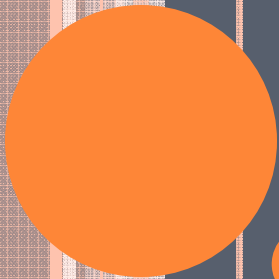


COGUI TUTORIAL

Rules



RULES

Basic Model



Rules to enhance expressiveness

- The vocabulary can be seen as a *lightweight* ontology
- We can enrich it with **rules** expressing properties of relations and concepts
 - **parentOf** and **childOf** are inverse relations
For all x and y , **if** $\text{parentOf}(x,y)$ **then** $\text{childOf}(y,x)$
For all x and y , **if** $\text{childOf}(x,y)$ **then** $\text{parentOf}(y,x)$
 - **ancestorOf** is a transitive relation
For all x , y and z , **if** $\text{ancestorOf}(x,y)$ and $\text{ancestorOf}(y,z)$ **then** $\text{ancestorOf}(x,z)$
 - **siblingOf** is a symmetrical relation
For all x and y , **if** $\text{siblingOf}(x,y)$ **then** $\text{siblingOf}(y,x)$



More rules

- The vocabulary already encodes some kinds of rules

Definition of **motherOf** from **parentOf**

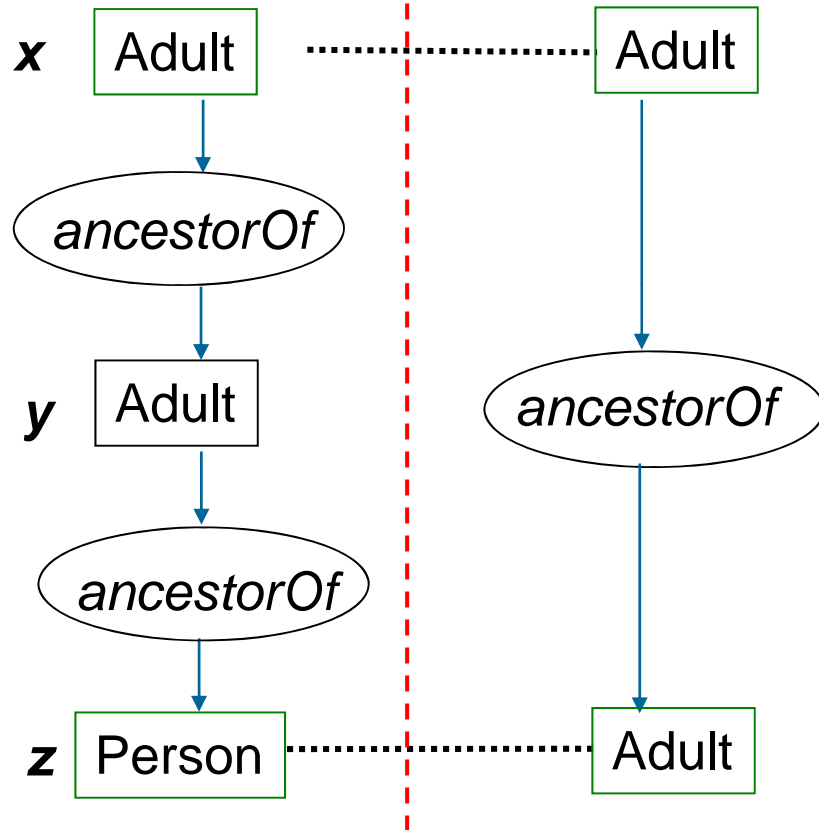
- For all x and y , if **motherOf**(x,y) then **parentOf**(x,y) and **Woman**(x)
already encoded in the vocabulary by subtyping and the signature of **motherOf**
 - For all x and y , if **parentOf**(x,y) and **Woman**(x) then **motherOf**(x,y)
not encoded in the vocabulary
- Rules may introduce new unknown individuals

Definition of **SiblingOf** from **parentOf**

- For all x , y and z , if **parentOf**(z,x) and **parentOf**(z,y)
then **siblingOf**(x,y)
- For all x and y , if **siblingOf**(x,y) then there exists z such that
parentOf(z,x) and **parentOf**(z,y)



Conceptual Graph Rule: « ancestorOf » is transitive



Frontier nodes : *in green*

Logical translation:

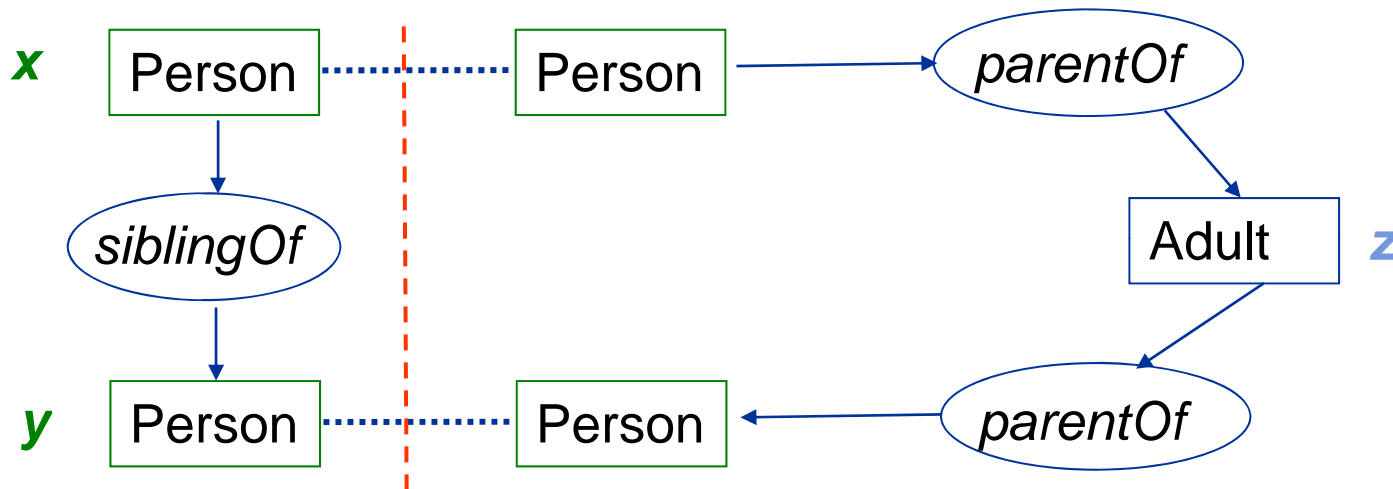
$$\forall x \forall y \forall z (\text{Adult}(x) \wedge \text{Adult}(y) \wedge \text{Person}(z) \wedge \text{ancestorOf}(x, y) \wedge \text{ancestorOf}(y, z)) \rightarrow \text{ancestor}(x, z))$$

Hypothesis
(any basic CG)

Conclusion
(any basic CG)



Another Conceptual Graph Rule



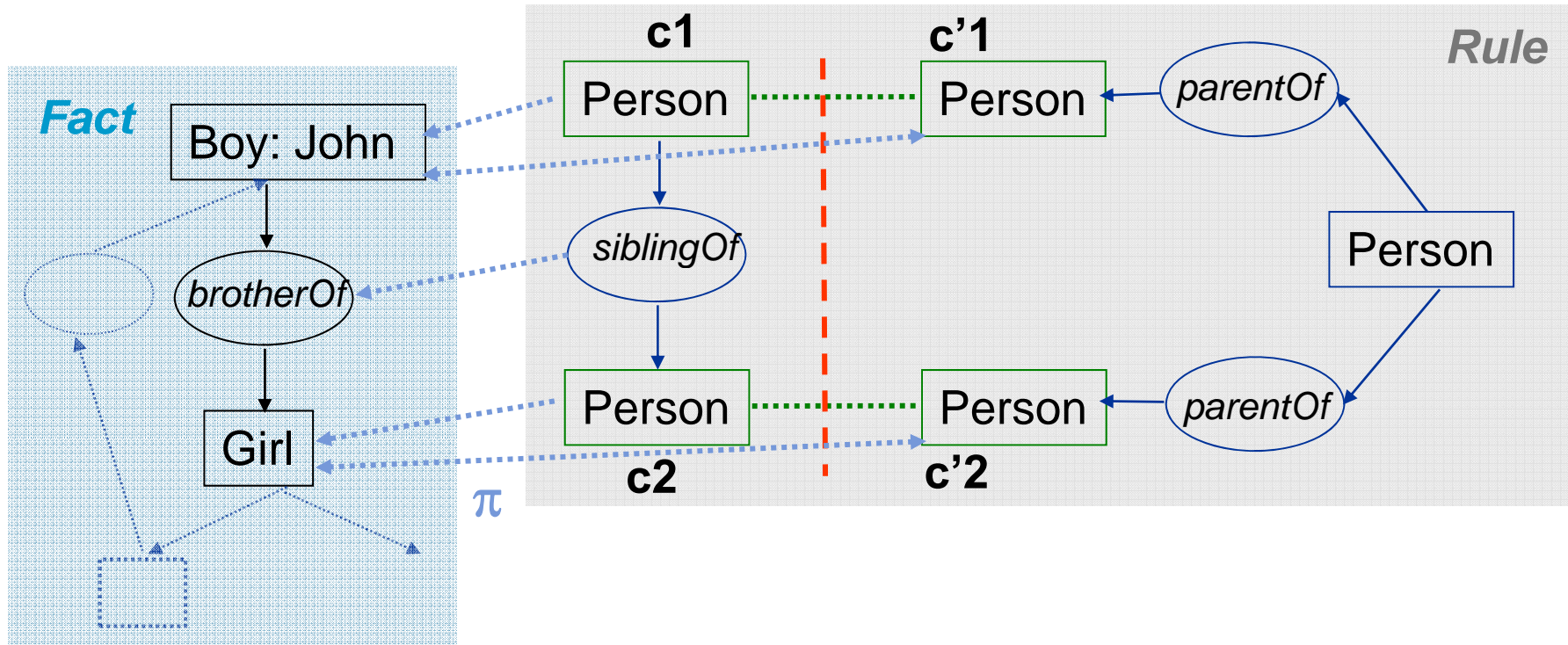
$$\forall x \forall y ((\text{Person}(x) \wedge \text{Person}(y) \wedge \text{siblingOf}(x,y)) \rightarrow \exists z (\text{Person}(z) \wedge \text{parentOf}(z,x) \wedge \text{parentOf}(z,y))))$$

Frontier nodes : *in green*



Rule application

- A rule $H \rightarrow C$ is applicable to a fact F if H projects to F

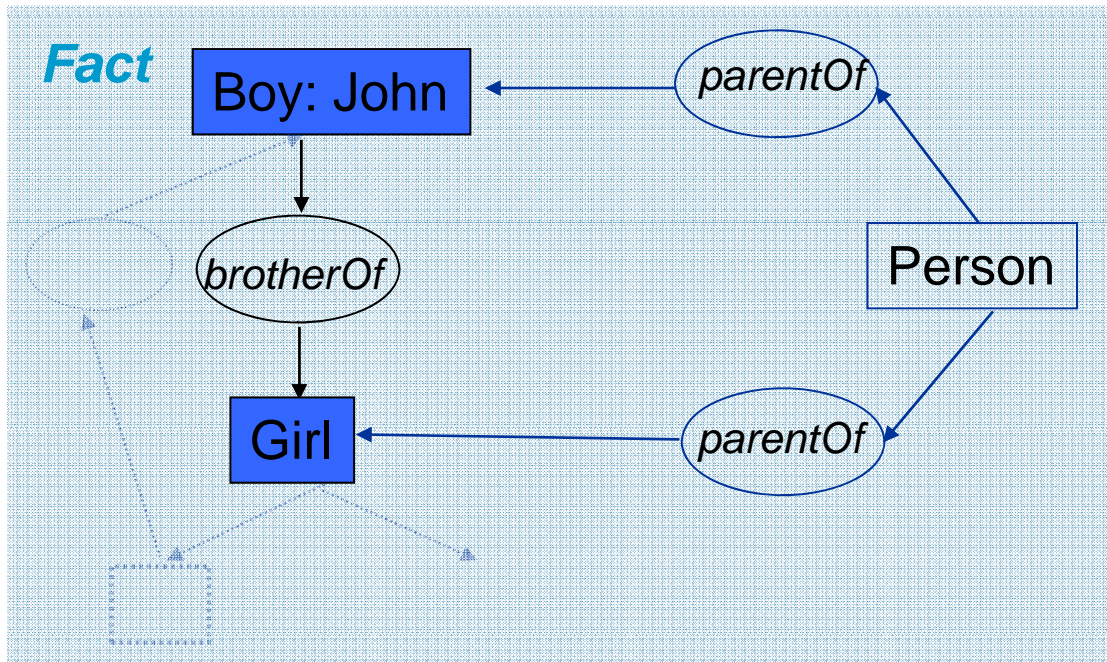


- Given a projection π from H to F , applying the rule consists in:
 - (1) adding C to F
 - (2) merging each frontier node c'_i of C with $\pi(c_i)$ in F



Rule application

- A rule $H \rightarrow C$ is applicable to a fact F if H projects to F

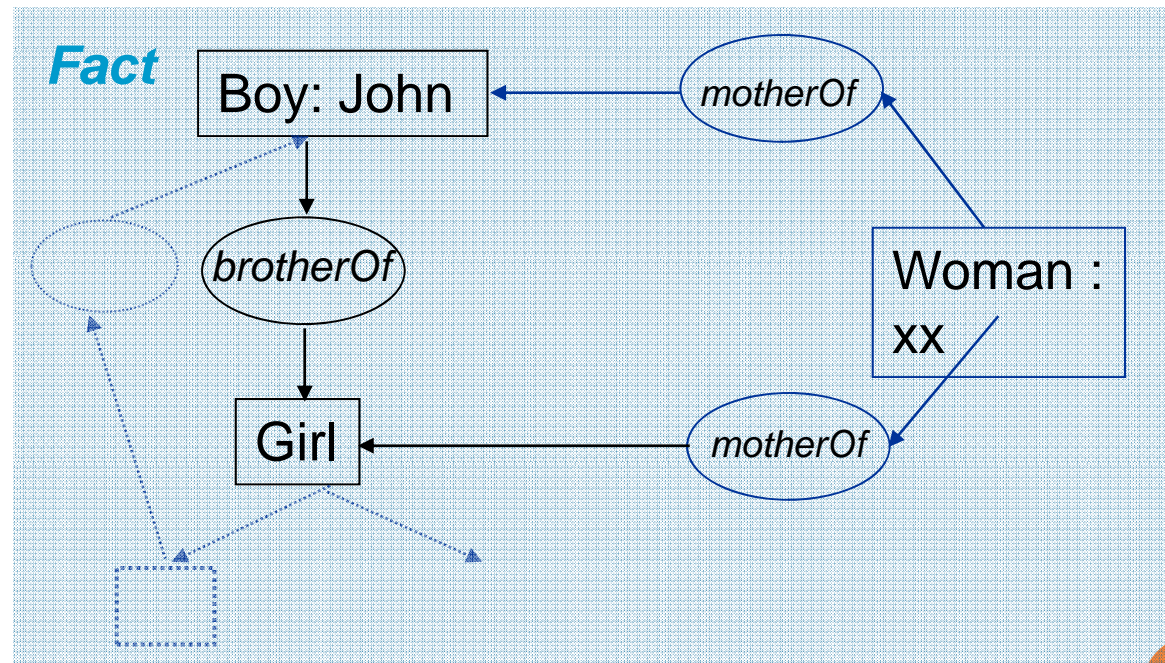


- Given a projection π from H to F , applying the rule consists in:
 - (1) adding C to F
 - (2) merging each frontier node c'_i of C with $\pi(c_i)$ in F

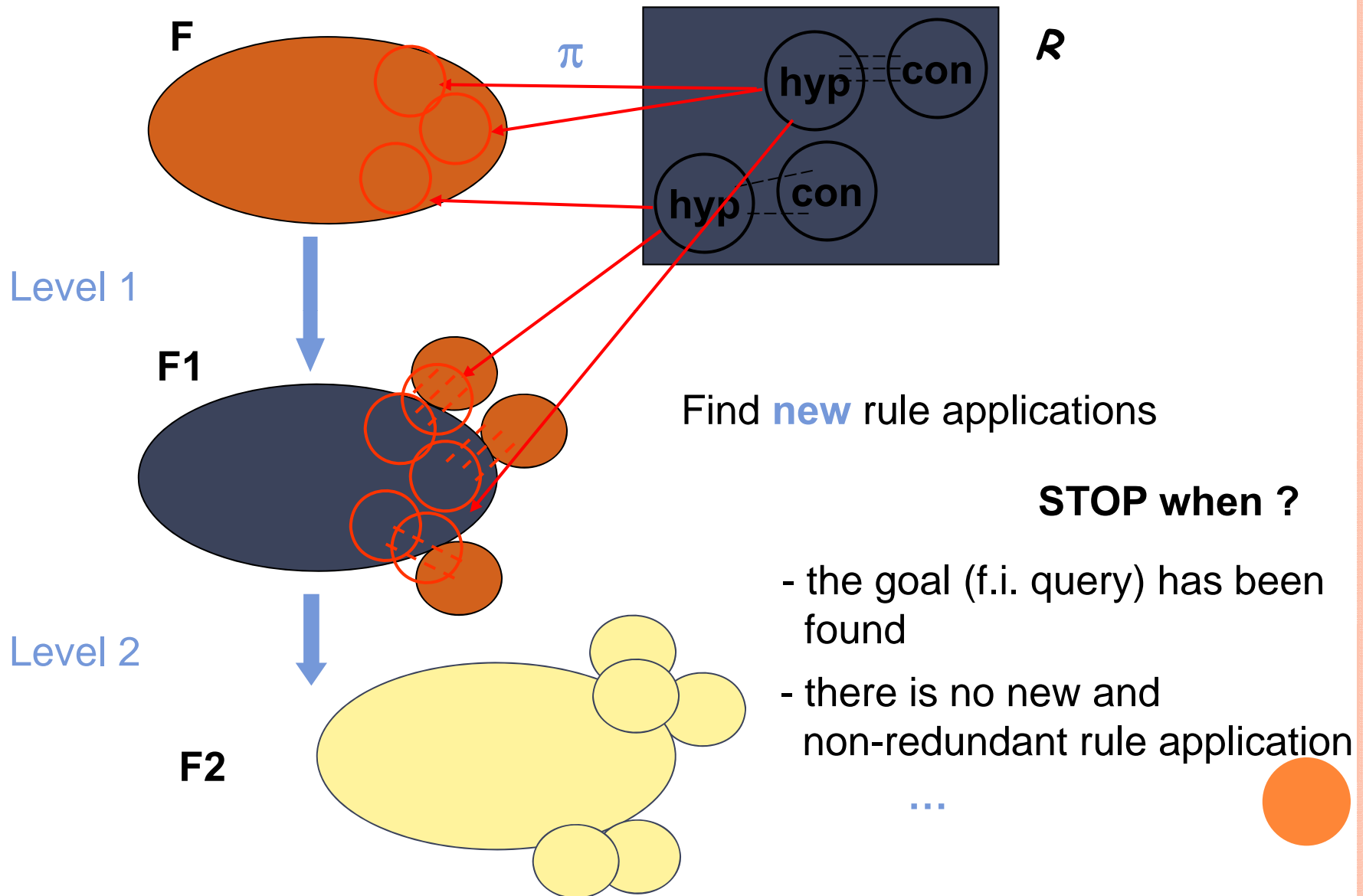


Redundant rule application

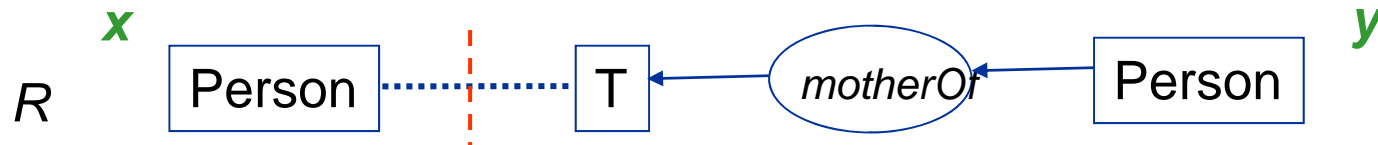
- Example: trying to apply the previous sibling rule to this fact



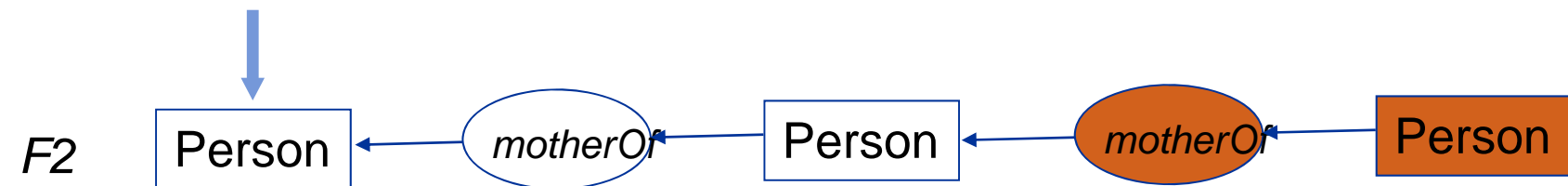
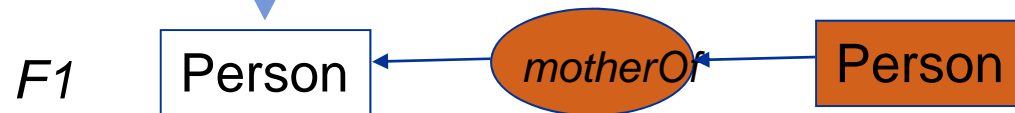
Forward Chaining (FC) Scheme



Forward Chaining (FC) may not halt



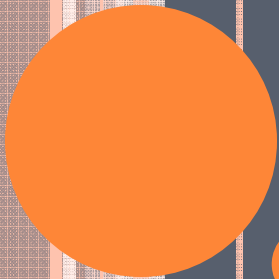
$\forall x (\text{Person}(x) \rightarrow \exists y (\text{Person}(y) \wedge \text{motherOf}(y,x)))$



Forward chaining soundness and completeness

- Knowledge base K with a set of facts F and a set of rules R
- Query Q
- Q is logically deducible from K if and only if there is a projection from Q to a fact produced by FC (K)



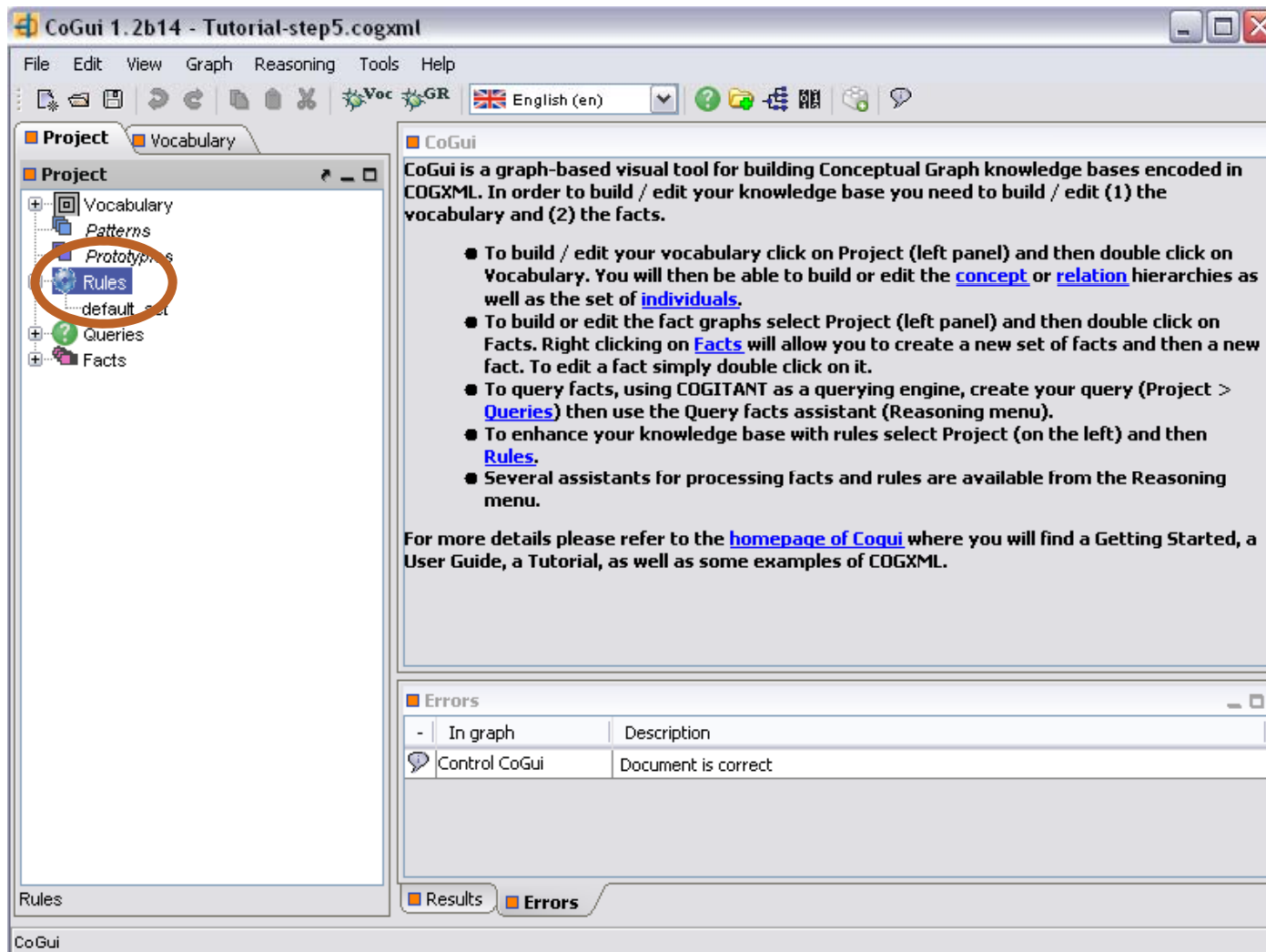


RULES

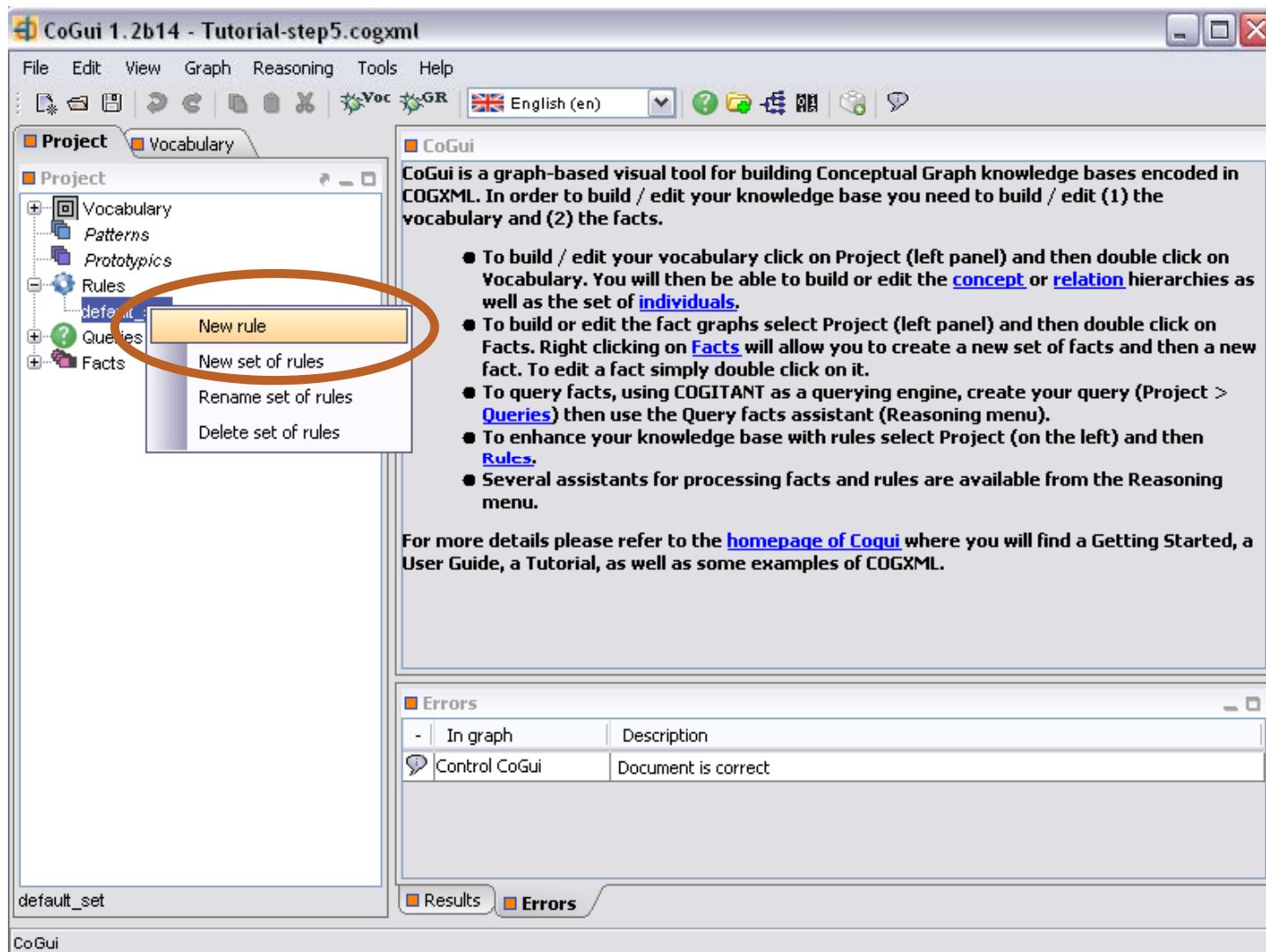
USING COGUI



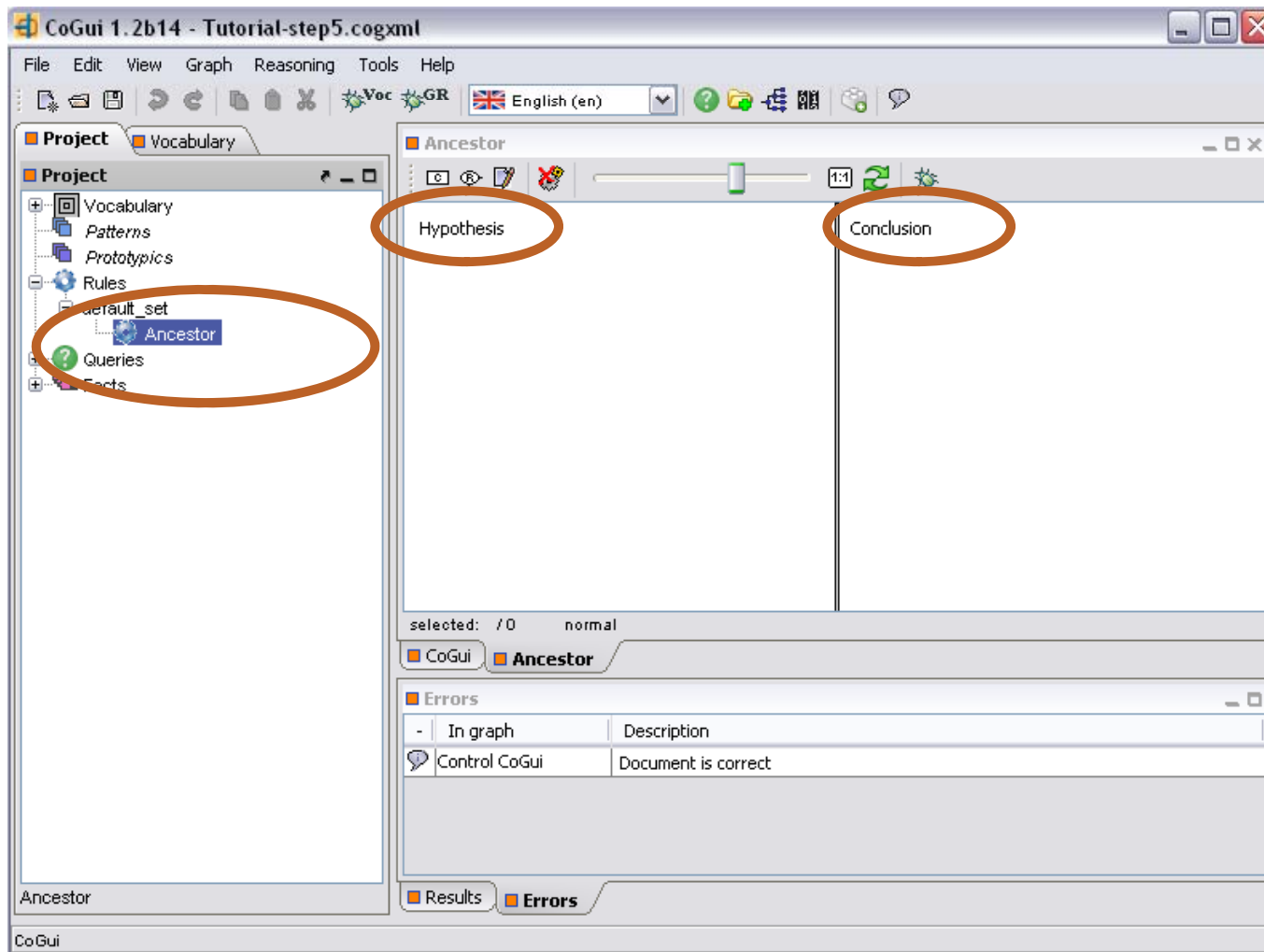
GO TO RULES IN THE PROJECT MENU



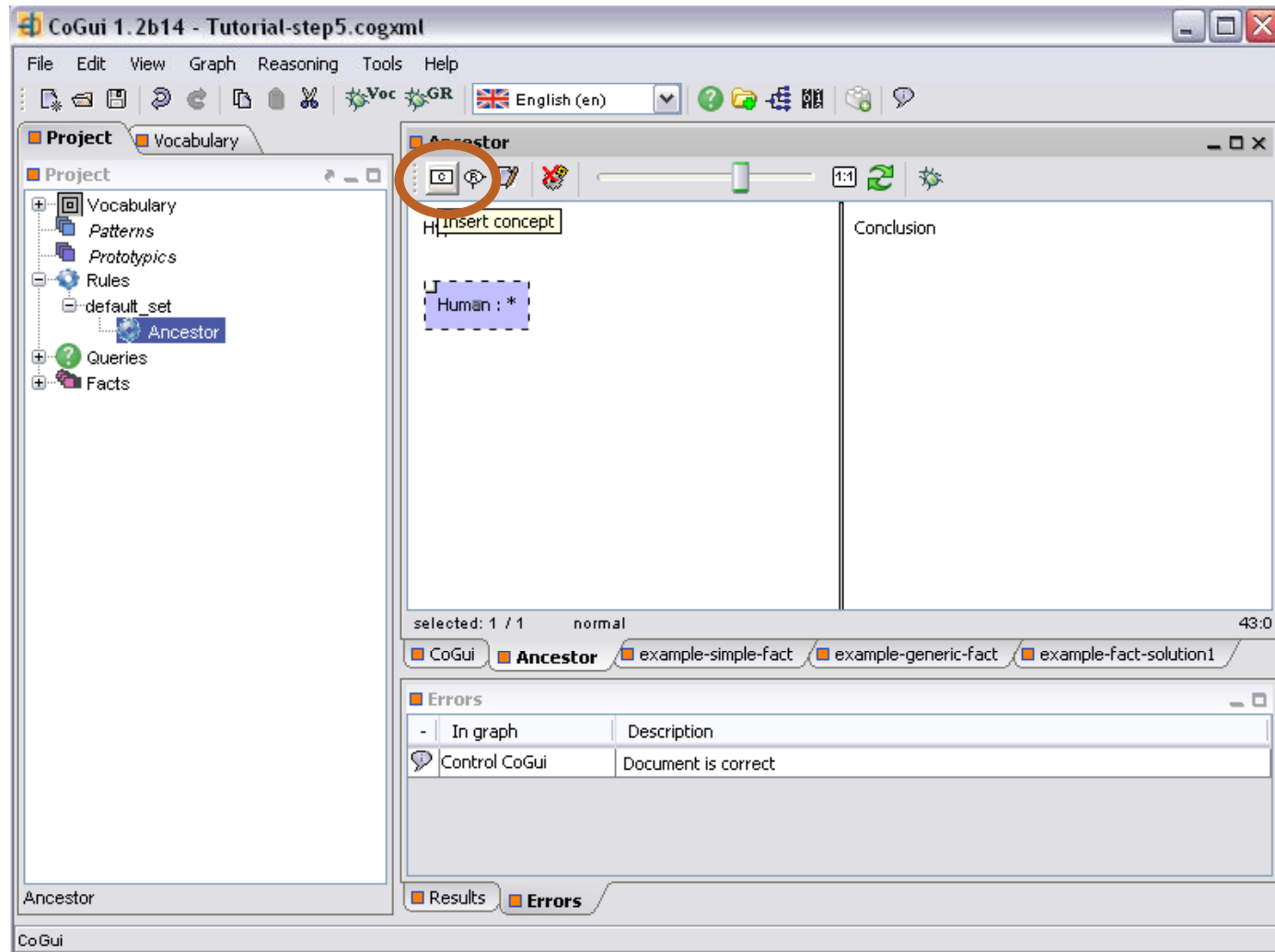
RIGHT CLICK ON DEFAULT SET AND SELECT NEW RULE



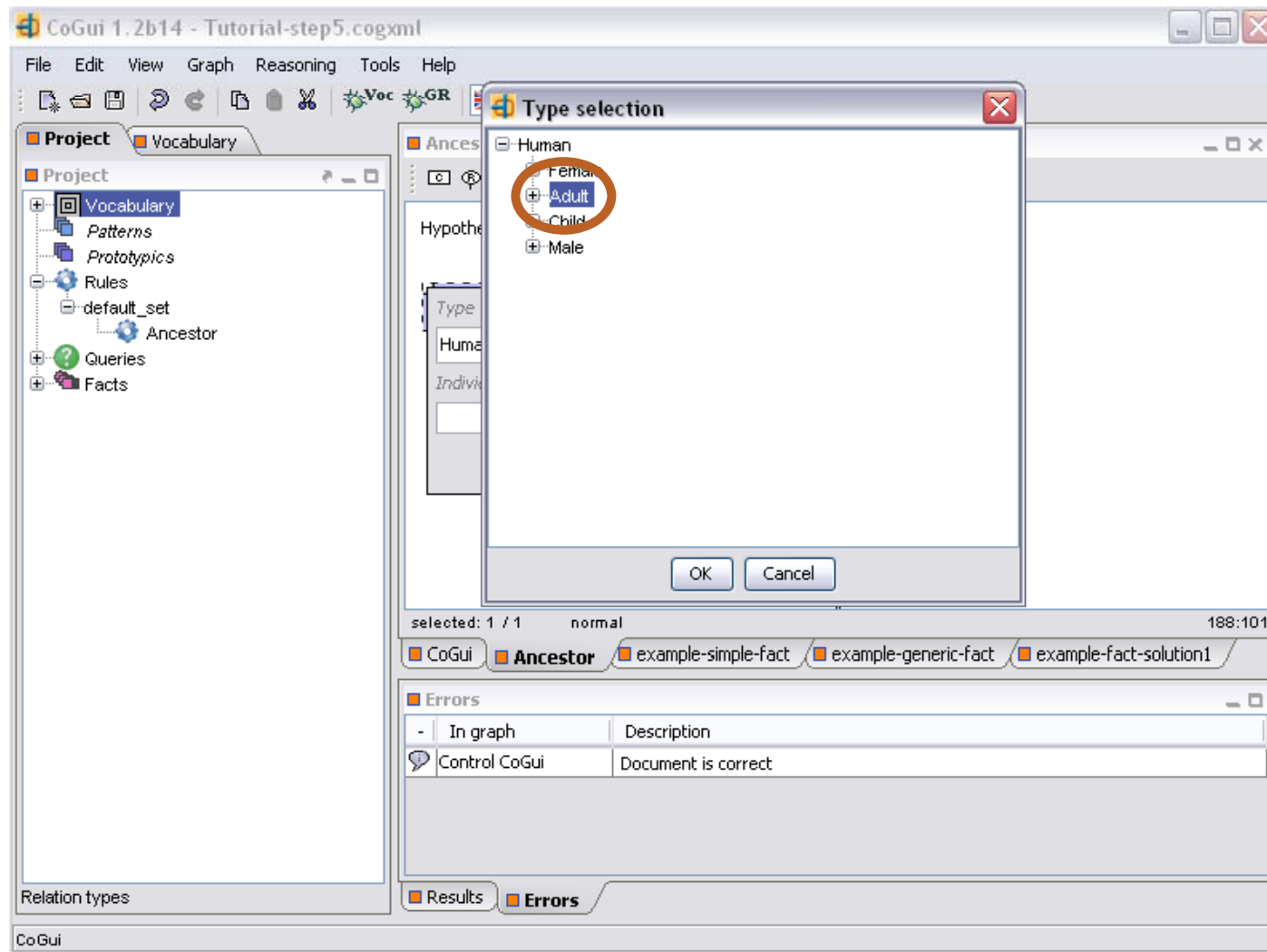
NAME YOUR RULE AND EDIT THE HYPOTHESIS AND THE CONCLUSION



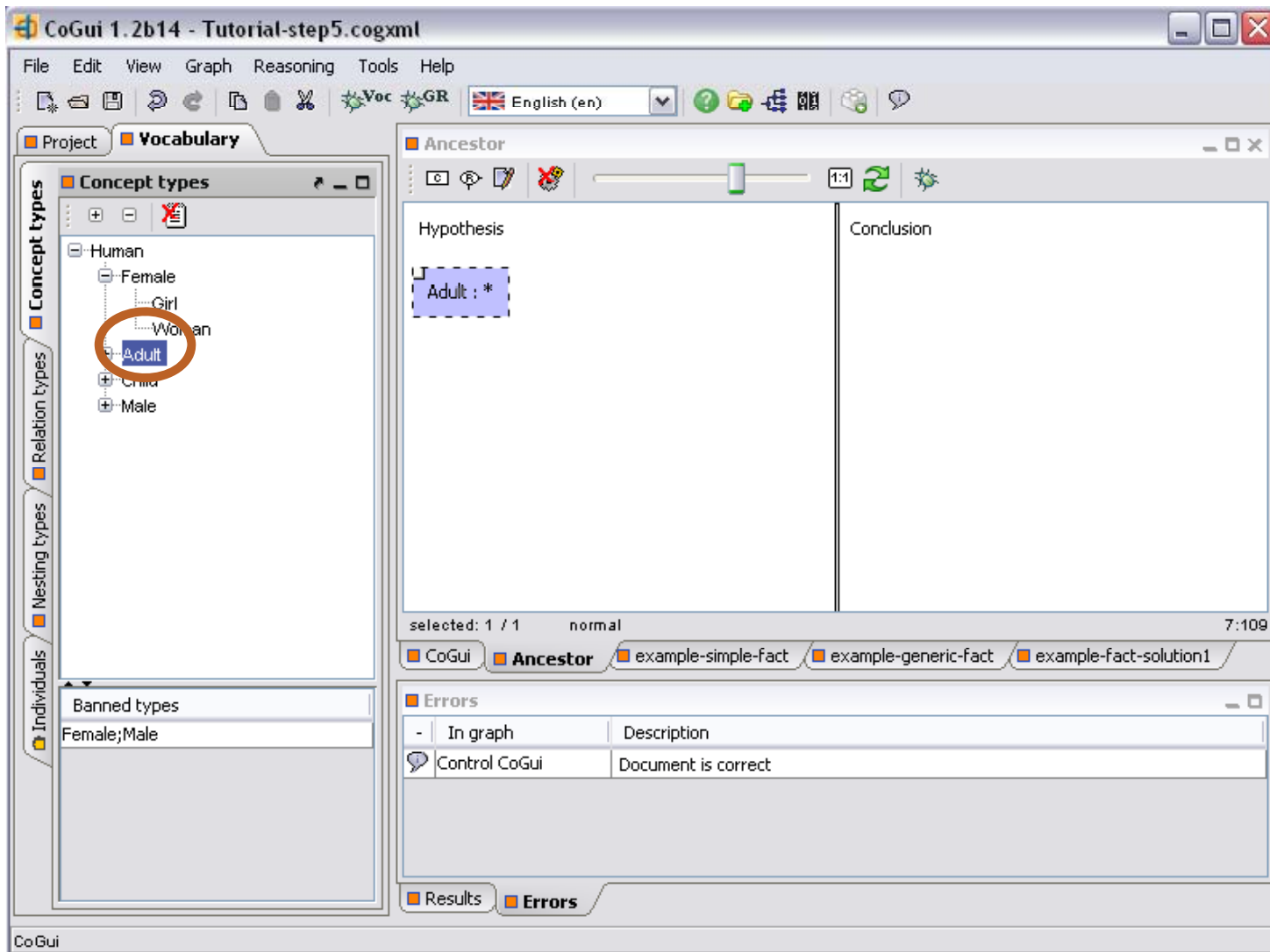
TO EDIT YOUR RULE DO THE SAME AS FOR EDITING FACTS



TO EDIT YOUR RULE DO THE SAME AS FOR EDITING FACTS



TO EDIT YOUR RULE DO THE SAME AS FOR EDITING FACTS



TO EDIT YOUR RULE DO THE SAME AS FOR EDITING FACTS

The screenshot shows the CoGui 1.2b14 interface. The main window is titled "Ancestor" and is divided into two panes: "Hypothesis" and "Conclusion". The "Hypothesis" pane contains a diagram with three blue boxes labeled "Adult : *" and two yellow ovals labeled "ancestorOf". Arrows indicate relationships between these elements. The "Conclusion" pane is currently empty. On the left side, there is a "Relation types" panel with a tree view showing various relations like "link(Human ,Human)", "relatedWith(Human ,Human)", "marriedTo(Adult ,Adult)", "siblingOf(Human ,Human)", "ancestorOf(Adult ,Human)", "childOf(Human ,Adult)", "like(Human ,Human)", and "dislike(Human ,Human)". The "ancestorOf(Adult ,Human)" relation is highlighted. At the bottom, there is an "Errors" panel with a table:

-	In graph	Description
Control CoGui		Document is correct

The "Ancestor" window also shows a status bar with "selected: 1 / 9", "normal", and "530:73". The bottom of the interface has tabs for "Results" and "Errors".



TO EDIT YOUR RULE DO THE SAME AS FOR EDITING FACTS

CoGui 1.2b14 - Tutorial-step5.cogxml

File Edit View Graph Reasoning Tools Help

English (en)

Project Vocabulary

Project

- Vocabulary
- Patterns
- Prototypics
- Rules
 - default_set
 - Ancestor
- Queries
- Facts
 - default_set
 - example-fact-solution1
 - example-generic-fact
 - example-simple-fact

Ancestor

Hypothesis

Conclusion

selected: 0 / 14 normal 0:158

CoGui Ancestor

Results

In graph	Description
modified_graph	rule applications in modified_graph

Results Errors

See rules application step by step



TO EXPRESS THAT TWO CONCEPT NODES DESIGN THE SAME ENTITY ADD A COREF RELATION

The screenshot shows the CoGui 1.2b14 interface for editing a graph. The main window is titled "Ancestor" and is split into "Hypothesis" and "Conclusion" panes. In the Hypothesis pane, a blue box labeled "Adult : *" is connected to a yellow oval labeled "ancestorOf", which is then connected to another blue box labeled "Adult : *". In the Conclusion pane, a pink oval labeled "ancestorOf" is connected to a pink box labeled "Adult : *", which is then connected to another pink box labeled "Adult : *". A large orange oval highlights a horizontal line connecting the "Adult : *" node in the Hypothesis to the "Adult : *" node in the Conclusion, representing a coreference relation. The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help), a toolbar, and a project tree on the left. The project tree shows a hierarchy: Project > Vocabulary > Patterns > Prototypics > Rules > default_set > Ancestor. The bottom of the window shows a "Results" panel with a table:

-	In graph	Description
🔍	modified_graph	rule applications in modified_graph

At the bottom left, there is a link: "See rules application step by step".



DO NOT FORGET TO ADD THE COREF RELATIONS BETWEEN ALL CONCEPTS

The screenshot displays the CoGui 1.2b14 interface for a tutorial. The main window is titled "Ancestor" and is divided into two panes: "Hypothesis" and "Conclusion".

Hypothesis: Contains three blue boxes labeled "Adult : *". The top and middle boxes are connected by a yellow oval labeled "ancestorOf". The middle and bottom boxes are also connected by a yellow oval labeled "ancestorOf".

Conclusion: Contains two purple boxes labeled "Adult : *". The top and bottom boxes are connected by a yellow oval labeled "ancestorOf".

Two large orange ovals are drawn across the interface, highlighting the coreference relations between the "Adult : *" concepts in the Hypothesis and Conclusion panes. The top oval connects the top "Adult : *" in the Hypothesis to the top "Adult : *" in the Conclusion. The bottom oval connects the bottom "Adult : *" in the Hypothesis to the bottom "Adult : *" in the Conclusion.

The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help), a toolbar, and a left sidebar with a project tree. The project tree shows a "Project" folder containing "Vocabulary", "Patterns", "Prototypics", "Rules", "Queries", and "Facts". The "Rules" folder is expanded, showing "default_set" and "Ancestor". The "Facts" folder is also expanded, showing "example-fact-solution1", "example-generic-fact", and "example-simple-fact".

At the bottom of the window, there is a "Results" panel with a table:

-	In graph	Description
🔍	modified_graph	rule applications in modified_graph

Below the table, there are tabs for "Results" and "Errors".



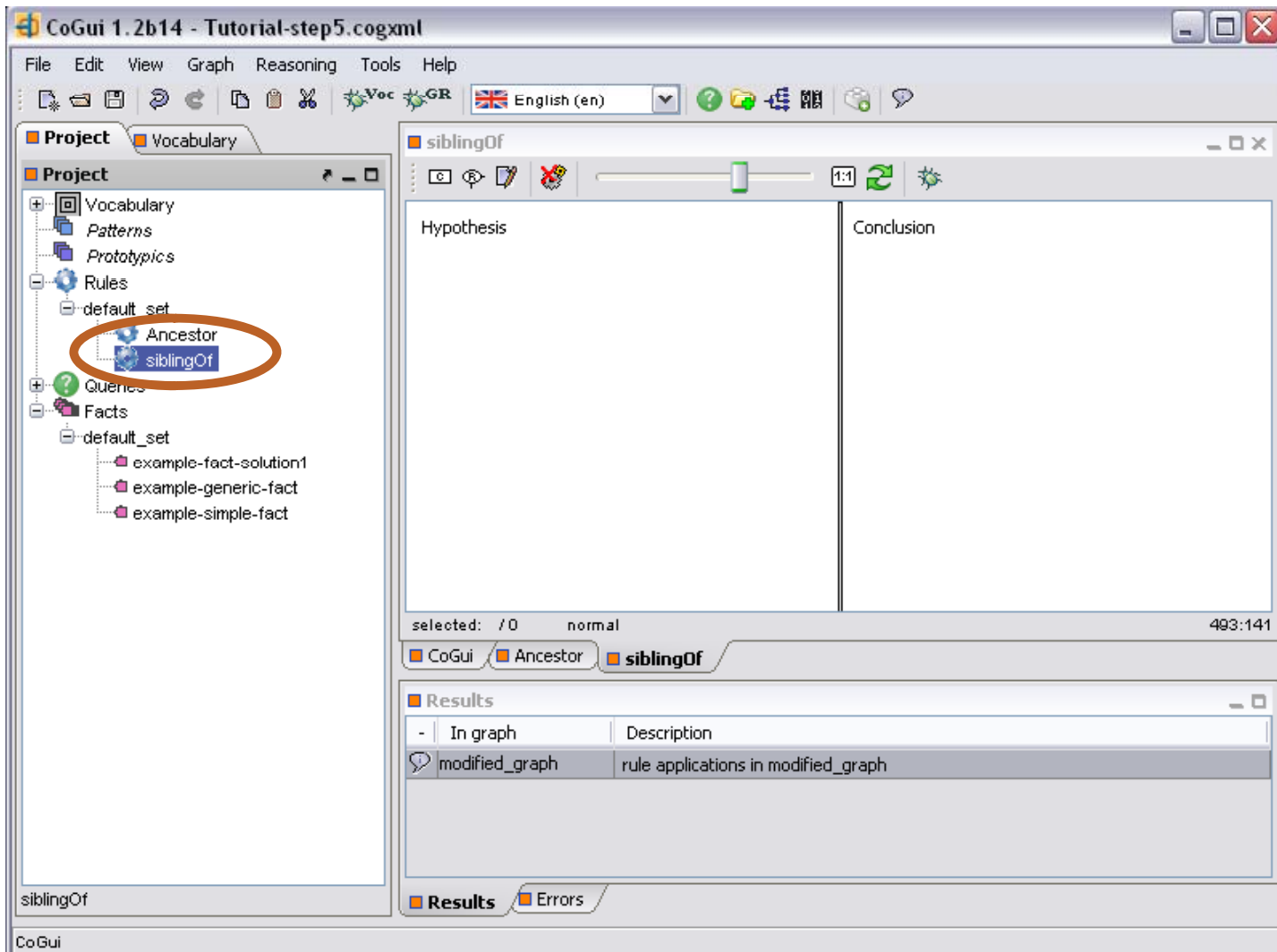
TO CONSTRUCT A NEW RULE RIGHT CLICK ON DEFAULT_SET OF RULES

The screenshot displays the CoGui 1.2b14 interface. On the left, a tree view under 'Project' shows 'default_set' selected. A right-click context menu is open over 'default_set', with 'New rule' highlighted. The main workspace shows a rule graph for 'Ancestor' with 'Hypothesis' and 'Conclusion' panels. The 'Hypothesis' panel contains three 'Adult : *' nodes and two 'ancestorOf' nodes. The 'Conclusion' panel contains two 'Adult : *' nodes and one 'ancestorOf' node. A 'Results' table is visible at the bottom.

-	In graph	Description
🔍	modified_graph	rule applications in modified_graph



WE WILL EDIT THE SIBLINGOF RULE DESCRIBED EARLIER IN THE TUTORIAL



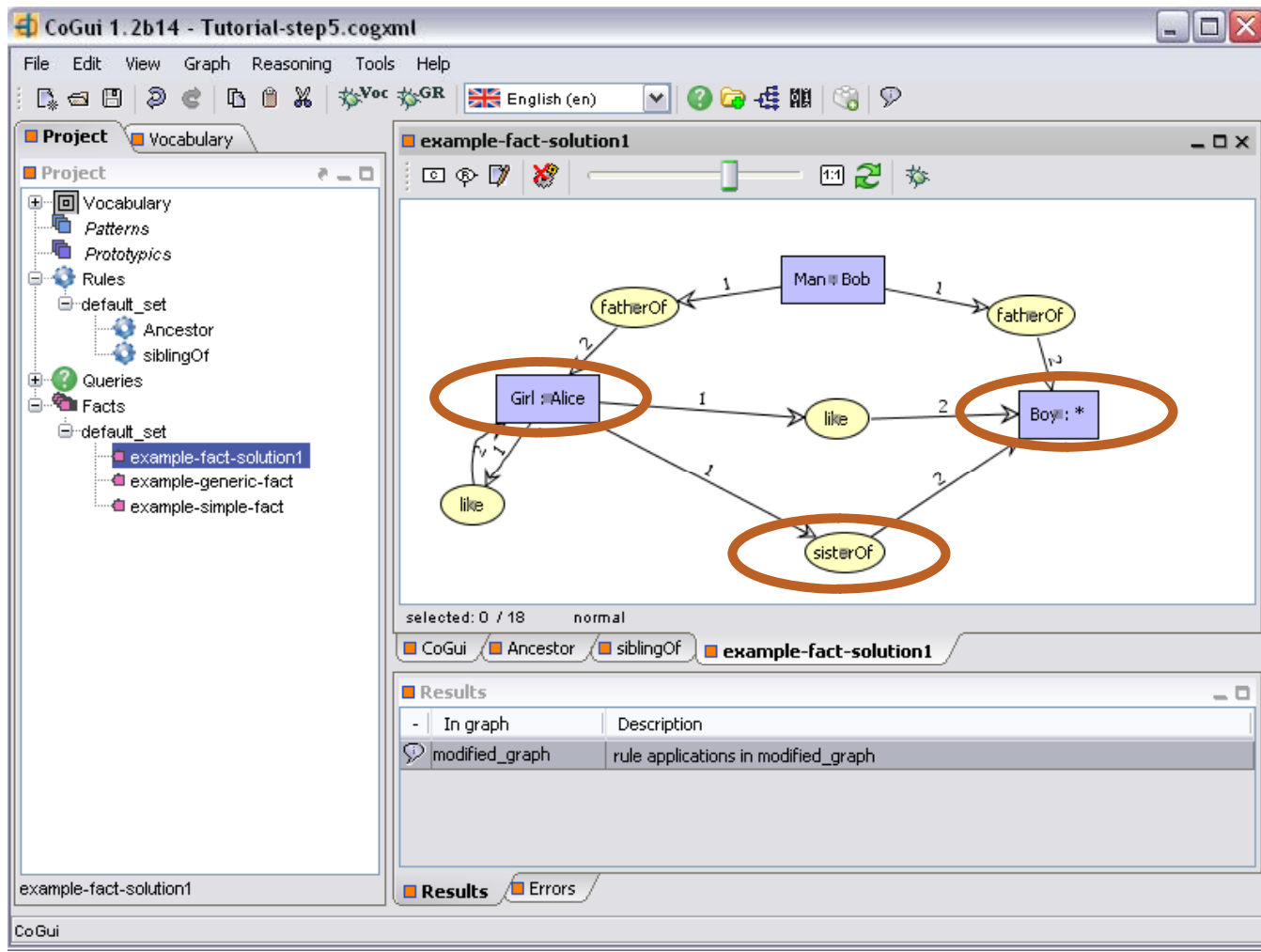
THE RULE: IF A HUMAN IS THE SIBLING OF ANOTHER HUMAN THEN THERE EXISTS AN ADULT WHO IS THE PARENT OF THE TWO HUMANS

The screenshot shows the CoGui 1.2b14 - Tutorial-step5.cogxml interface. The main window is titled 'siblingOf' and is divided into two panels: 'Hypothesis' and 'Conclusion'. The 'Hypothesis' panel shows a graph with two 'Human : *' nodes connected by a 'siblingOf' relation. The 'Conclusion' panel shows a graph with two 'Human : *' nodes connected by two 'parentOf' relations, both leading to an 'Adult : *' node. The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help), a toolbar, and a sidebar with 'Project', 'Vocabulary', 'Relation types', 'Nesting types', and 'Individuals'. The 'Relation types' sidebar lists various relations, with 'parentOf(Adult, Human)' highlighted. The 'Results' panel at the bottom shows a table with columns 'In graph' and 'Description', containing one row: 'modified_graph' with description 'rule applications in modified_graph'.

In graph	Description
modified_graph	rule applications in modified_graph



LET US TRY TO APPLY THIS RULE ON THE FACT EXAMPLE-FACT-SOLUTION1



TO APPLY RULES, CLICK ON REASONING THEN SELECT APPLY RULES

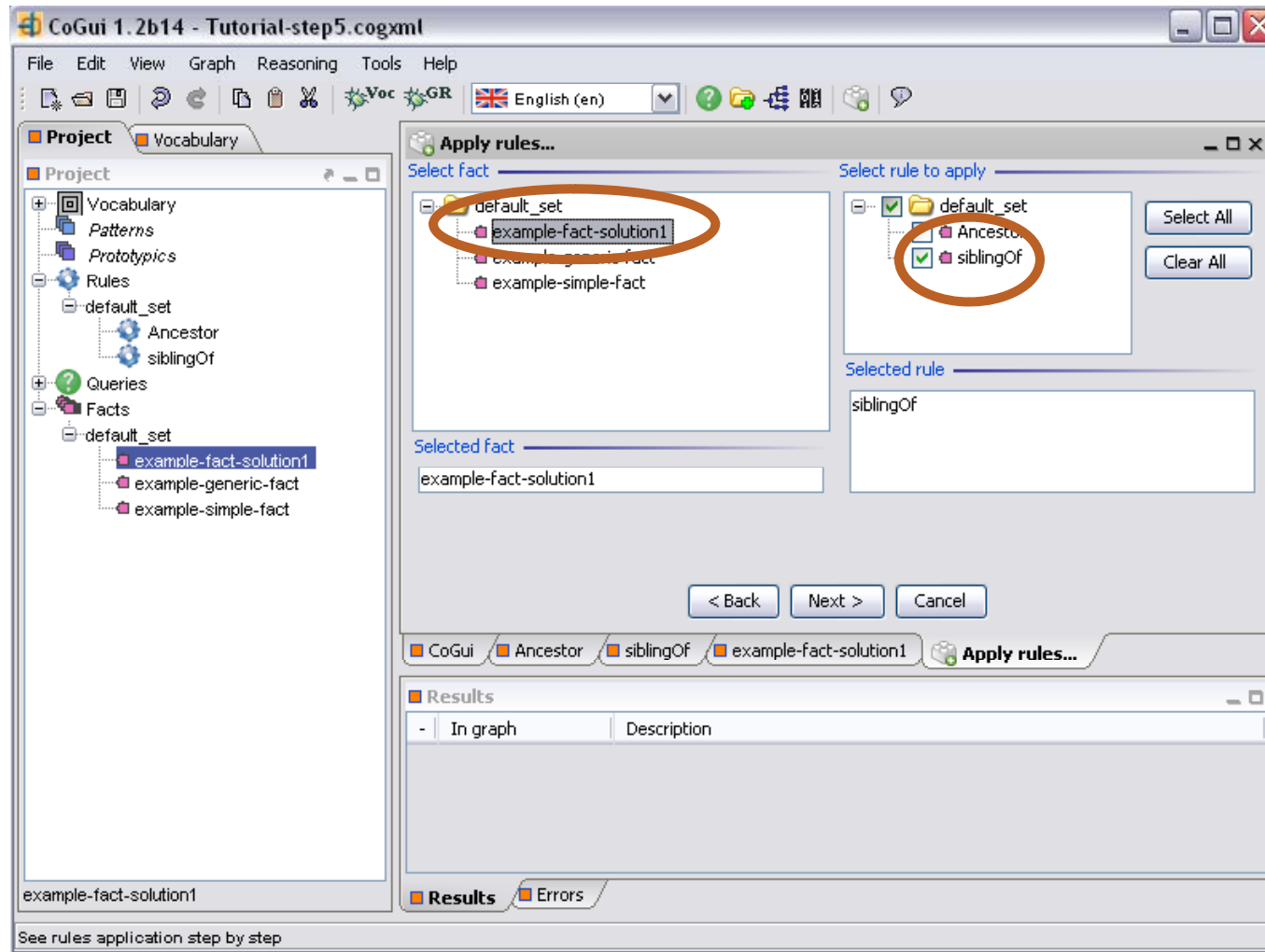
The screenshot shows the CoGui 1.2b14 interface. The 'Reasoning' menu is open, and the 'Apply rules...' option is highlighted with an orange oval. The main window displays a graph with nodes and edges. The nodes include 'Man: Bob', 'Girl: Alice', 'Boy: *', 'like', 'fatherOf', and 'sisterOf'. The edges are labeled with numbers 1 and 2. The 'Results' panel at the bottom shows a table with the following content:

In graph	Description
modified_graph	rule applications in modified_graph

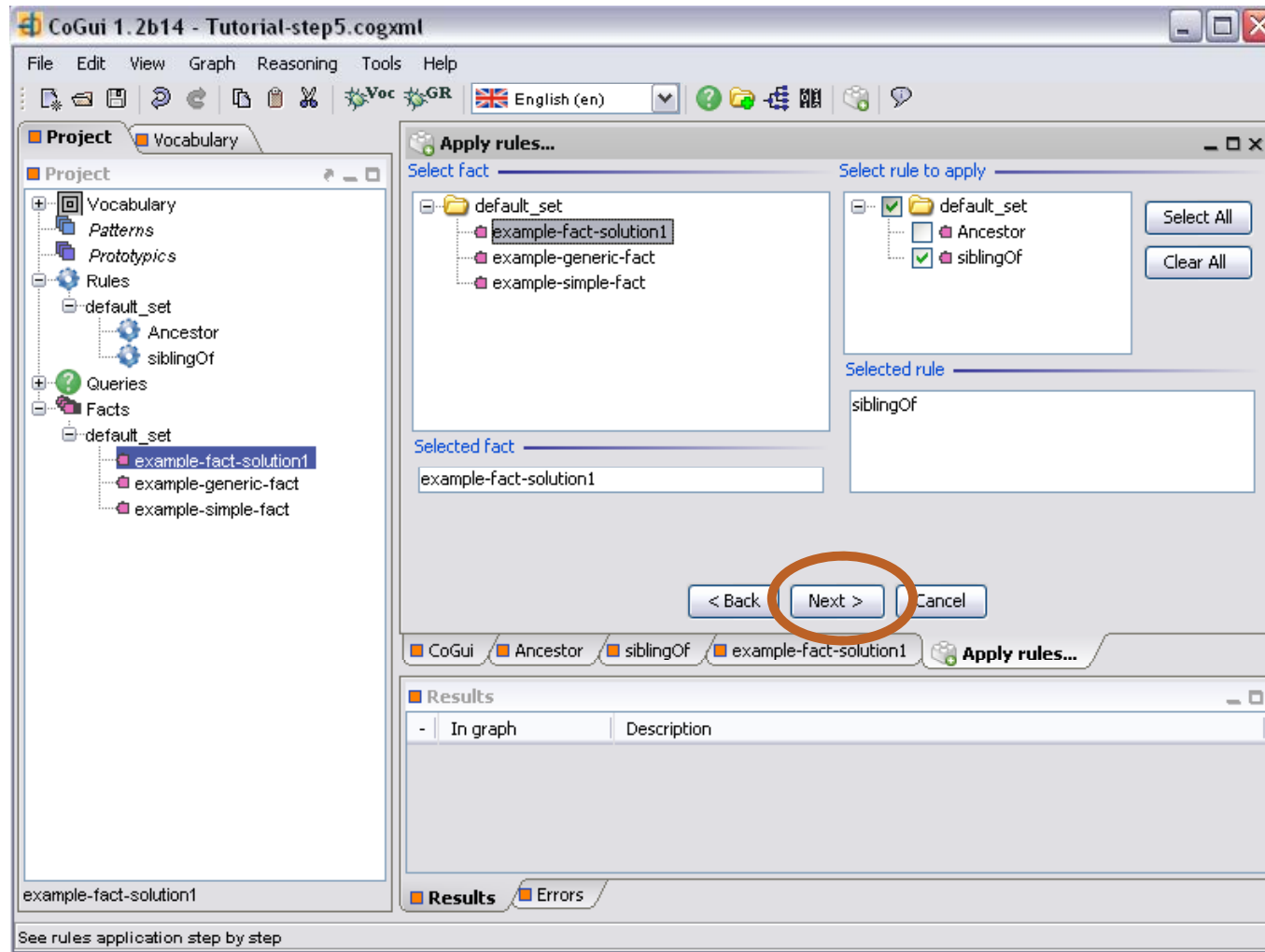
The status bar at the bottom indicates 'selected: 0 / 18 normal' and '55:228'. The bottom of the window shows 'example-fact-solution1' and 'See rules application step by step'.



SELECT THE FACT ON WHICH YOU WANT TO APPLY THE RULE AND THE DESIRED RULE



TO APPLY THE RULE CLICK NEXT



THE RULES ASSISTANT PROVIDES THREE BUTTONS

The screenshot shows the CoGui 1.2b14 interface. The main window displays a graph with nodes and edges. The nodes include 'Man : Bob', 'Girl : Alice', 'Boy : *', 'like', 'sisterOf', and 'fatherOf'. The edges are labeled with numbers 1 and 2. The 'Apply rules...' dialog is open, showing a progress bar and a '1:1' ratio. Below the graph, there are navigation buttons: '< Back', 'Next >', and 'Cancel'. A red circle highlights the '< Back' and 'Next >' buttons, with the text 'use left buttons to see rule applications' written below them. The 'Results' panel at the bottom is empty, with columns for 'In graph' and 'Description'. The status bar at the bottom indicates 'See rules application step by step'.

CoGui 1.2b14 - Tutorial-step5.cogxml

File Edit View Graph Reasoning Tools Help

Project Vocabulary

Project

- Vocabulary
- Patterns
- Prototypics
- Rules
 - default_set
 - Ancestor
 - siblingOf
- Queries
- Facts
 - default_set
 - example-fact-solution1
 - example-generic-fact
 - example-simple-fact

Apply rules...

selected: / 18 view only

use left buttons to see rule applications

< Back Next > Cancel

CoGui Ancestor siblingOf example-fact-solution1 Apply rules...

Results

In graph	Description
----------	-------------

Results Errors

example-fact-solution1

See rules application step by step



THE FIRST BUTTON ALLOWS THE STEP BY STEP APPLICATION OF THE RULE

The screenshot shows the CoGui 1.2b14 interface. On the left is a project tree with folders for Vocabulary, Patterns, Prototypics, Rules, Queries, and Facts. The 'Rules' folder is expanded, showing a 'default_set' with 'Ancestor' and 'siblingOf'. The 'Facts' folder is also expanded, showing a 'default_set' with 'example-fact-solution1', 'example-generic-fact', and 'example-simple-fact'. The 'example-fact-solution1' fact is selected. The main window displays a graph with nodes: 'Man : Bob', 'Girl : Alice', 'Boy : *', 'like', 'sisterOf', and 'fatherOf'. Edges connect these nodes with weights: 'Man : Bob' to 'fatherOf' (1), 'Man : Bob' to 'fatherOf' (1), 'fatherOf' to 'Girl : Alice' (2), 'fatherOf' to 'Boy : *' (2), 'Girl : Alice' to 'like' (1), 'Girl : Alice' to 'sisterOf' (1), 'like' to 'Boy : *' (2), and 'sisterOf' to 'Boy : *' (2). The 'Apply rules...' dialog is open, showing a progress bar at 1:1. Below the graph, there are buttons for 'Apply rule step by step' (circled in red), '< Back', 'Next >', and 'Cancel'. The 'Results' panel at the bottom is empty, with a table header: 'In graph' and 'Description'. The status bar at the bottom says 'See rules application step by step'.



THE SECOND BUTTON ALLOWS THE SATURATION OF THE GRAPH WITH THE SELECTED RULE

The screenshot displays the CoGui 1.2b14 interface. The main window shows a project tree on the left with 'example-fact-solution1' selected. The central area features a graph visualization with nodes like 'Man : Bob', 'Girl : Alice', 'Boy : *', and relationships such as 'fatherOf', 'like', and 'sisterOf'. The 'Apply rules...' dialog box is open, showing a progress bar and a 'Saturate graph' button circled in red. Below the dialog, a 'Results' table is visible with columns 'In graph' and 'Description'.

In graph	Description
-	



THE THIRD BUTTON ALLOWS THE STORAGE OF THE GRAPH ENRICHED AFTER RULE APPLICATION

The screenshot displays the CoGui 1.2b14 interface for a tutorial. The main window is titled "CoGui 1.2b14 - Tutorial-step5.cogxml". The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help), a toolbar, and a sidebar on the left showing a project tree with folders like Vocabulary, Patterns, Prototypics, Rules, Queries, and Facts. The main area shows a graph visualization with nodes and edges. The nodes include "Man : Bob", "Girl : Alice", "Boy : *", "like", "sisterOF", and "fatherOF". The edges are labeled with numbers (1, 2). Below the graph, there is a "selected: / 18" indicator, a "view only" button, and a "Store resulting graph" button highlighted with a red circle. Other buttons include "< Back", "Next >", and "Cancel". The bottom of the interface shows a "Results" panel with a table header "In graph" and "Description".

selected: / 18 view only 109:221

use left buttons to see rule applications

Store resulting graph < Back Next > Cancel

In graph	Description
----------	-------------

example-fact-solution1

See rules application step by step



GOING BACK TO THE EXAMPLE WHEN WE CLICK ON APPLY RULE NOTHING HAPPENS!! WHY?

The screenshot shows the CoGui interface with a graph and the 'Apply rules...' dialog. The graph contains nodes: 'Man : Bob', 'Girl : Alice', 'Boy : *', 'like', 'sisterOf', and 'fatherOf'. Edges are labeled with numbers 1 and 2. The 'Apply rules...' dialog is open, showing a progress bar at 1:1 and a 'selected: 0 / 18' status. A red circle highlights the 'Apply rule step by step' button. Below the dialog, there are tabs for 'CoGui', 'Ancestor', 'siblingOf', 'example-fact-solution1', and 'Apply rules...'. At the bottom, there is a 'Results' section with a table header: 'In graph' and 'Description'.

selected: 0 / 18 view only 148:233

use left buttons to see rule applications

Apply rule step by step < Back Next > Cancel

In graph	Description
----------	-------------



WE EDIT THE SIBLINGOF RULE

The screenshot shows the CoGui 1.2b14 interface. The main window displays a graph with nodes and edges. The nodes include 'Man : Bob', 'Girl : Alice', 'Boy : *', 'fatherOf', 'like', and 'sisterOf'. Edges are labeled with numbers 1 and 2. A context menu is open over the 'siblingOf' rule in the left sidebar, with 'Edit rule' highlighted. The 'Apply rules...' dialog is also open, showing a progress bar and buttons for '< Back', 'Next >', and 'Cancel'. The 'Results' panel at the bottom is empty.

CoGui 1.2b14 - Tutorial-step5.cogxml

File Edit View Graph Reasoning Tools Help

Project Vocabulary

Project

- Vocabulary
- Patterns
- Prototypics
- Rules
 - default_set
 - Ancestor
 - siblingOf**
- Queries
- Facts
 - default_set
 - examp
 - examp
 - examp

Apply rules...

selected: 0 / 18 view only 250:229

use left buttons to see rule applications

< Back Next > Cancel

CoGui Ancestor siblingOf example-fact-solution1 Apply rules...

Results

In graph	Description
----------	-------------

Results Errors

siblingOf

CoGui

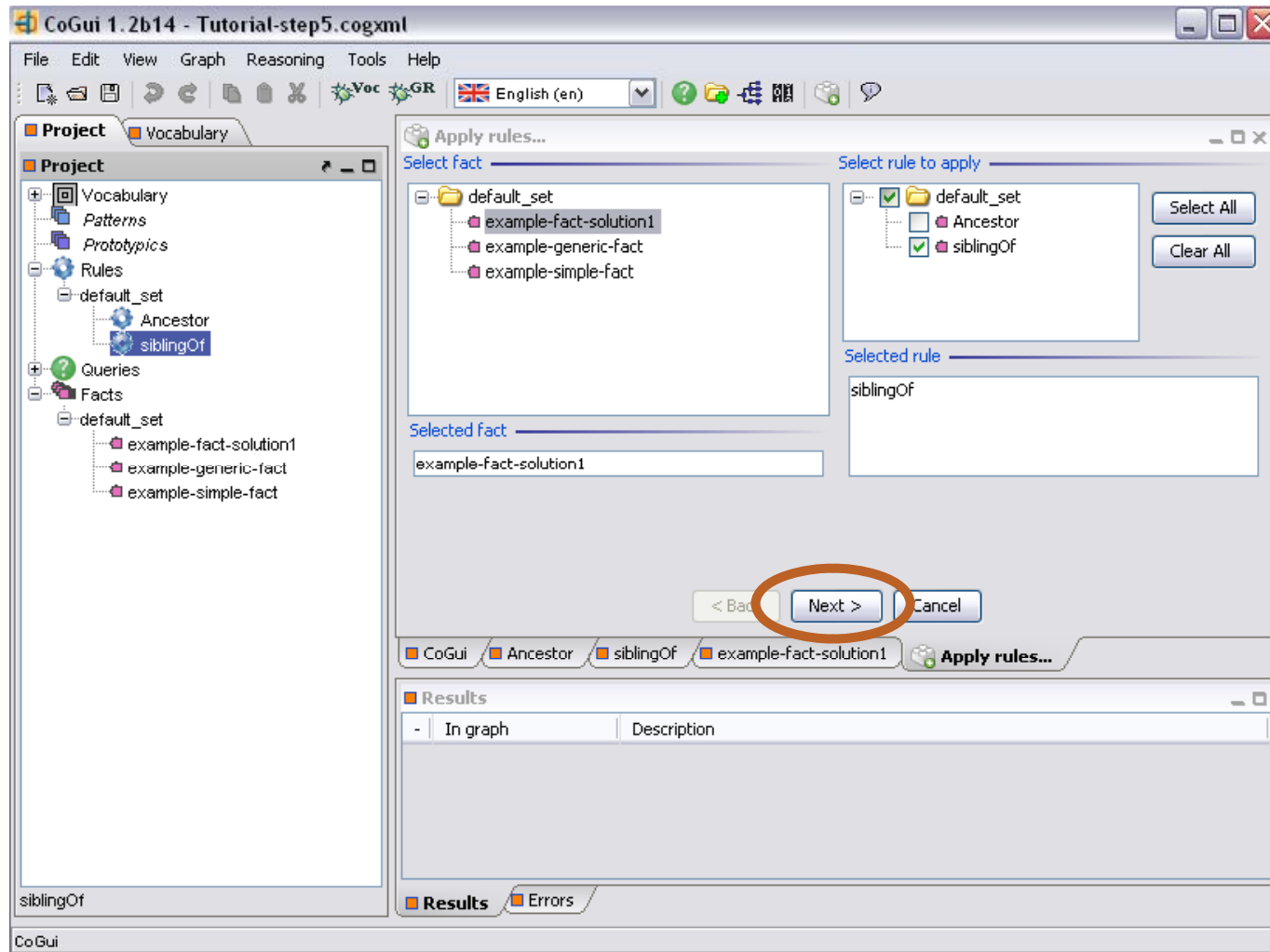


THE SIBLINGOF RULE EDITED SO THAT THE ADDED INFORMATION CONCERNS THE MOTHER OF THE TWO HUMANS IN THE HYPOTHESIS

The screenshot displays the CoGui 1.2b14 interface for editing the 'siblingOf' rule. The main window is divided into two panels: 'Hypothesis' and 'Conclusion'. In the 'Hypothesis' panel, two 'Human : *' nodes are connected by a 'siblingOf' relation. In the 'Conclusion' panel, two 'Human : *' nodes are each connected to a 'motherOf' node, which are both connected to a 'Woman : *' node. A large orange circle highlights the 'motherOf' nodes and their connection to the 'Woman : *' node in the conclusion. The left sidebar shows a tree of relation types, with 'motherOf(Woman, Human)' selected. The bottom status bar shows 'selected: 1 / 16 normal' and '530:222'.



WE APPLY THE NEWLY EDITED RULE



WE SELECT THE STEP BY STEP APPLICATION OF THE RULE

The screenshot displays the CoGui 1.2b14 interface for a tutorial. The main window is titled "CoGui 1.2b14 - Tutorial-step5.cogxml". The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help) and a toolbar with various icons. On the left, a "Project" panel shows a tree view of the project structure, including "Vocabulary", "Patterns", "Prototypics", "Rules", "Queries", and "Facts". The "Rules" folder is expanded, showing "default_set", "Ancestor", and "siblingOf". The "Facts" folder is also expanded, showing "default_set", "example-fact-solution1", "example-generic-fact", and "example-simple-fact".

The central "Apply rules..." dialog box is the focus. It features a graph with nodes and edges. The nodes are: "Man : Bob" (blue rectangle), "Girl : Alice" (blue rectangle), "Boy : *" (blue rectangle), "like" (yellow oval), "sisterOf" (yellow oval), and "fatherOf" (yellow oval). The edges are labeled with numbers: "1" and "2". The graph shows relationships between these entities. Below the graph, there is a "selected: 0 / 18" indicator and a "view only" button. A play button icon is circled in red, and a text prompt says "use left buttons to see rule applications". Below this, there are buttons for "Apply rule step by step", "< Back", "Next >", and "Cancel".

At the bottom of the dialog, there is a "Results" section with a table header: "In graph" and "Description". The table is currently empty. Below the table, there are tabs for "Results" and "Errors".



THE THREE NODES IN THE CONCLUSION HAVE BEEN ADDED IN PINK ON THE FACT

The screenshot displays the CoGui 1.2b14 interface for a tutorial. The main window shows a graph with nodes and relationships. The nodes are: Woman : * (pink), motherOf (pink), Man : Bob (blue), FatherOf (yellow), Girl : Alice (grey), like (yellow), Boy : * (grey), and sisterOf (grey). The relationships are: Woman : * (1) -> motherOf (1), Man : Bob (1) -> FatherOf (1), Man : Bob (1) -> FatherOf (1), Girl : Alice (1) -> like (1), Girl : Alice (1) -> sisterOf (1), Boy : * (2) -> like (2), Boy : * (2) -> sisterOf (2), and motherOf (1) -> Boy : * (1). The three nodes in the conclusion (Woman : *, motherOf, Boy : *) are highlighted in pink. The interface includes a Project panel on the left, an Apply rules... dialog in the center, and a Results panel at the bottom. The Apply rules... dialog shows the rule applied: siblingOf. The Results panel shows a table with columns: In graph and Description.

CoGui 1.2b14 - Tutorial-step5.cogxml

File Edit View Graph Reasoning Tools Help

English (en)

Project Vocabulary

Project

- Vocabulary
- Patterns
- Prototypics
- Rules
 - default_set
 - Ancestor
 - siblingOf
- Queries
- Facts
 - default_set
 - example-fact-solution1
 - example-generic-fact
 - example-simple-fact

Apply rules...

selected: 1 / 25 view only 665:139

level: 1 rule applied: siblingOf

< Back Next > Cancel

CoGui Ancestor siblingOf example-fact-solution1 Apply rules...

Results

In graph	Description
----------	-------------

Results Errors

siblingOf

CoGui



THE RULE CANNOT BE RE-APPLIED WITHOUT CAUSING REDUNDANCY

The screenshot shows the CoGui 1.2b14 interface with a graph and a rule application dialog. The graph contains nodes: Woman : *, Man : Bob, Girl : Alice, Boy : *, and several relationship nodes (motherOf, fatherOf, like, sisterOf). The 'Apply rules...' dialog is open, showing 'level: 1' and 'rule applied: siblingOf'. A red circle highlights the navigation buttons in the dialog. The 'Results' panel is empty.

CoGui 1.2b14 - Tutorial-step5.cogxml

File Edit View Graph Reasoning Tools Help

Voc GR English (en)

Project Vocabulary

Project

- Vocabulary
 - Patterns
 - Prototypics
- Rules
 - default_set
 - Ancestor
 - siblingOf
- Queries
- Facts
 - default_set
 - example-fact-solution1
 - example-generic-fact
 - example-simple-fact

Apply rules...

selected: 1 / 25 view only 87:201

level: 1 rule applied: siblingOf

< Back Next > Cancel

CoGui Ancestor siblingOf example-fact-solution1 Apply rules...

Results

In graph	Description
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Results Errors

siblingOf

CoGui



YOU CAN STORE THE RESULTING GRAPH

The screenshot displays the CoGui 1.2b14 interface. The main window shows a graph with nodes and edges. The nodes include 'Woman : *', 'Man : Bob', 'Girl : Alice', 'Boy : *', 'motherOf', 'fatherOf', 'like', and 'sisterOf'. The edges are labeled with numbers (1 or 2). A 'Apply rules...' dialog box is open, showing 'level: 1' and 'rule applied: siblingOf'. The 'Results' panel at the bottom is circled in orange and contains the following table:

graph	Description
modified_graph	rule applications in modified_graph



TO STORE THE GRAPH DRAG AND DROP

The screenshot displays the CoGui 1.2b14 interface for 'Tutorial-step5.cogxml'. The main window is divided into several sections:

- Project Panel (Left):** A tree view showing the project structure. The 'facts' folder is expanded, and the 'default_set' sub-folder is circled in orange. It contains three items: 'example-fact-solution1', 'example-generic-fact', and 'example-simple-fact'.
- Apply rules... Dialog (Center):** A dialog box showing a graph with nodes and edges. The graph includes nodes like 'Woman : *', 'Man : Bob', 'Girl : Alice', 'Boy : *', and various relationships like 'motherOf', 'fatherOf', 'like', and 'sisterOf'. The 'rule applied' is 'siblingOf'. The 'level' is '1'. Below the graph are navigation buttons: '< Back', 'Next >', and 'Cancel'.
- Results Panel (Bottom):** A table with two columns: 'In graph' and 'Description'. The row 'modified_graph' is circled in orange, with the description 'rule applications in modified_graph'.

At the bottom of the window, there are tabs for 'Results' and 'Errors', and the text 'CoGui' is visible in the status bar.



THE NEW GRAPH IS VISIBLE IN THE FACTS SET

The screenshot displays the CoGui 1.2b14 interface. The main window shows a graph visualization with nodes and edges. The nodes include 'Woman : *', 'Man : Bob', 'Girl : Alice', 'Boy : *', and several relationship nodes like 'motherOf', 'fatherOf', 'like', and 'sisterOf'. The edges are labeled with numbers (1 or 2). The graph is titled 'Copy of modified_graph' in the window title bar. The left sidebar shows a project tree with 'Facts' expanded, and 'Copy of modified_graph' is selected. The bottom panel shows a 'Results' table with the following content:

In graph	Description
modified_graph	rule applications in modified_graph

