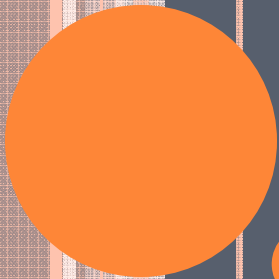


COGUI TUTORIAL

Facts



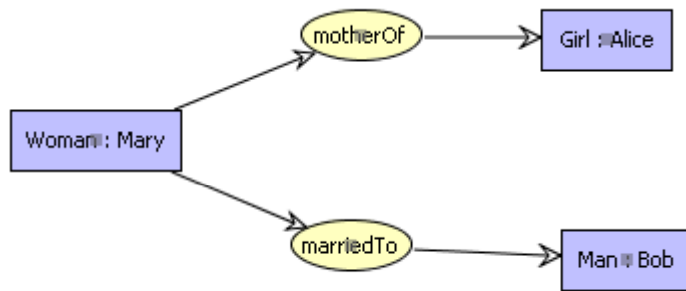
FACT GRAPHS

A BG FACT IS COMPOSED OF:

- The **concept nodes** representing entities labeled by
 - *Concept types* (vocabulary) and
 - Either the *generic marker* (*) or an *individual marker*
- The **relation nodes** representing relationships between these entities labeled by *relation types* (vocabulary)



EXAMPLE



- There are **entities** (represented by rectangles): Mary, who is a Woman, Alice who is a Girl and Bob who is a Man
- There are **relations** (represented by ovals) between the entities: a relation asserting that Mary is the motherOf Alice and a relation asserting that Mary is marriedTo Bob.



SUMMING AND NORMALIZING BGs

- The **sum** of two BGs comes down to summing two graphs (the resulting graph has the union set of vertices and edges)
- Two concept nodes having the same individual marker represent the same entity and then can be merged into one concept (**normalization**):
 - A BG is called normal if there is **at most one individual** concept with a given marker



THE BG MODEL - SEMANTICS

○ Vocabulary:

- A predicate is assigned to each type (unary predicate to a concept type and a k-ary predicate to a k-ary relation type)
- A constant is assigned to each individual marker
- Translating the specialization relation:

$$\forall x(Girl(x) \rightarrow Child(x)), \forall x\forall y(sisterOf(x, y) \rightarrow relativeOf(x, y))$$

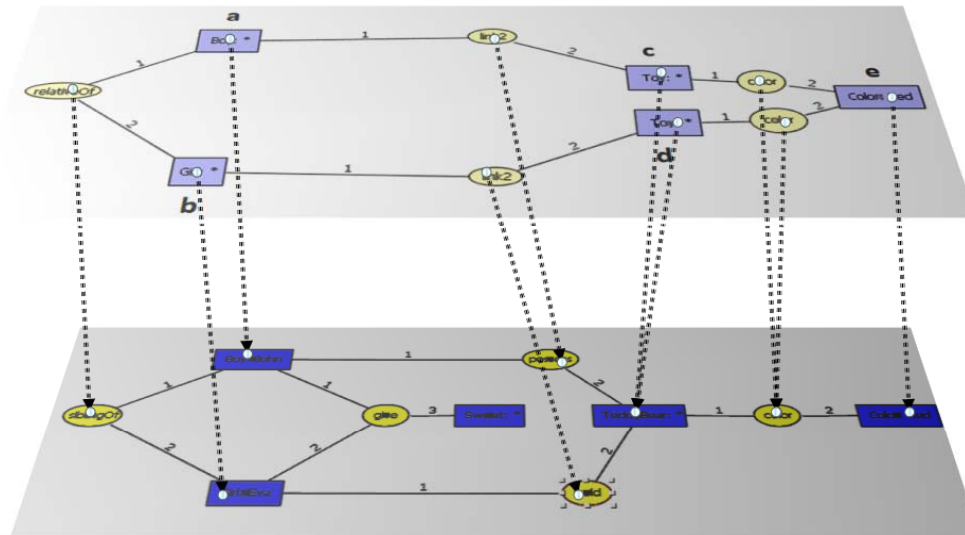
○ Facts being assigned the existentially closed formulae:

$$\exists x\exists y(Girl(x) \wedge Boy(y) \wedge sisterOf(x, y))$$



HOMOMORPHISM (“PROJECTION”)

- A homomorphism from a BG G to a BG H is a **mapping** from the nodes of G to the nodes of H , which **preserves the relationships** between the entities of G and **may specialize the labels of entities and relationships**.



HOMOMORPHISM

- Sound and complete with respect to logical deduction
- If there is a homomorphism from G to H we say that H entails G
- Basic Conceptual Graphs correspond to the existential, positive and conjunctive fragment of **First Order Logic**



QUERY ANSWERING

- A knowledge base composed of a vocabulary and **set of BGs**
- A query: itself a **BG**
- Elements **answering the query**: elements of the knowledge base that **entail** the query:
 - **Yes/No question**: Is the knowledge represented by the query asserted by the Knowledge Base?
 - **Pattern** allowing to extract knowledge from the Knowledge Base: each homomorphism from the query to the knowledge base defines an answer to the query



IRREDUNDANT GRAPHS

- Two graphs G and H are **hom-equivalent** if there is a hom from G to H and a hom from H to G
- A BG is called **redundant** if it is hom-equivalent to one of its strict subgraphs. Otherwise it is called **irredundant**.



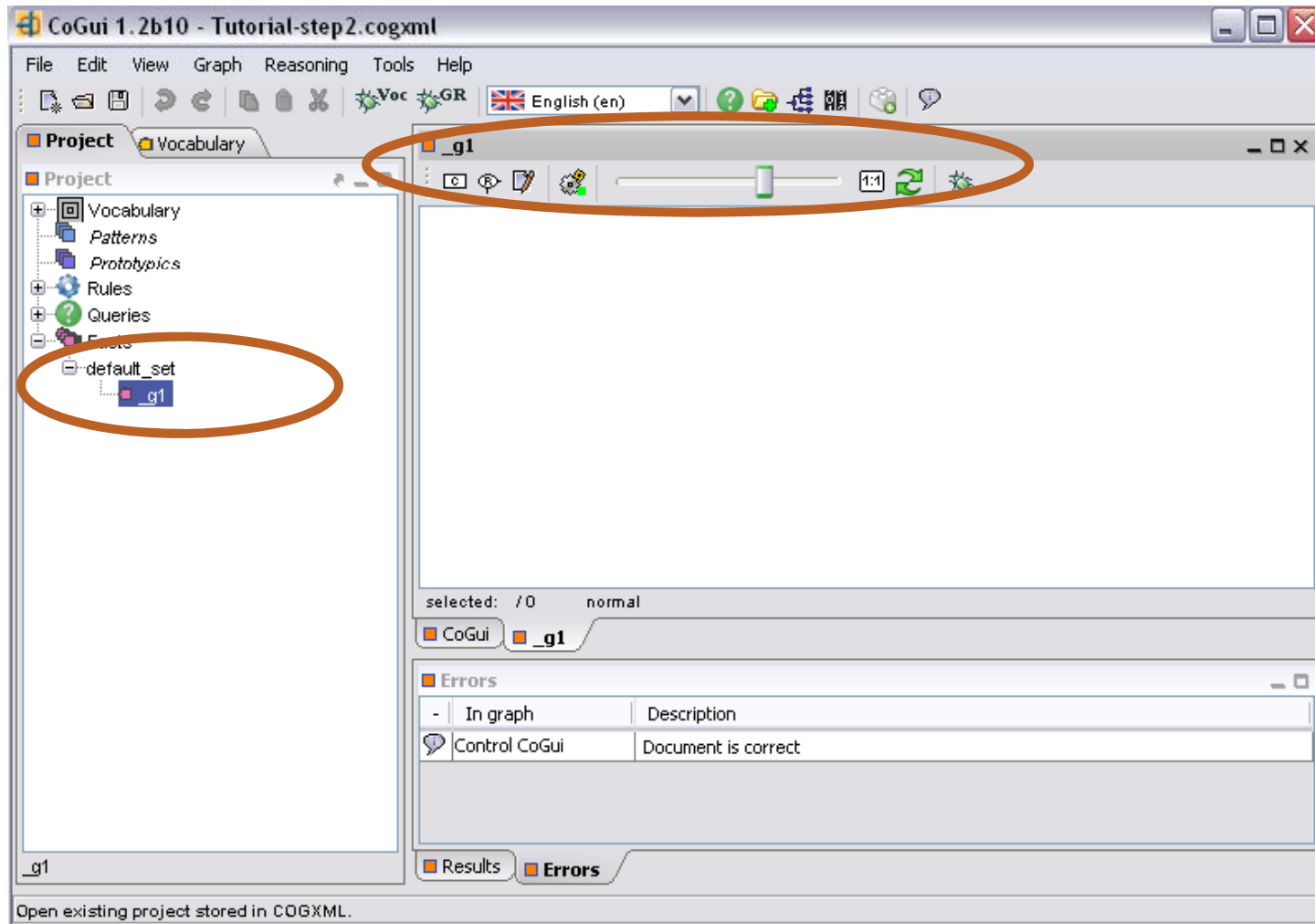


EDITING FACT GRAPHS IN COGUI

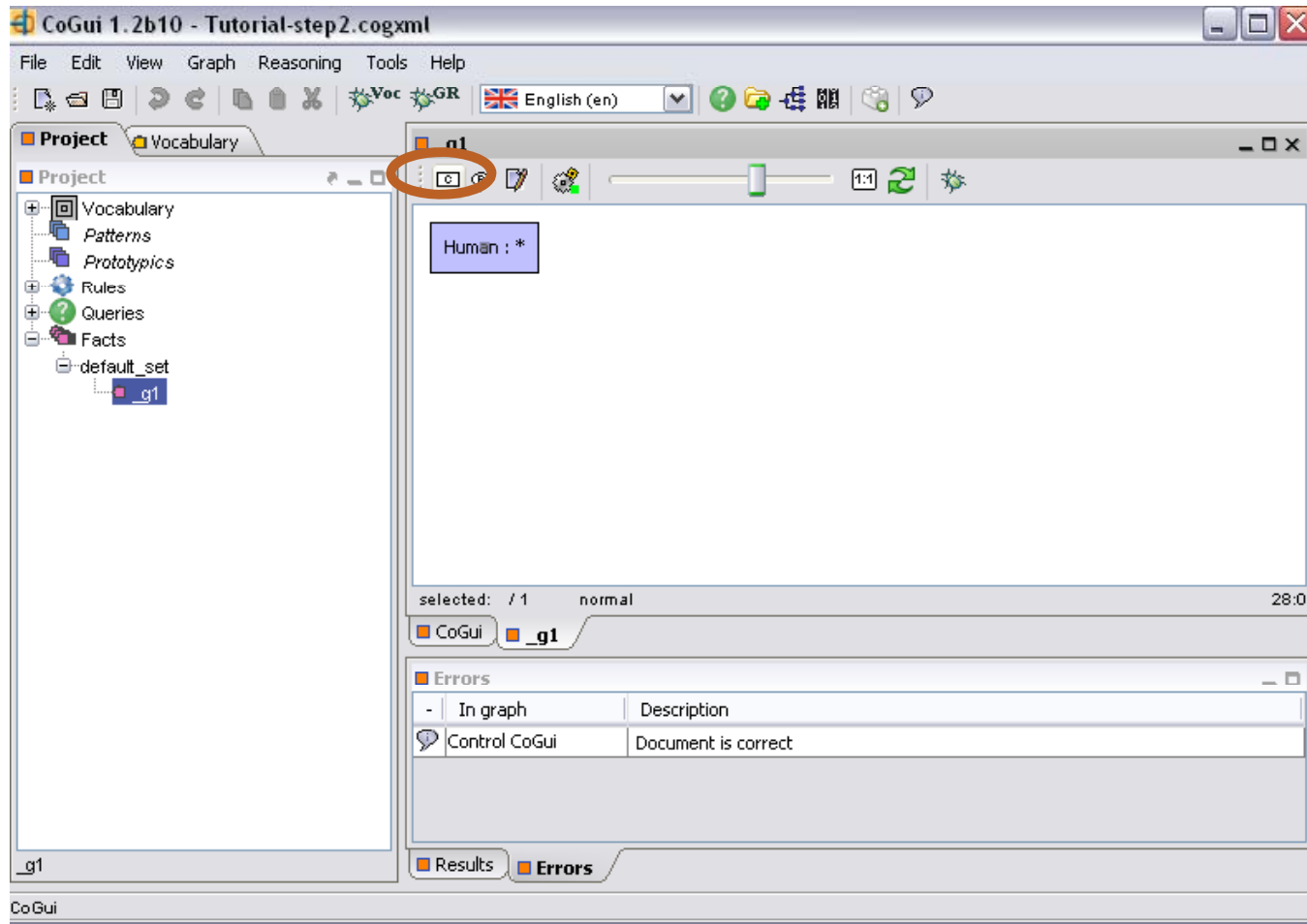
OPEN THE TUTORIAL-STEP2.COGXML FILE AND SELECT FACTS UNDER PROJECT



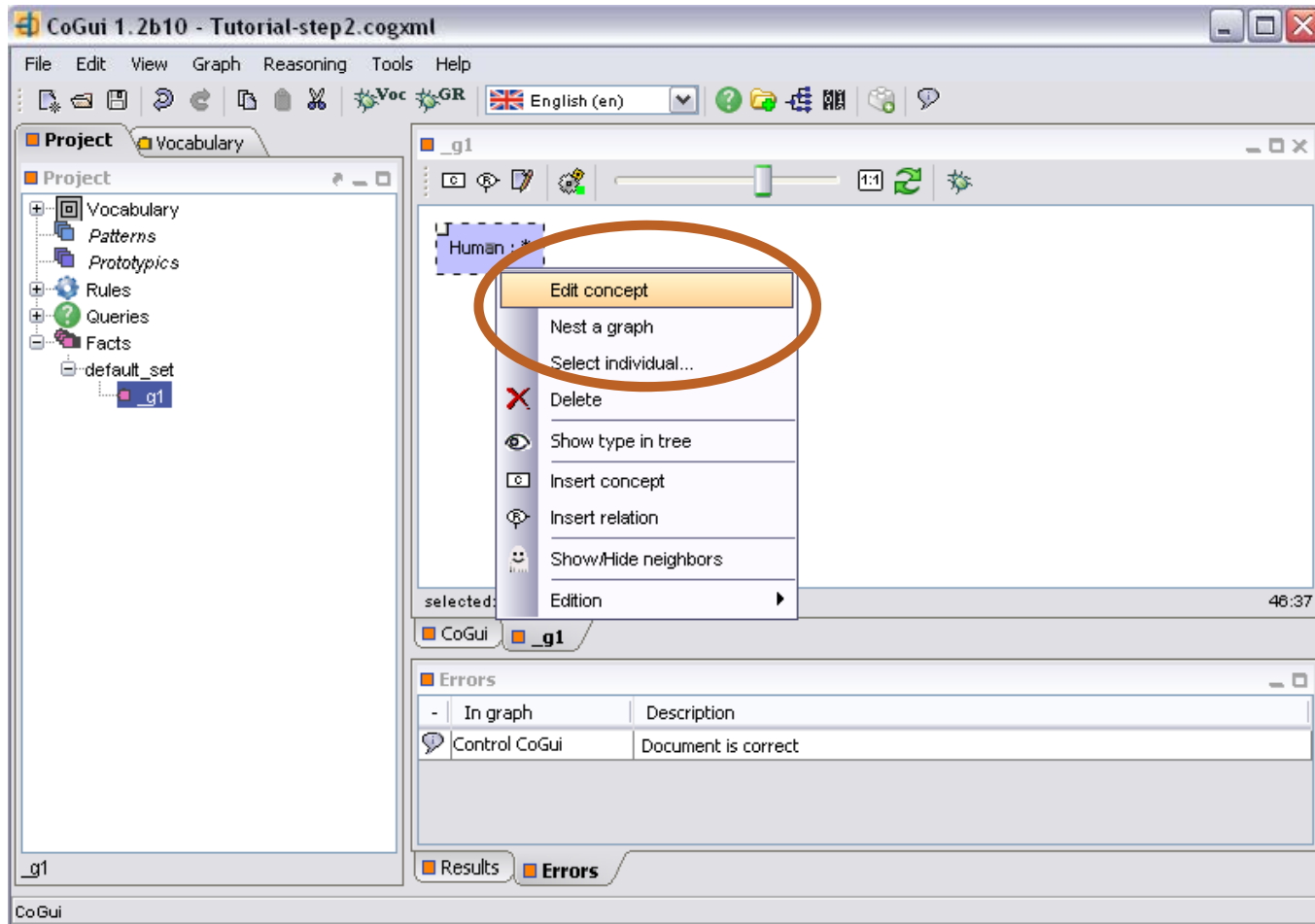
UNDER DEFAULT_SET OF FACTS THERE IS ALREADY A _G1 FACT THAT CAN BE EDITED



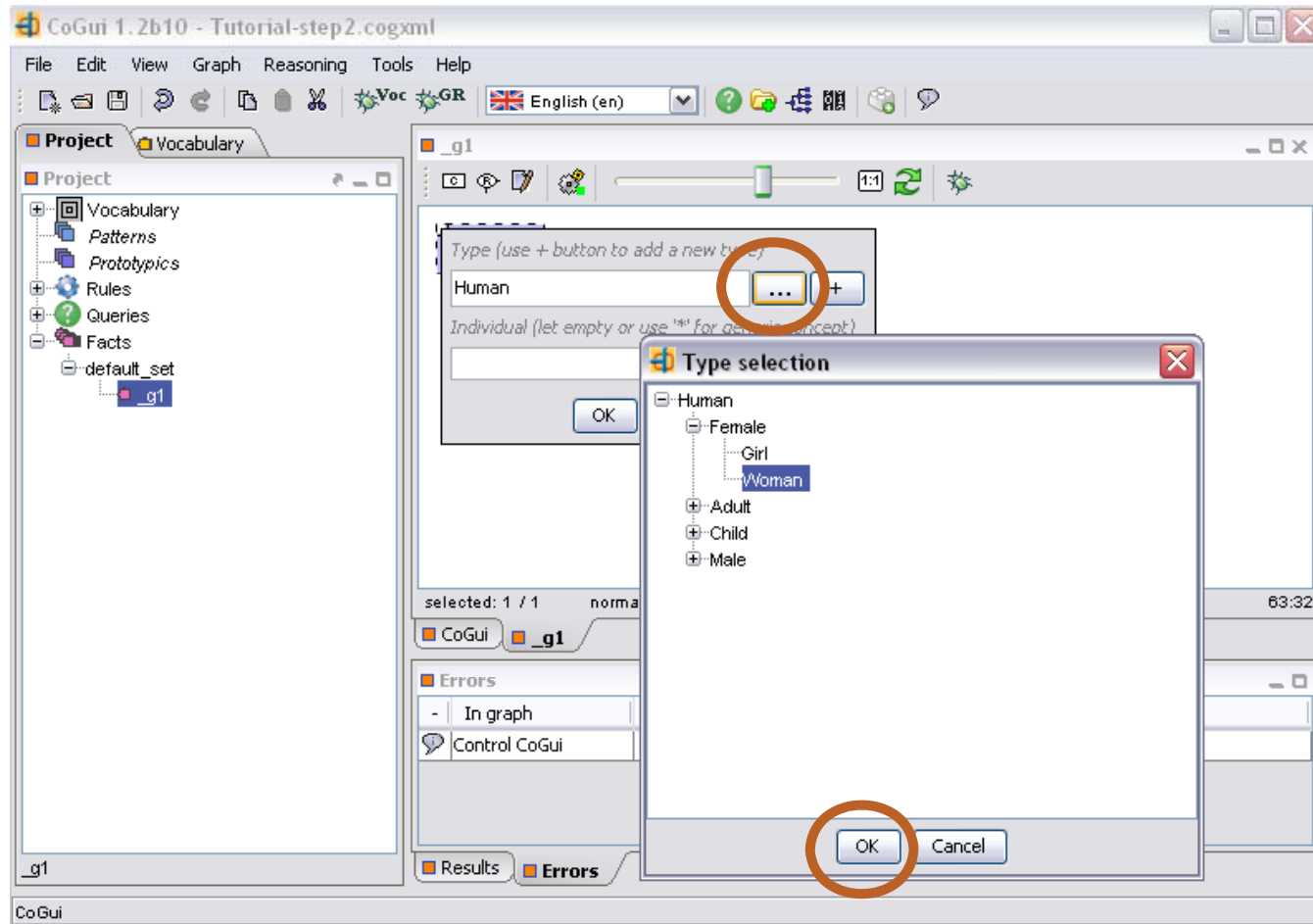
TO INSERT A CONCEPT NODE IN A FACT USE THE GRAPH EDITOR AND CLICK ON CONCEPT



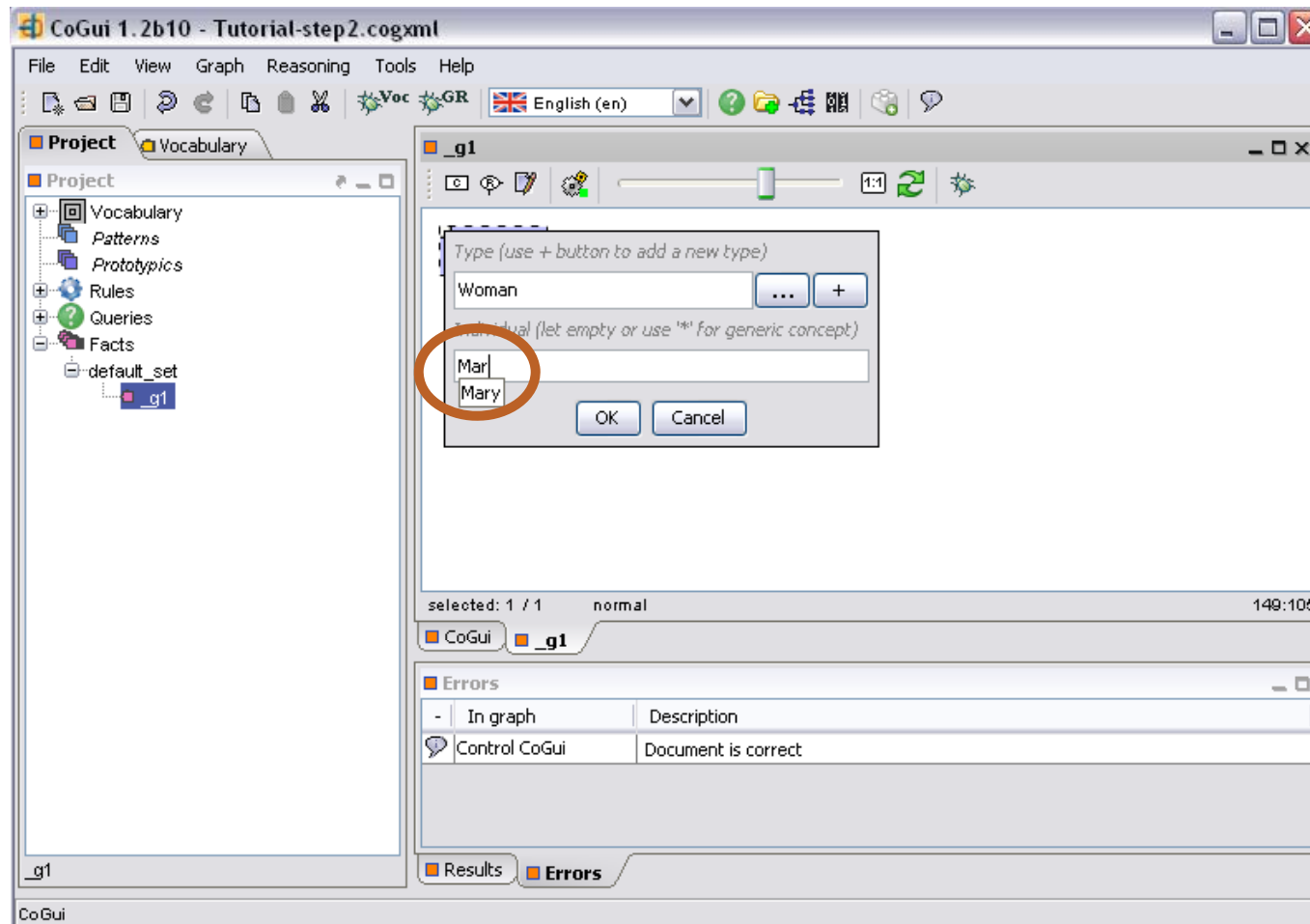
THE TYPE OF A ADDED CONCEPT IS BY DEFAULT THE UPPER MOST TYPE IN THE HIERARCHY – TO MODIFY RIGHT CLICK AND EDIT



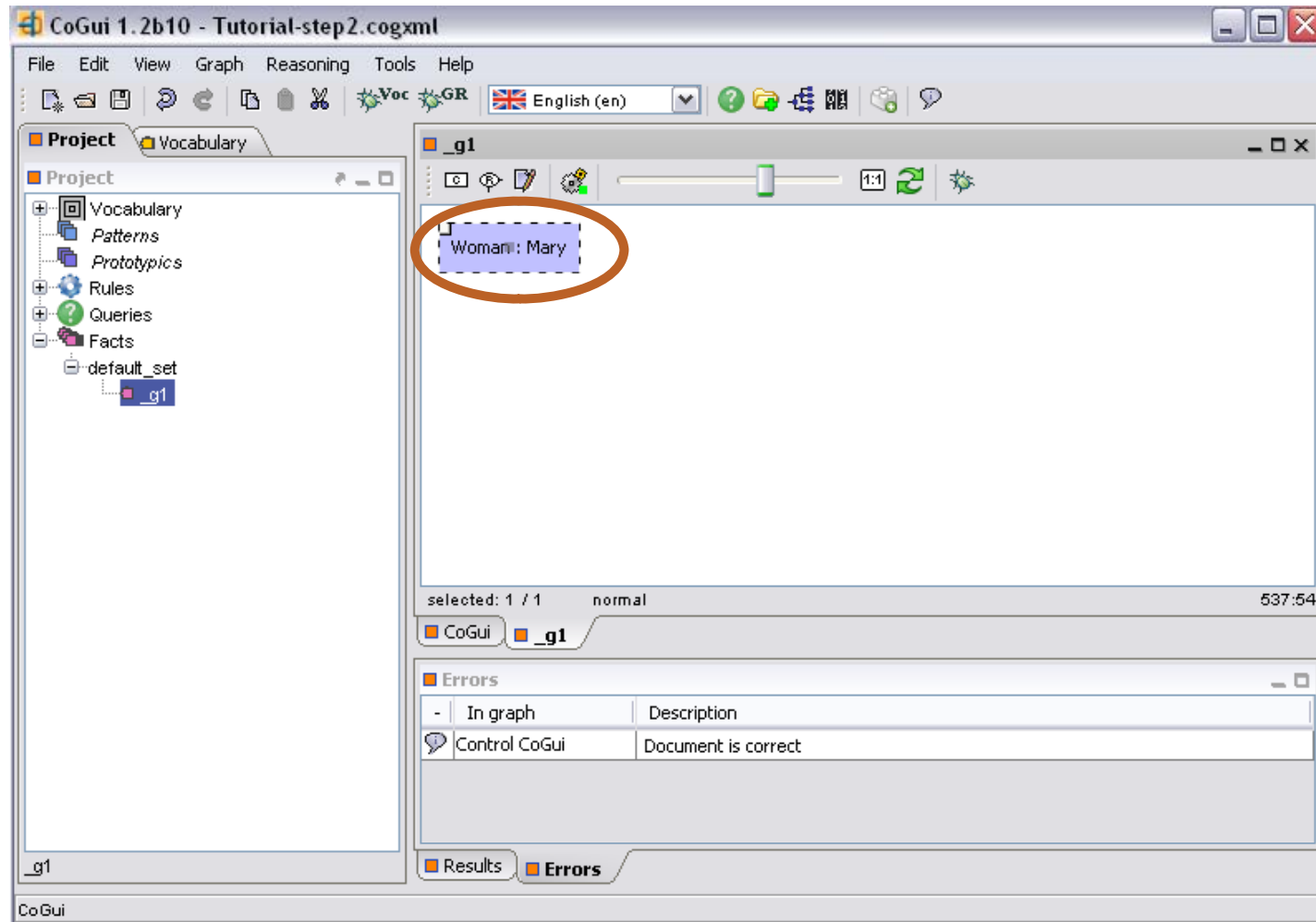
VIEW AND SELECT THE APPROPRIATE CONCEPT TYPE IN THE HIERARCHY



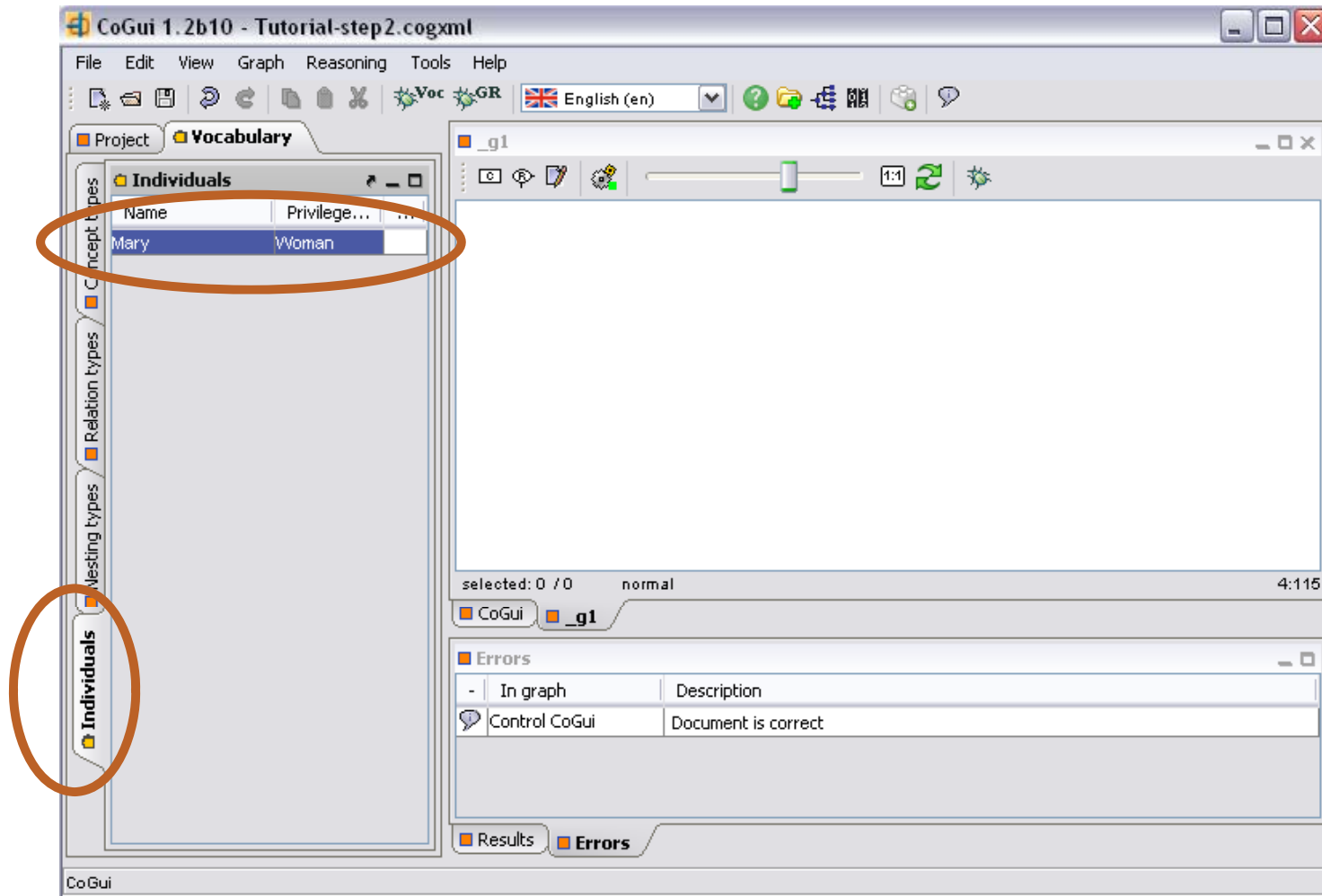
TO ADD AN INDIVIDUAL MARKER TO A CONCEPT JUST TYPE THE NAME OF THE INDIVIDUAL



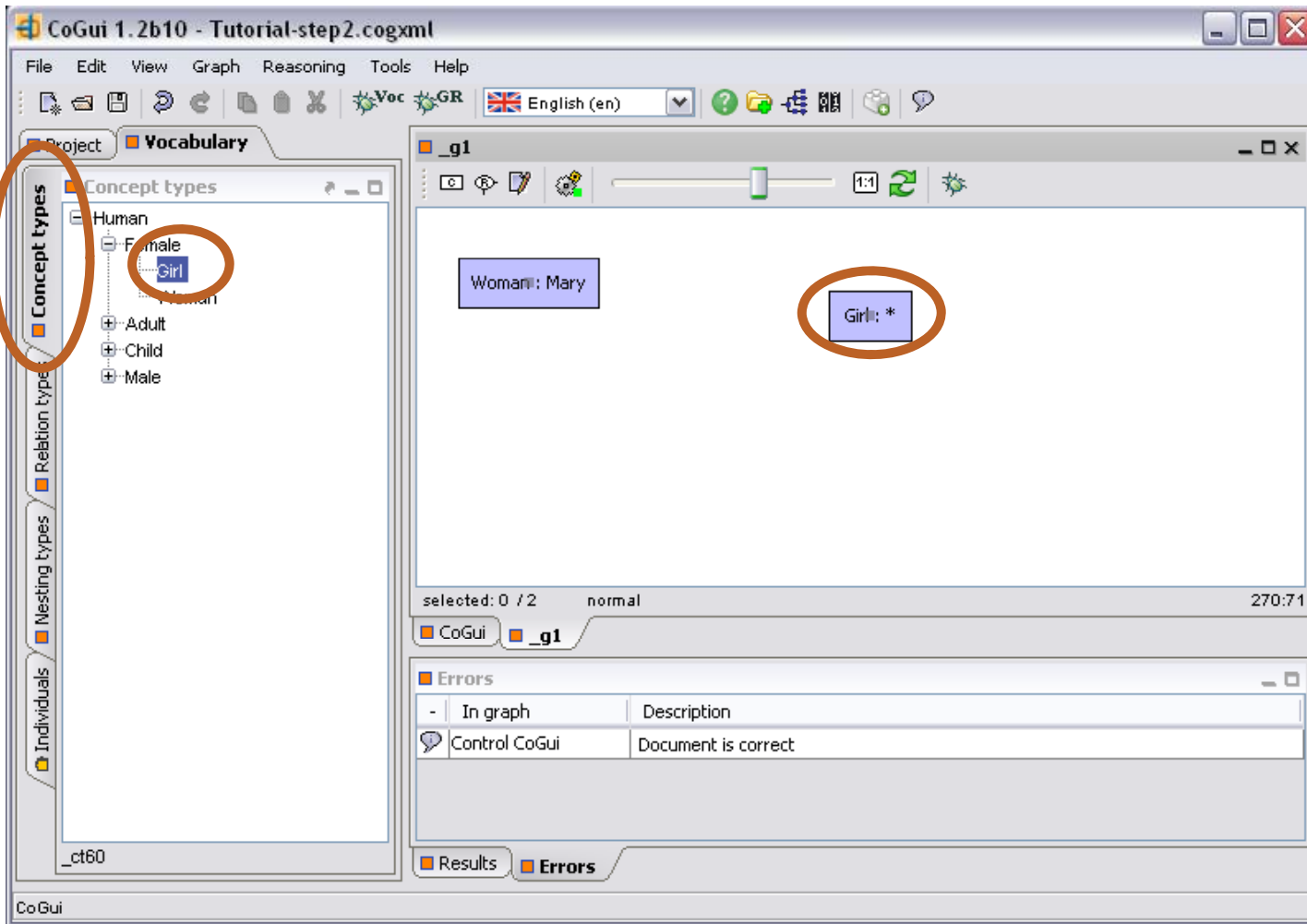
A CONCEPT NODE PART OF A FACT



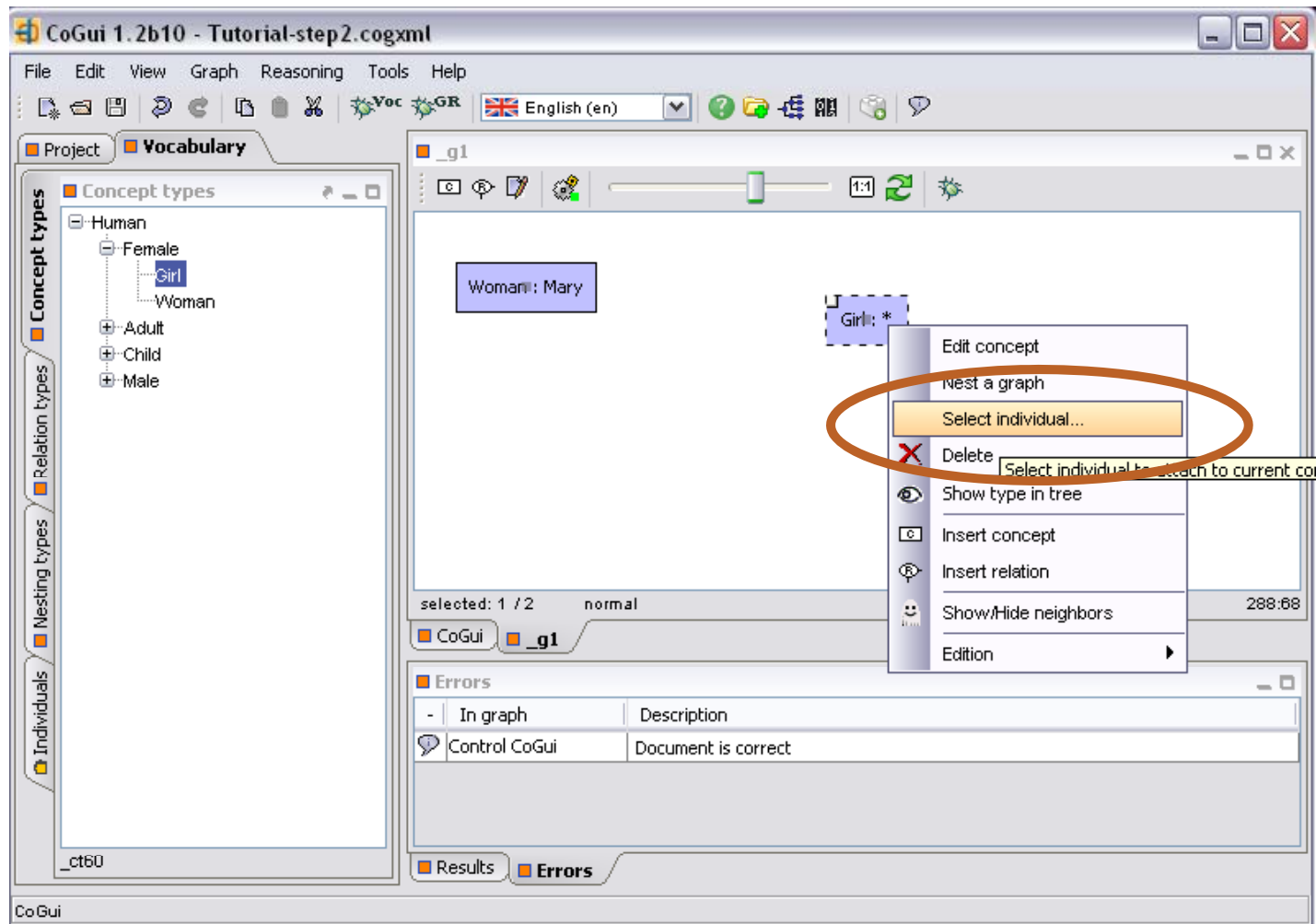
TO ADD A CONCEPT NODE WITH AN INDIVIDUAL MARKER, ALTERNATIVELY, DRAG AND DROP FROM THE INDIVIDUALS VIEW TO THE FACT EDITOR



TO ENTER A CONCEPT NODE OF A GIVEN TYPE
DRAG AND DROP THE CONCEPT FROM THE TREE
VIEW OF THE VOCABULARY



TO ADD AN INDIVIDUAL MARKER TO A CONCEPT NODE YOU CAN ALSO SELECT THE INDIVIDUAL FROM THE INDIVIDUALS LIST



IF THE INDIVIDUAL IS NOT IN THE LIST DO NOT PANIC!

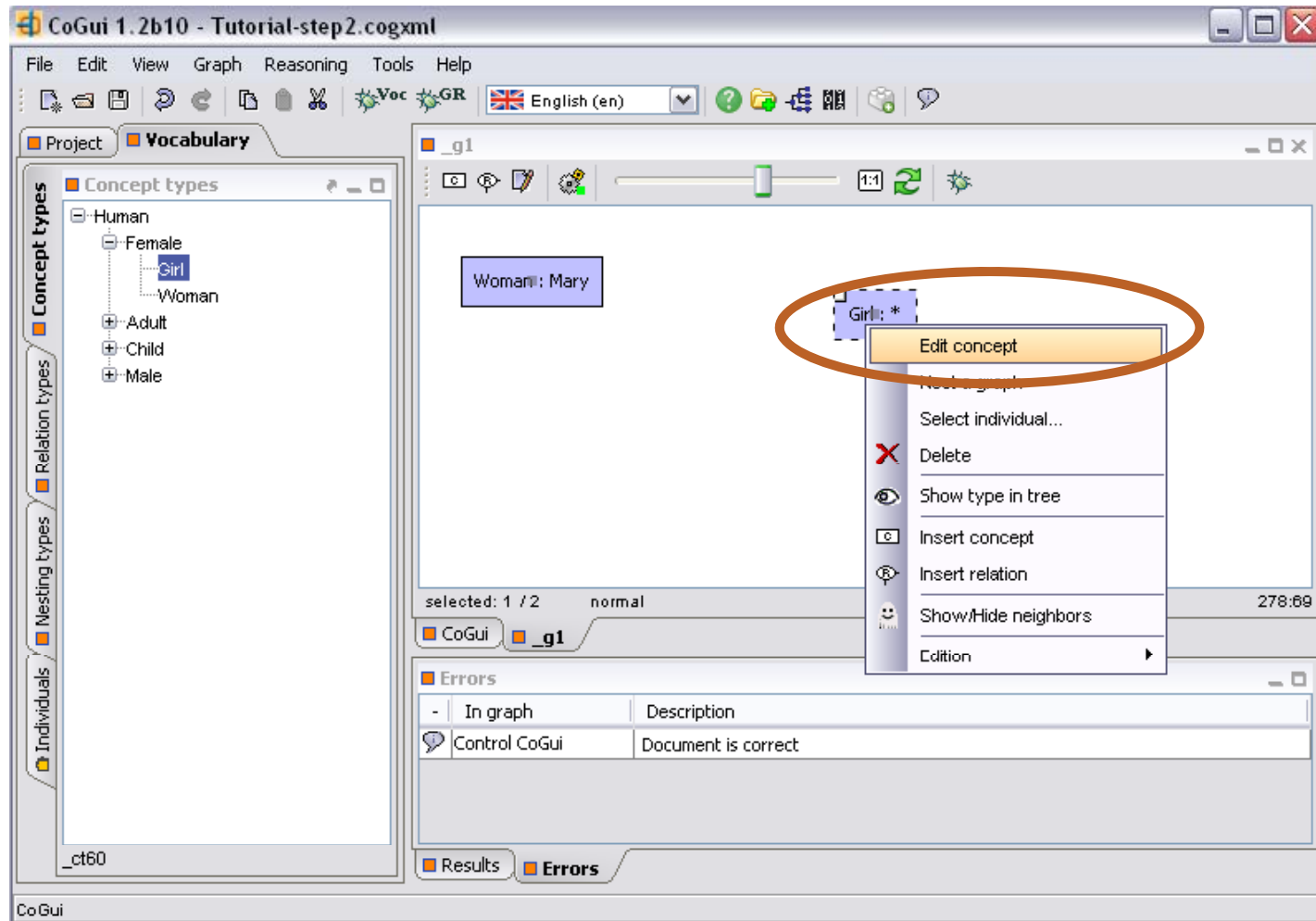
The screenshot shows the CoGui 1.2b10 interface. On the left, a 'Concept types' tree is visible under the 'Vocabulary' tab, showing a hierarchy: Human > Female > Girl > Woman. The 'Girl' node is highlighted. In the main workspace, there are two boxes: 'Woman: Mary' and 'Girl: *'. A dialog box titled 'Select an individual for concept Girl' is open, showing a table with the following content:

Label	Type
Mary	Woman

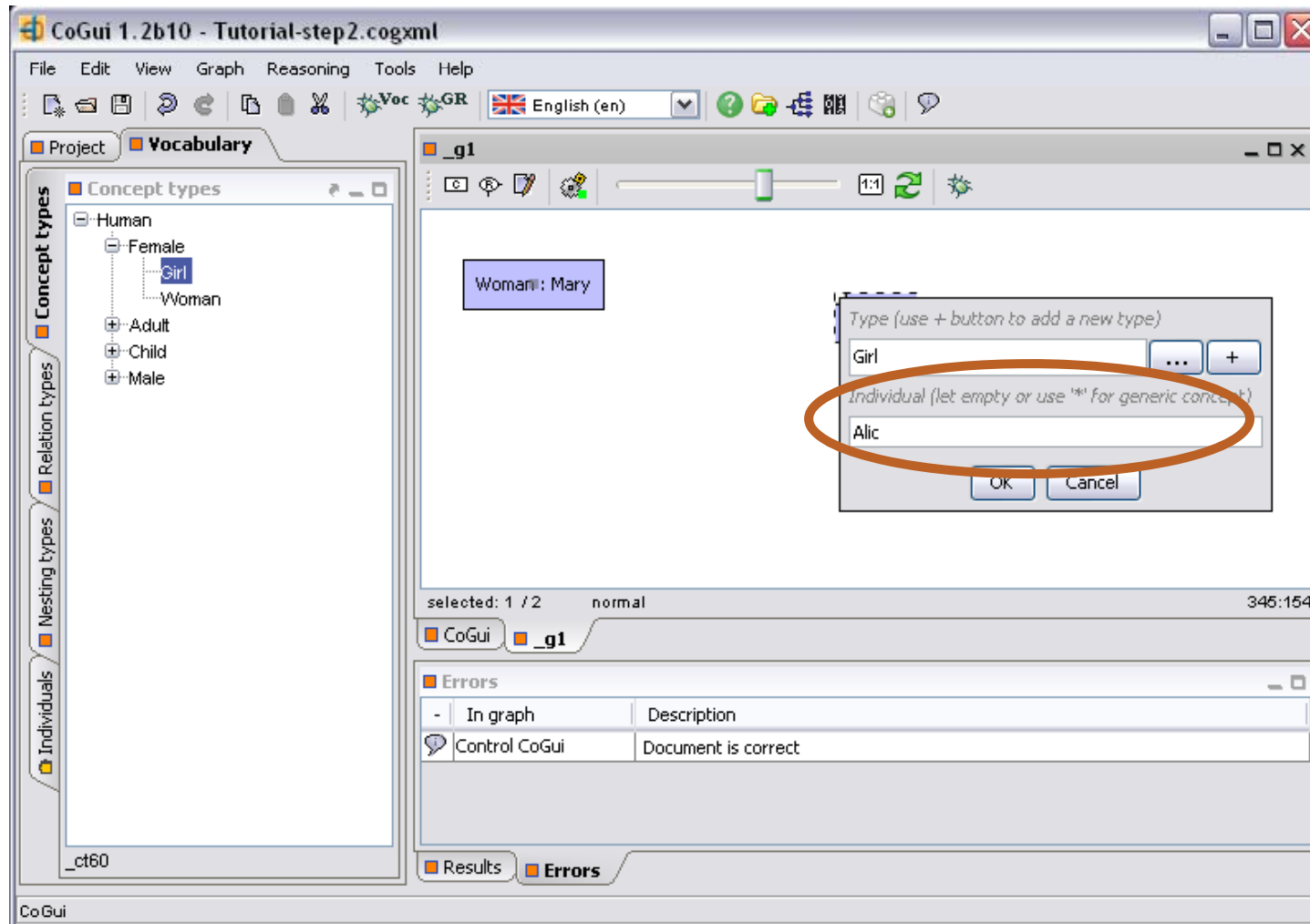
The 'Mary' row is circled in orange. The dialog also has 'Select' and 'Cancel' buttons. Below the dialog, the 'Errors' panel shows a message: 'Control CoGui | Document is correct'. The status bar at the bottom indicates 'CoGui'.



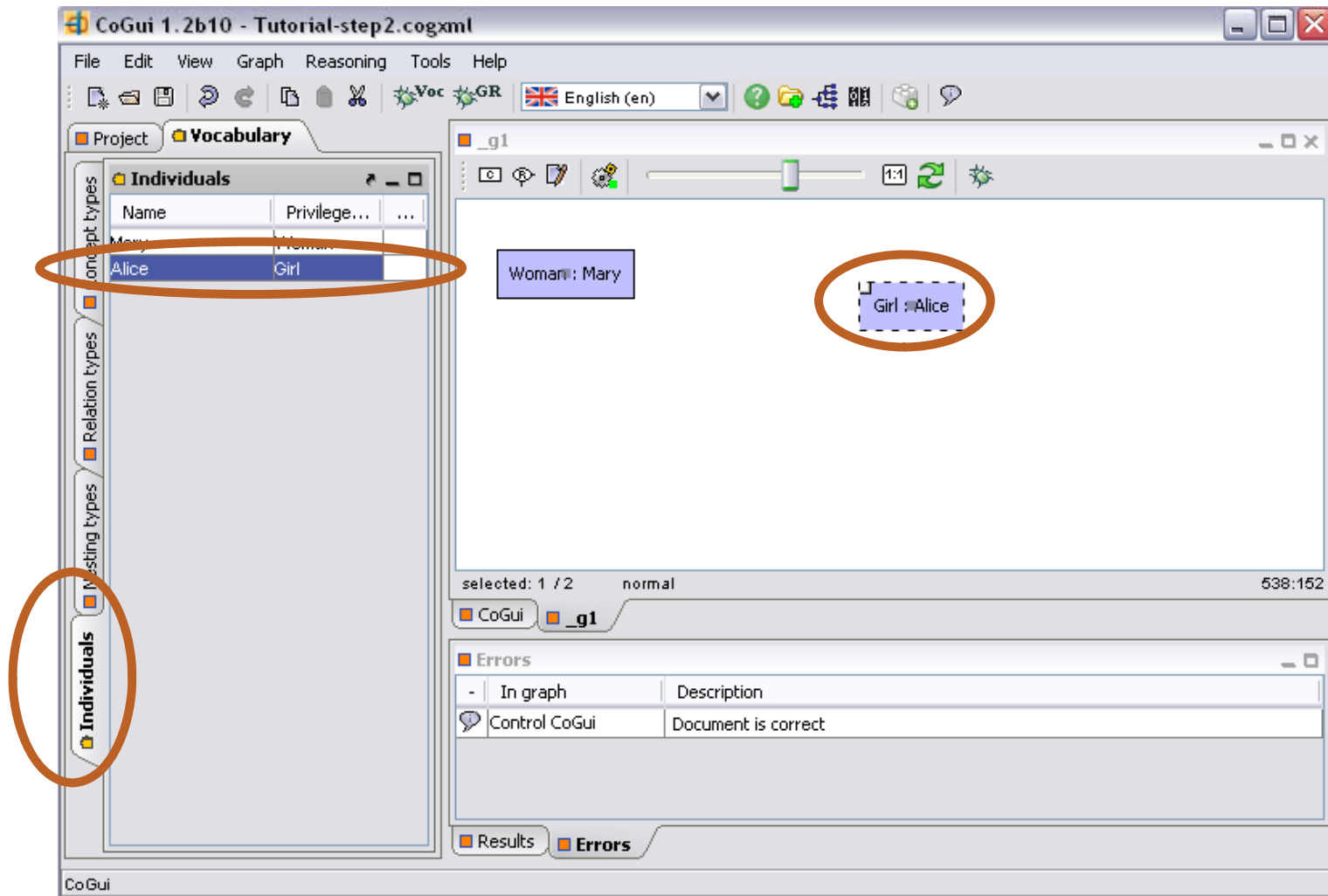
EDIT CONCEPT TO ENTER THE INDIVIDUAL BY HAND



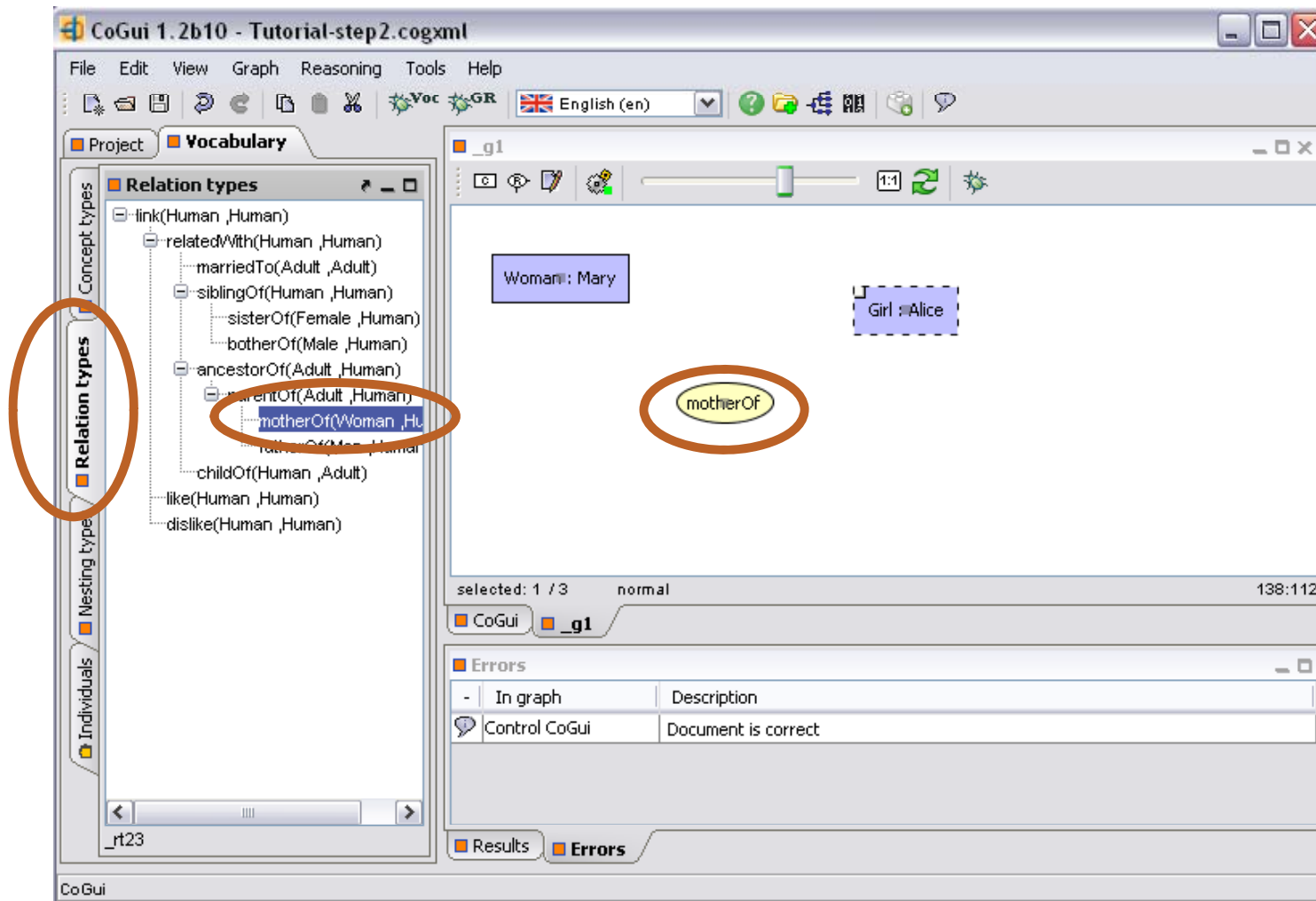
SIMPLY WRITE THE NAME OF THE INDIVIDUAL



ONCE YOU WRITE THE NAME OF THE INDIVIDUAL IN THE CONCEPT NODE, THE INDIVIDUAL WILL APPEAR IN THE INDIVIDUAL LIST TOO



TO ADD A RELATION DRAG AND DROP THE RELATION FROM THE TREE VIEW OF THE VOCABULARY



TO LINK THE RELATION TO DESIRED CONCEPTS
CLICK THE MIDDLE OF THE RELATION NODE THEN
DRAG AND DROP THE EDGE TOWARDS CONCEPTS

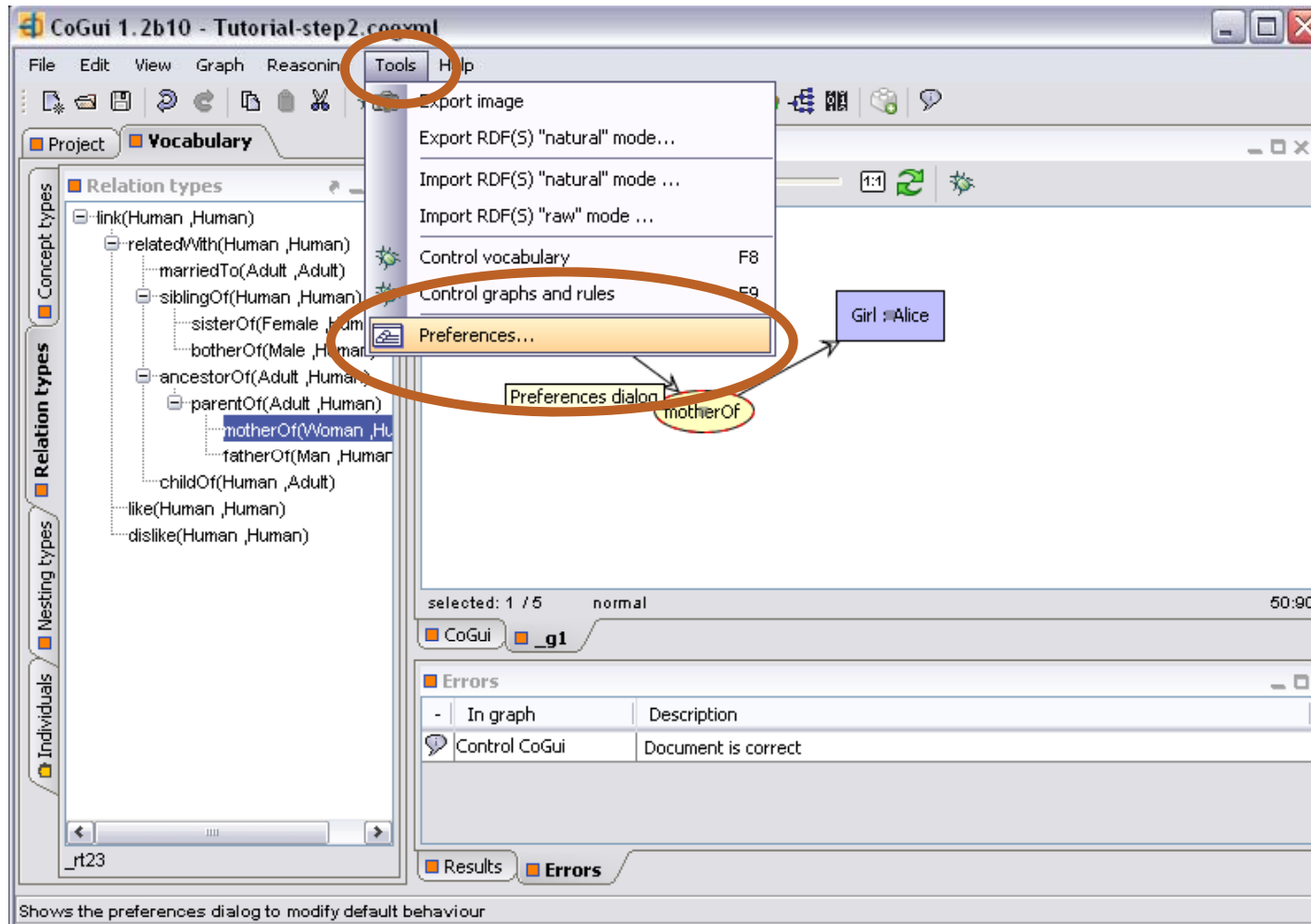
The screenshot displays the CoGui 1.2b10 interface for a tutorial. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help) and a toolbar with various icons. On the left, there is a "Vocabulary" panel with a tree view of "Relation types". The "Relation types" list includes: link(Human, Human), relatedWith(Human, Human), marriedTo(Adult, Adult), siblingOf(Human, Human), sisterOf(Female, Human), botherOf(Male, Human), ancestorOf(Adult, Human), parentOf(Adult, Human), motherOf(Woman, Human), fatherOf(Man, Human), childOf(Human, Adult), like(Human, Human), and dislike(Human, Human). The "motherOf(Woman, Human)" node is selected and highlighted in blue. The main graph area, titled "_g1", shows a graph with two nodes: "Woman: Mary" and "Girl: Alice". A "motherOf" relation node is positioned between them, with arrows pointing from "Woman: Mary" and "Girl: Alice" to it. The "motherOf" node is highlighted in yellow and circled in orange. Below the graph area, there is a status bar showing "selected: 1 / 4" and "normal". At the bottom, there is an "Errors" panel with a table:

-	In graph	Description
🔔	Control CoGui	Document is correct

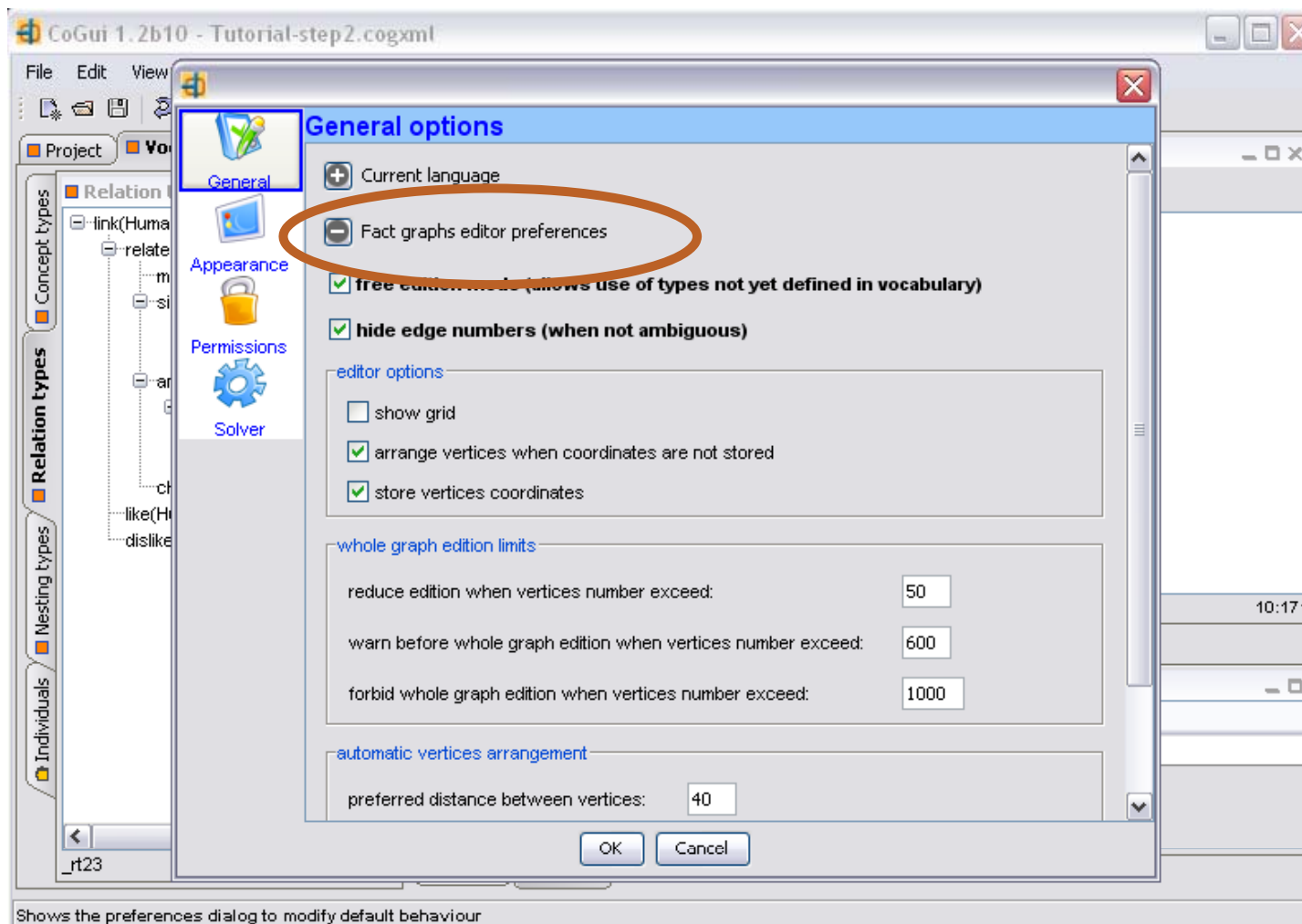
The bottom of the interface shows tabs for "Results" and "Errors".



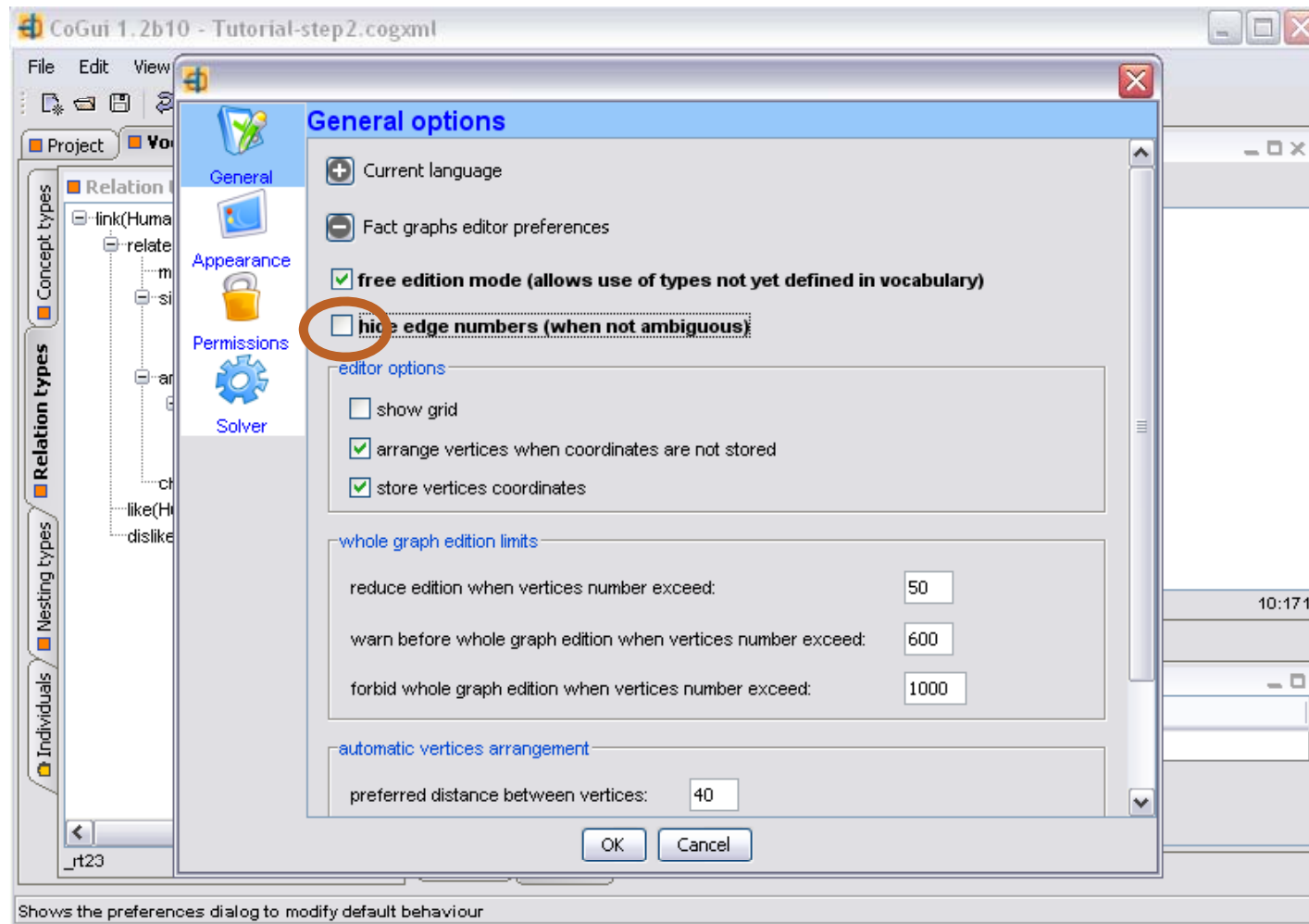
TO CHANGE THE APPEARANCE OF EDGES IN THE FACT GRAPH GO TO PREFERENCES



IN GENERAL OPTIONS SELECT FACT GRAPHS EDITOR PREFERENCES



UNSELECT HIDE EDGE NUMBERS



TO APPLY THE CHANGES TO YOUR GRAPH YOU HAVE TO REFRESH THE GRAPH VIEW

The screenshot shows the CoGui 1.2b10 interface. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". The interface is divided into several panels:

- Project Panel:** Shows "Vocabulary" selected.
- Relation types Panel:** A tree view of relation types. The "motherOf(Woman, Human)" relation is highlighted in blue.
- Graph View:** A graph with two nodes: "Woman: Mary" and "Girl: Alice". A directed edge labeled "motherOf" connects "Woman: Mary" to "Girl: Alice". The "motherOf" label is circled in orange. A "Refresh graph" button is also circled in orange.
- Errors Panel:** A table with two columns: "In graph" and "Description". It contains one row: "Control CoGui" with the description "Document is correct".

At the bottom of the window, there is a status bar that reads "Shows the preferences dialog to modify default behaviour".



THE EDGES ARE NOW NUMBERED

The screenshot displays the CoGui 1.2b10 interface for a tutorial. The main window shows a graph with two nodes: "Woman: Mary" and "Girl: Alice". A central node is labeled "motherOf". Two edges connect the nodes to the "motherOf" node, with the edges numbered 1 and 2. The left sidebar shows a tree view of relation types, with "motherOf(Woman, Human)" selected. The bottom panel shows an "Errors" table with one entry: "Control CoGui" with the description "Document is correct".

CoGui 1.2b10 - Tutorial-step2.cogxml

File Edit View Graph Reasoning Tools Help

Project Vocabulary

Relation types

- link(Human, Human)
 - relatedWith(Human, Human)
 - marriedTo(Adult, Adult)
 - siblingOf(Human, Human)
 - sisterOf(Female, Human)
 - brotherOf(Male, Human)
 - ancestorOf(Adult, Human)
 - parentOf(Adult, Human)
 - motherOf(Woman, Human) **selected**
 - fatherOf(Male, Human)
 - childOf(Human, Adult)
 - like(Human, Human)
 - dislike(Human, Human)

graph: _g1

selected: 1 / 5 normal 537:21

In graph	Description
Control CoGui	Document is correct

Results Errors



ADD A NEW RELATION TO THE GRAPH AND DRAG AND DROP FROM THE MIDDLE OF THE RELATION TO THE EMPTY SCREEN TO CREATE CONCEPTS

The screenshot shows the CoGui 1.2b10 interface. The main window displays a graph with nodes and relations. The graph contains the following elements:

- Nodes: **Woman: Mary** (blue box), **Girl: Alice** (blue box), **Adult : *** (dashed blue box).
- Relations: **motherOf** (yellow oval), **marriedTo** (yellow oval).
- Connections: **Woman: Mary** is connected to **motherOf** (edge 1) and **marriedTo** (edge 1). **motherOf** is connected to **Girl: Alice** (edge 2). **marriedTo** is connected to **Adult : *** (edge 2).

The **marriedTo** relation and its connection to **Adult : *** are circled in red. The **Adult : *** node is highlighted with a dashed border, indicating it is being created or edited.

The interface includes a menu bar (File, Edit, View, Graph, Reasoning, Tools, Help), a toolbar, and a sidebar with tabs for **Project** and **Vocabulary**. The **Relation types** list includes:

- link(Human ,Human)
- relatedWith(Human ,Human)
- marriedTo(Adult ,Adult)
- siblingOf(Human ,Human)
- sisterOf(Female ,Human)
- brotherOf(Male ,Human)
- ancestorOf(Adult ,Human)
- parentOf(Adult ,Human)
- motherOf(Woman ,Human)
- fatherOf(Man ,Human)
- childOf(Human ,Adult)
- like(Human ,Human)
- dislike(Human ,Human)

The bottom panel shows the **Errors** section with the following table:

-	In graph	Description
Control CoGui		Document is correct



THE ADDED CONCEPT WILL HAVE THE TYPE CORRESPONDING TO THE RELATION SIGNATURE — REFINE IT BY RIGHT CLICK AND EDIT CONCEPT

The screenshot shows the CoGui 1.2b10 interface. On the left, a 'Vocabulary' pane lists various relation types, with 'marriedTo(Adult,Adult)' highlighted. The main window displays a graph with two nodes: 'Woman: Mary' and 'Girl: Alice'. A 'motherOf' relation connects them, and a 'marriedTo' relation also connects them. A dialog box is open over the 'marriedTo' relation, allowing the user to select a type for the second argument. The dialog shows a list of types, with 'Man' selected. Below the list, there is a text input field containing 'Bob'. The dialog also includes 'OK' and 'Cancel' buttons.

selected: 1 / 9 normal 493:31

-	In graph	Description
Control CoGui		Document is correct



WHEN YOU ARE HAPPY WITH YOUR FACT RIGHT
CLICK ON THE NAME BY DEFAULT OF THE FACT

The screenshot displays the CoGui 1.2b10 interface. On the left, a project tree shows a hierarchy: Project > Vocabulary > Patterns > Prototypics > Rules > Queries > Facts > default_set > _g1. The _g1 node is circled in orange. The main window shows a graph visualization with the following structure:

```
graph LR; Mary[Woman: Mary] -- 1 --> motherOf(motherOf); Mary -- 1 --> marriedTo(marriedTo); motherOf -- 2 --> Alice[Girl: Alice]; marriedTo -- 2 --> Bob[Man: Bob];
```

The 'motherOf' node is highlighted in yellow. Below the graph, a status bar shows 'selected: 0 / 9 normal 512:131'. At the bottom, there are tabs for 'CoGui' and '_g1', and a section for 'Errors' with a table:

-	In graph	Description
🗨	Control CoGui	Document is correct

At the bottom right, there is an orange circle.

RENAME YOUR FACT GRAPH ACCORDINGLY

The screenshot shows the CoGui 1.2b10 interface. The main window displays a fact graph with the following structure:

```
graph TD; Mary[Woman: Mary] -- 1 --> motherOf[motherOf]; motherOf -- 2 --> Alice[Girl: Alice]; Mary -- 1 --> marriedTo[marriedTo]; marriedTo -- 2 --> Bob[Man: Bob];
```

The context menu is open over the 'Facts' folder in the Project panel, with the 'Rename' option highlighted. The 'Errors' panel at the bottom shows a message: 'Control CoGui | Document is correct'.

In graph	Description
Control CoGui	Document is correct



DO NOT FORGET TO VALIDATE YOUR FACT GRAPHS

The screenshot shows the CoGui 1.2b10 interface. The main window displays a fact graph with the following structure:

```
graph LR; Mary[Woman: Mary] -- 1 --> motherOf(motherOf); Mary -- 1 --> marriedTo(marriedTo); motherOf -- 2 --> Alice[Girl: Alice]; marriedTo -- 2 --> Bob[Man: Bob];
```

The interface includes a menu bar with 'File', 'Edit', 'View', 'Graph', 'Reasoning', and 'Tools'. A red circle highlights the 'GR' (Graph) icon in the toolbar. The left sidebar shows a project tree with 'Project' and 'Vocabulary' tabs. The 'Project' tab is active, showing a tree structure with 'Vocabulary', 'Patterns', 'Prototypics', 'Rules', 'Queries', 'Facts', and 'default_set'. The 'default_set' folder contains a 'q1' query. The bottom status bar shows 'selected: 0 / 9', 'normal', and '12:0'. The 'Errors' panel at the bottom right contains the following table:

In graph	Description
Control CoGui	Document is correct

The 'Results' and 'Errors' tabs are visible at the bottom of the interface.



FOLLOW THE INSTRUCTIONS AFTER YOU VALIDATED YOUR GRAPH

The screenshot displays the CoGui 1.2b10 interface. The main window shows a graph with nodes and edges. The nodes are: 'Woman: Mary' (blue box), 'motherOf' (yellow oval), 'marriedTo' (yellow oval), 'Girl: Alice' (blue box), and 'Man: Bob' (blue box). The edges are: '1' from 'Woman: Mary' to 'motherOf', '2' from 'motherOf' to 'Girl: Alice', '1' from 'Woman: Mary' to 'marriedTo', and '2' from 'marriedTo' to 'Man: Bob'. 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 'Project' folder containing 'Vocabulary', 'Patterns', 'Prototypics', 'Rules', 'Queries', 'Facts', and 'default_set'. The 'default_set' folder contains a sub-folder named '_g1'. The main window title is 'CoGui 1.2b10 - Tutorial-step2.cogxml'. The status bar at the bottom shows 'selected: 0 / 9 normal 297:10'. The 'Errors' panel at the bottom right contains a table with one row circled in orange:

graph	Description
Control CoGui	All CG graphs and rules are correct



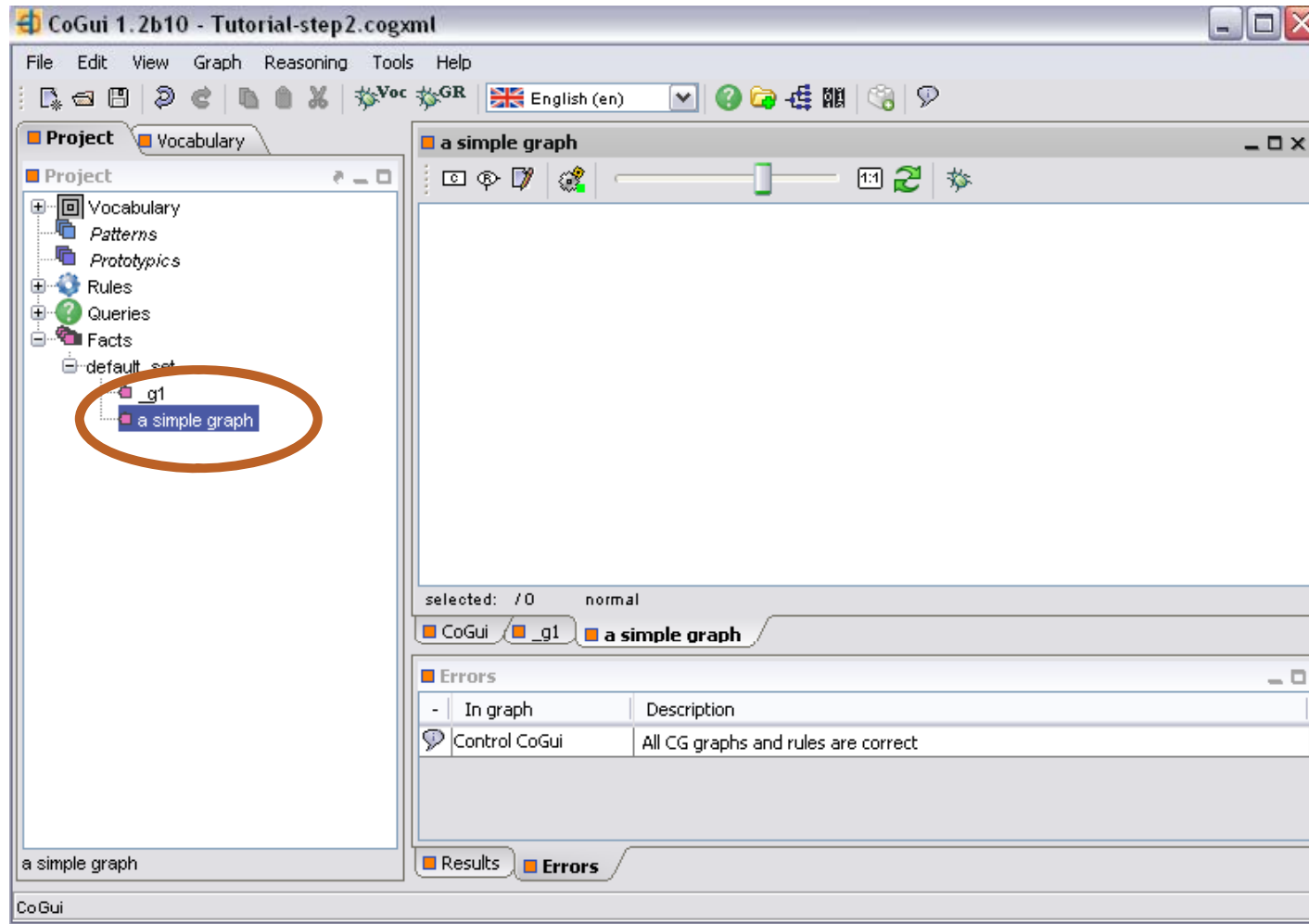
TO CREATE A NEW FACT RIGHT CLICK ON DEFAULT SET AND SELECT NEW FACT

The screenshot shows the CoGui 1.2b10 interface. On the left, the 'Project' tree is visible, with 'default_set' selected and a context menu open. The 'New Fact' option is highlighted with an orange circle. The main window displays a graph with nodes 'Woman: Mary', 'motherOf', 'marriedTo', 'Girl: Alice', and 'Man: Bob'. The graph shows relationships: 'Woman: Mary' is connected to 'motherOf' (edge 1) and 'marriedTo' (edge 1). 'motherOf' is connected to 'Girl: Alice' (edge 2). 'marriedTo' is connected to 'Man: Bob' (edge 2). The bottom panel shows an 'Errors' list with one entry: 'Control CoGui' with the description 'All CG graphs and rules are correct'.

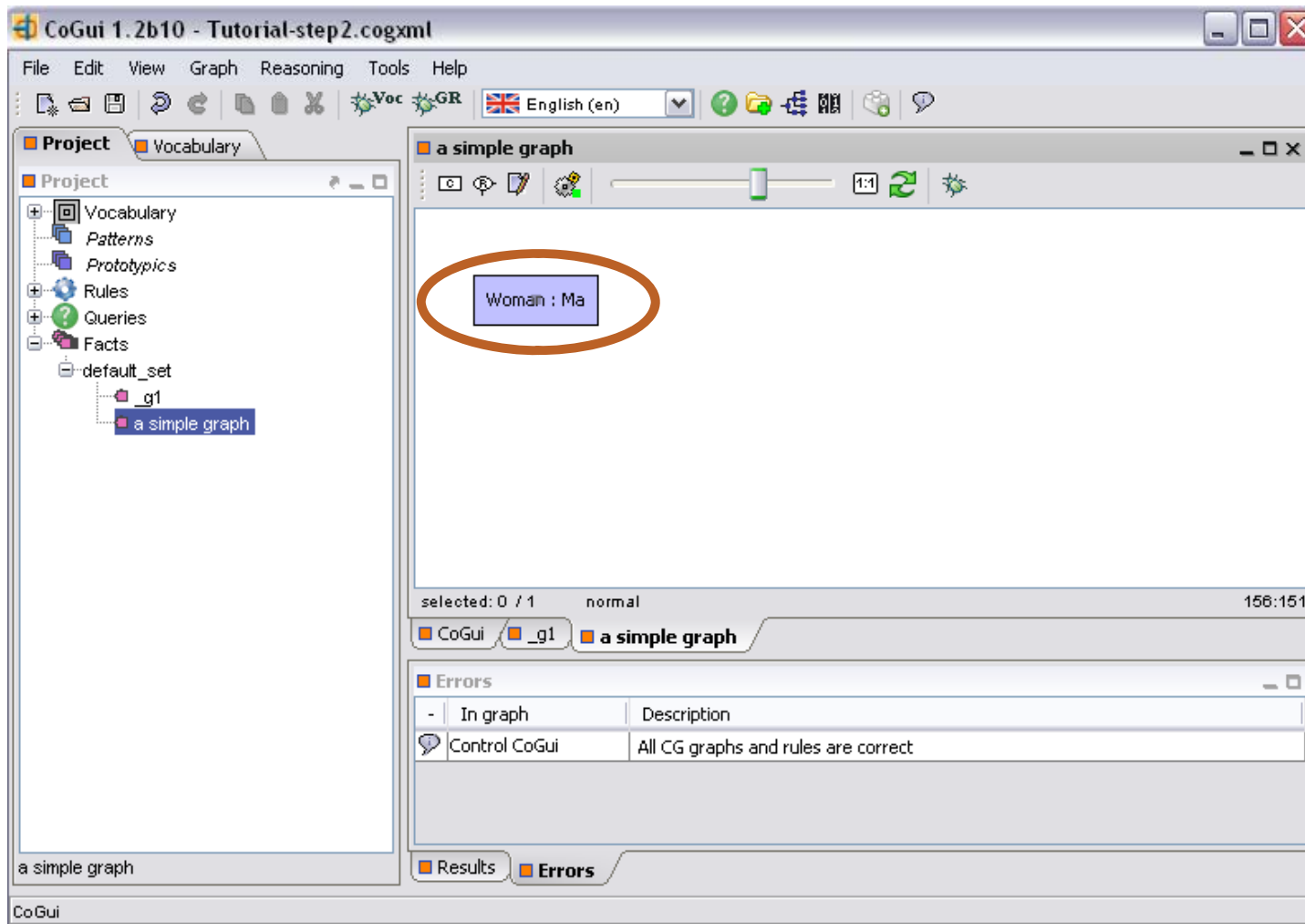
In graph	Description
Control CoGui	All CG graphs and rules are correct



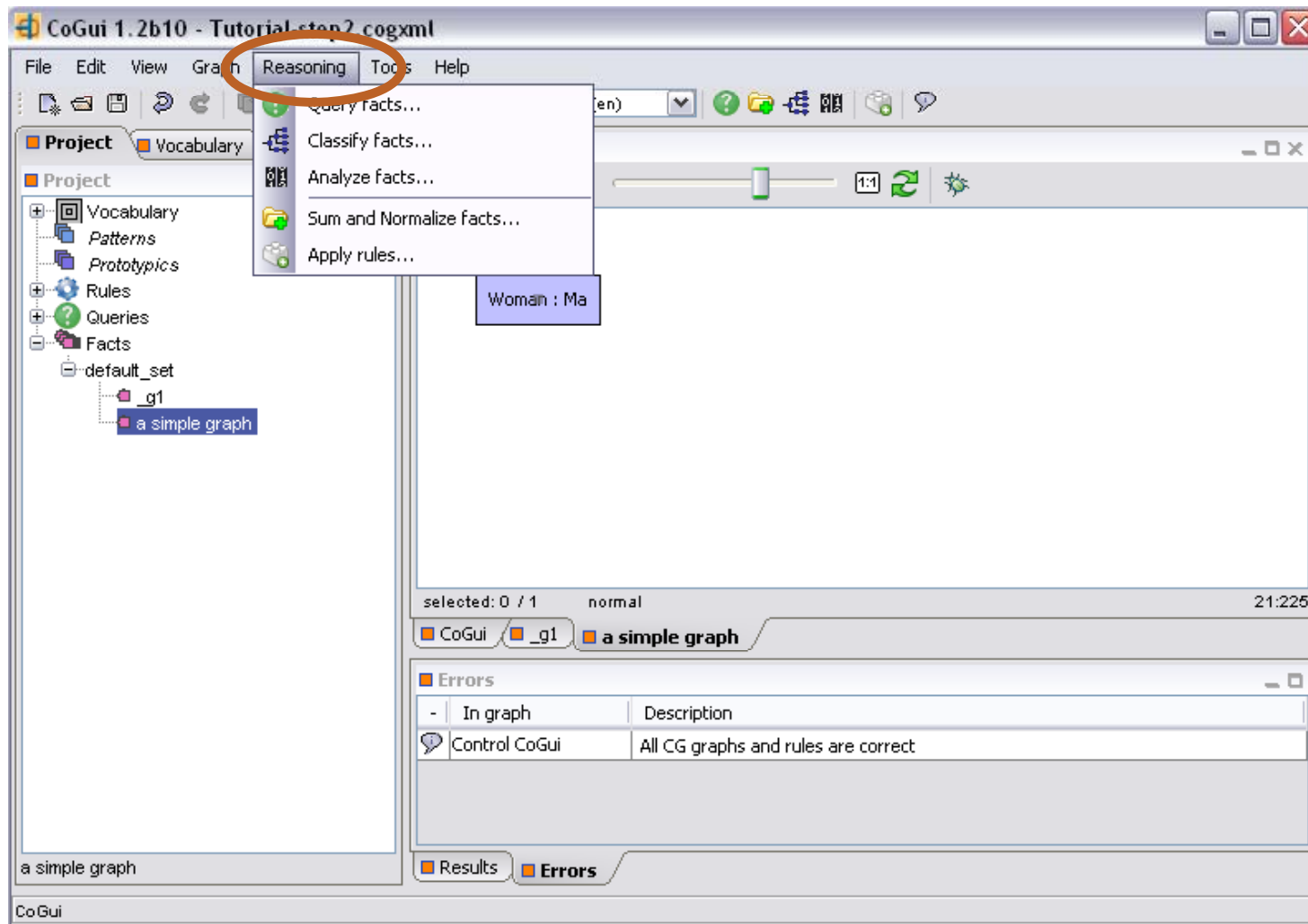
YOU CAN NAME YOUR GRAPH AFTER YOU CREATED IT



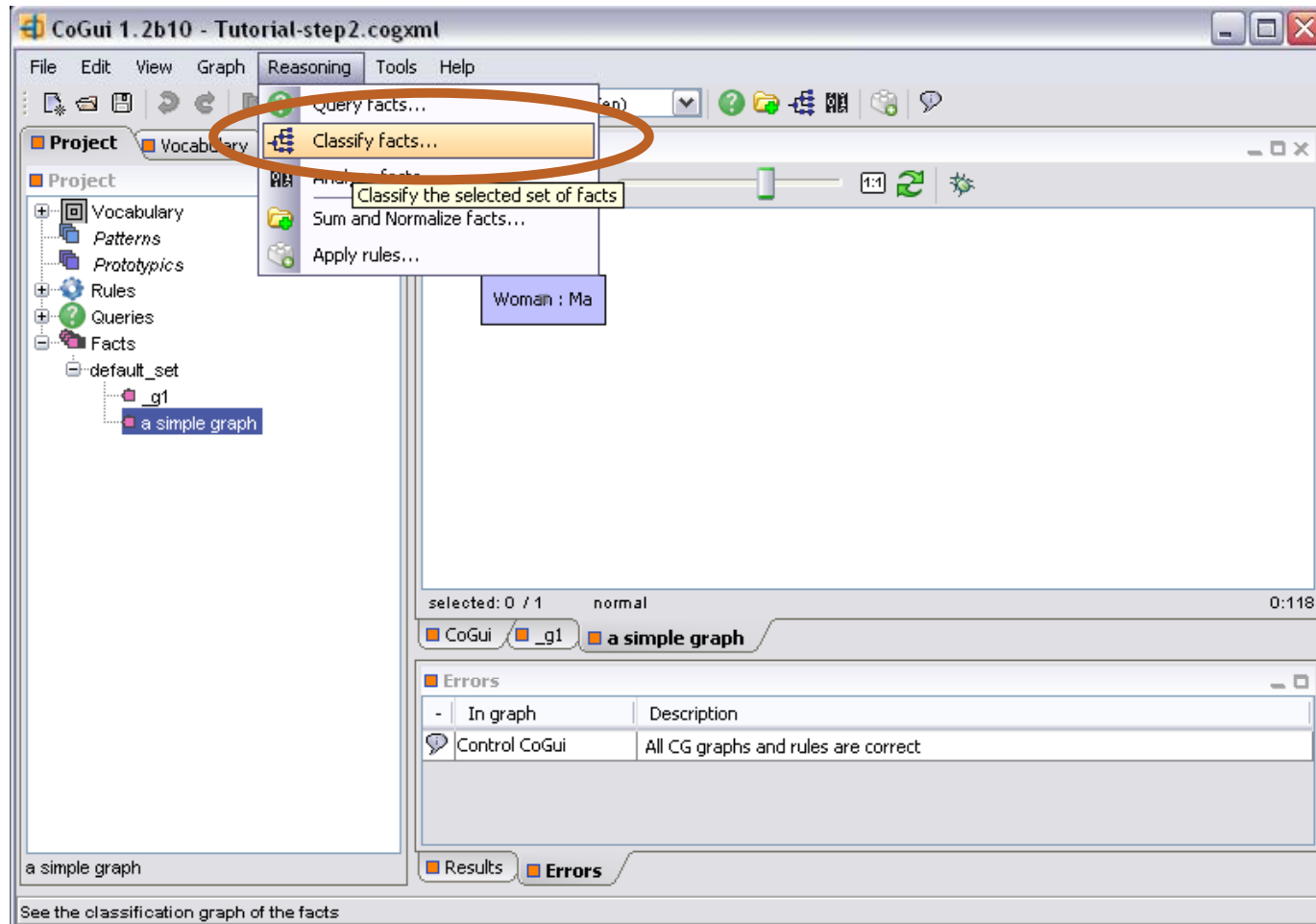
A FACT GRAPH CAN CONSIST OF A SINGLE CONCEPT NODE (BUT NOT A SINGLE RELATION NODE)



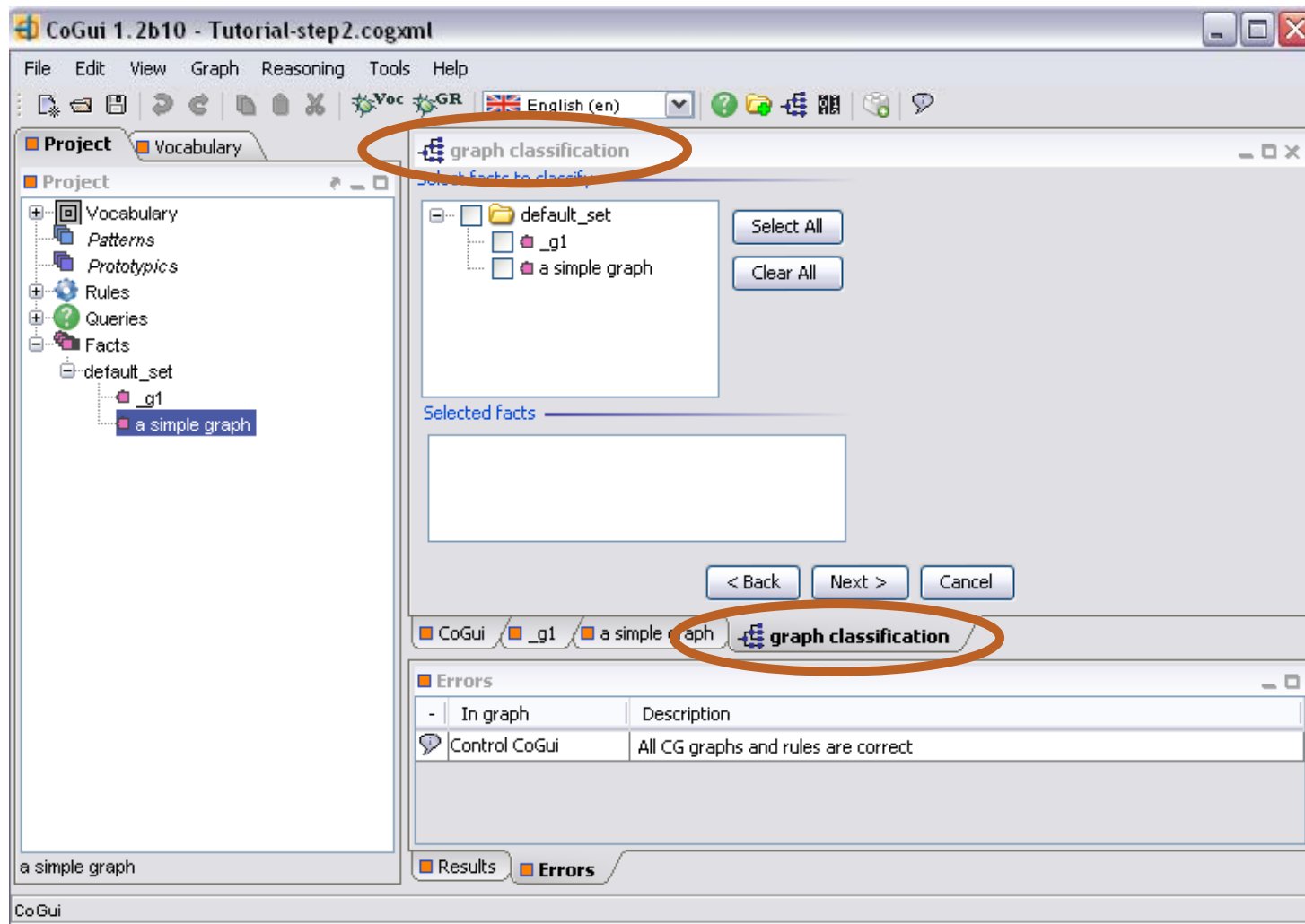
CLICK ON REASONING FOR OPERATIONS ON THE FACTS



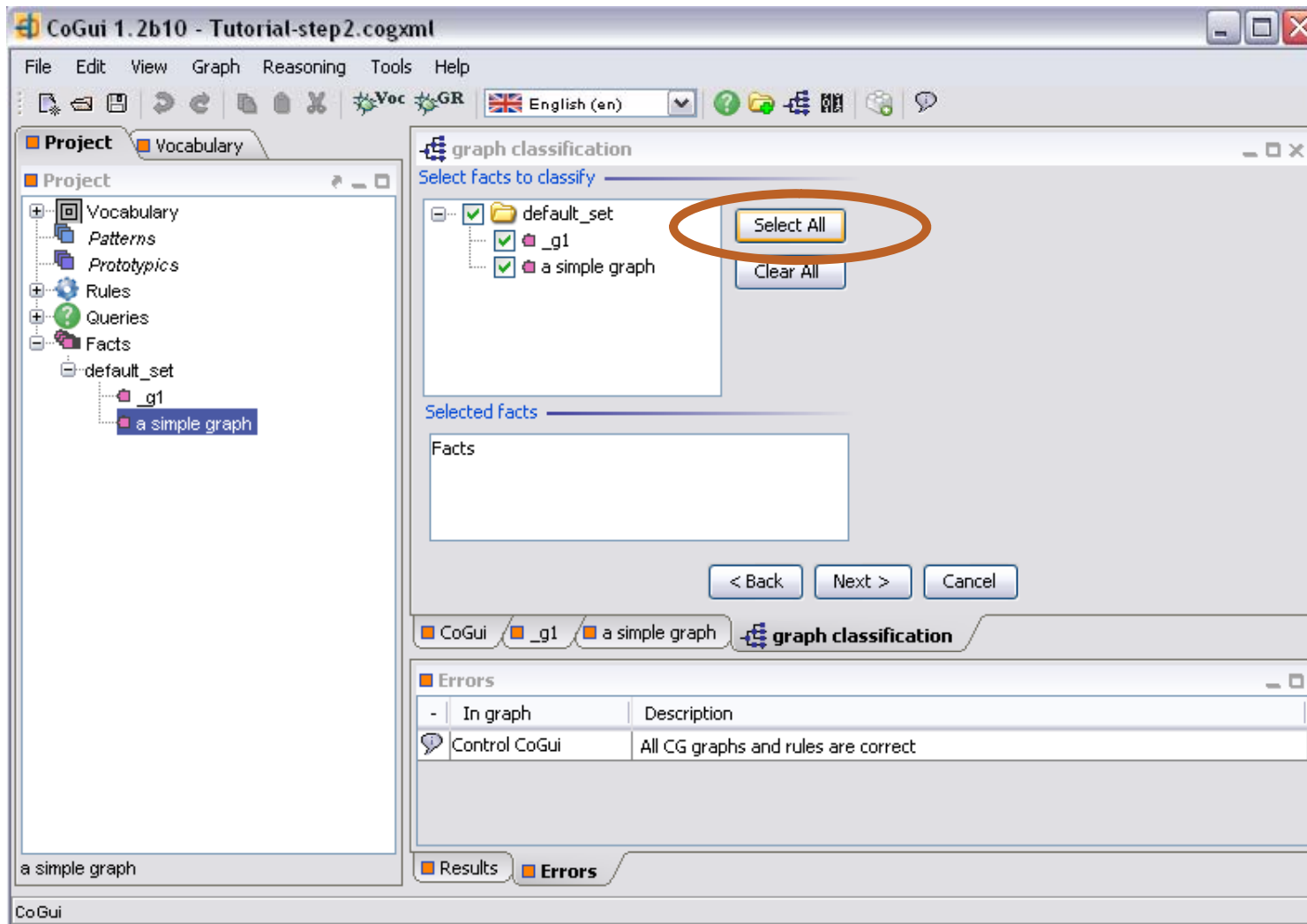
TO CLASSIFY FACTS SELECT CLASSIFY FACTS



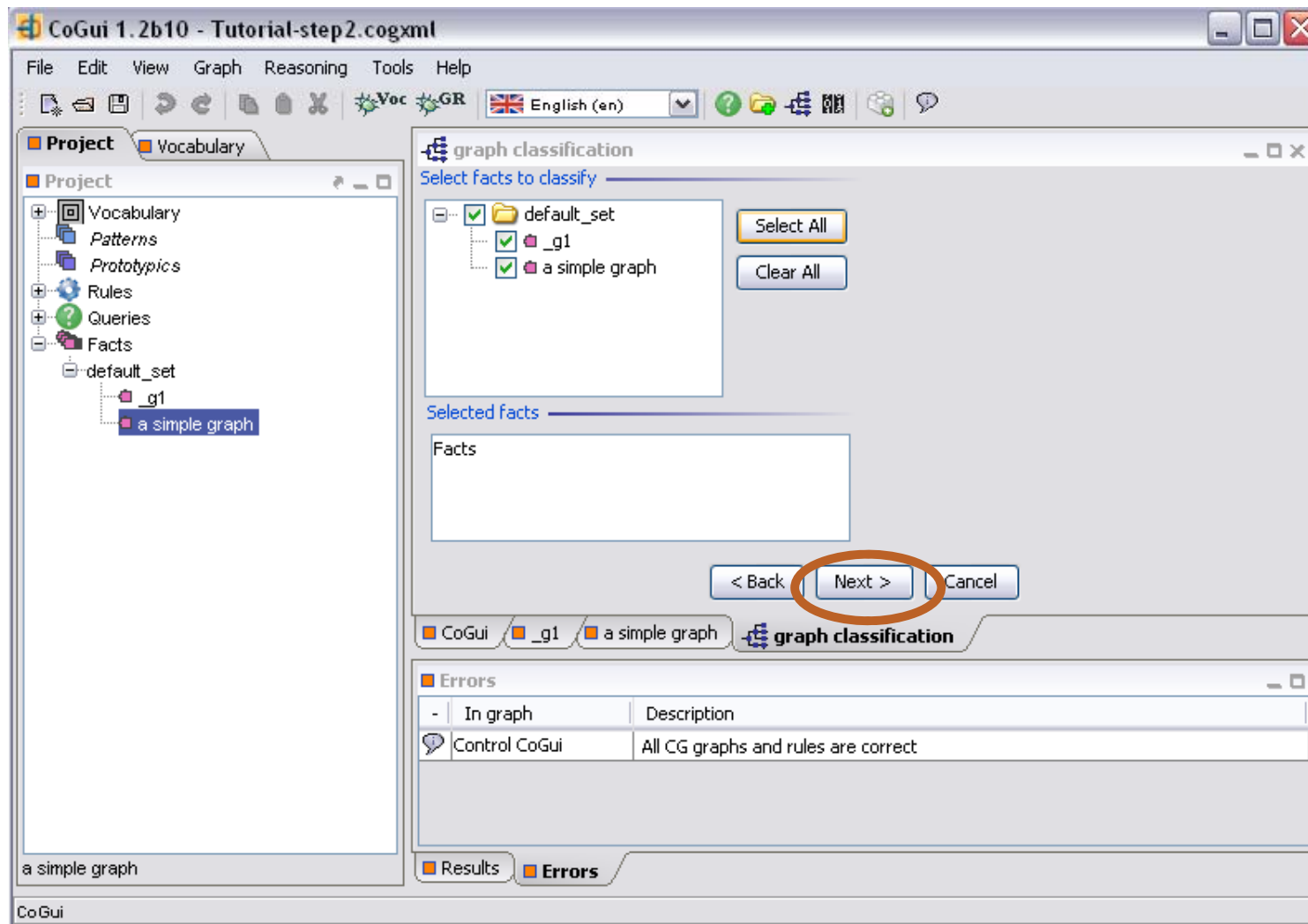
THE GRAPH CLASSIFICATION WINDOW IS OPEN



SELECT ALL YOUR FACT GRAPHS FOR CLASSIFICATION



WHEN THE FACT GRAPHS YOU WANT TO CLASSIFY ARE SELECTED CLICK NEXT



THE GRAPHS ARE SHOWN IN THEIR GENERALIZATION / SPECIALIZATION HIERARCHY

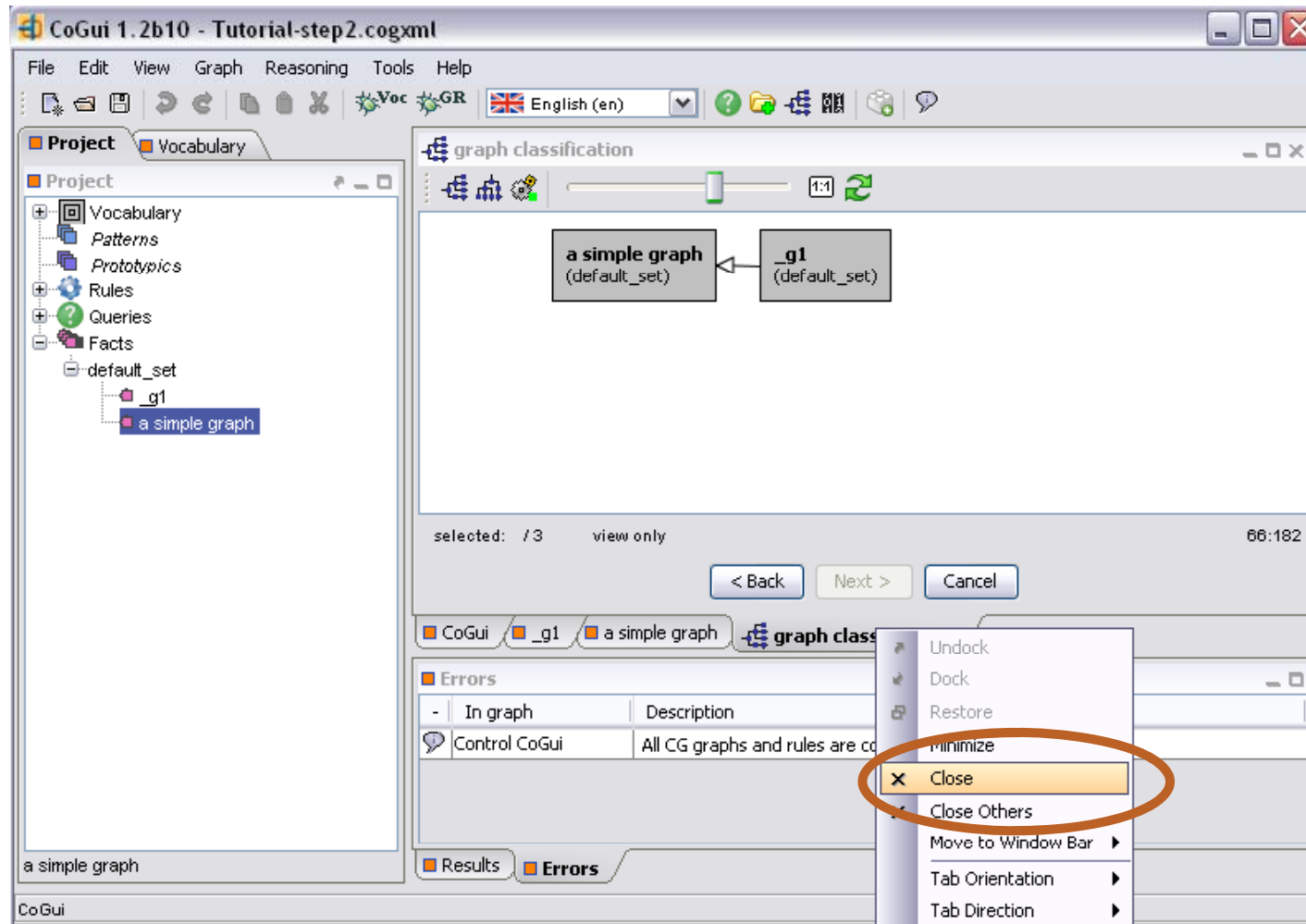
The screenshot displays the CoGui 1.2b10 interface. On the left, a project tree shows a hierarchy: Project > Vocabulary > Patterns > Prototypics > Rules > Queries > Facts > default_set > _g1 > a simple graph. The main window, titled 'graph classification', shows a diagram with two boxes: 'a simple graph (default_set)' on the left and '_g1 (default_set)' on the right. An arrow points from the right box to the left box, indicating a generalization relationship. This diagram is circled in orange. Below the diagram, there are navigation buttons: '< Back', 'Next >', and 'Cancel'. At the bottom, there is an 'Errors' panel with a table:

In graph	Description
Control CoGui	All CG graphs and rules are correct

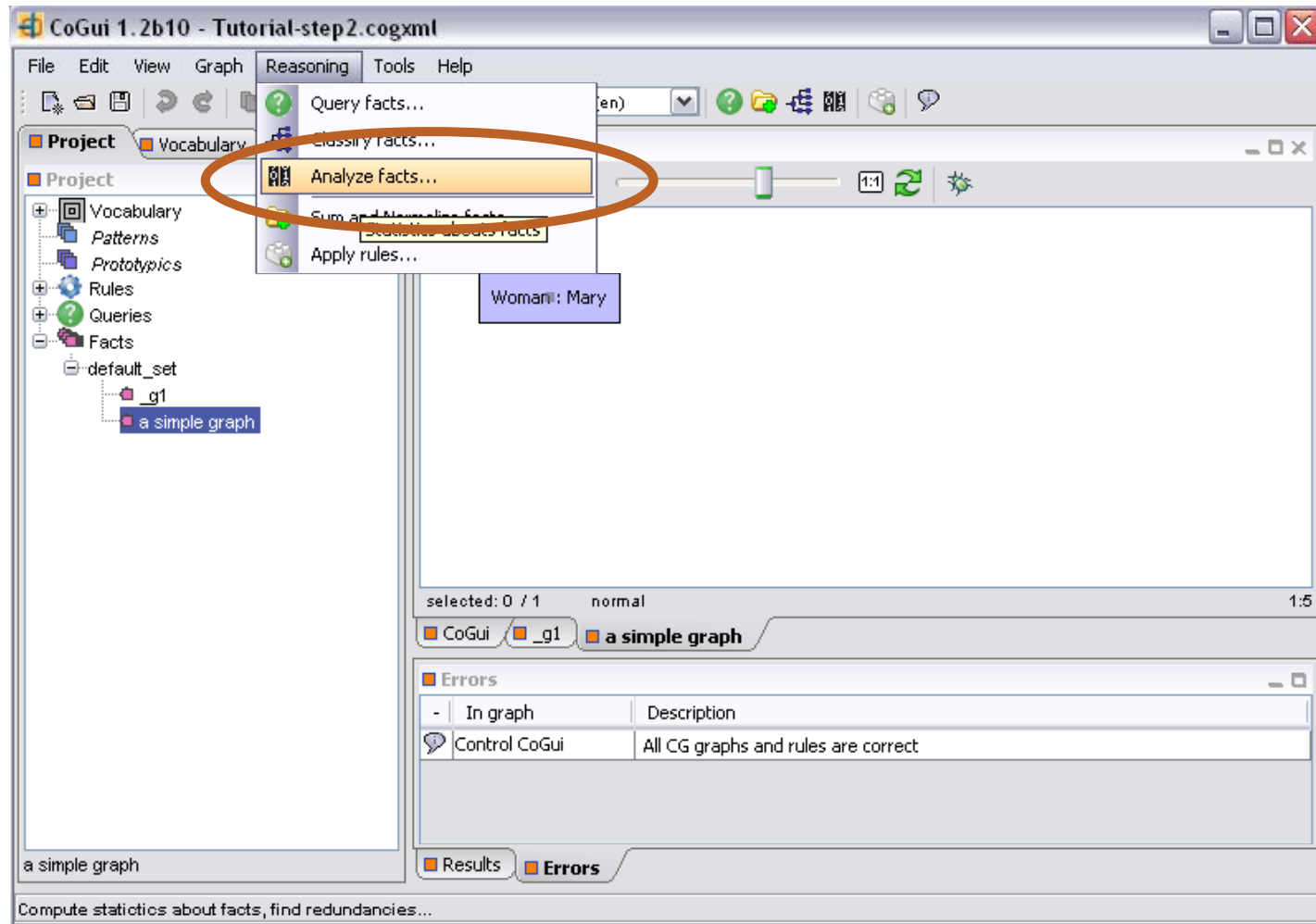
The status bar at the bottom shows 'a simple graph' and 'CoGui'.



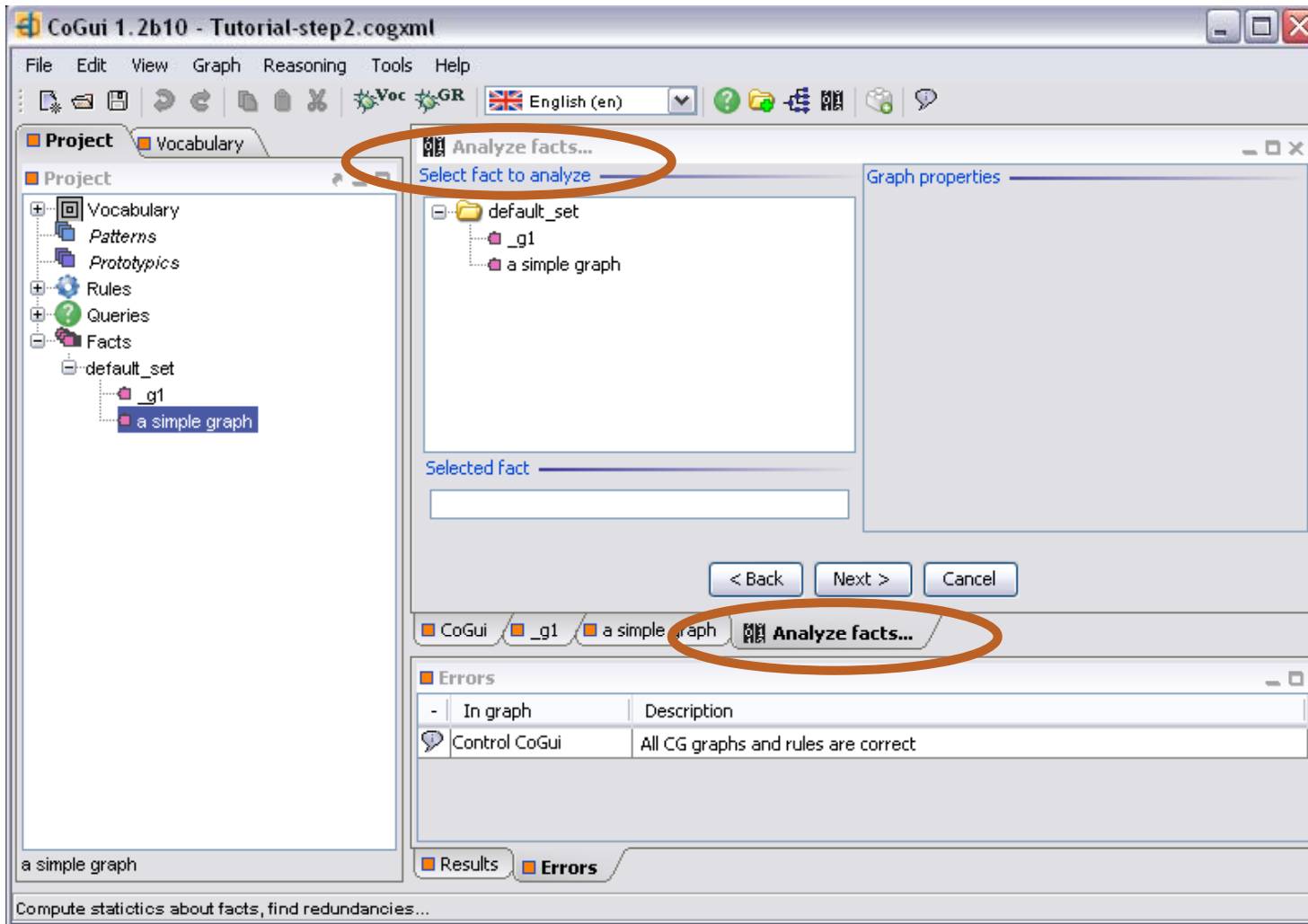
TO CLOSE THE GRAPH CLASSIFICATION WINDOW, RIGHT CLICK THEN SELECT CLOSE



TO ANALYZE FACTS SELECT REASONING THEN ANALYZE FACTS



THE ANALYZE FACTS WINDOW IS NOW OPEN



SELECT EACH GRAPH YOU WANT TO ANALYZE ONE BY ONE AND FIND THE REQUIRED INFORMATION ON THE RIGHT

The screenshot shows the CoGui 1.2b10 interface. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". The menu bar includes File, Edit, View, Graph, Reasoning, Tools, and Help. The toolbar contains various icons for file operations and reasoning. The left sidebar shows a project tree with folders for Vocabulary, Patterns, Prototypics, Rules, Queries, and Facts. Under Facts, there is a folder named "default_set" containing a graph named "_g1" with the description "a simple graph".

The "Analyze facts..." dialog box is open, showing a list of facts to analyze. The fact "default_set/_g1" is selected and circled in orange. Below the list, the "Selected fact" field contains "_g1". The "Graph properties" panel on the right displays the following statistics:

Graph properties	
name	default_set/_g1
connected components	1
concept count	total: 3
(normalized)	individual(s): 3
concept degree	average: 1.33
	(min: 1, max: 2)
relation count	2

Below the statistics, there is a button labeled "Is irredondant?". At the bottom of the dialog, there are buttons for "< Back", "Next >", and "Cancel".

The bottom of the interface shows a tabbed area with "CoGui", "_g1", and "a simple graph". Below this is an "Errors" panel with a table:

In graph	Description
Control CoGui	All CG graphs and rules are correct

At the bottom, there are tabs for "Results" and "Errors", and a status bar with the text "Compute statistics about facts, find redundancies..."



YOU CAN ALSO CHECK IF A GRAPH IS REDUNDANT

The screenshot shows the CoGui 1.2b10 interface. The main window displays a project tree on the left with a selected fact '_g1'. The 'Analyze facts...' dialog box is open, showing the following statistics for the selected fact:

name	default_set/_g1
connected components	1
concept count (normalized)	total: 3 individual(s): 3
concept degree	average: 1.33 (min: 1, max: 2)
relation count	2

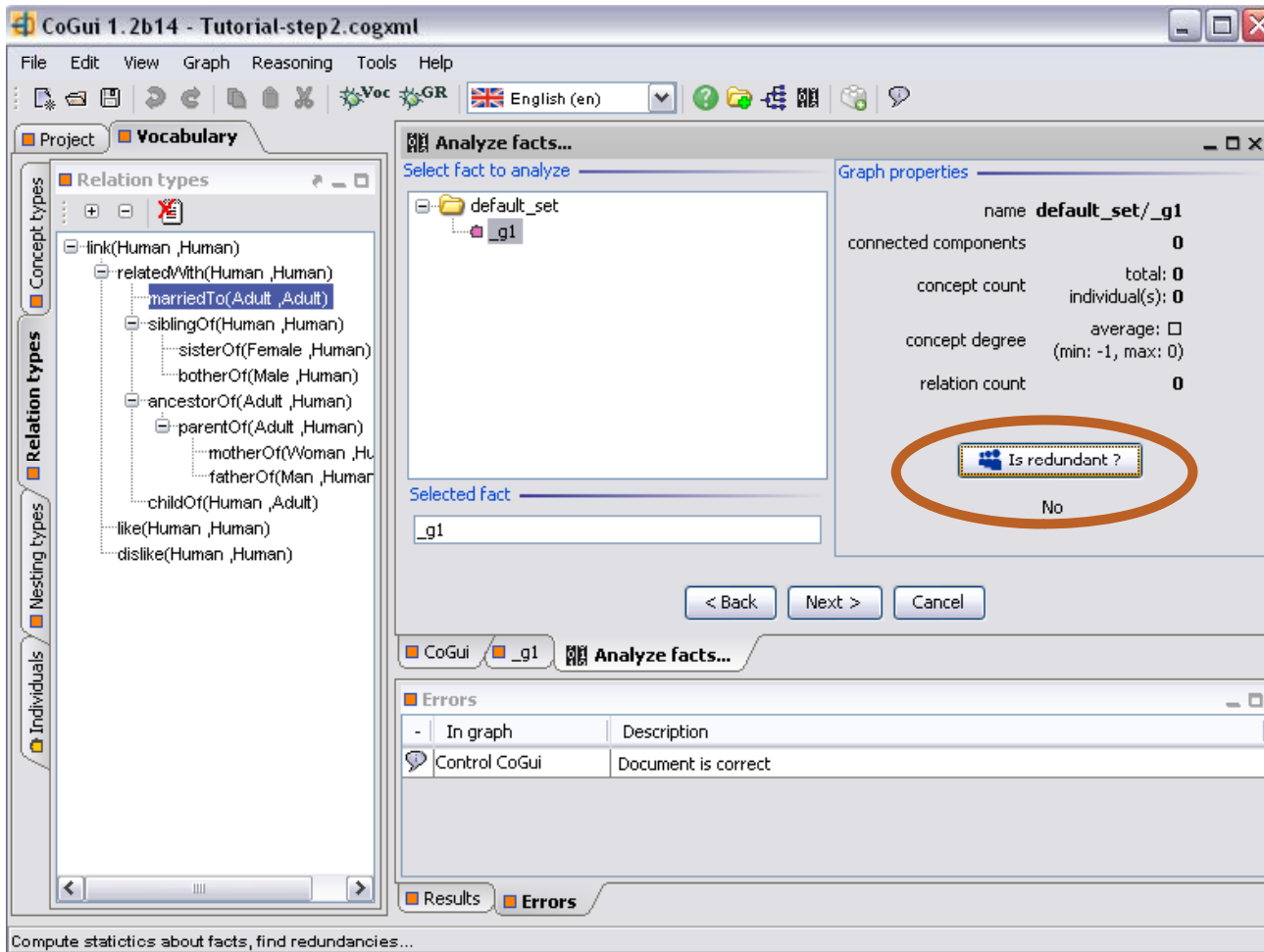
The dialog also features a button labeled "Is irredondant?" which is circled in orange. Below the dialog, there are buttons for "< Back", "Next >", and "Cancel". The bottom of the interface shows an "Errors" panel with the following content:

In graph	Description
-	
Control CoGui	All CG graphs and rules are correct

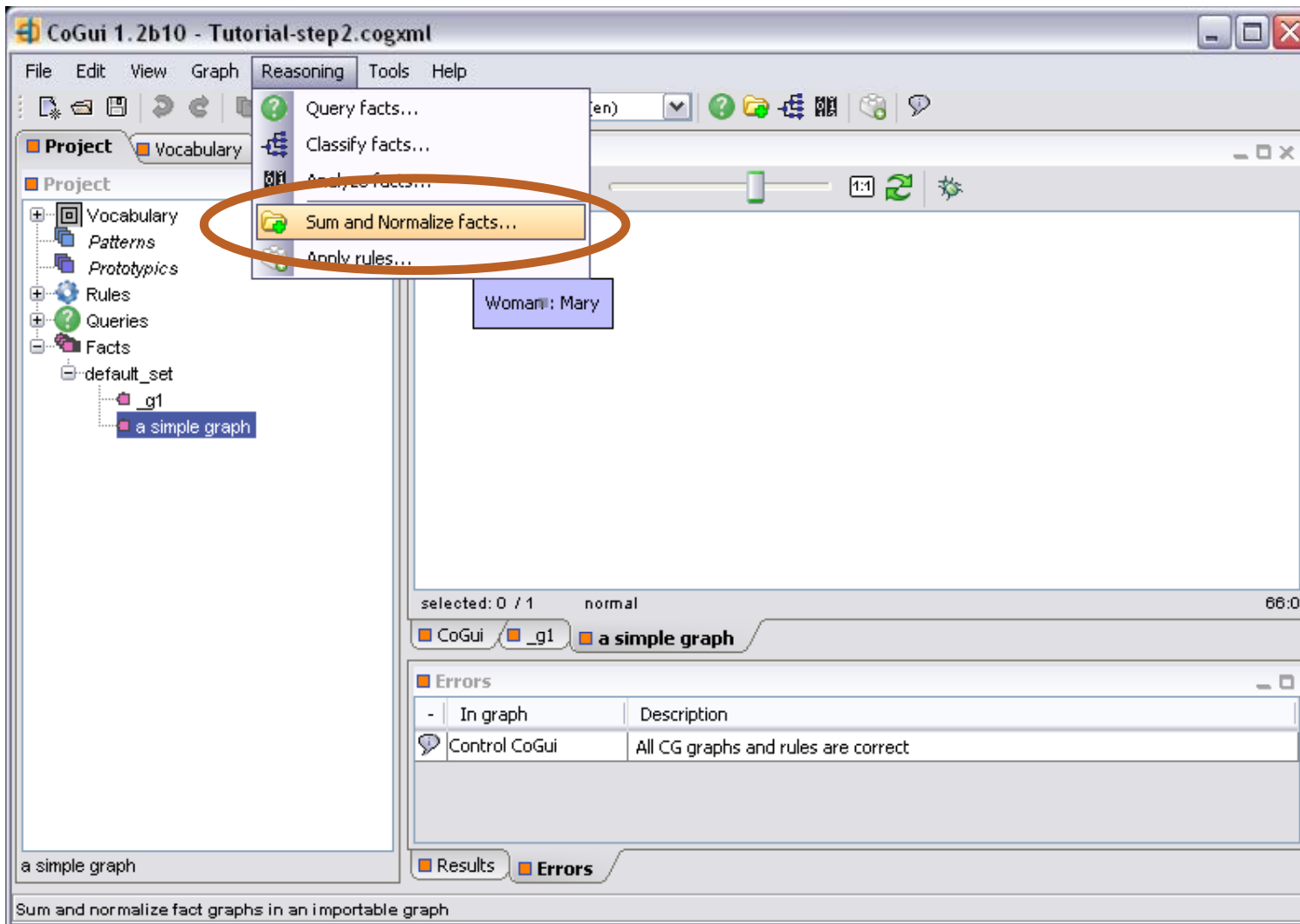
The status bar at the bottom of the window reads: "Compute statistics about facts, find redundancies..."



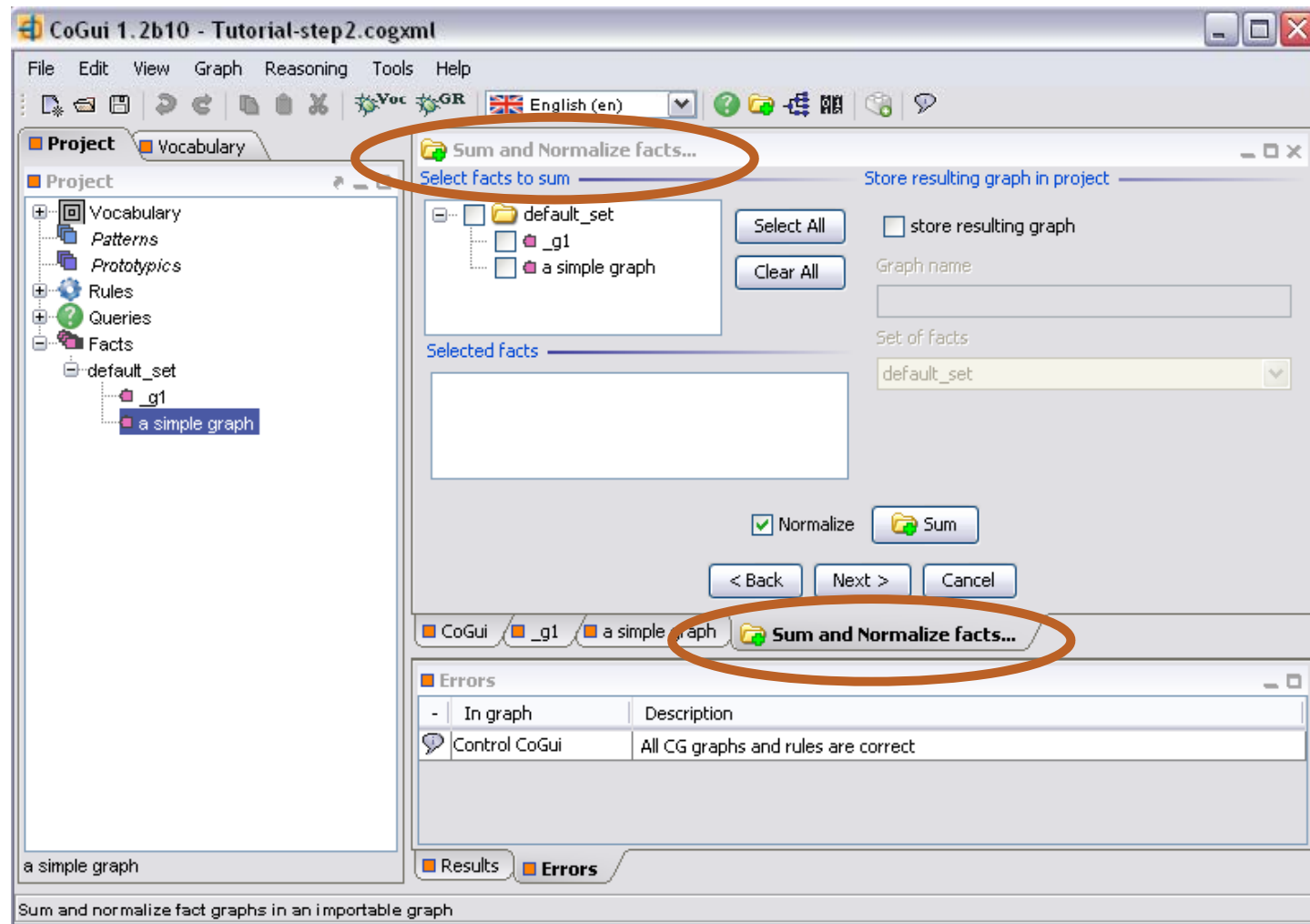
ATTENTION: THE REDUNDANCY CHECKING IS DIFFERENT IN THE NEW VERSION



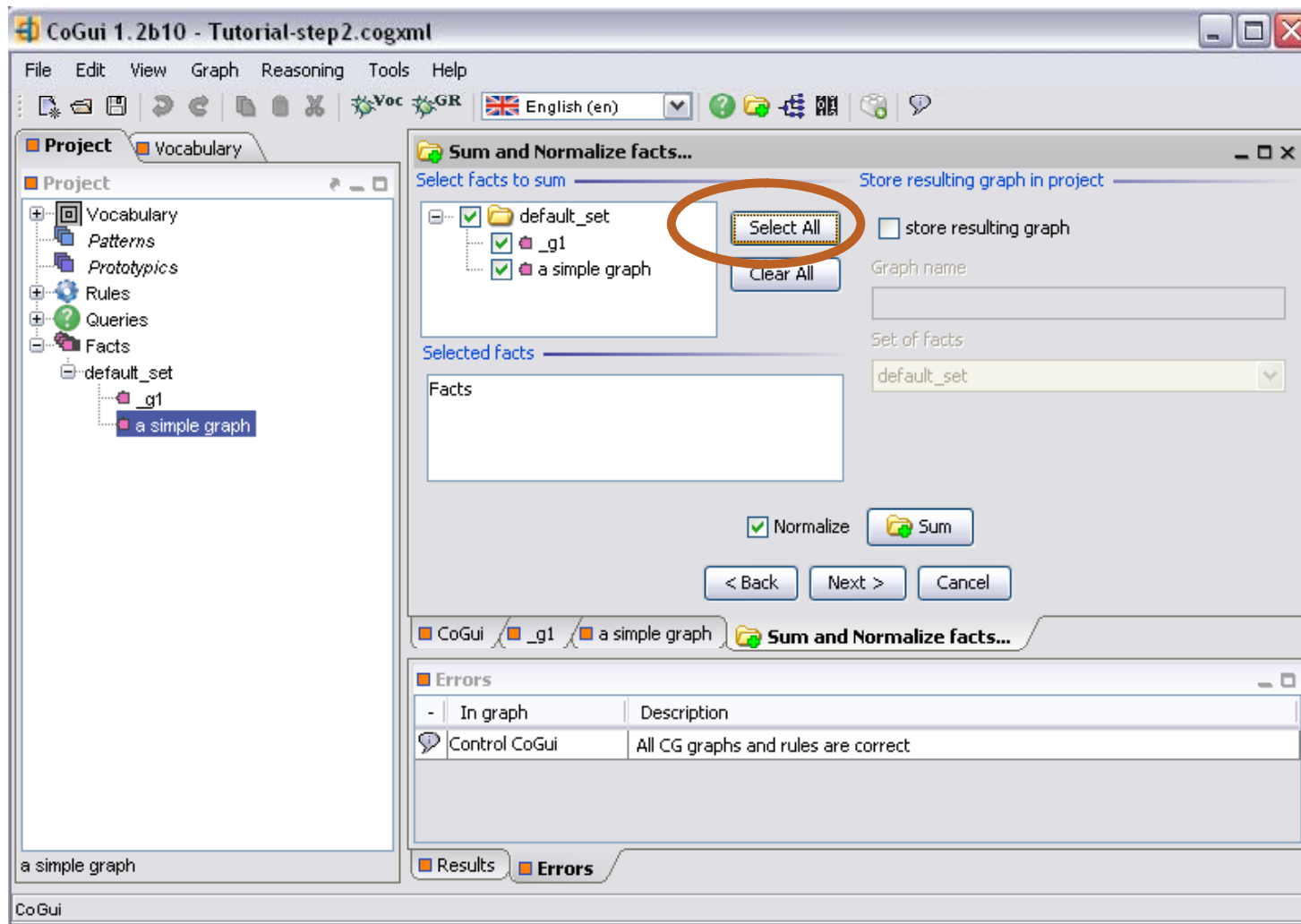
TO SUM (AND NORMALIZE) FACTS SELECT REASONING THEN SUM AND NORMALIZE FACTS



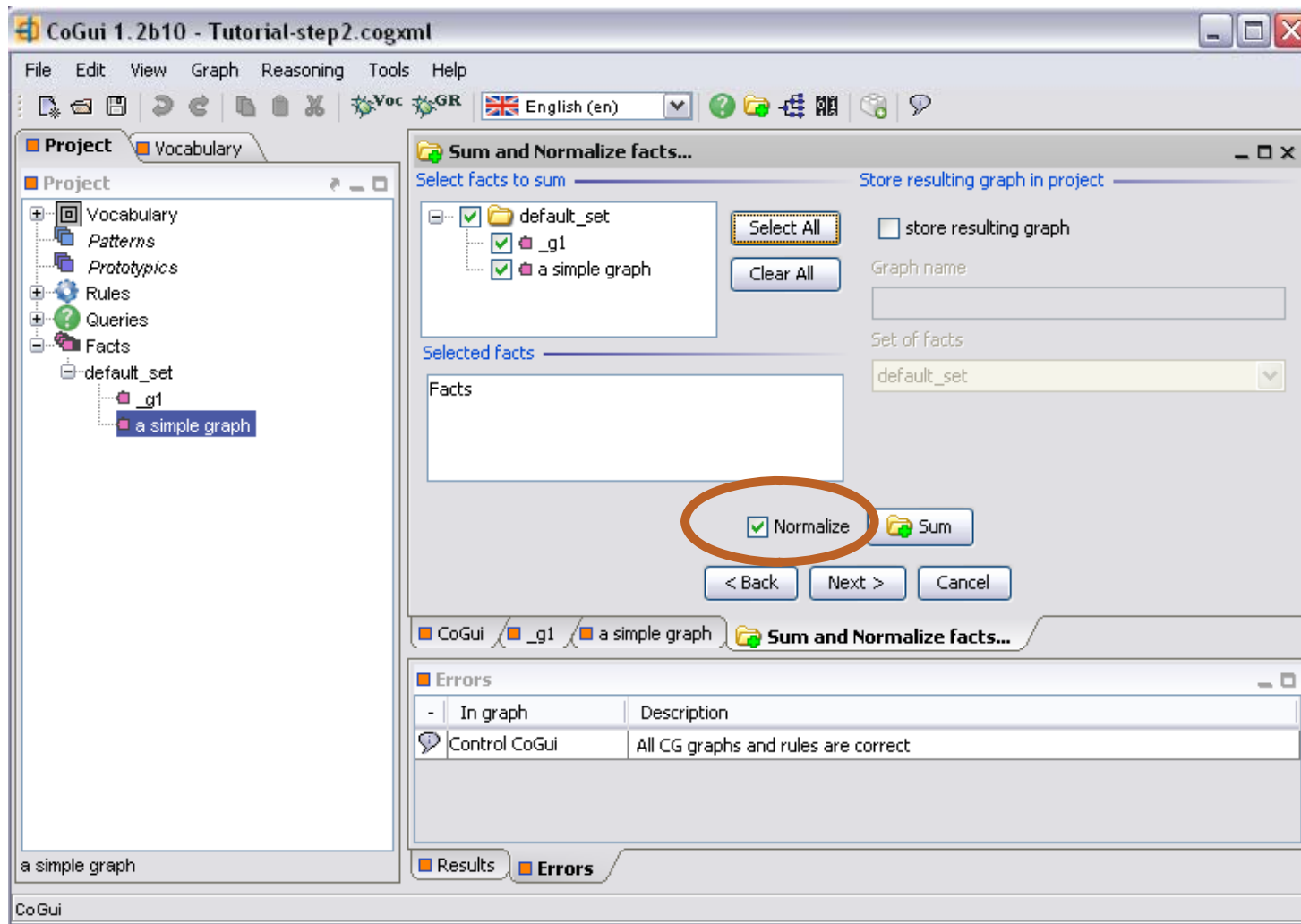
THE SUM AND NORMALIZE WINDOW IS OPEN



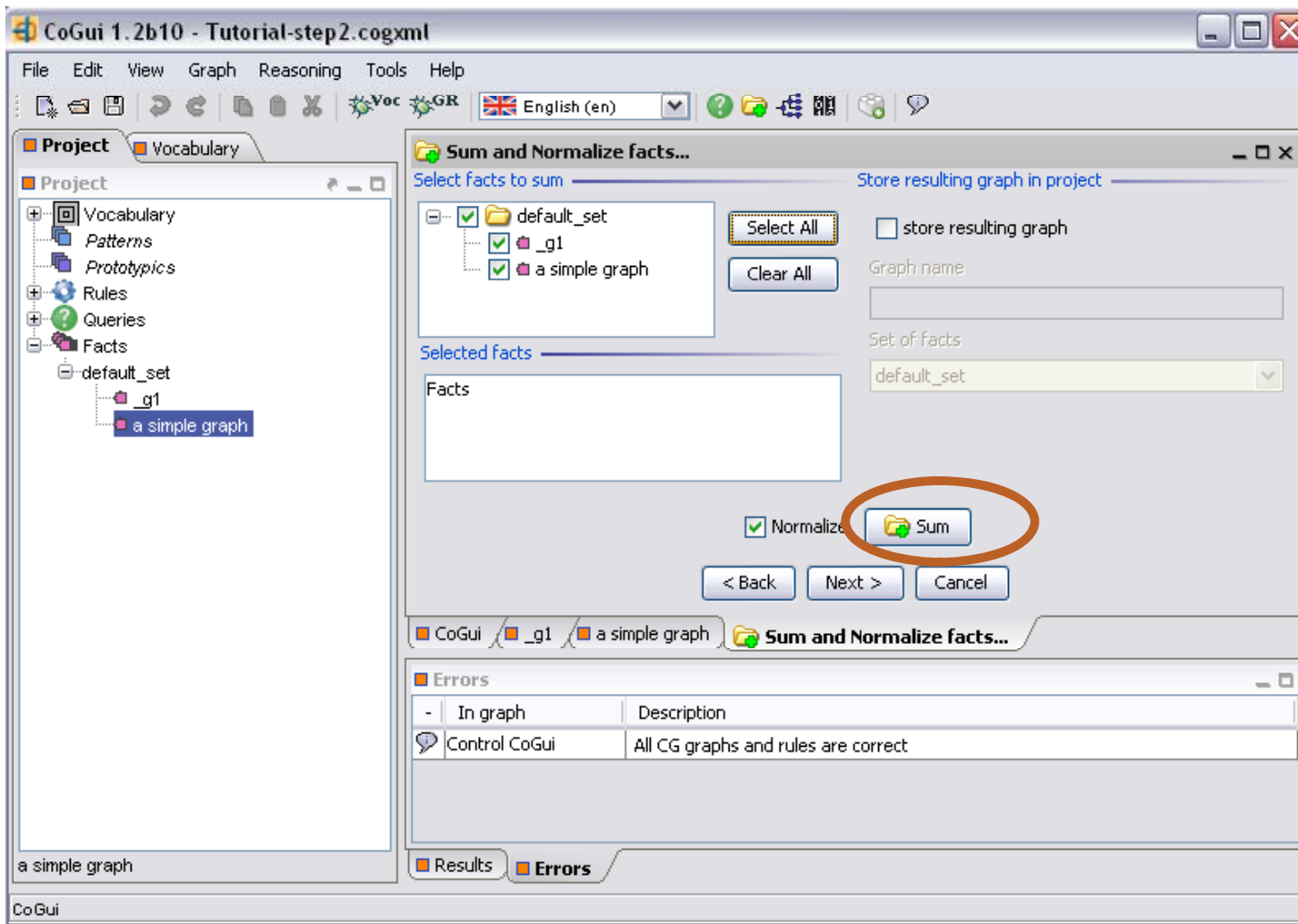
SELECT ALL THE GRAPHS YOU WANT TO SUM



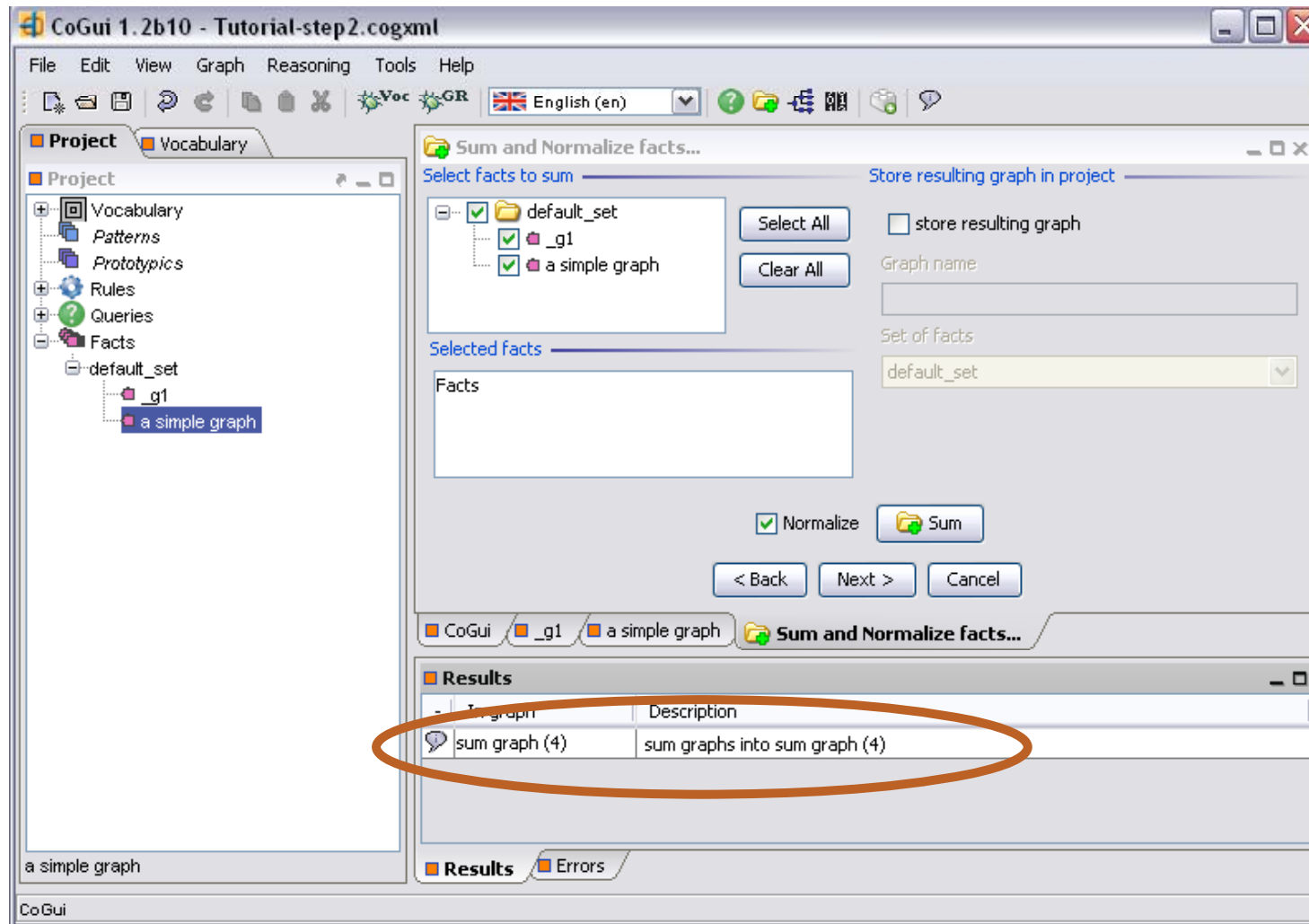
KEEP NORMALIZED CHECKED WHEN DOING THE SUM



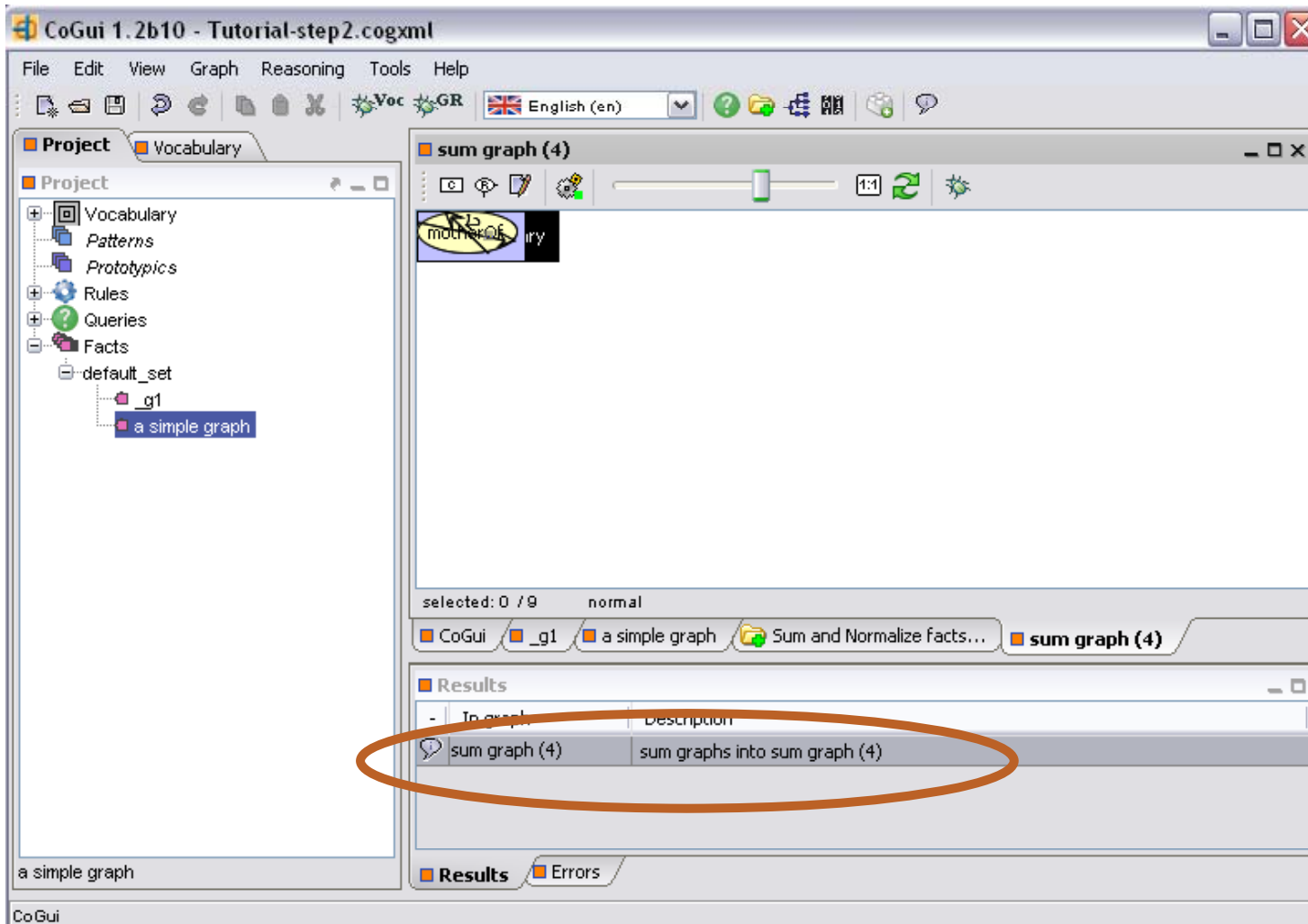
CLICK ON SUM



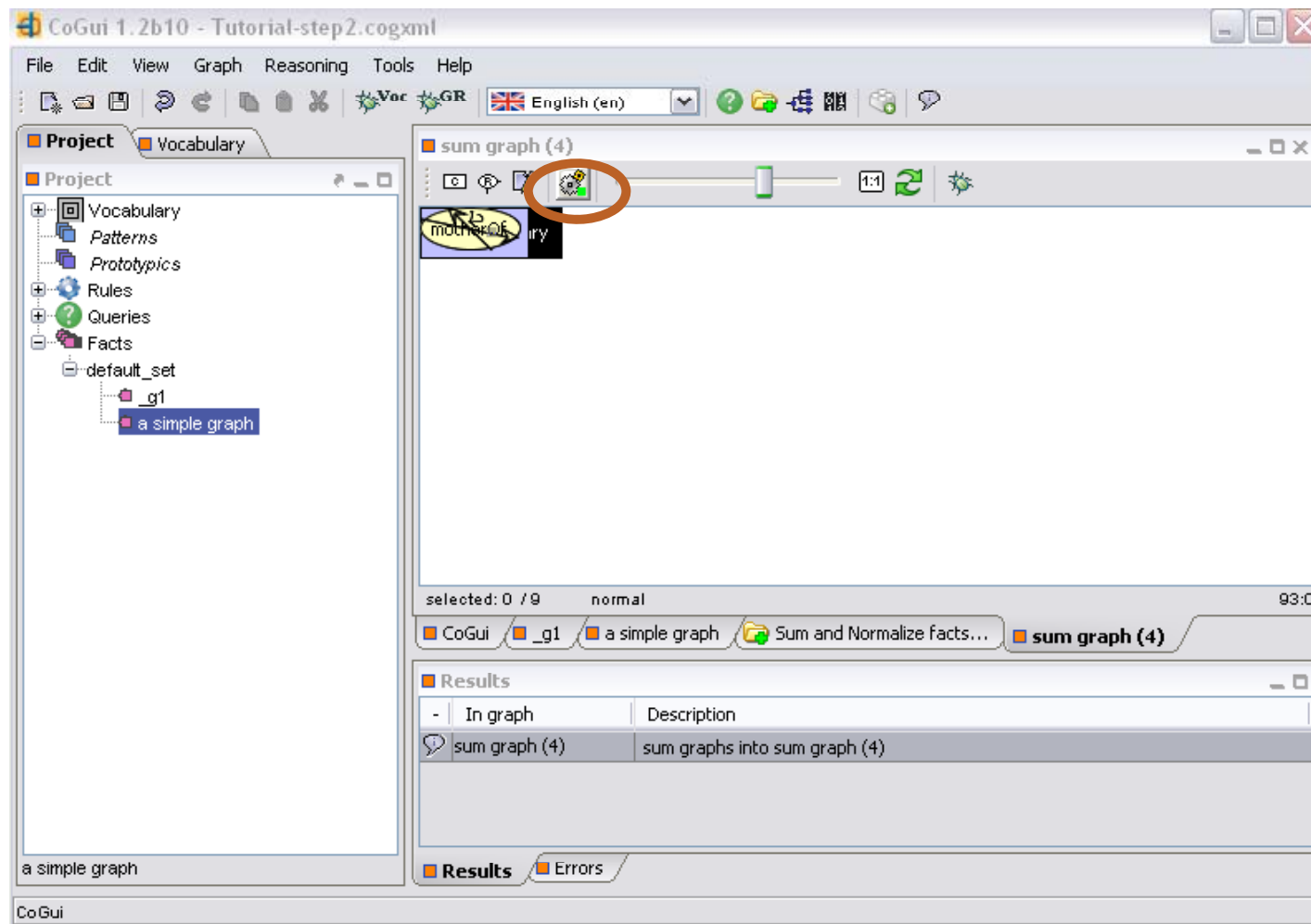
THE RESULT GRAPH IS DISPLAYED IN THE RESULTS WINDOW



DOUBLE CLICK ON THE RESULT GRAPH



IN ORDER TO BETTER VISUALIZE THE GRAPH CLICK ON ARRANGE GRAPH



BECAUSE YOU NORMALIZED THE SUM GRAPH THE NODES WOMAN:MARY HAVE BEEN MERGED

The screenshot shows the CoGui 1.2b10 interface. The main window displays a graph with the following nodes and edges:

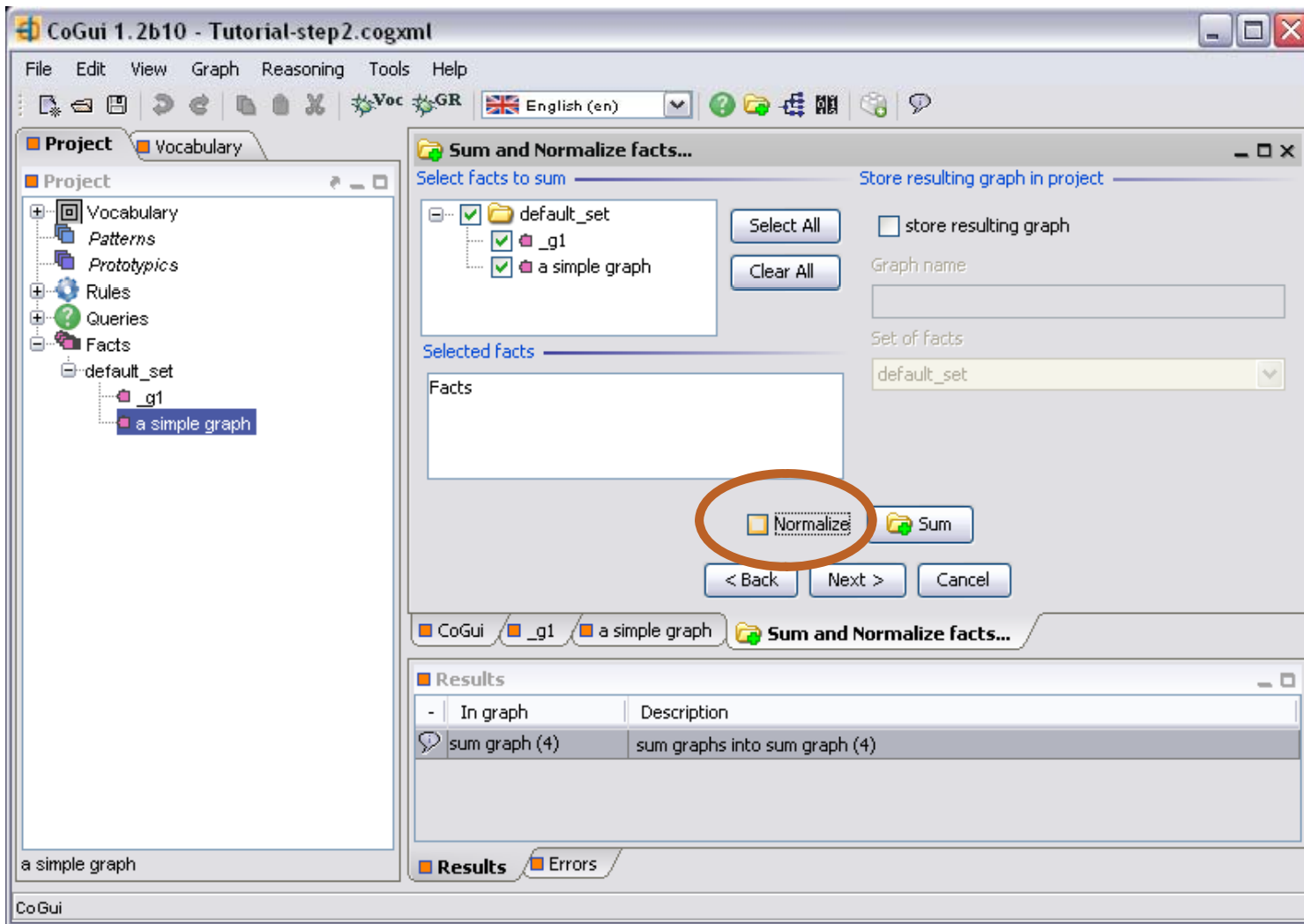
- Nodes: 'Woman: Mary' (black box, circled in orange), 'motherOf' (yellow oval), 'marrnedTo' (yellow oval), 'Girl: Alice' (blue box), and 'Man: Bob' (blue box).
- Edges: 'motherOf' to 'Girl: Alice' (weight 2), 'marrnedTo' to 'Man: Bob' (weight 2), 'Woman: Mary' to 'motherOf' (weight 1), and 'Woman: Mary' to 'marrnedTo' (weight 1).

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 > default_set > _g1 > a simple graph. The bottom status bar shows 'selected: 0 / 9', 'normal', and a timer '595:50'. The bottom right corner features a 'Results' tab with a table:

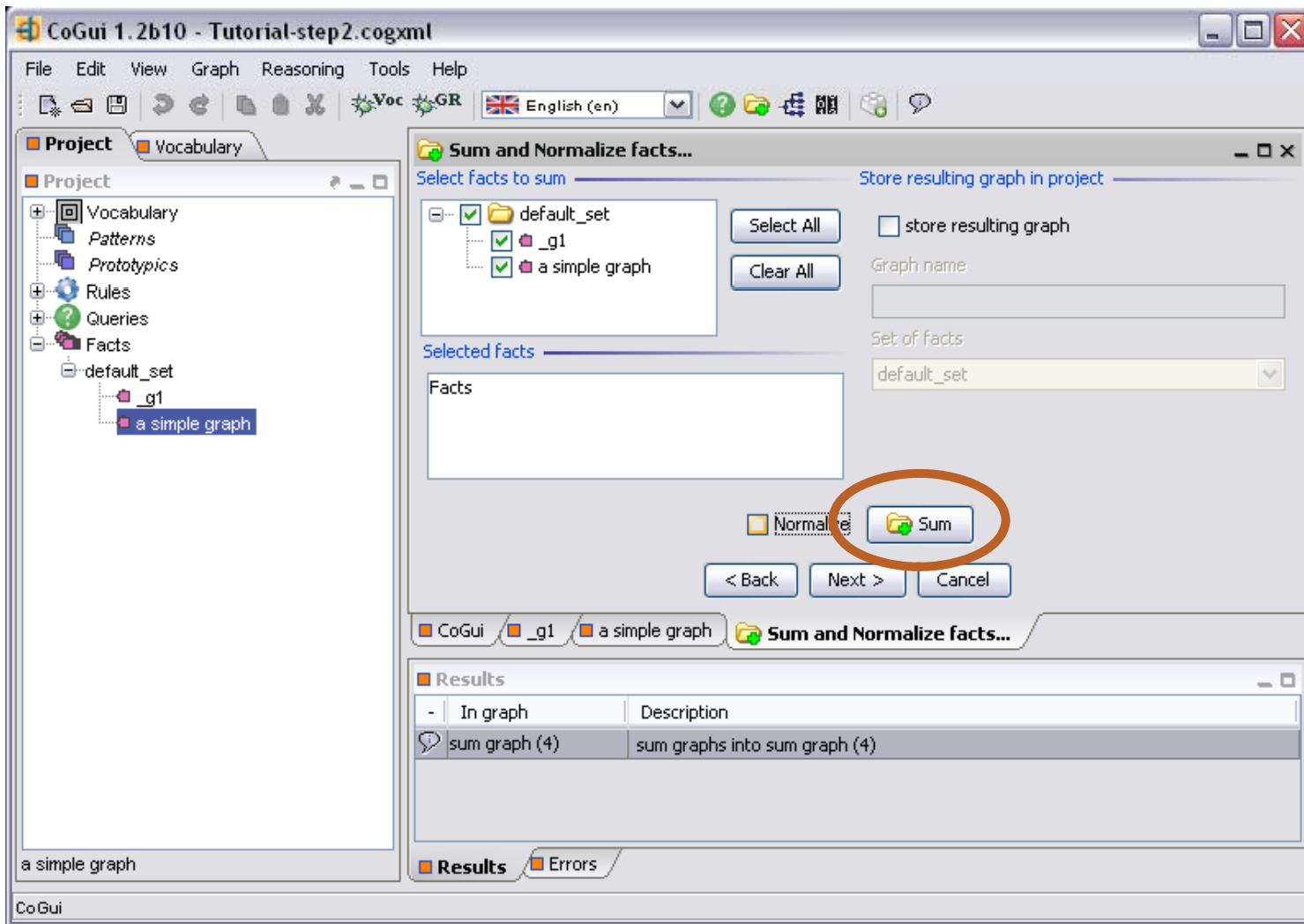
In graph	Description
sum graph (4)	sum graphs into sum graph (4)



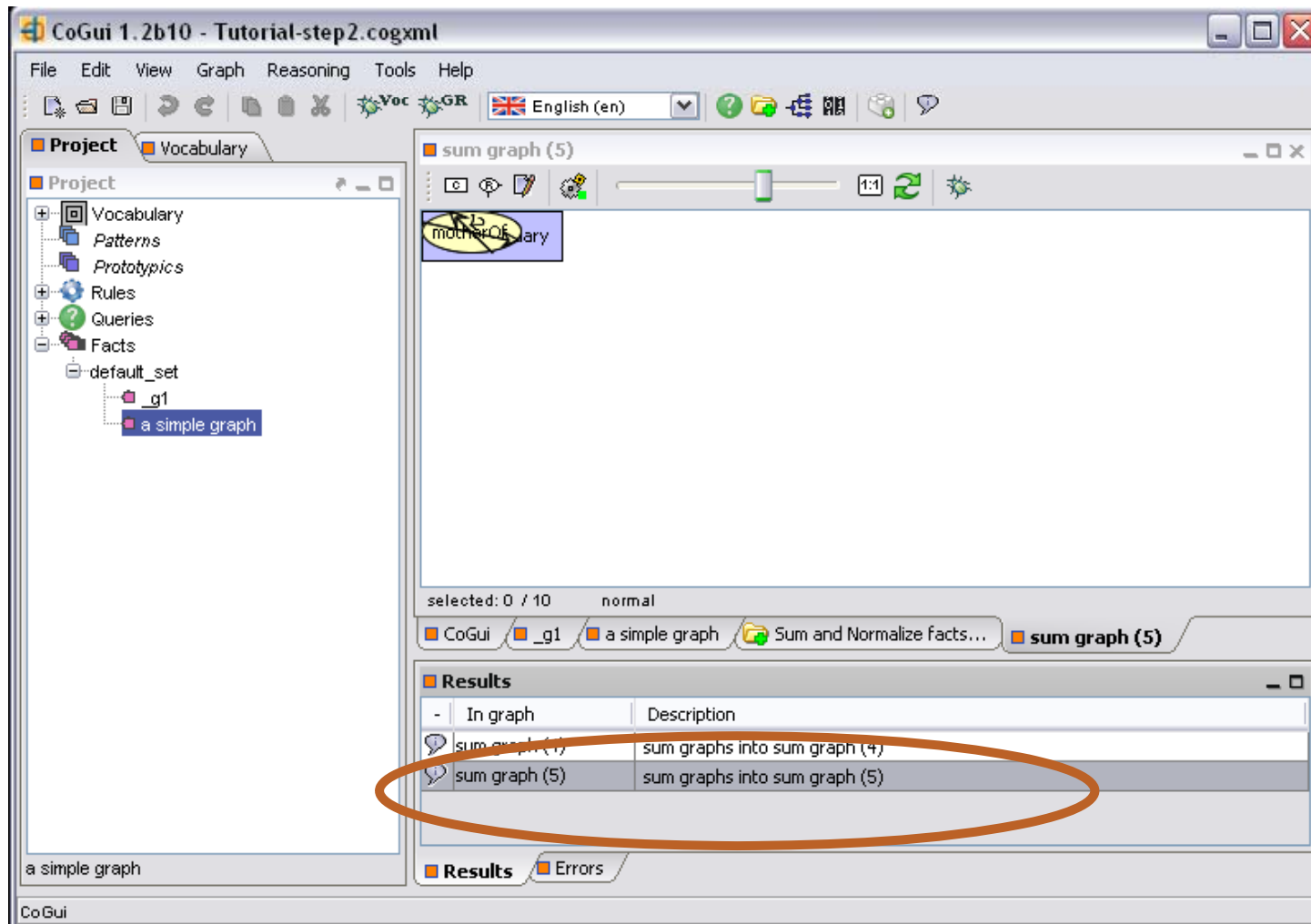
IF YOU DO NOT CHECK NORMALIZE



AND THEN CLICK SUM



SIMILARLY THE RESULT GRAPH IS SHOWN IN THE RESULTS WINDOW



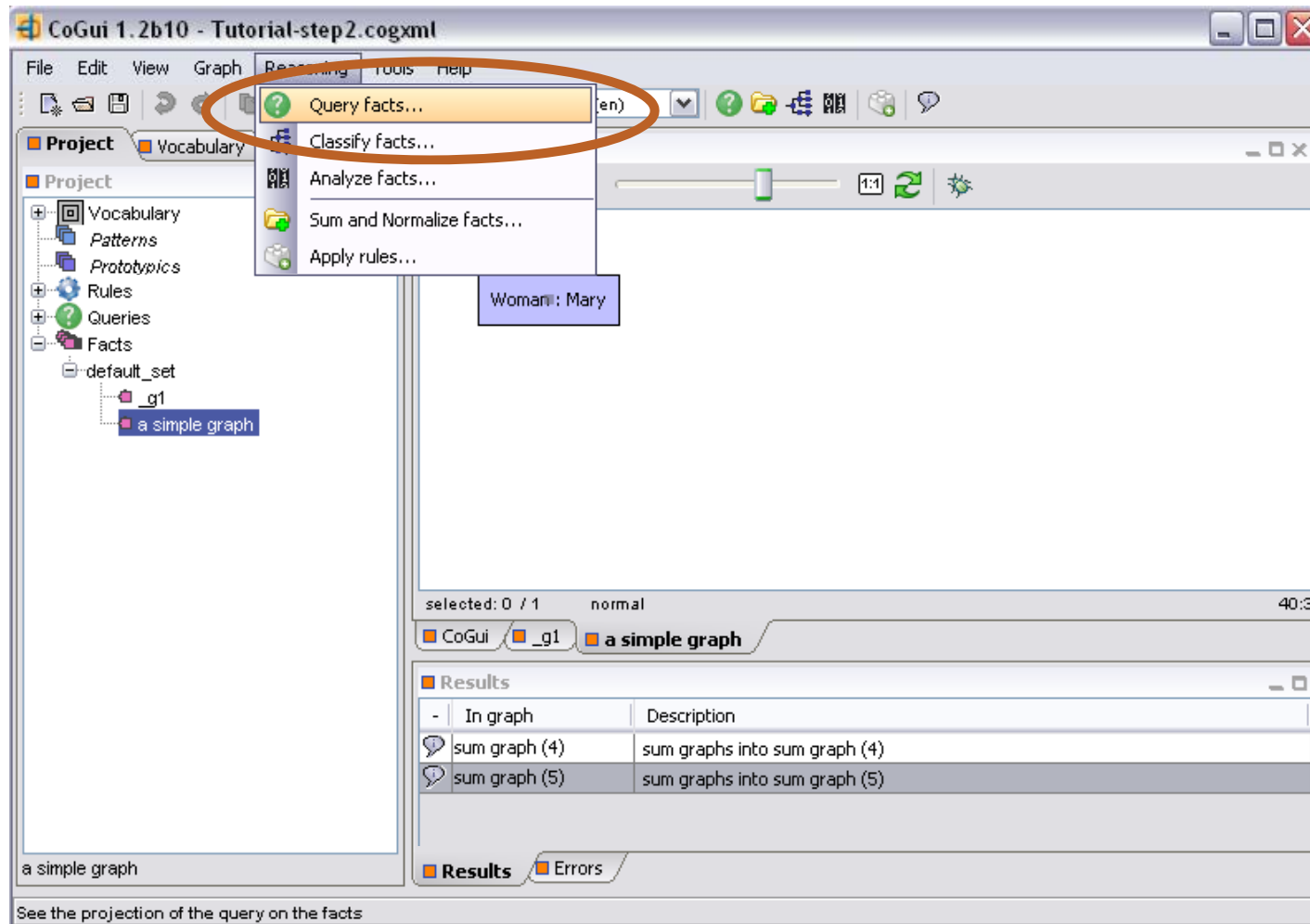
SINCE THE GRAPH WAS NOT NORMALIZED AFTER THE SUM THERE ARE TWO CONCEPTS WOMAN: MARY

The screenshot shows the CoGui 1.2b10 interface. The main window displays a graph with nodes and relationships. The nodes are: Girl: Alice, Man: Bob, motherOf, marriedTo, and two instances of Woman: Mary. The relationships are: motherOf (Girl: Alice to motherOf), marriedTo (Man: Bob to marriedTo), and two instances of marriedTo (each connecting a Woman: Mary node to motherOf). The two Woman: Mary nodes are circled in orange. 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 > default_set > g1 > a simple graph. The bottom panel shows a 'Results' table with the following data:

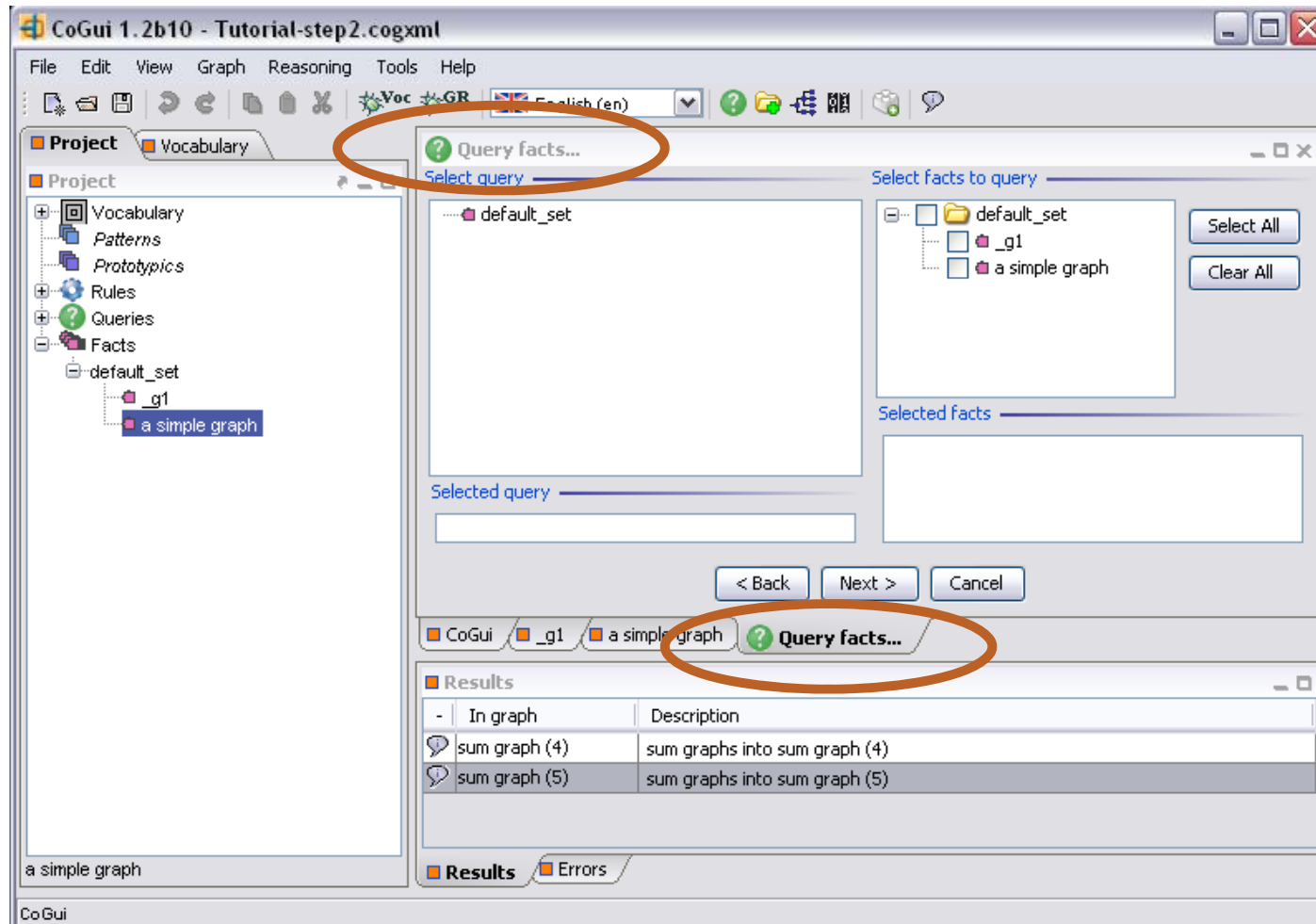
-	In graph	Description
🔍	sum graph (4)	sum graphs into sum graph (4)
🔍	sum graph (5)	sum graphs into sum graph (5)



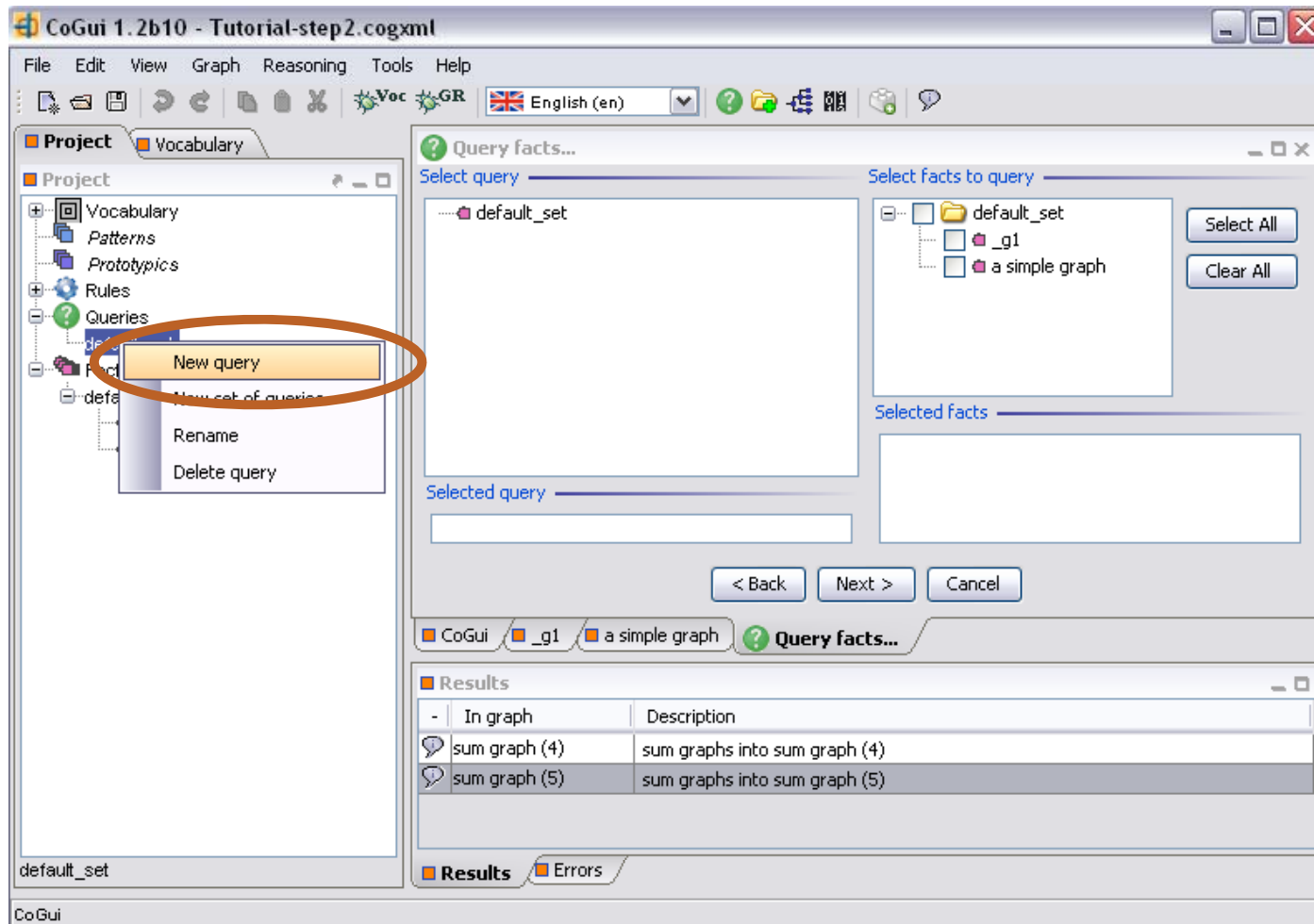
TO QUERY THE KNOWLEDGE BASE SELECT REASONING, QUERY FACTS



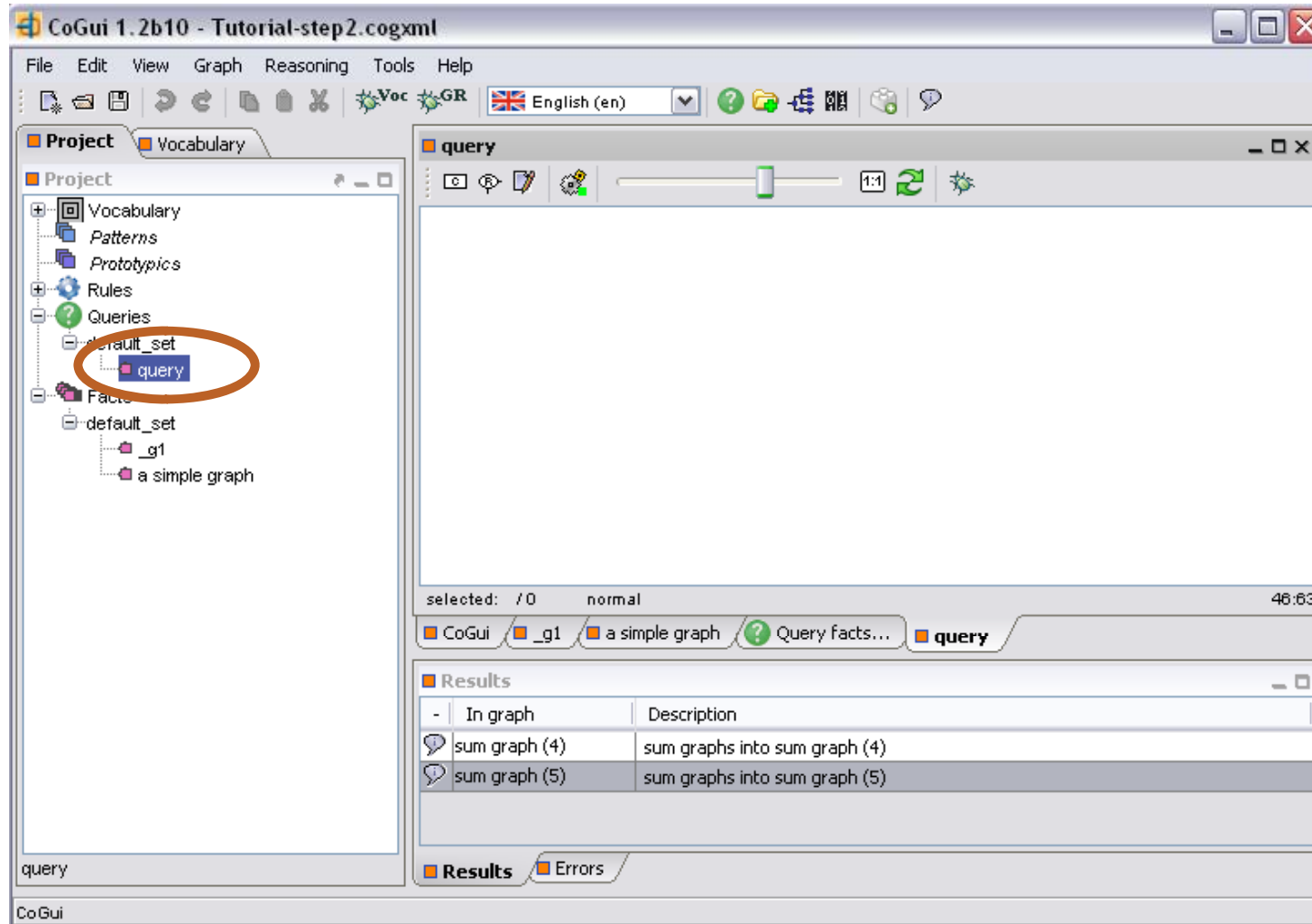
THE QUERY FACTS WINDOW IS OPEN



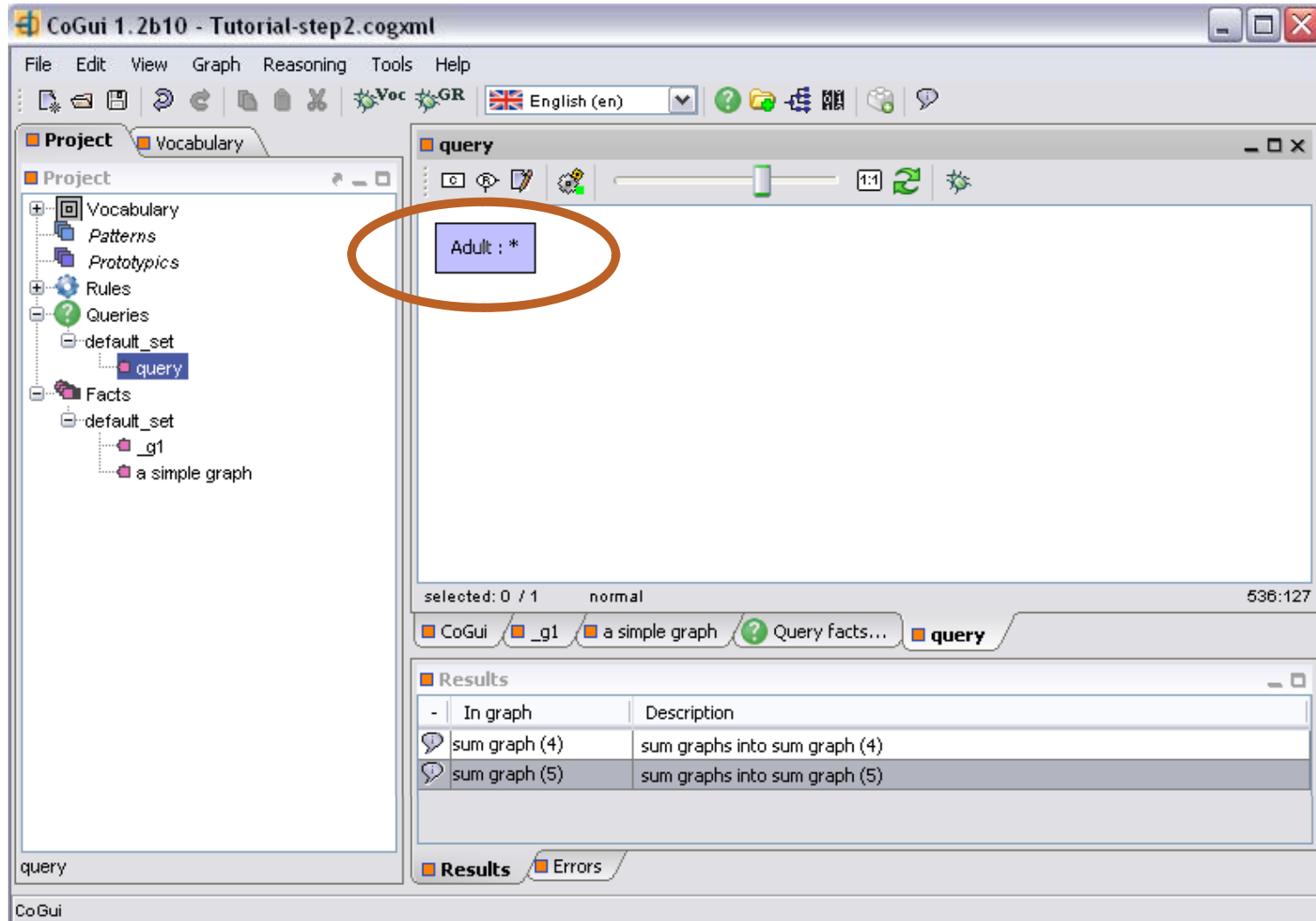
TO QUERY YOU WILL NEED TO CREATE A NEW QUERY



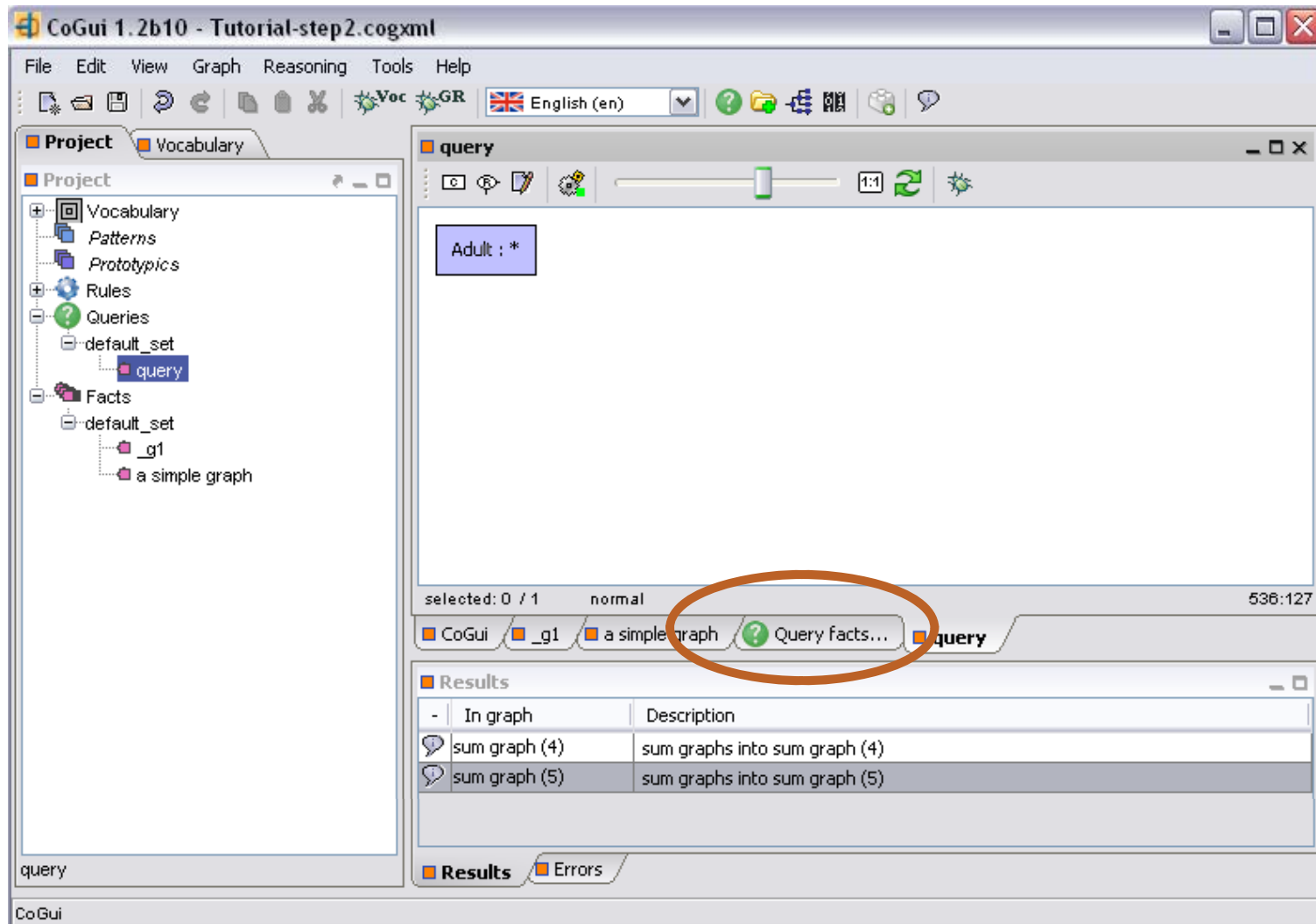
TO CREATE A QUERY GO TO PROJECT > QUERIES AND RIGHT CLICK ON THE DEFAULT QUERY SET



THE QUERY IS A BG – IS BUILT JUST LIKE A FACT GRAPH



AFTER WRITING THE QUERY SELECT THE QUERY FACTS WINDOW



SELECT THE QUERY YOU WANT TO ASK

The screenshot shows the CoGui 1.2b10 interface. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". The "Project" panel on the left shows a tree view with "Queries" expanded to "default_set", where "query" is highlighted. The "Query facts..." dialog box is open, showing "query" selected in the "Select query" list. The "Selected facts" table is empty. The "Results" panel at the bottom shows a table with two rows:

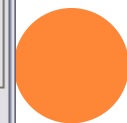
-	In graph	Description
🔍	sum graph (4)	sum graphs into sum graph (4)
🔍	sum graph (5)	sum graphs into sum graph (5)



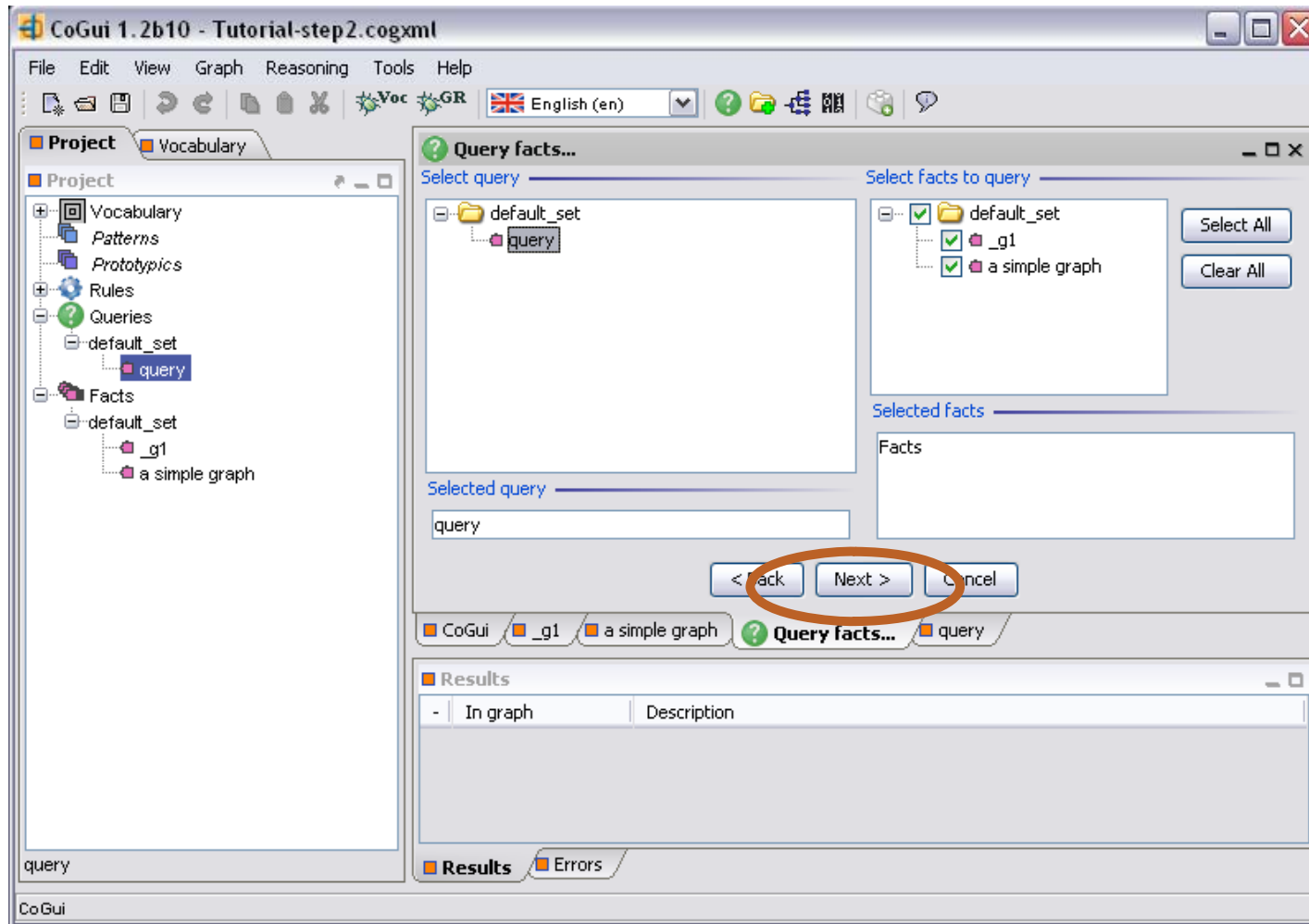
SELECT THE FACTS THAT YOU WANT TO USE TO ANSWER THE QUERY

The screenshot shows the CoGui 1.2b10 interface. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". The "Query facts..." dialog box is open, showing the "Select facts to query" section with three items selected: "default_set", "_g1", and "a simple graph". The "Select All" button is circled in orange. The "Selected facts" section is empty. The "Selected query" section is also empty. The "Results" section at the bottom shows a table with two rows of results.

-	In graph	Description
🔍	sum graph (4)	sum graphs into sum graph (4)
🔍	sum graph (5)	sum graphs into sum graph (5)



CLICK NEXT TO FIND THE HOMOMORPHISMS OF THE QUERY IN THE SELECTED FACTS



IN THE RESULTS WINDOW YOU CAN SEE THE HOMOMORPHISMS (PROJECTIONS) OF THE QUERY IN THE FACT GRAPHS

The screenshot shows the CoGui 1.2b10 interface. The main window is titled "CoGui 1.2b10 - Tutorial-step2.cogxml". 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, Queries > default_set > query, Facts > default_set > _g1 > a simple graph. The "Query facts..." window is open, displaying a single fact: "Woman : Mary". Below this, it shows "selected: / 1" and "view only". Navigation buttons include "< Back", "Next >", and "Cancel". The "Results" window is also open, showing a table of homomorphisms (projections) of the query into the fact graphs. The table is circled in orange. The table has two columns: "In graph" and "Description".

In graph	Description
_g1	projection 1/2 into _g1.
_g1	projection 2/2 into _g1.
a simple graph	projection 1/1 into a simple graph.



SELECT ONE RESULT TO VIEW THE PROJECTION

The screenshot shows the CoGui 1.2b10 interface. The main window displays a graph with nodes and edges. The nodes are: 'Woman: Mary' (blue rectangle), 'motherOf' (yellow oval), 'marriedTo' (yellow oval), 'Girl: Alice' (blue rectangle), and 'Man: Bob' (black rectangle). Edges are labeled with numbers: '1' connects 'Woman: Mary' to 'motherOf', '1' connects 'Woman: Mary' to 'marriedTo', '2' connects 'motherOf' to 'Girl: Alice', and '2' connects 'marriedTo' to 'Man: Bob'. The 'Man: Bob' node is circled in orange.

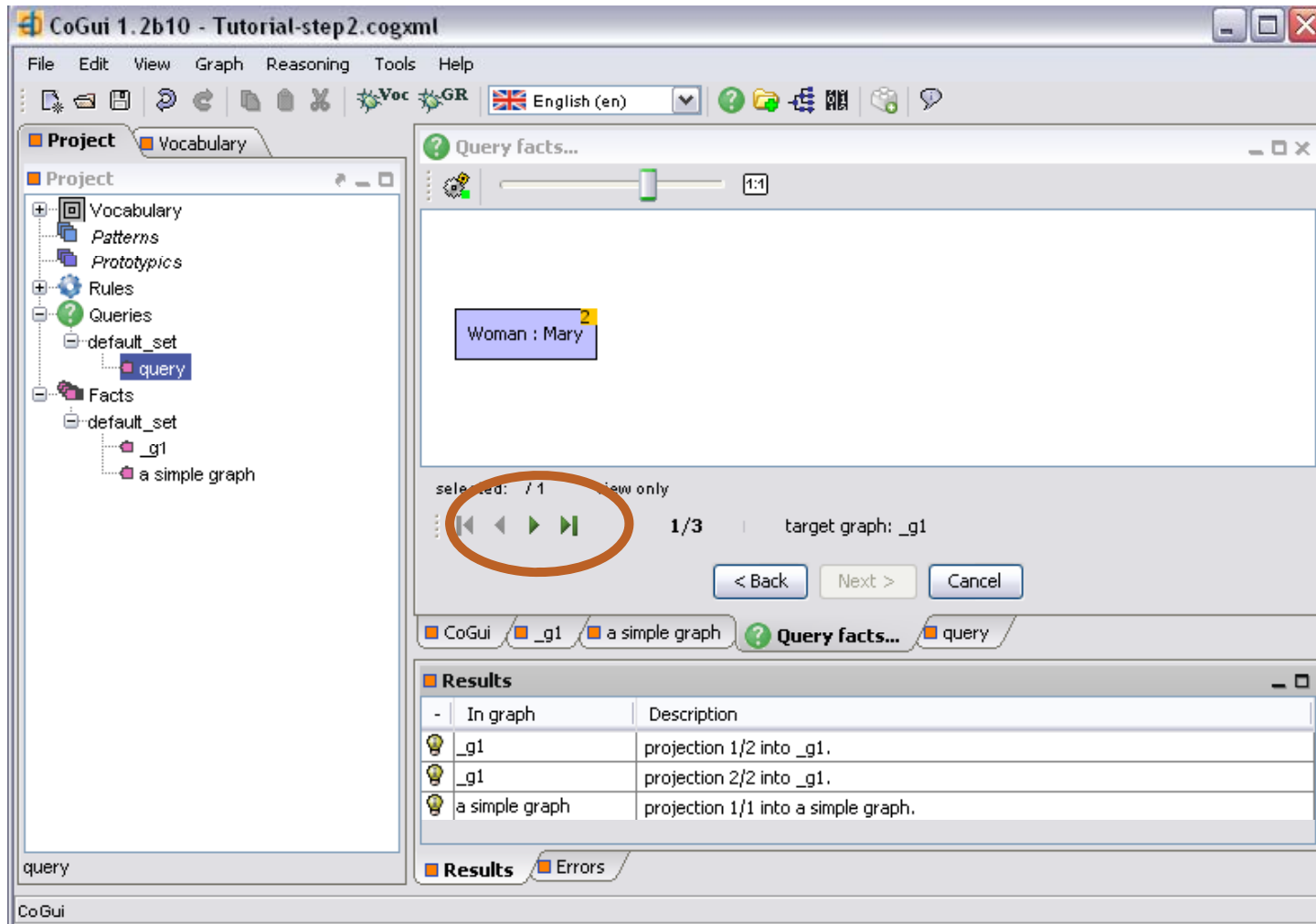
The 'Results' panel at the bottom shows a table with the following data:

-	In graph	Description
🔍	_g1	projection 1/2 into _g1.
💡	_g1	projection 2/2 into _g1.
🔍	a simple graph	projection 1/1 into a simple graph.

The second row of the table is circled in orange.



IF YOU ONLY INTERESTED TO SEE THE IMAGE OF THE QUERY USE THE VISUAL NAVIGATOR



THE VISUAL NAVIGATOR ONLY ALLOWS YOU TO SEE THE IMAGES OF THE PROJECTION

