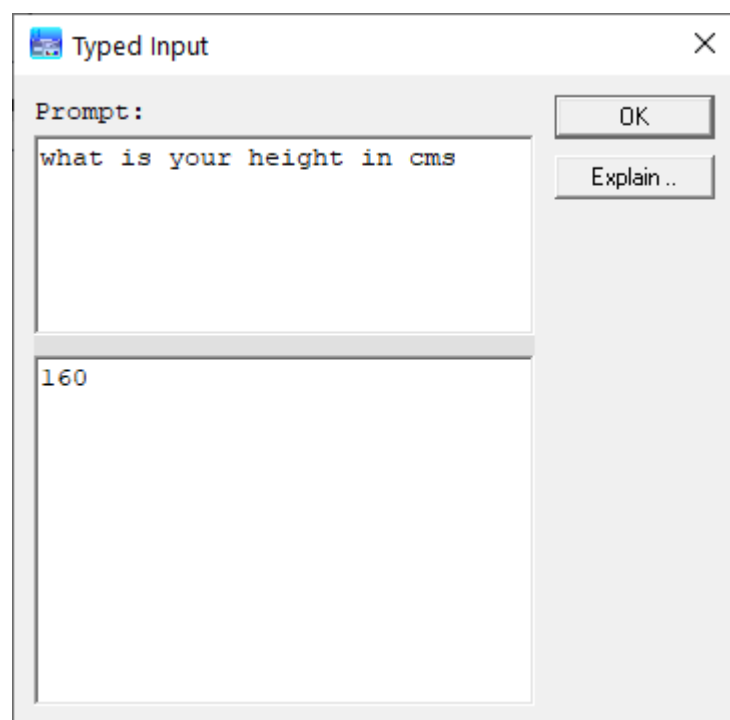
6. Simple Maths



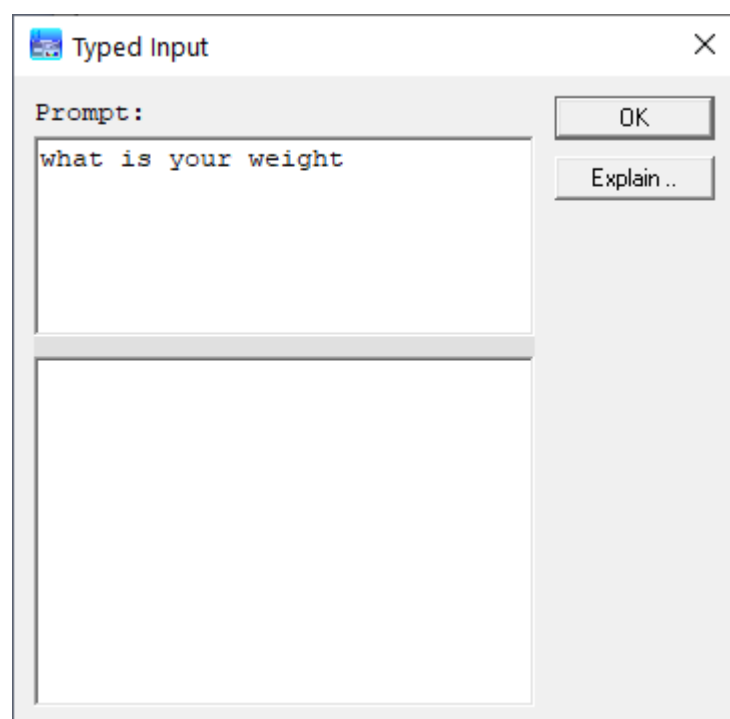
Here we have 2 number input questions and a statement which divides one into the other and then outputs the various values using flash/1 – there's some HTML formatting in there for the browser.

Let's try it on the desktop:

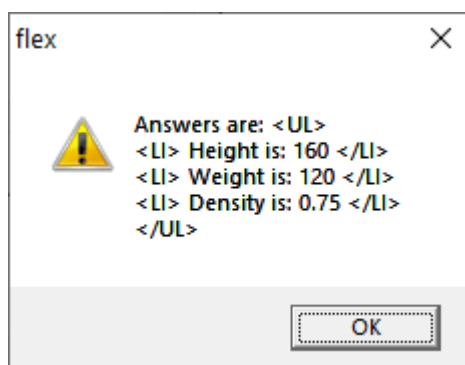
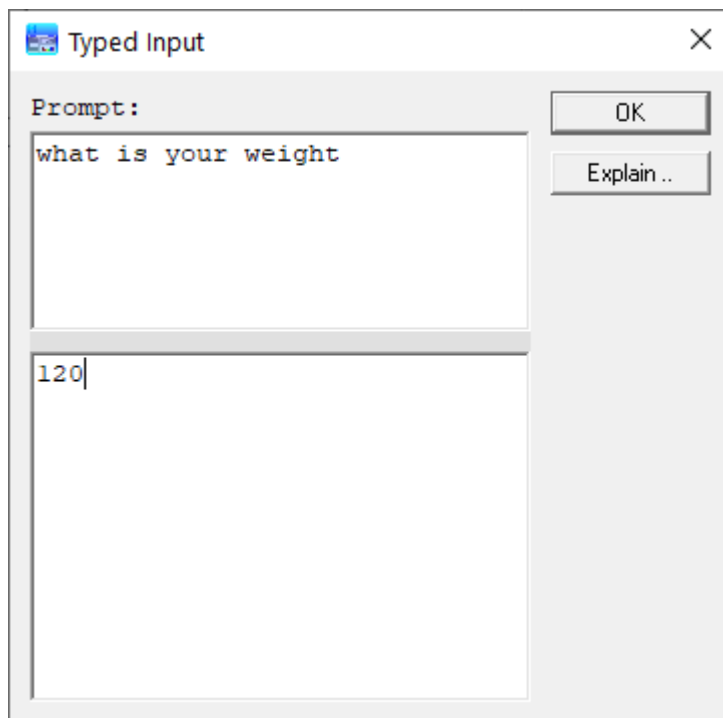




A screenshot of a 'Typed Input' dialog box. The title bar contains a small icon and the text 'Typed Input' followed by a close button (X). The dialog is divided into two main sections. The top section is labeled 'Prompt:' and contains a text input field with the text 'what is your height in cms'. To the right of this section are two buttons: 'OK' and 'Explain..'. The bottom section is a larger text area containing the response '160'.



A screenshot of a 'Typed Input' dialog box, similar to the one above. The title bar contains a small icon and the text 'Typed Input' followed by a close button (X). The dialog is divided into two main sections. The top section is labeled 'Prompt:' and contains a text input field with the text 'what is your weight'. To the right of this section are two buttons: 'OK' and 'Explain..'. The bottom section is a larger text area that is currently empty.



7. Helpful Resources for VisiRule Author on Windows

You are reading the PDF labelled: VisiRule Starter Guide

Other Documentation (available on the LPA web site):

- WinProlog User Guide (win_user.pdf) ... installation chapter for all LPA products
- VisiRule User Guide (vsr_ref.pdf)
- VisiRule Tutorial (vsr_tut.pdf)

These documents can all be downloaded from the LPA web-site

https://www.lpa.co.uk/dow_doc.htm



The screenshot shows a web browser window displaying the LPA website. The page has a green header with the LPA logo and navigation links. The main content area is titled "Documentation Files" and contains text explaining that users can download many of LPA's software manuals in PDF format. It also includes a "Version 7.0" section with a table of available documentation files.

Documentation Files

From this page, you can download many of LPA's software manuals, in PDF (Adobe Acrobat 4) format. These manuals may be used in conjunction with our Free Trial software to help with software evaluation, or by themselves, simply to read about our products in greater depth.

Please note that many of these files are quite large, and if you are having trouble downloading them because our website is busy, please try again later.

You can also download free trial versions of some LPA software from the LPA website: once you have obtained your documentation files, click on the "Download" tab and select "Free Trial Software".

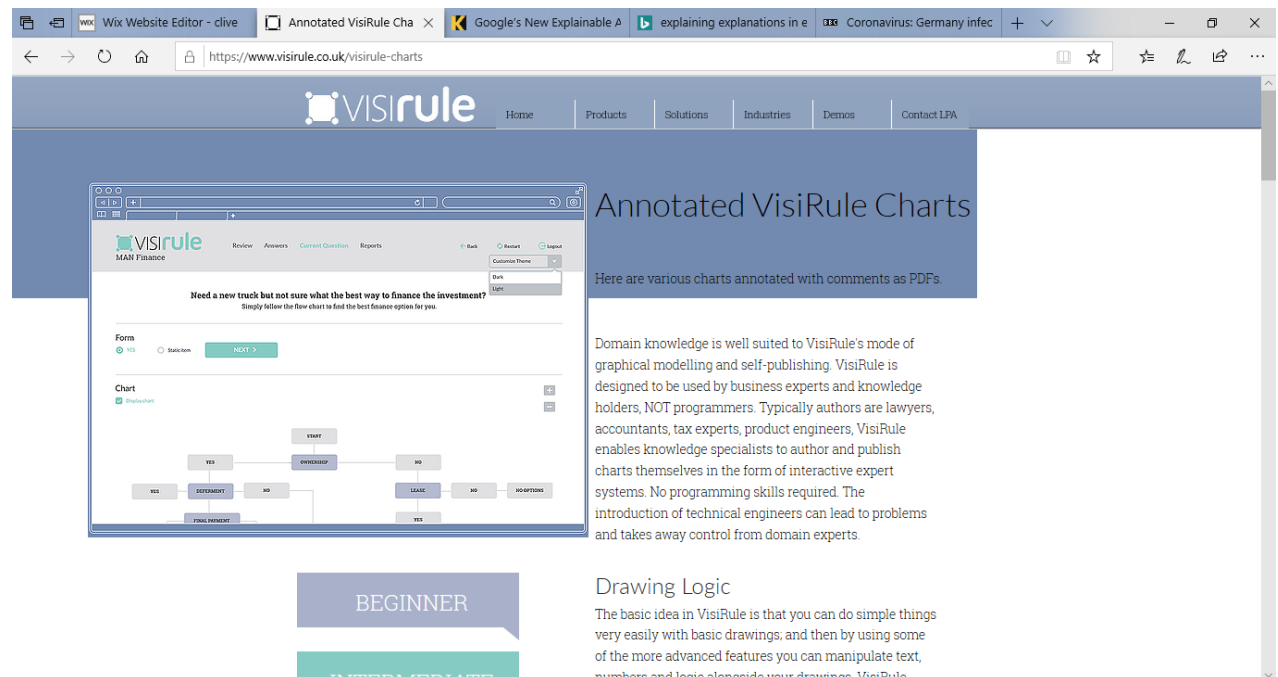
Version 7.0

To obtain your documentation files for the above software version, please select from the following links:

File Name	File Size	File Date	Contents
CBR_REF.PDF	1,689,699	01-MAR-2019	Case-based Reasoning
CHL_REF.PDF	9,655,078	01-MAR-2019	Chimera Agents Reference
DTM_API.PDF	2,063,476	01-MAR-2019	Data Mining Toolkit
FLN_REF.PDF	4,218,472	01-MAR-2019	Flint Reference
FLX_EGS.PDF	1,217,957	01-MAR-2019	flex Examples
FLX_REF.PDF	1,836,983	01-MAR-2019	flex Reference
FLX_TUT.PDF	1,220,434	15-NOV-2019	flex Tutorial
INT_REF.PDF	1,977,979	01-MAR-2019	Intelligence Server
PDI_REF.PDF	1,327,509	01-MAR-2019	ProData Interface
PPP_REF.PDF	1,992,989	01-MAR-2019	Prolog++ Reference
PWS_REF.PDF	4,763,058	01-MAR-2019	ProWeb Server User Guide
VSR_REF.PDF	3,151,507	01-MAR-2019	VisiRule User Guide
VSR_TUT.PDF	2,476,575	01-MAR-2019	VisiRule Tutorial
WBL_REF.PDF	8,271,002	02-OCT-2019	Weblog User Guide and Reference
WELCOME.PDF	3,846,171	16-DEC-2019	Welcome and Update Notes

VisiRule Starter Guide

In addition, there are multiple annotated charts available on the VisiRule web-site:
<https://www.visirule.co.uk/visirule-charts>



These charts cover various typical decision logic with a commentary.

There are some slides available which describe how to use VisiRule Author on the Windows desktop.

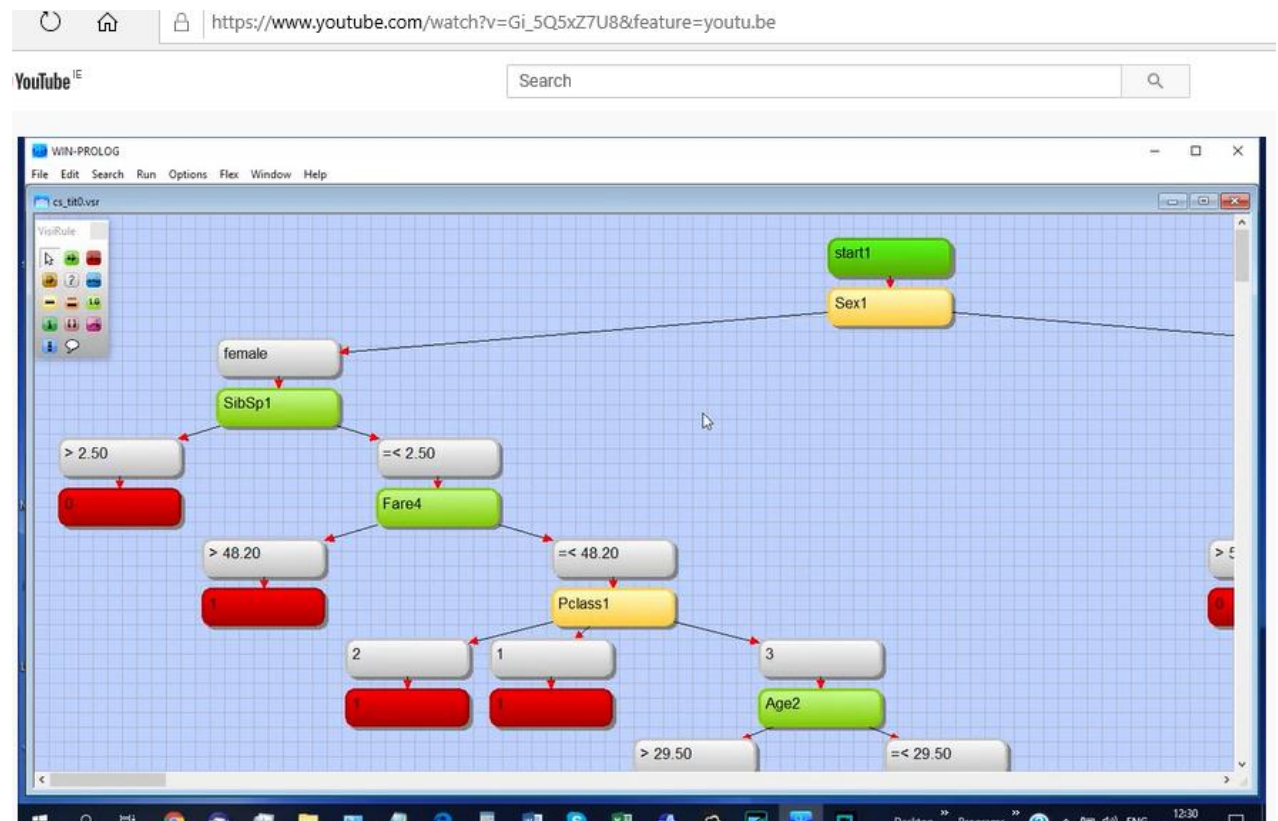
There are additional documents which cover items such as:

- How to Publish Charts to the Web Server
- How to Compile Simple Charts into JS/HTML
- How to use VrEditor Utility
- How to use VR365
- How to use the VisiRule Verifier
- Additional Flex/Prolog predicates for VisiRule
- VisiRule FastChart
- How to use document templates for automated document generation

VisiRule Starter Guide

PublishYourVisiRuleChart

https://youtu.be/Gi_5Q5xZ7U8



Shows How to Publish a VisiRule Chart from VisiRule Author running on Windows using VisiRule Web Upload component

CompileVisiRuleChart2HTML

Shows how to Compile a VisiRule chart directly into HTML and deliver it client side on mobile devices

<https://youtu.be/QoQH-sQFUv4>

FromData2Chart

<https://youtu.be/fs64VNDL48Q>

Video shows how to get from data to a published VisiRule expert system in under 5 clicks

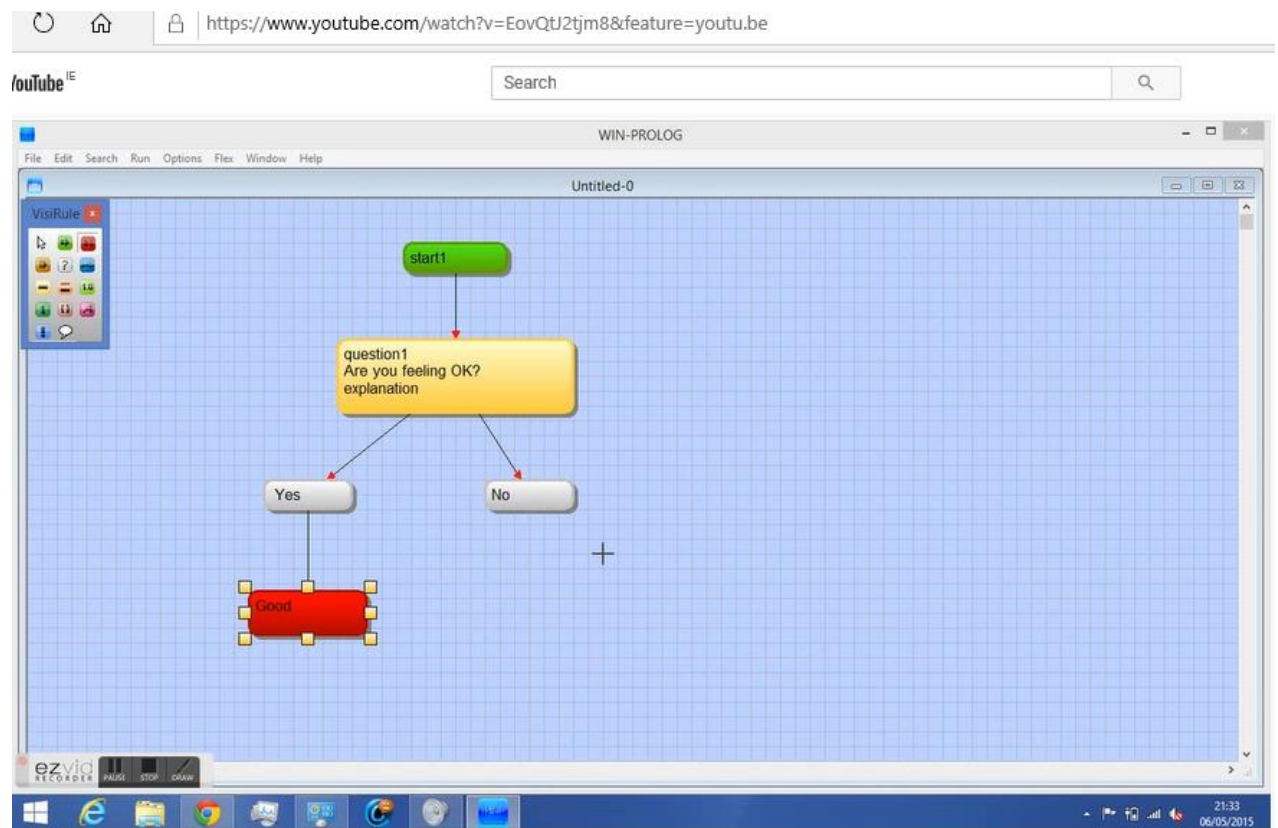
VisiRuleSlides

<https://youtu.be/ETJHfEF0nXc>

PowerPoint Introduction to VisiRule

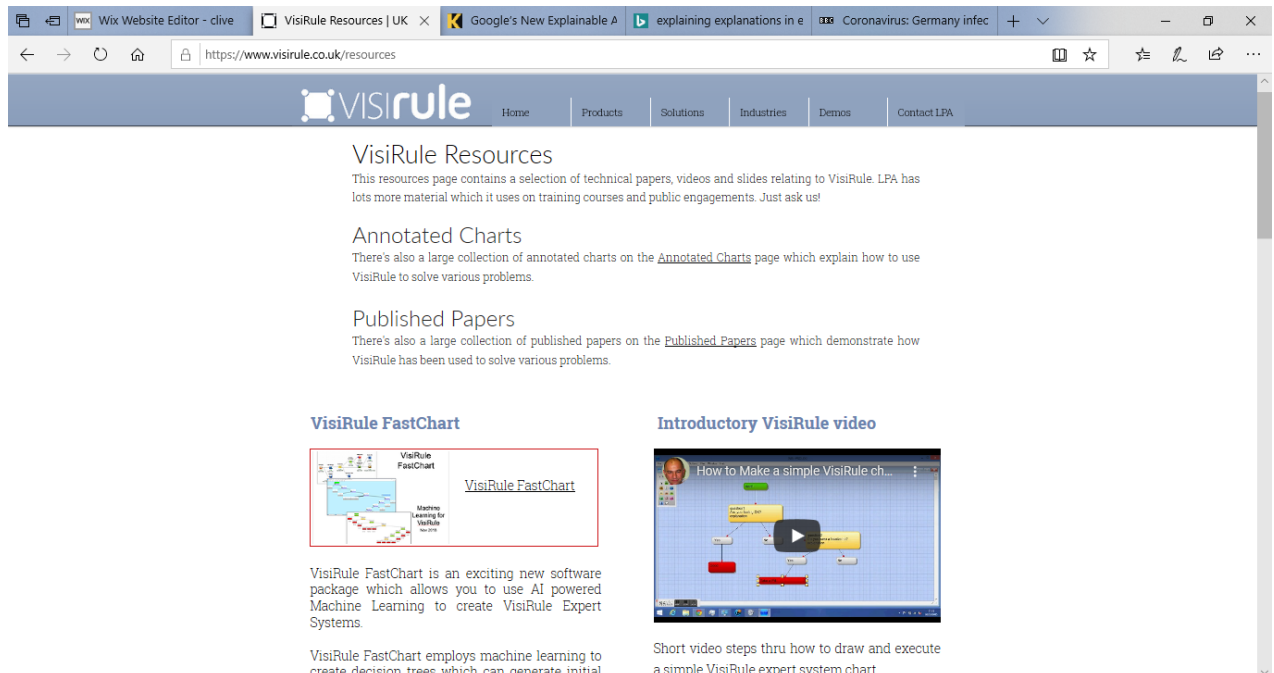
VisiRule Starter Guide

<https://youtu.be/EovQtJ2tjm8>



How to draw a simple VisiRule chart

There are many resources on the VisiRule Resources page



The screenshot shows a web browser window with the URL <https://www.visirule.co.uk/resources>. The page has a blue header with the VisiRule logo and navigation links: Home, Products, Solutions, Industries, Demos, and Contact LPA. The main content area is titled "VisiRule Resources" and includes a sub-header "VisiRule Resources" with a description: "This resources page contains a selection of technical papers, videos and slides relating to VisiRule. LPA has lots more material which it uses on training courses and public engagements. Just ask us!". Below this are three sections: "Annotated Charts" (describing a collection of annotated charts), "Published Papers" (describing a collection of published papers), "VisiRule FastChart" (describing a software package for creating expert systems), and "Introductory VisiRule video" (describing a short video on how to draw and execute a simple expert system chart). The "VisiRule FastChart" section includes a thumbnail image of a decision tree and the text "VisiRule FastChart" and "Machine Learning for VisiRule". The "Introductory VisiRule video" section includes a thumbnail image of a video player with the title "How to Make a simple VisiRule ch..." and a play button.

VisiRule Resources
This resources page contains a selection of technical papers, videos and slides relating to VisiRule. LPA has lots more material which it uses on training courses and public engagements. Just ask us!

Annotated Charts
There's also a large collection of annotated charts on the [Annotated Charts](#) page which explain how to use VisiRule to solve various problems.

Published Papers
There's also a large collection of published papers on the [Published Papers](#) page which demonstrate how VisiRule has been used to solve various problems.

VisiRule FastChart

VisiRule FastChart is an exciting new software package which allows you to use AI powered Machine Learning to create VisiRule Expert Systems.

VisiRule FastChart employs machine learning to create decision trees which can generate initial

Introductory VisiRule video

Short video steps thru how to draw and execute a simple VisiRule expert system chart.

Useful Hints and Tips

Order of Drawing Actions

In general, VisiRule does not care in which order you create and link or, edit the contents of, nodes.

You can draw two nodes, edit them and link them in almost any particular order.

You can NOT link two items until they both exist.

So, you could, for instance, decide to draw all your nodes, edit them and then add the links; or draw all the nodes, link them and then edit them or almost combination thereof.

Referral by Name

One time when the order in which you do things is important is when you want to refer back EXPLICITLY by name to a previous question or statement which occurs earlier in the tree.

You must ensure that the question is defined higher up the 'tree' and ensure that expression box linked to the chart - before you enter the expression.

```
? previous_question = SomeValue
```

VisiRule will immediately search backwards to check that that question is there and available ON THAT BRANCH of the tree.

If not available, then the expression will go RED --- which is an indication of a referencing error.

As noted above, if using reference by name of previous questions within an expression, you should connect the expression box to the tree before entering the expression.

Error in Expression

If an expression node is RED -- then you have an error with the expression which you just created.

This may stop you from being able to generate any code for the chart.

Possible causes of a Syntax Error are:

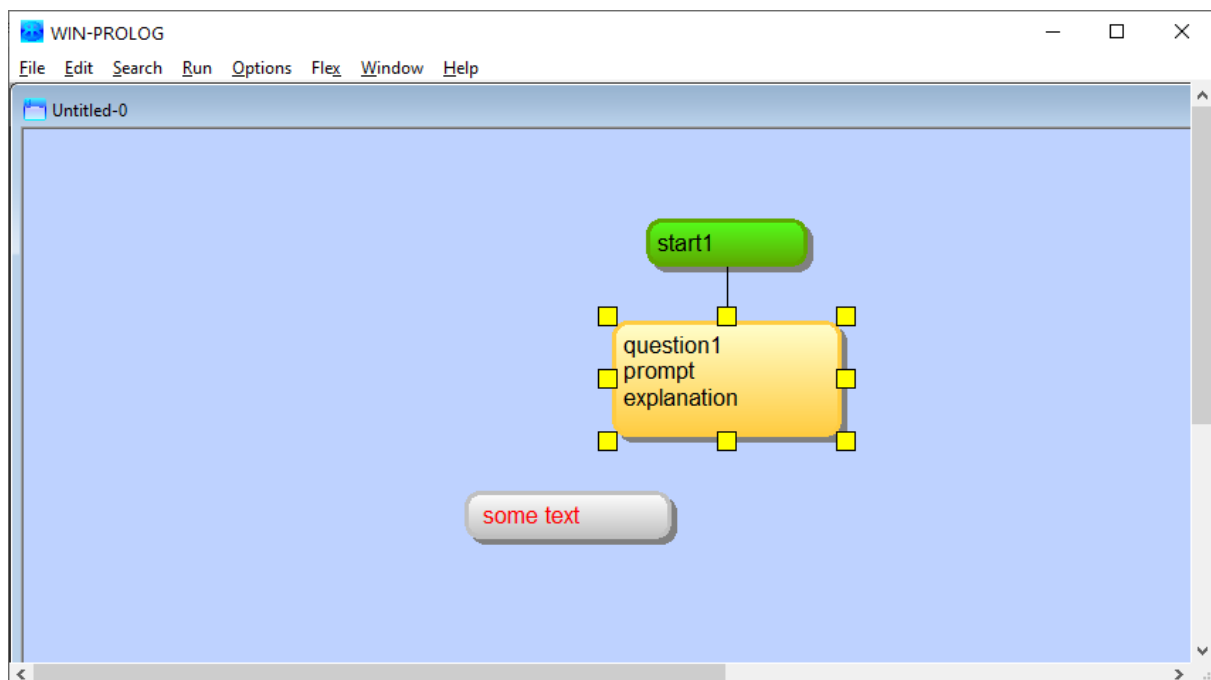
- incorrect syntax
- wrong name for question
- extra spaces (spaces in BOTH question names and values need enclosing quotes)
- extra non-visible characters in input
- incorrect use of an operator (AND instead of and; or using sets when attached to a single-choice question)
- direct reference to a question which VisiRule does not recognize
- direct reference to a question which VisiRule thinks is not 'on the path'

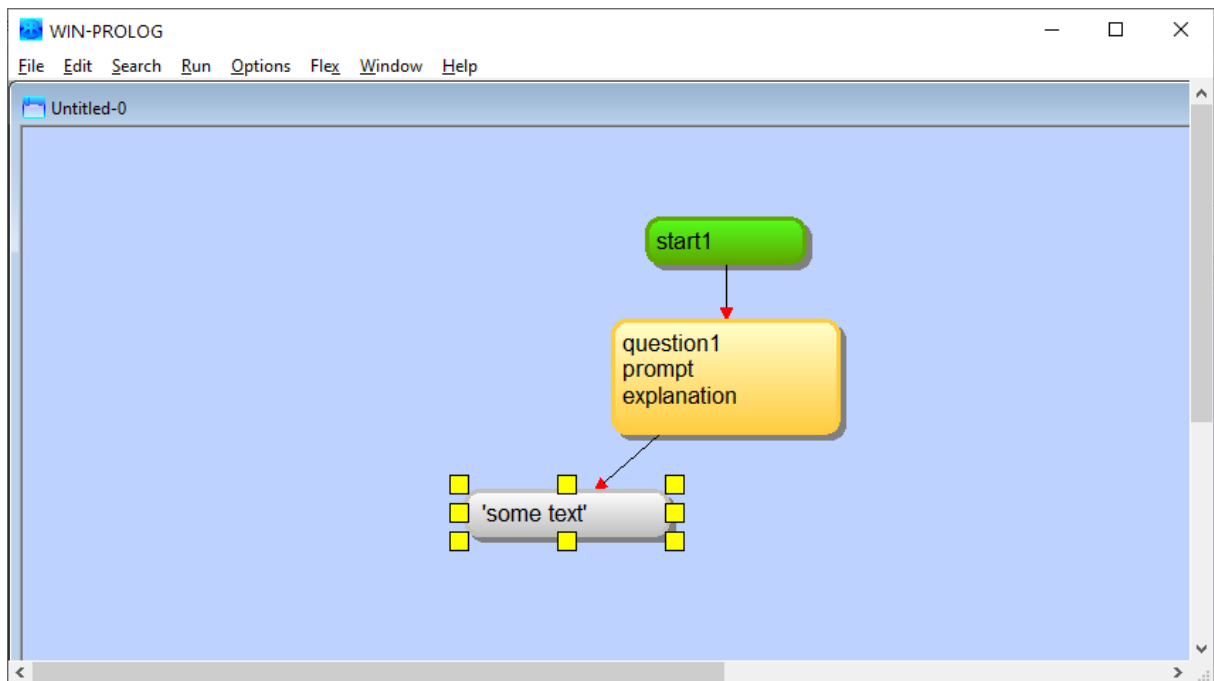
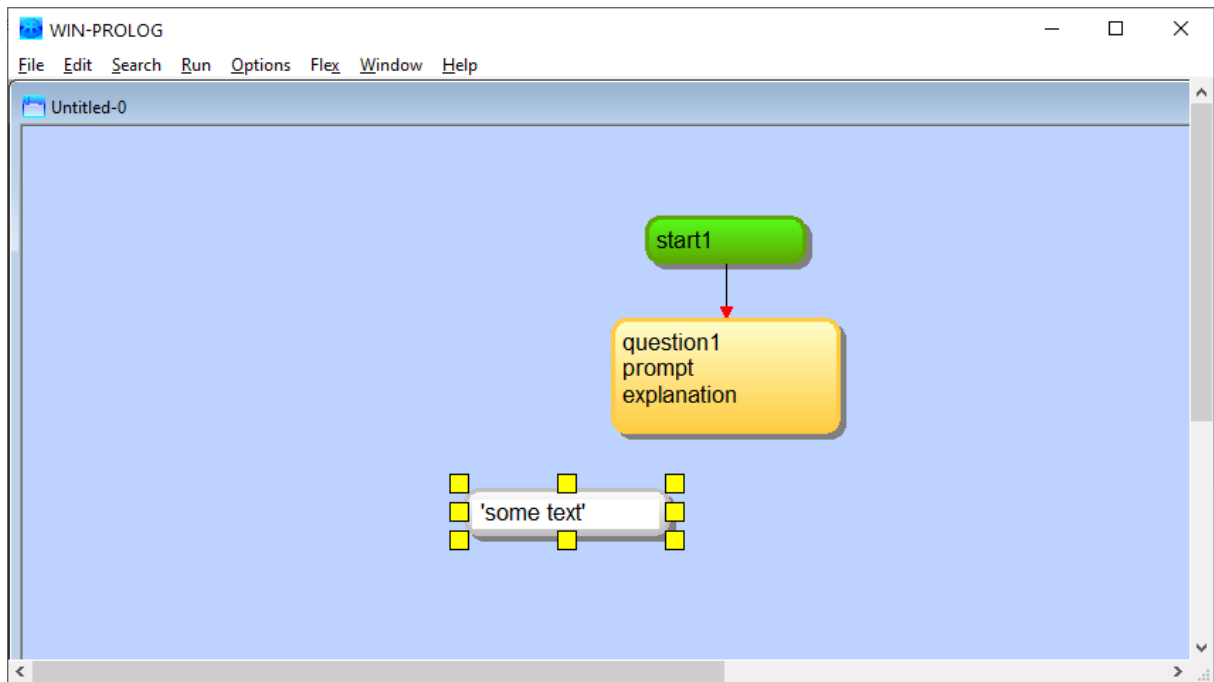
If you are referring explicitly to a previous question by name within an expression, VisiRule will flag it as an error IF the expression is not already connected to the tree.

That means that you need to link in advance of entering the reference to the named question in the expression.

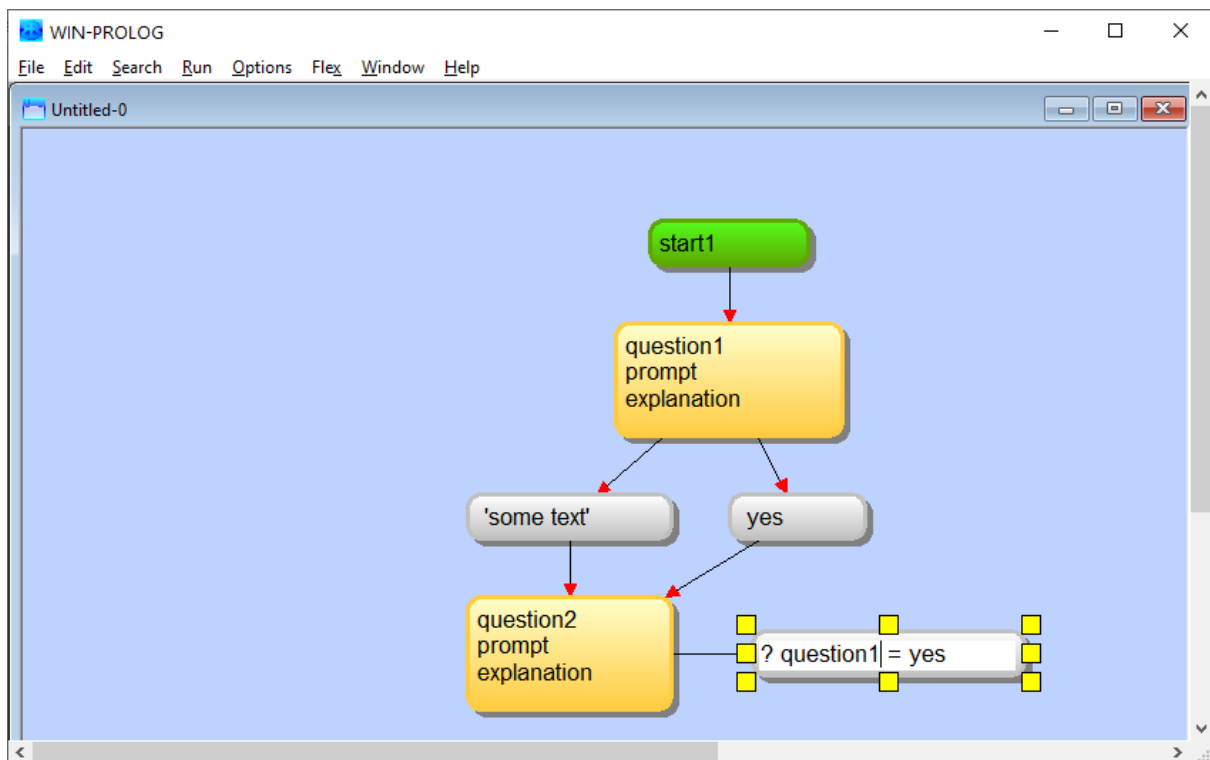
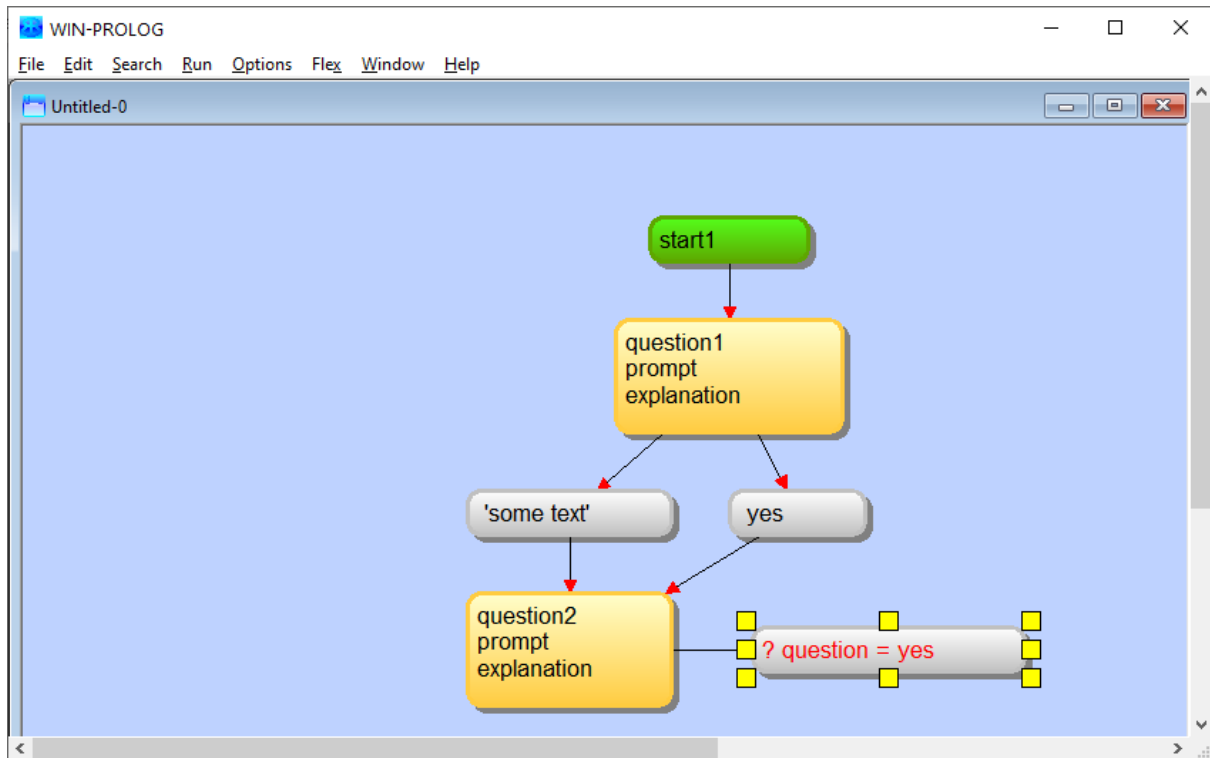
So, if the expression goes red and you may need to re-edit it after having linked the expression to the tree.

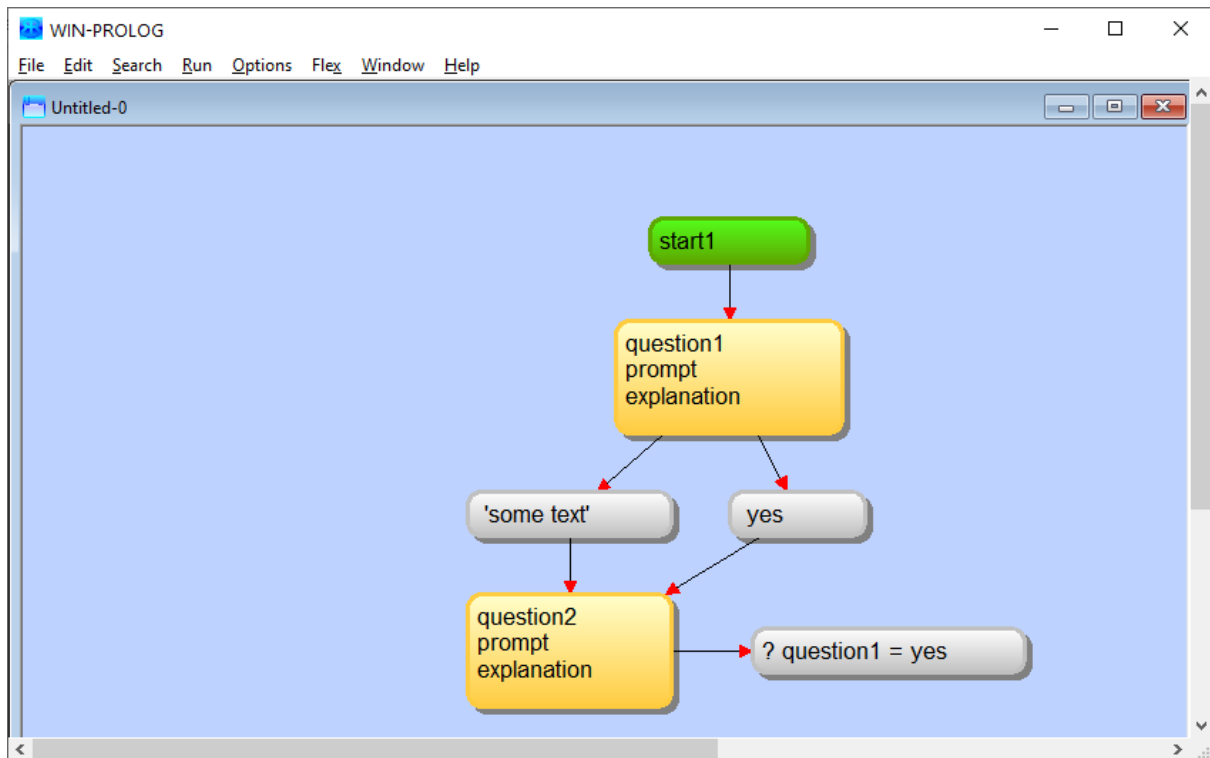
Incorrect syntax – If there is a space in expression, then the expression has to be quoted





Incorrect reference

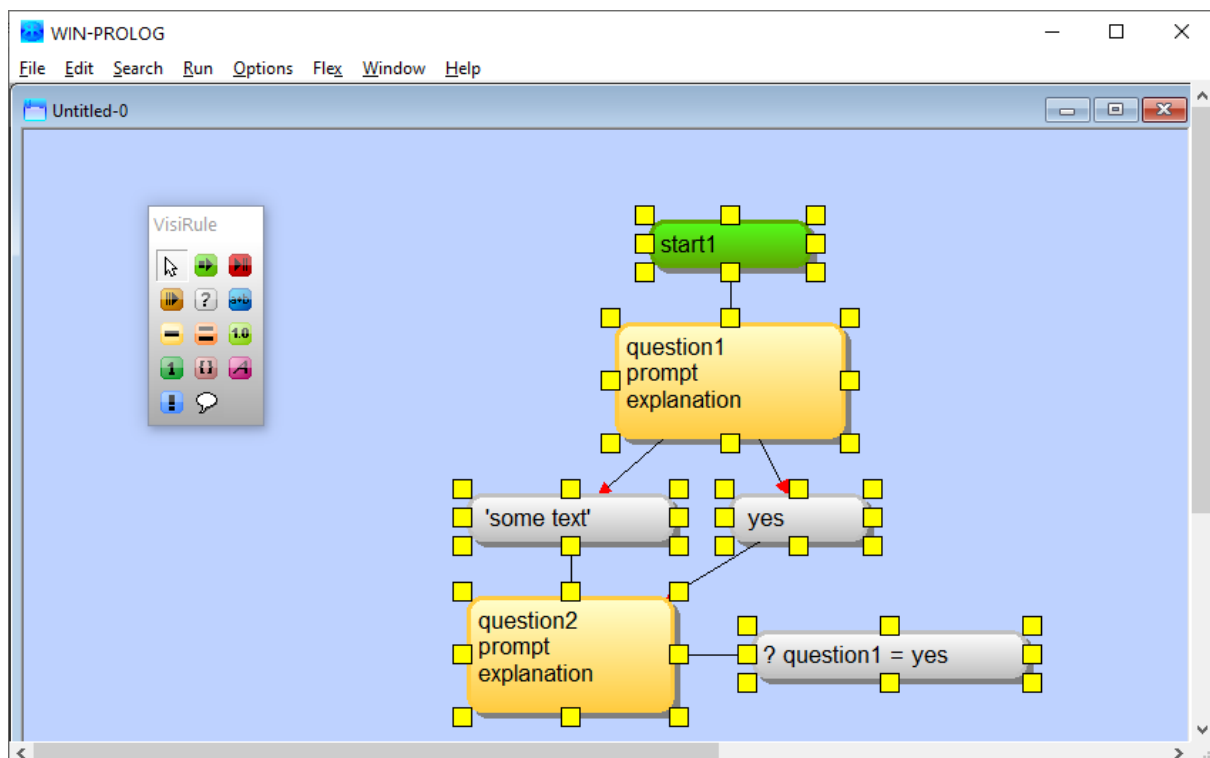
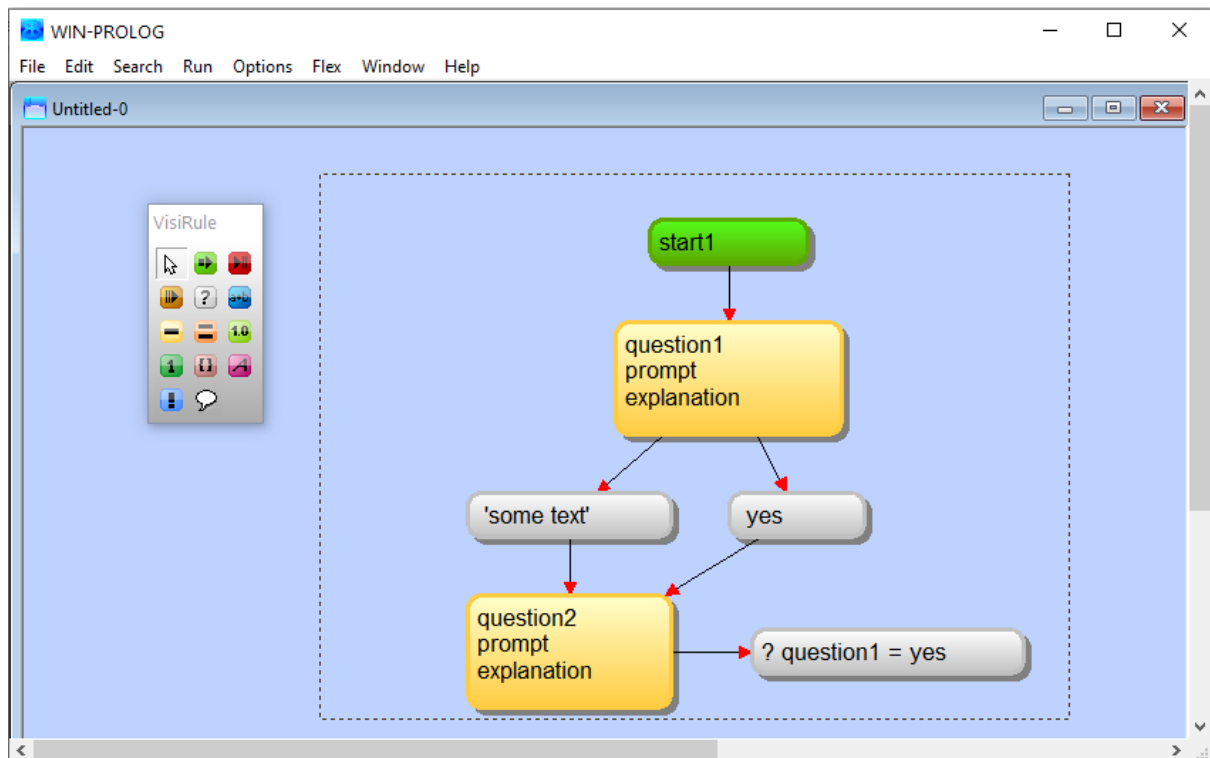




It can take a while to correct the expression; sometimes you may need to delete it and create a new one very CAREFULLY, or use CNTL-A, CNTRL-X and CNTL-V to re-enter it.

The Select Tool on the Tool Palette

The select tool (looks like a pointer) is the first tool on the floating tool palette. It is there to Select items - either one at a time, or multiple items by drawing an enclosing marquee.



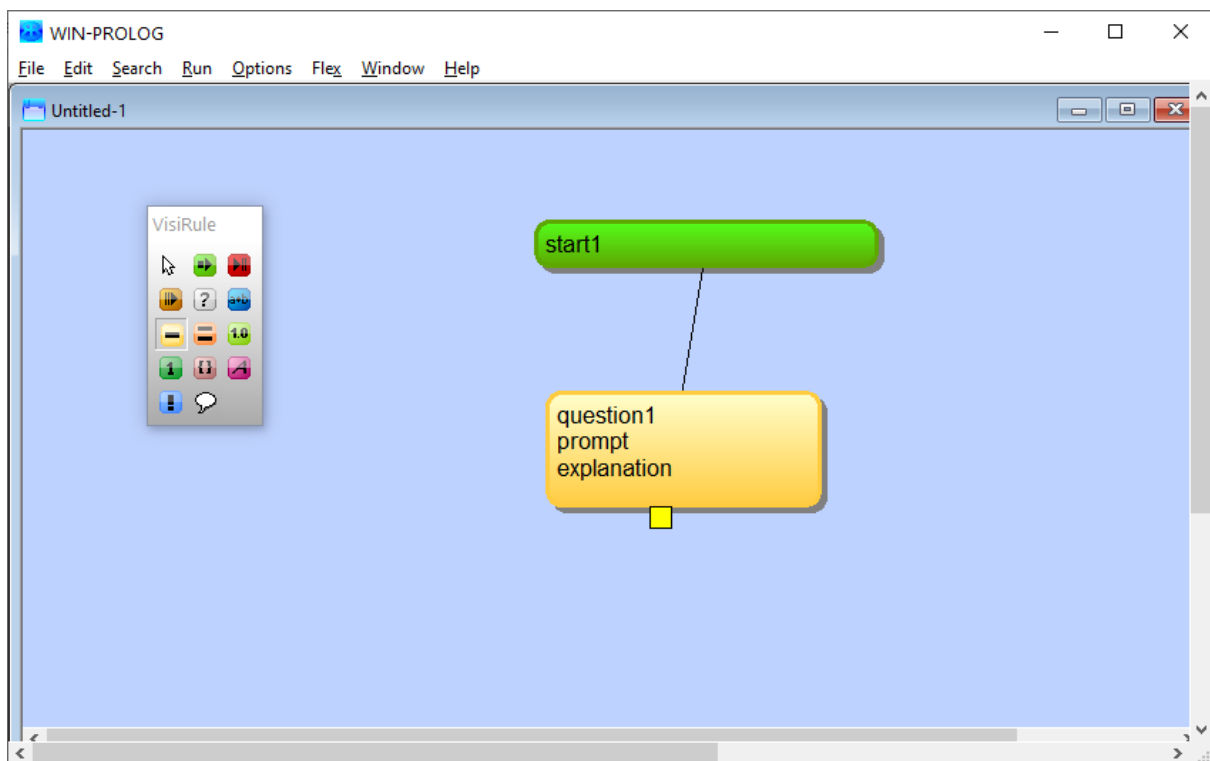
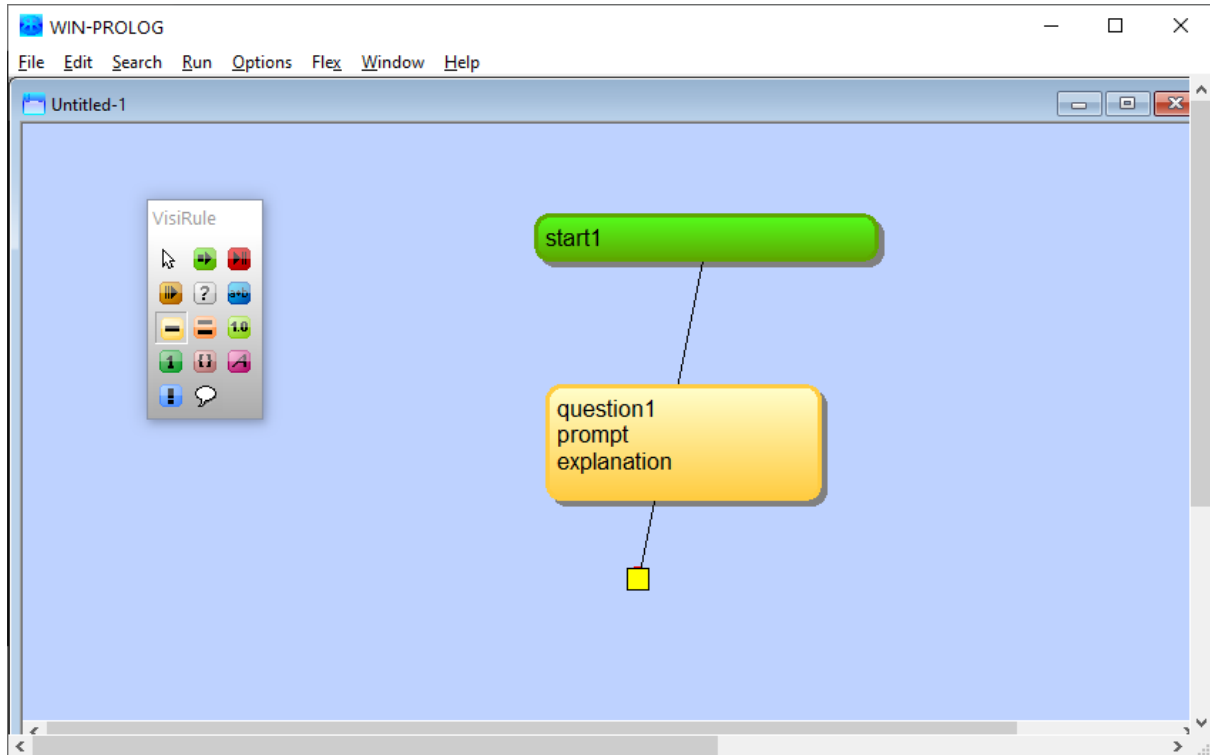
The cursor will change shape (to an Up arrow) when you can select something. Once items are selected, you can then nudge them using the arrow keys or drag them around or delete them.

PLEASE NOTE: You can NOT link with this select tool.

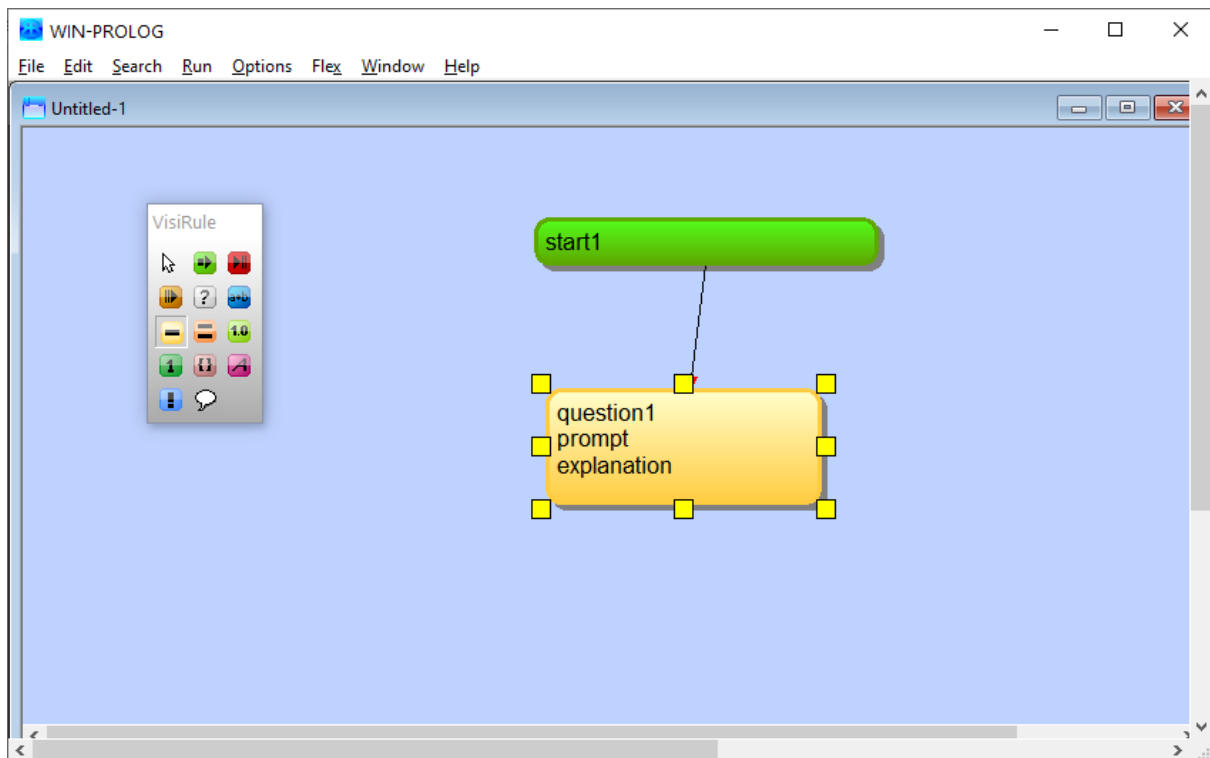
Connecting Nodes

To link 2 boxes (nodes), choose any tool in the VisiRule palette OTHER than the Select tool; click in the 1st node and drag a link (by holding down left click) and release it over the 2nd box

Not Linked



Linked!



If you click in (near) the edit part of the first box, then this can activate the edit field (see below).

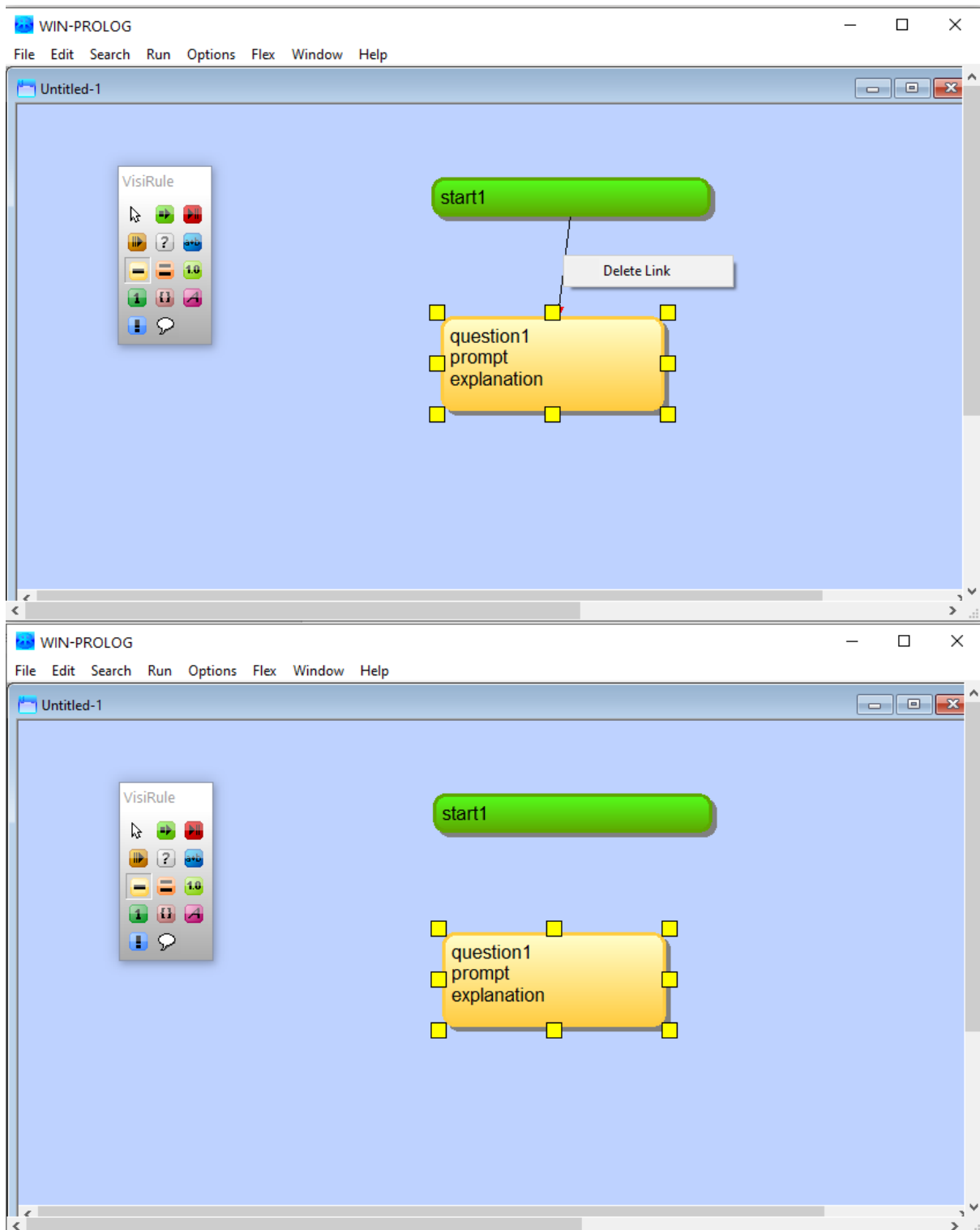
Active Edit

If you find yourself in an active edit field within a node (the text is white and the cursor blinking) ... which can happen when you click in a node too near the centre, and/or as a result of a previous edit ... you may need to ESCAPE/EXIT out of the edit field.

You can ESCAPE simply by hitting <Esc> (normally top left hand key on keyboard).

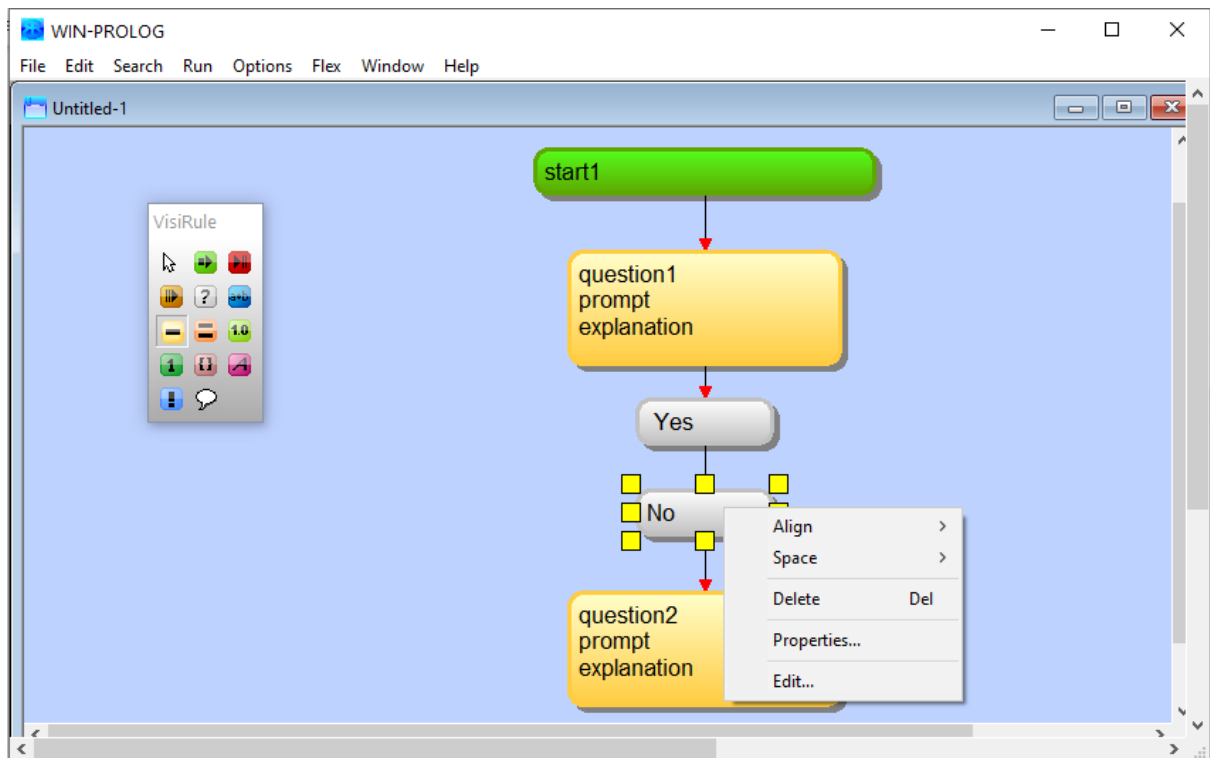
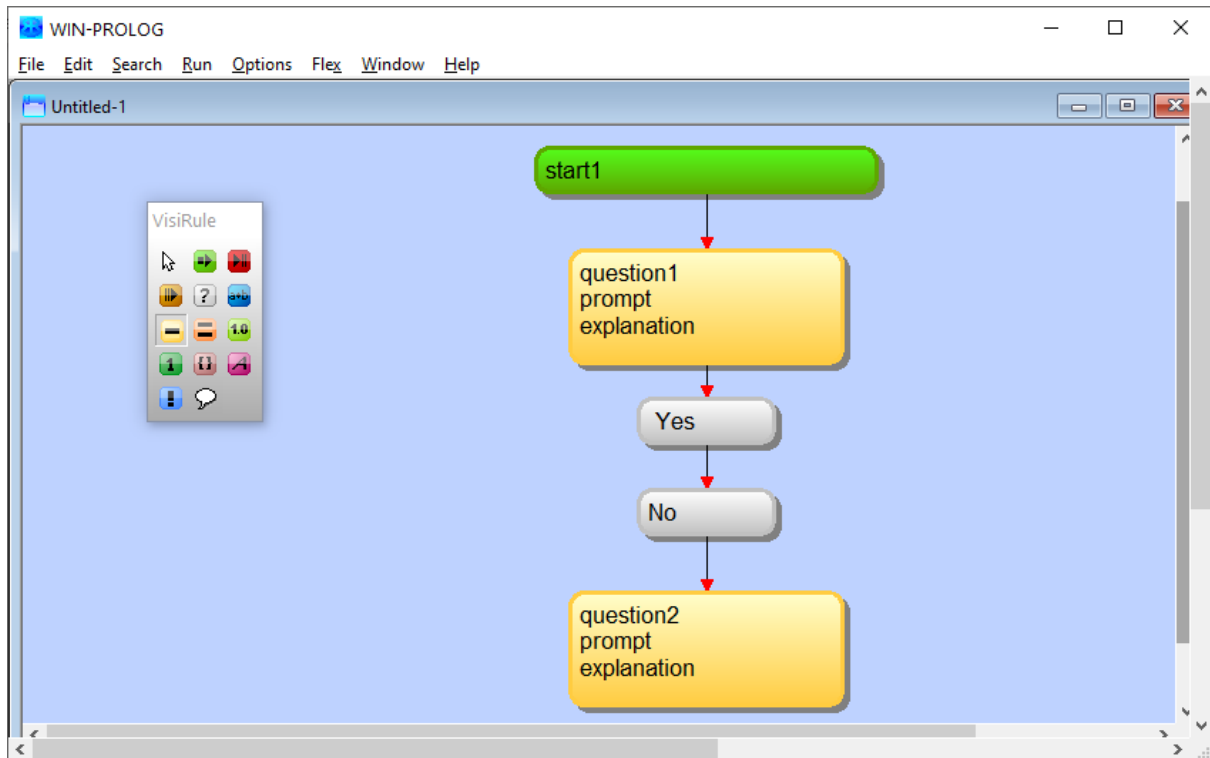
Deleting a Link

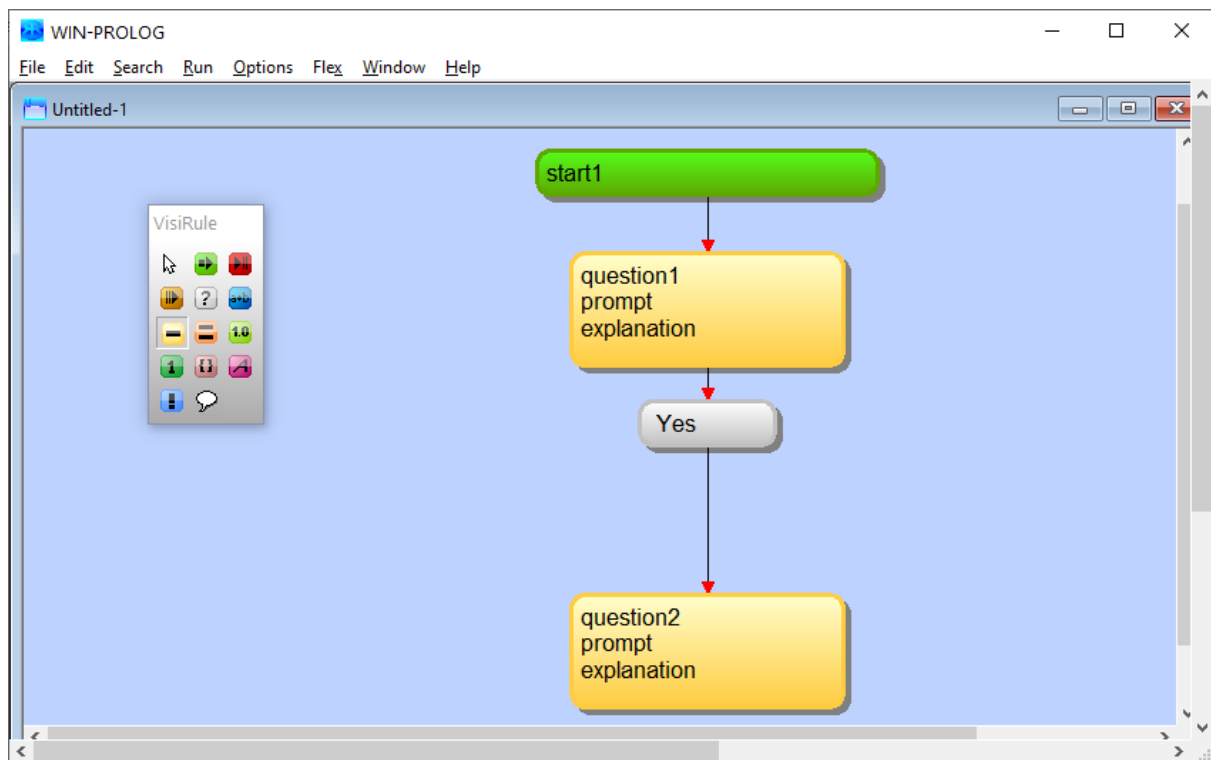
Right Click on a link and you get the option to delete the link.



Smart Deletion

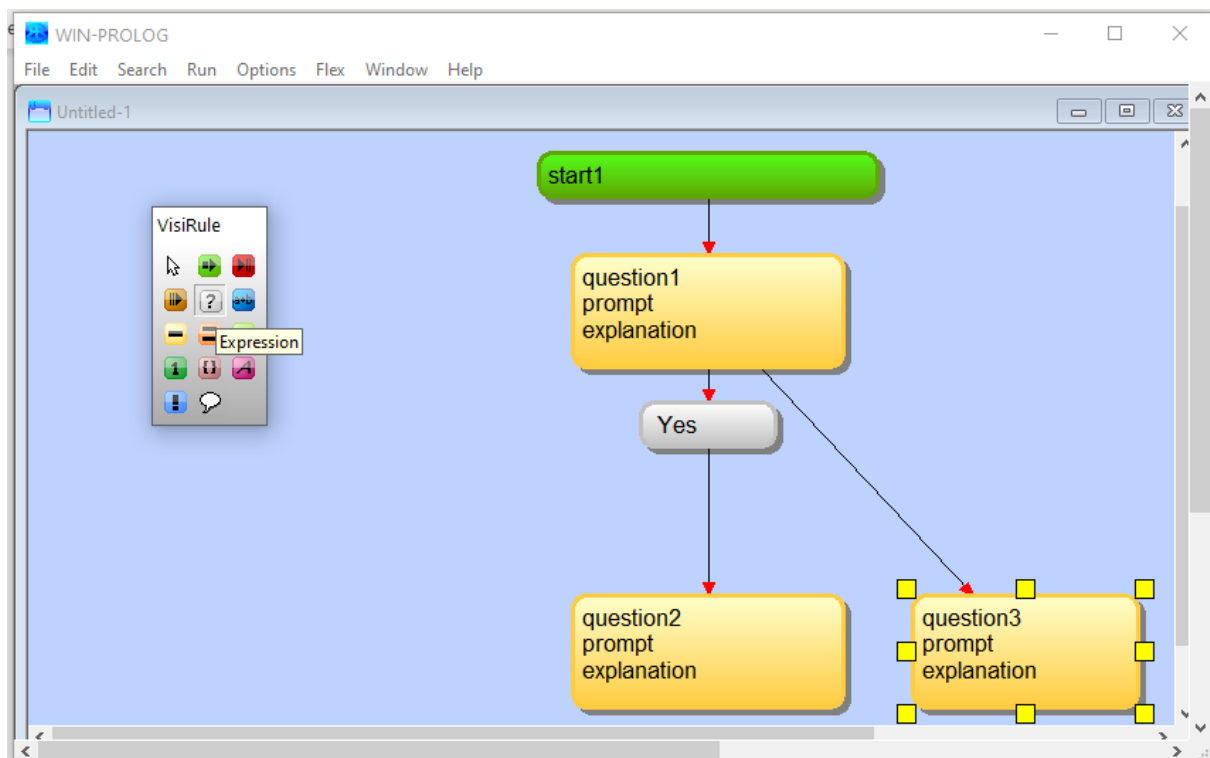
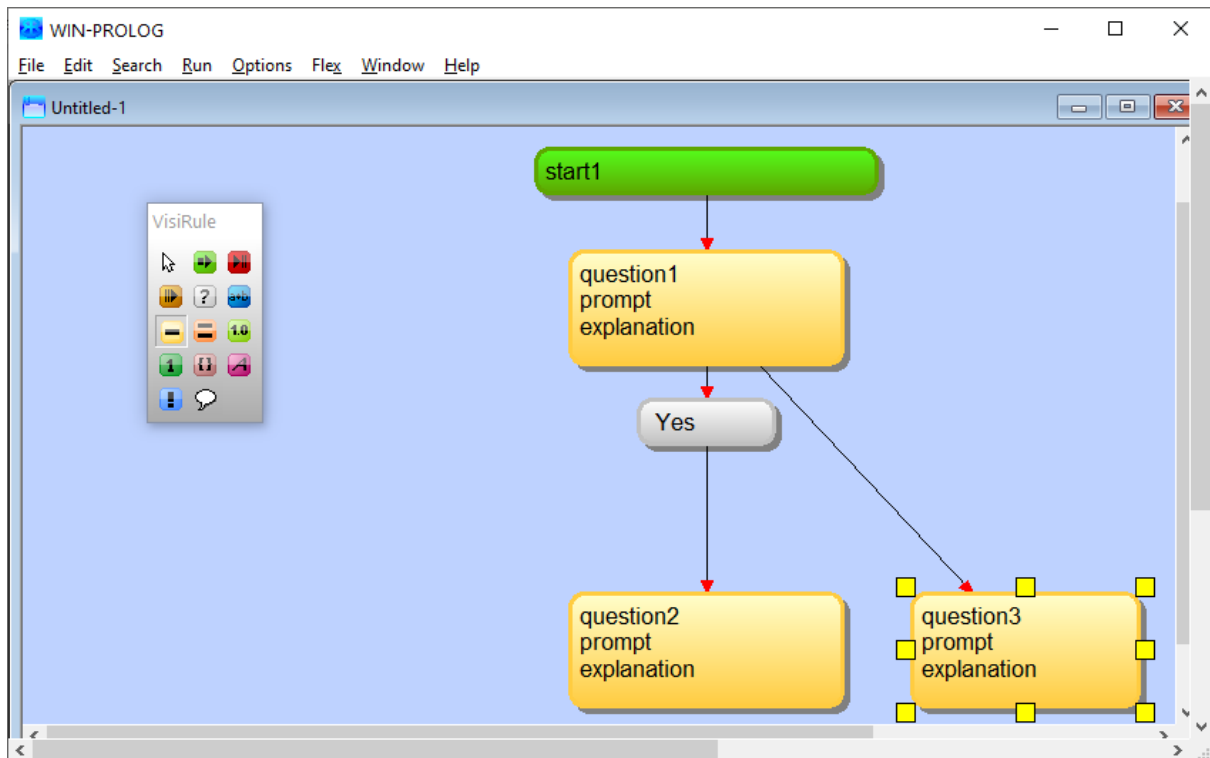
If a node is deleted, say B in a sequence $A \rightarrow B \rightarrow C$, VisiRule will rebuild the links according by deleting the intermediate connections (AB and BC) and generating a new (direct) connection for AC.

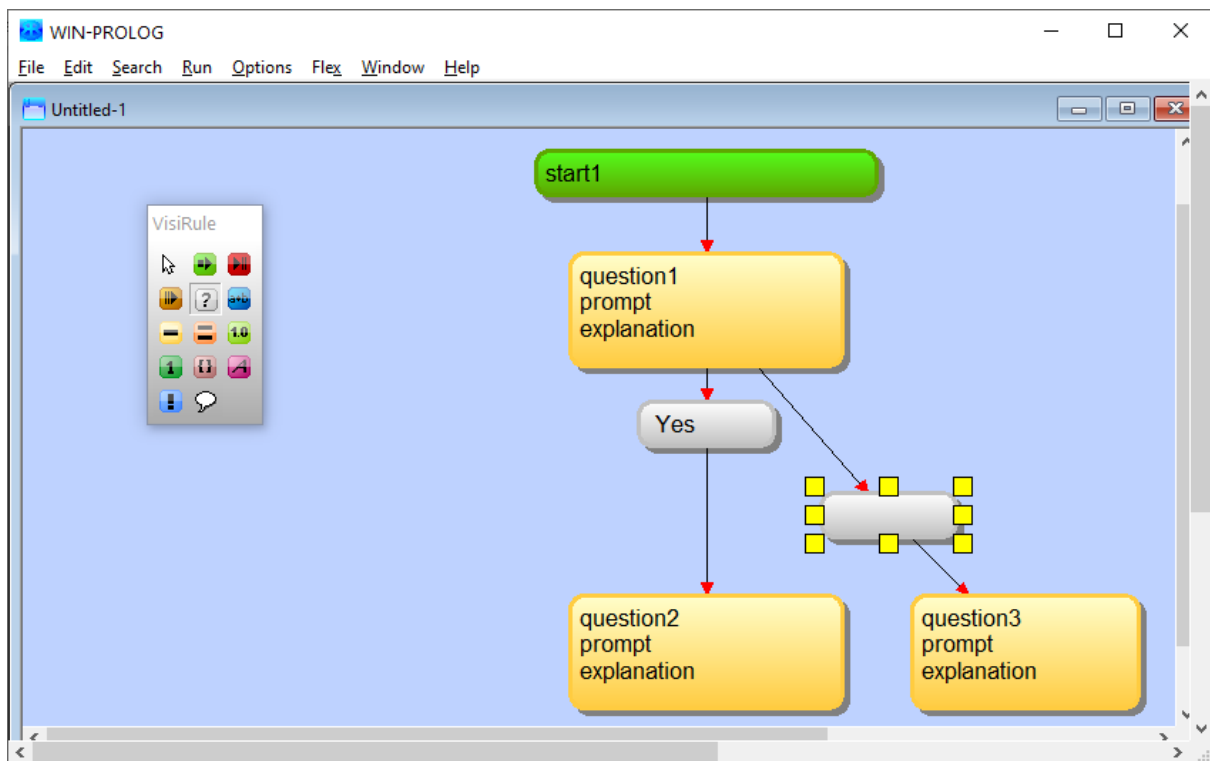
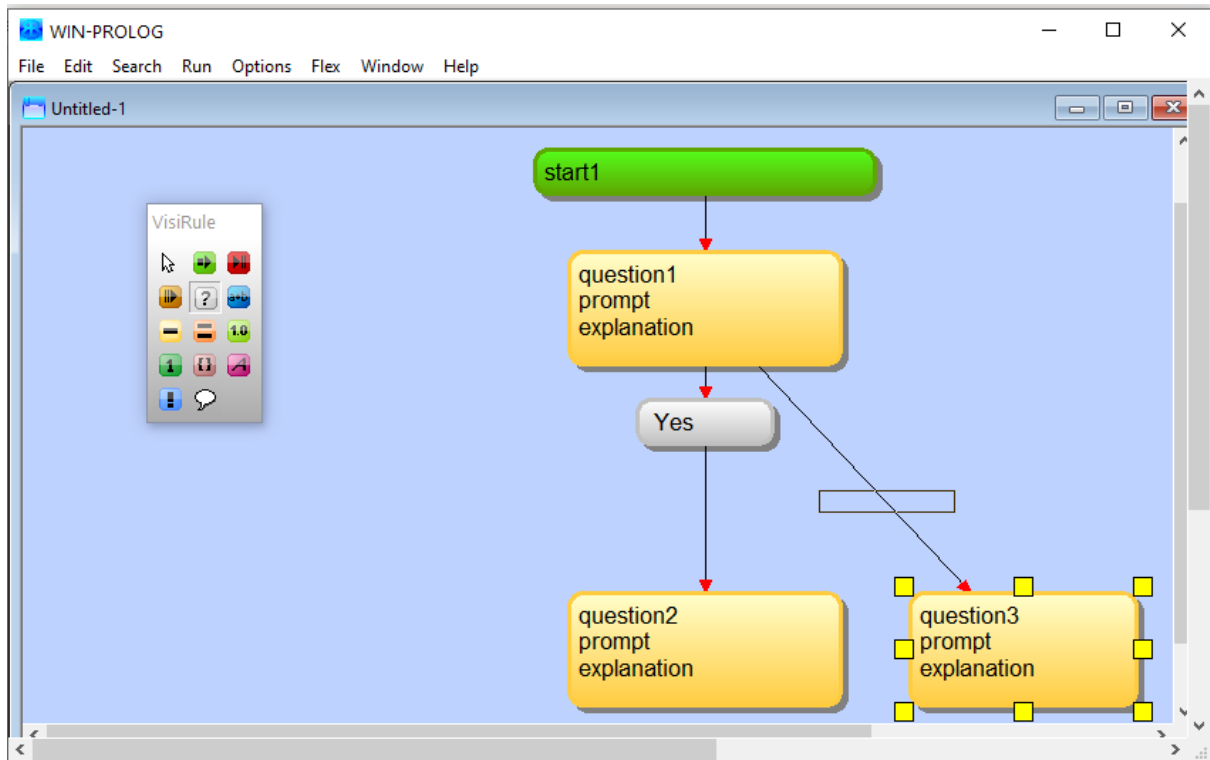




Smart Insertion

If a node is added say B to the sequence A -> C, VisiRule will add the links according by deleting the direct connection (AC) and generating two new connections, AB and BC.





Smart Renaming

Renaming a question will propagate the change into any expressions which reference that question by name.

Alignment & Selection

To move things (i.e. nodes and links) around, and get them to line up nicely:

- a) select them (indicated by the yellow boxes appearing), and then
- b) use the nudge or arrow keys (the arrow keys are normally located on the bottom rhs of the keyboard) to move them very slightly or drag them around. Connected links will follow nodes.
- c) You can also use the alignment facilities that are available

To select multiple items, it is best to use the Select tool (first icon in the floating VisiRule palette)

You can also select lots of boxes and links by drawing a marquee OUTSIDE of all the boxes desired.

This selects all the objects fully enclosed within the marquee rectangle.

You can also select multiple objects by using shift-click, in which case you can drag them all around with the mouse.

Floating Toolbar

If you lose the floating palette, go to the Options menu and try clicking on 'Show Toolbar'

Scroll the Canvas

You can enlarge the canvas by panning - i.e. hit space bar

Zoom

You can switch quickly to the Zoom tool by holding down Ctrl+Spacebar to zoom in or Ctrl+Alt+Spacebar to zoom out.

You can also switch to the Zoom tool using the Ctrl+Spacebar keystroke, and then click and drag a rectangular selection box around the area you want to zoom in on and release the mouse button. VisiRule zooms in on that selection.

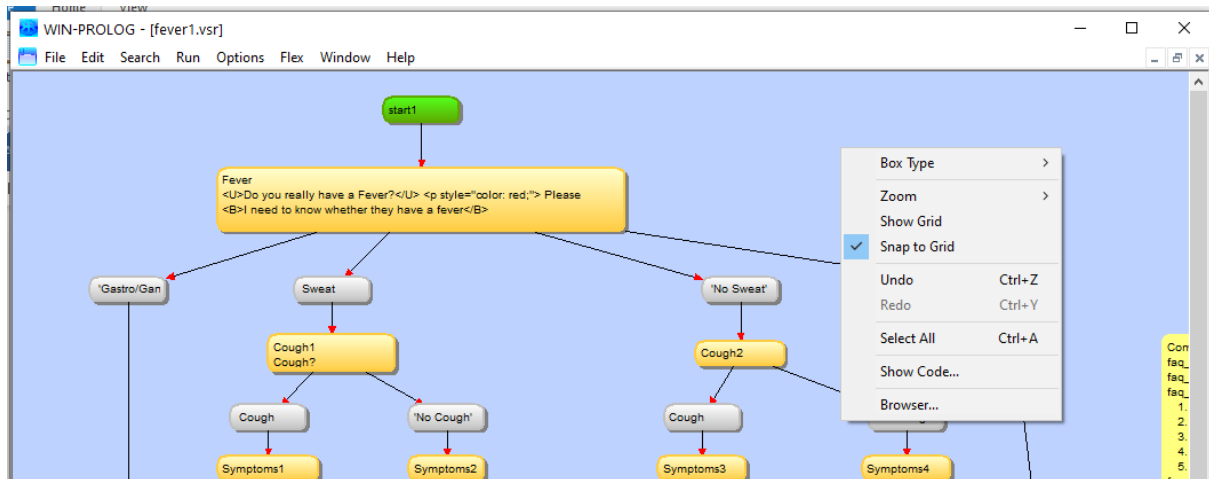
Pan

You can move the whole chart across the screen by holding down the Spacebar and dragging whilst you are in Select Mode. The cursor should change to the hand

Pop-up Menu

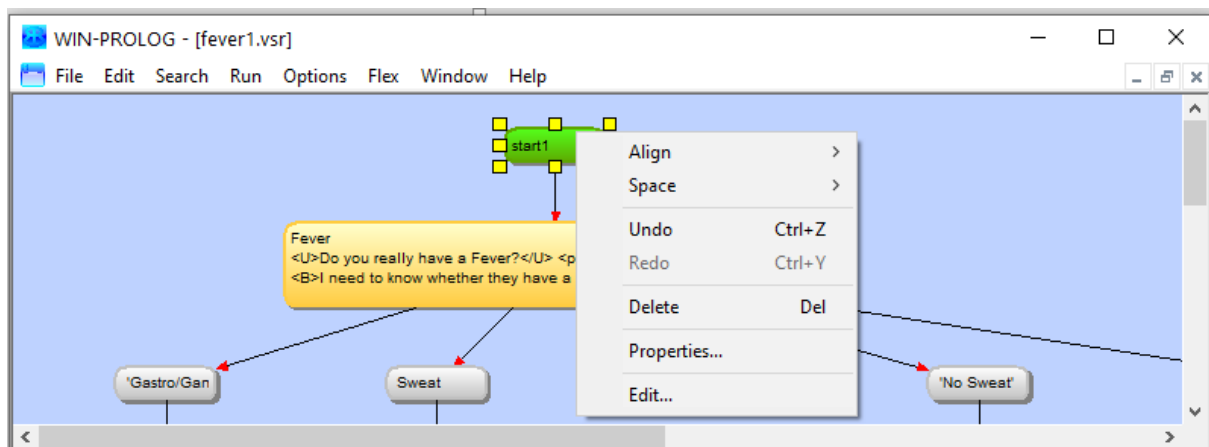
When you right click on the canvas away from any nodes/links, you get a small pop-up menu.

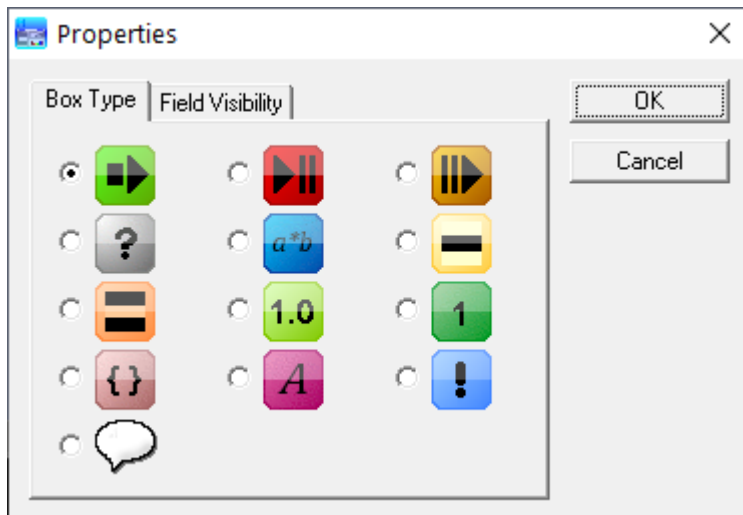
The last item (or penultimate item if you have the vreditor loaded) here allows you to Show Code ... This generates executable rules which allow you to test the chart and its logic.



Changing Box Types using pop-up property dialog

If you have created a node of the wrong type, you can often change it by Right-Click on node and Properties...





Undo

To Undo something added by accident, use Undo (<CTRL><Z>); remember if you are in an active Edit field, you may need to hit <Esc> first to exit it.

Multiple Choice (i.e. multi-answer) vs Single Choice Questions

Multiple choice questions can invariably be decomposed and then asked as a series of single choice questions. But sometimes, you want ask about lots of possible options all at the same time.

Naming Questions

Use MeaningfulNames wherever possible. Each name can only be used once. So, if asking for phone number twice have:

```
Q1 = HomePhoneNumber or home_phone_number  
Q2 = WorkPhoneNumber or work_phone_number
```

PLEASE NOTE: Questions have to have UNIQUE names

The 3 Fields in a Question

Field 1]

The Internal Name for the box ... normally not used nor required UNLESS the question is referenced explicitly by name within an expression (or statement box) later in the chart;

The Internal Name is mainly visible from a Chart Developers' viewpoint; it is not visible at run-time (other than for debugging and/or reporting purposes)

It is used in the question trail which records and reports on the user's session.

Try NOT to use spaces (or even a CapitalInitialLetter), as this means quotes will be needed in any future expression.

Statements have to have UNIQUE names

Field 2]

'The text which is to be presented at run-time as the question prompt'

Field 3]

An optional piece of text which serves as an explanation could be a URL which will act as a link ... could be a hook into a bespoke explanation system

If interlocutors are supported, such as HOW, WHY, What, then follow the instructions for how to organize them.

The 3 Fields in a Statement Box

Field1) The Internal Name for the box ... normally never used UNLESS the statement box is referenced explicitly by name in a later expression (or statement box) in the chart. As with Question Names, the Internal Name is only visible from a Chart Developers' viewpoint; it is not visible at run-time (other than for debugging and/or reporting purposes)

Field2) The name of the logical Variable (UppercaseInitialLetter) which occurs in the statement box code (Field 3) which contains the answer

A typical logical variable is:

```
X
Answer
Income
```

Field3) Some program code which can use one or more LogicalVariables; only one of which (the one in Field 2) will be used to communicate the computed value of the statement

Examples of implication (If-Then-Else) are:

```
( 'Value' > 0, 'Value' < 50 -> Answer = 'Low';
  'Value' >= 51, 'Value' < 100 -> Answer = 'Medium';
  Answer = 'High )
```

Calculations in Statement Boxes

some examples:

1] Total is 'Question1' + 'Question2'

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```
2] Total1 is 'Q1' + 'Q2' * 12,  
    Total2 is 'Q3' + 'Q4' * 12,  
    Diff is Total1 - Total2
```

The variable of interest in [1] is Total and in [2] is Diff

```
3] TotalCost is ( 'CarCost' * 1.2 ) + 120
```

Quotations and Expressions

If you want a single choice question to contain items such as '> 3' and '< 3' then you MUST use quotes in the expression boxes.

Whenever you introduce a space in an expression, you will need to use SINGLE quotations marks later on when referring to that item.

Or you may choose to use underscore:

```
'Cathode Ray Tube'  
'cathode ray tube'  
cathode_ray_tube
```

Quotation Marks

Do NOT use "double" quotation marks.

Do NOT use `back` quotes

Do NOT use SMART quotes

Use 'single' quotes.

Numerical Questions

It is always good to have at least 2 expressions coming out of a numerical question.

a) tests for = 0 and b) tests for some value > 0

This is generally true too for Statement boxes, especially where they are doing some sort of calculation.

Splitting Long Text

You can force text onto separate lines within boxes by using <SHIFT><ENTER> which is sometimes referred to as a hard carriage return

End Boxes i.e. conclusions

The node before an end box CAN be (and often is) an expression

If you want to 'continue' your process after the end box has been reached, you can do that but you will need drop down a layer into Flex OR run the chart using a meta-chart.

Incorporating HTML

You can use HTML to enhance the presentation of text on the web simply by using the correct HTML tags.

You can do this for explanations, question prompts and conclusions and within the body of any write or flash statement.

There is an example available which shows how to incorporate text, images, video within VisiRule charts.

Debugging

A very useful ploy is to include (code boxes with) flash/1 or write/1 calls; i.e.

```
flash( 'CurrentValue' )  
write( 'We have reached here' )
```

or you can define your own predicate which combines both (flash and write)

Errors

Do check in the Console Window for error messages,

Error 4 - Heap Space Full - (pqpbbeuss 110

This can be fixed by increasing the amount of heap space allocated say by:

```
?- xinit( B, L, R, H, T, P, S, I, O ), H1 is H+H, xinit( B, L, R, H1,
T, P, S, I, O ).
```



```
WIN-PROLOG - [Console]
File Edit Search Run Options Flex Window Help
! -----
! Error 4 : Heap Space Full
! Goal      : vrl_show(ks1,['c:\users\clive\downloads\cliveswork\miscvsr_charts\covid symptoms.vsr'])
! ?- ~Z
! ?-
! -----
! Error 4 : Heap Space Full
! Goal      : vrl_show(ks1,['c:\users\clive\downloads\cliveswork\miscvsr_charts\covid symptoms.vsr'])
! ?-
! -----
! Error 4 : Heap Space Full
! Goal      : vrl_show(ks1,['c:\users\clive\downloads\cliveswork\miscvsr_charts\covid symptoms.vsr'])
! ?-
# 0.004 seconds to consult c:\users\clive\downloads\cliveswork\fromalan\vrverifier.pl
! ?- verifier.
Unmatched Continue boxes.
unmatched_continue('c:\users\clive\downloads\cliveswork\miscvsr_charts\geometry.vsr','reask_q1') .
unmatched_continue('c:\users\clive\downloads\cliveswork\miscvsr_charts\geometry.vsr','reask_q2') . |
unmatched_continue('c:\users\clive\downloads\cliveswork\miscvsr_charts\geometry.vsr','reask_q3') .

Self referencing links.
Deleting self referencing link c:\users\clive\downloads\cliveswork\miscvsr_charts\covid symptoms.vsr : xjzmlkrd - xjzmlkrd
Deleting self referencing link c:\users\clive\downloads\cliveswork\miscvsr_charts\covid symptoms.vsr : pclvucxz - pclvucxz
BE SURE TO SAVE THE FILES CHANGED

Syntax Check: Statement boxes
-----
Syntax Check: Code boxes
-----
yes
```