

Modifying *assignments* and creating new ones

Assignments are meant to let the learner perform some action. Other words for assignments are: exercises, practices, questions to be answered, etcetera. You use assignments to support your learner in exploring the domain.

In this chapter you learn how to modify existing assignments and how to create new ones.

Modifying assignments

One way of creating an assignment is modifying an existing one. This may save you work, because the overall structure of the assignment is already made and can stay in tact. The general steps you take are:

- make a copy of the assignment and change the name,
- edit the assignment, and
- check and save your work.

Copying and renaming an existing assignment

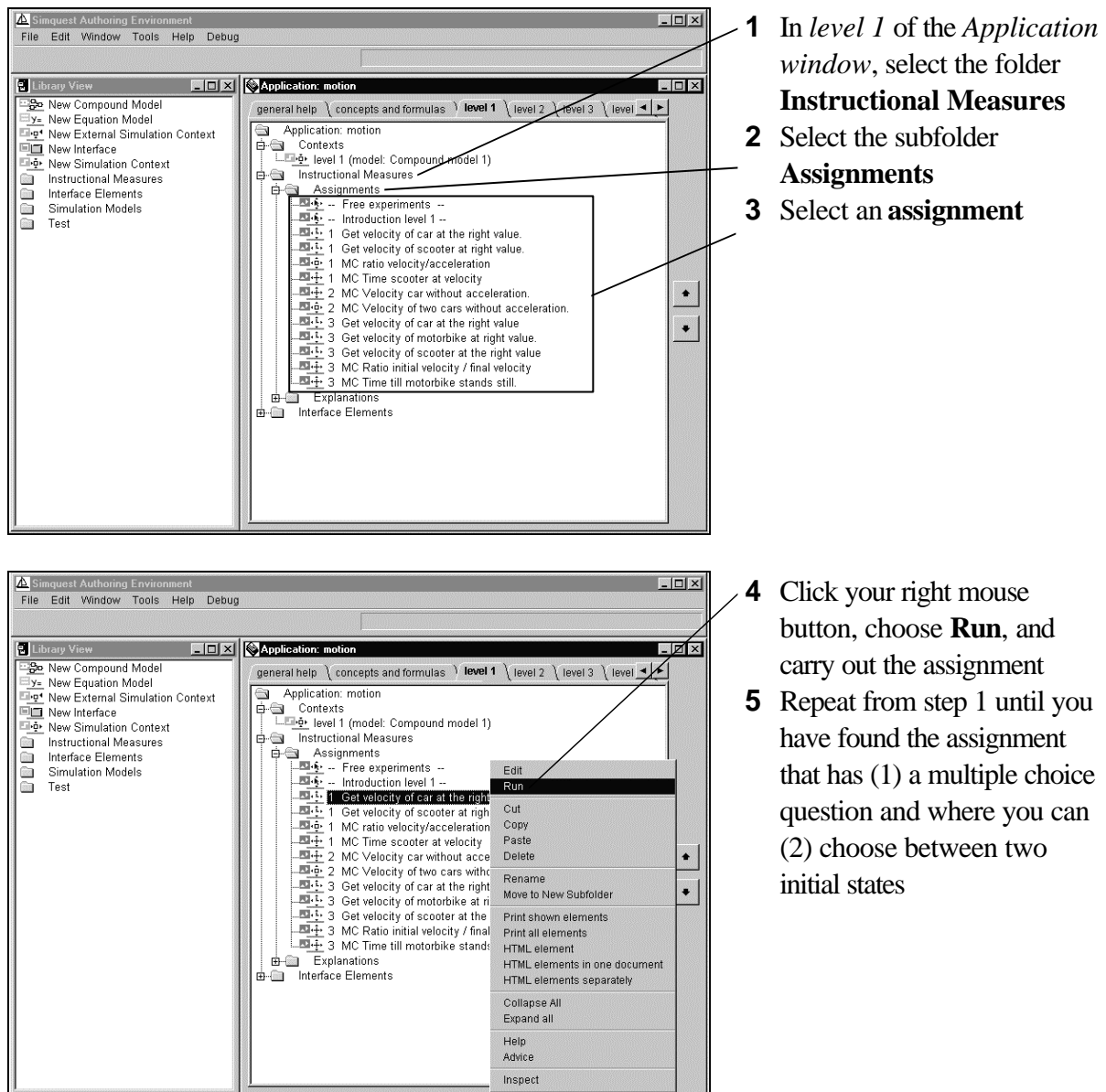
Before you can modify an existing assignment you have to:

- choose an appropriate assignment,
- copy it, and
- rename it.

Looking at assignments and selecting one

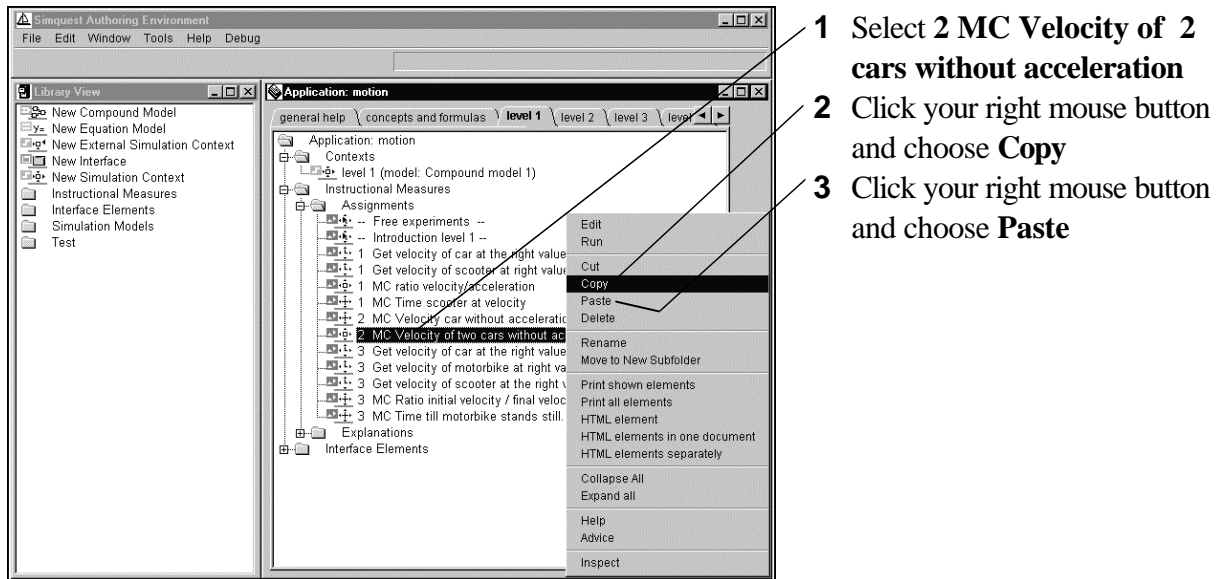
In this case, you are going to make an assignment that has the following two characteristics: (1) multiple choice question, and (2) simulation in which the user can choose between 2 initial simulation states.

In *level 1* of the Motion application, there is an assignment that has these characteristics. Run the assignments in level 1 of the Motion application and select the appropriate one.



Copying an assignment and pasting it

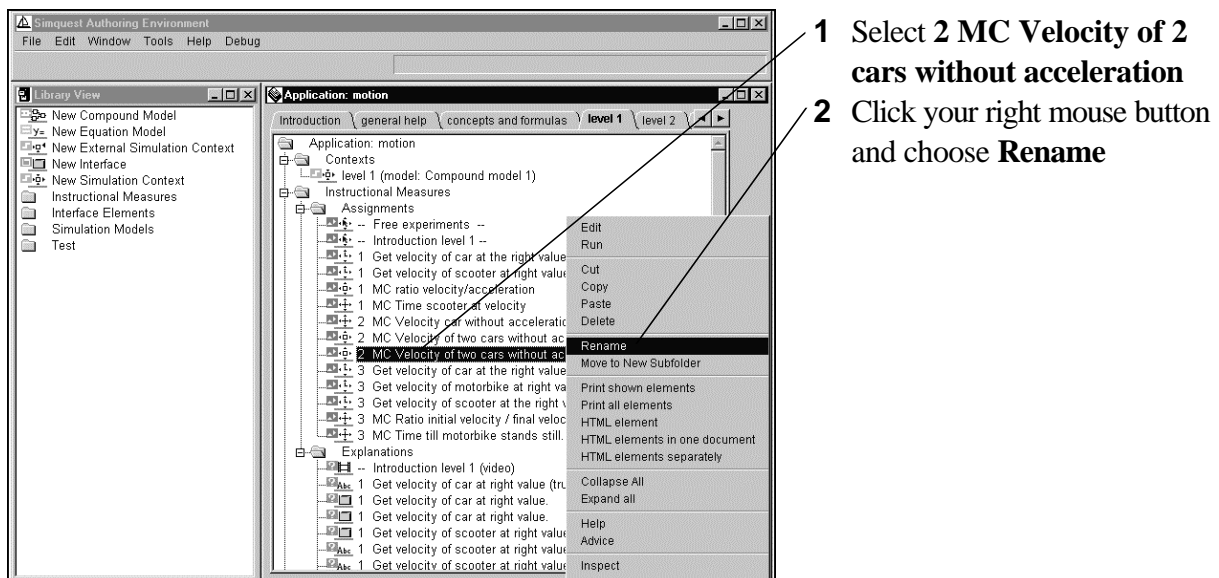
You probably found several assignments to be the appropriate. You are going to use the assignment **2 MC Velocity of two cars without acceleration** to modify. You can make a copy of this assignment and keep the original assignment for later use.

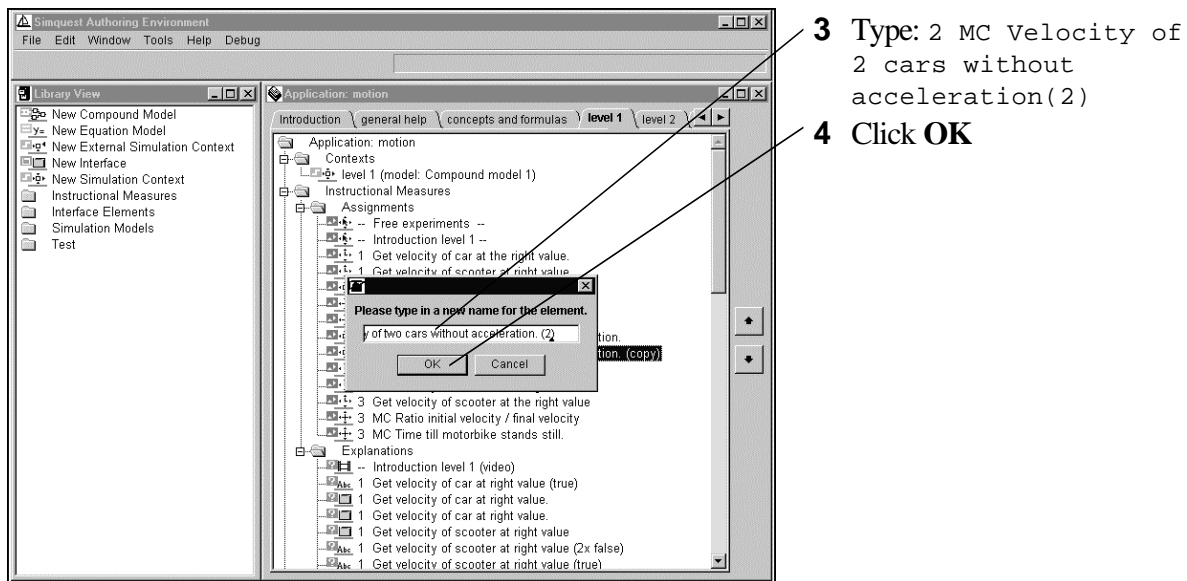


Check if an assignment with the same name and the extension 'copy' is added to the application.

Renaming an assignment

You can rename the assignment. In this case, the subject of your assignment will stay the same, so you do not really have to change it. To make clear that this is the second assignment about 'Two cars without acceleration' you simply add '(2)' to the name.





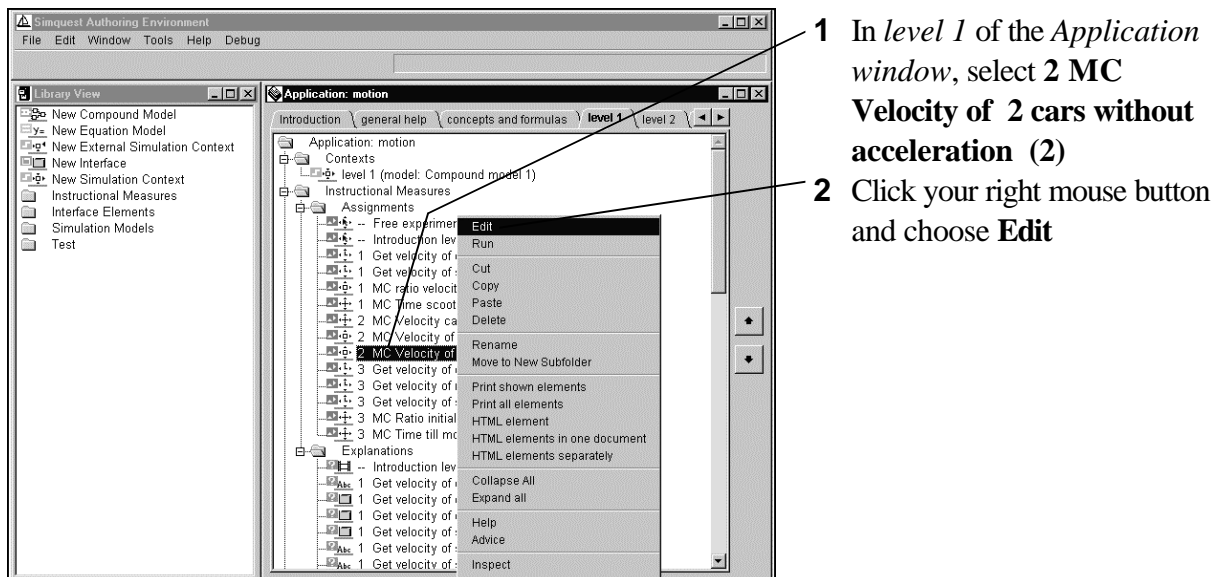
Editing an existing assignment

To modify an existing assignment means:

- opening the assignment editor,
- changing the question,
- changing the answers,
- changing the initial states, and
- specifying the control structure.

Opening the assignment editor

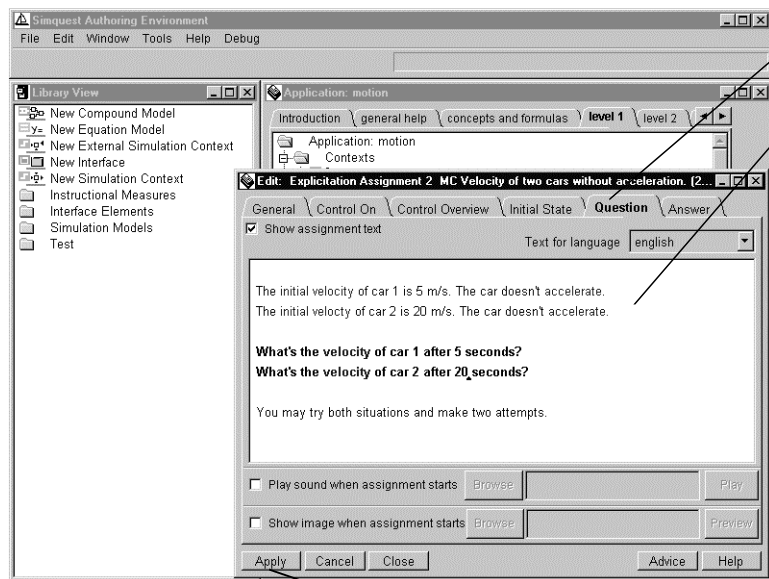
You open the assignment editor with your right mouse button.



Check if the assignment editor appears on the screen.

Changing the question of an assignment

First you can specify the learner task. In other words, formulate the question.



- 1 Select the **Question** tabsheet
- 2 Replace the question in the *text-area* for the following one:

Car 1 has an initial velocity of 5 m/s. The car does not accelerate.

Car 2 an initial velocity of 20 m/s. The car does not accelerate.

What is the velocity of car 1 after 5 seconds?

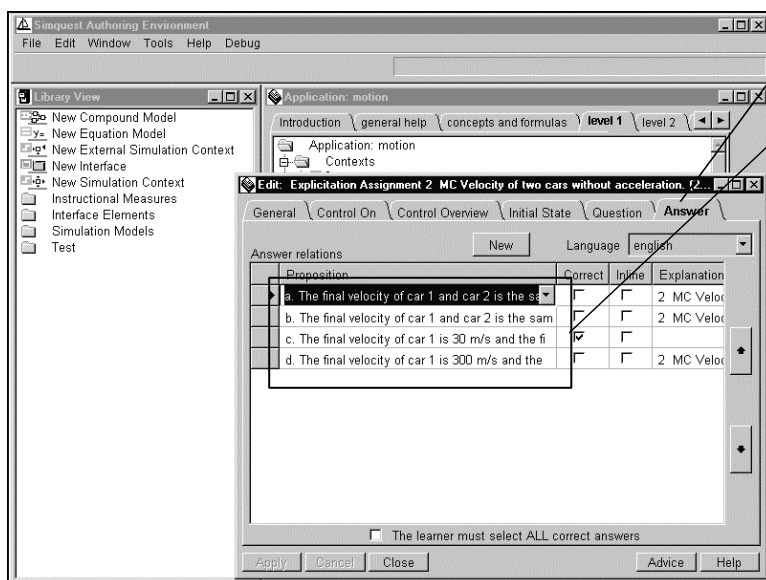
What is the velocity of car 2 after 20 seconds?

You can make two attempts.

- 3 Click **Apply**

Changing the answers of an assignment

The assignment you currently use contains a multiple choice question. You can formulate right and wrong multiple choice answers.



- 1 Select the **Answers** tabsheet
- 2 Click on an answer
- 3 Replace the answers in *proposition boxes* of the *Answer relation-area* for the following ones:

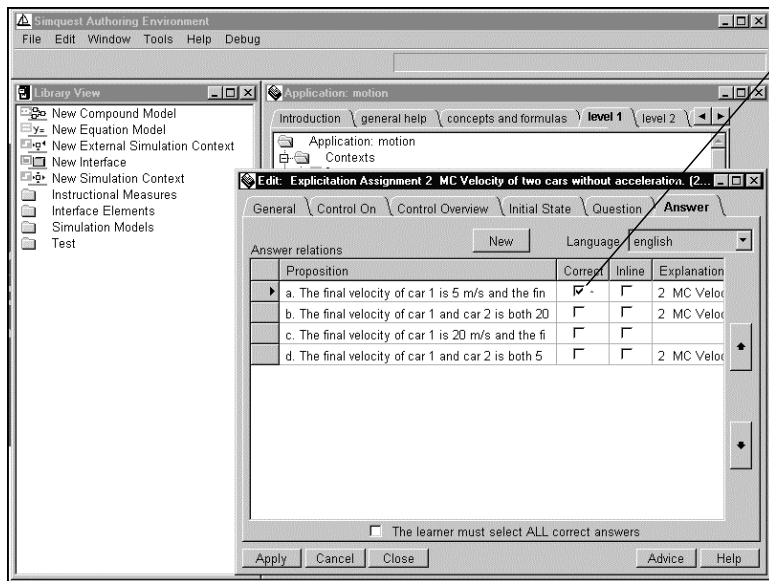
a. The final velocity of car 1 is 5 m/s and the final velocity of car 2 is 20 m/s.

b. The final velocity of car 1 and car 2 is 20 m/s for both cars.

c. The final velocity of car 1 is 20 m/s and the final velocity of car 2 is 5 m/s.

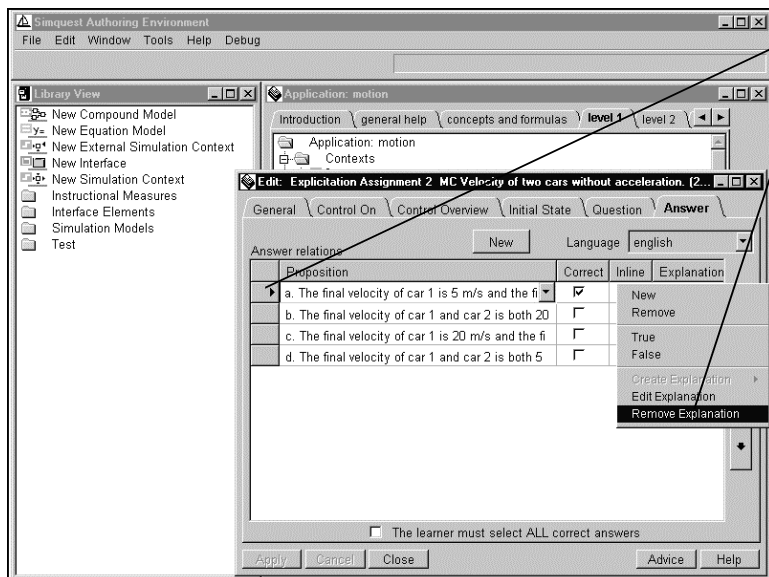
d. The final velocity of car 1 and car 2 is 5 m/s for both cars.

Answer **a** is the only right answer. This means you have to change the correct boxes accordingly.



4 Click in the *Correct* boxes to change them so that only answer **a** is set to **correct**

In the explanation column, you see which explanation is opened when an option is selected by the learner. These explanations serve as feedback. Because you copied an existing explanation, the feedback when answer a is selected is no longer correct. You must remove this explanation and add the appropriate explanation to the (wrong) answer c.



1 Click on answer **a**
2 Click your right mouse button and choose **Remove Explanation**

3 Click on answer **c**

4 In the *Application View*, select the explanation **2 MC Velocity of two cars without acceleration (false)**

5 Drag **2 MC Velocity of two cars without acceleration (false)** from the *Application window* and drop it on *answer c*

6 Click **Apply**

Changing the assignment's initial states

When your learners search for the right answer, they can use different simulation states to explore the simulation. The simulation state determines the values with which the simulation starts. You set these simulation states yourself, so your learners can only start the simulation in a limited amount of possibilities.

1 Select the **Initial State** tabsheet

2 Change the value of **v_begin** into **5**

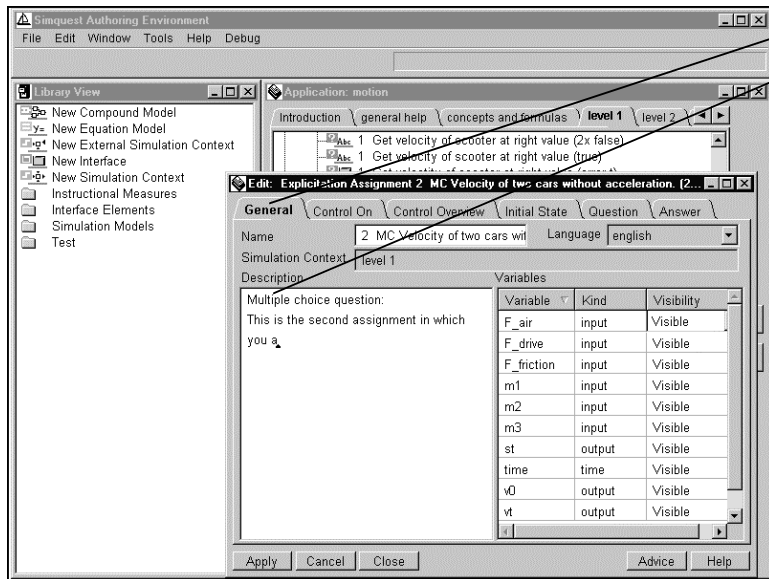
3 Click **Next Set**

4 Change the value of **v_begin** into **20**

5 Click **Apply**

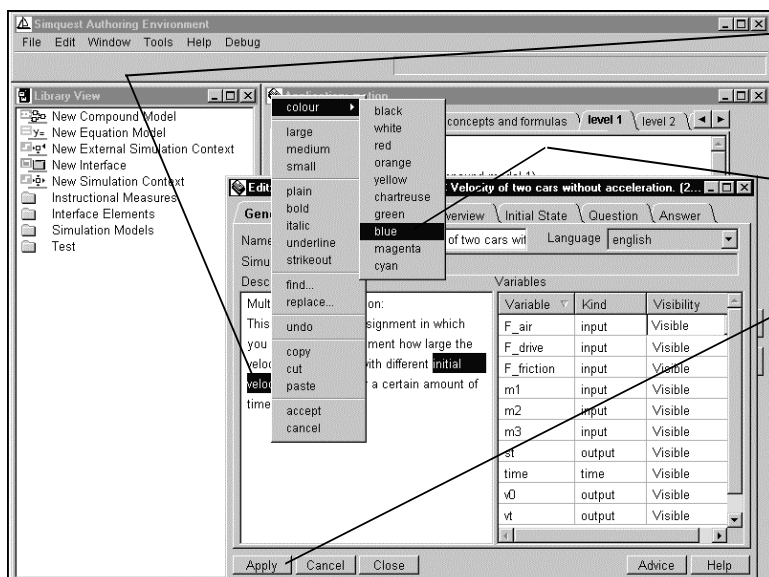
Changing the assignment's learner description

When the assignments are presented to the learners, they see a list of assignments of which they can choose from. The name of the assignment often does not give enough information to explain what the assignment is about. Therefore, you can add a learner description to the assignment. The learner description is a small amount of text that is presented to the learners when they select an assignment but not yet run it. The learner description is more or less a summary of the content of the assignment.



- 1 Click the **General** tabsheet
- 2 In the *Description* box, modify the learner description into:

Multiple choice question:
This is the second assignment in which you are asked to argument how large the velocity of two cars, with different initial velocities, will be after a certain amount of time.



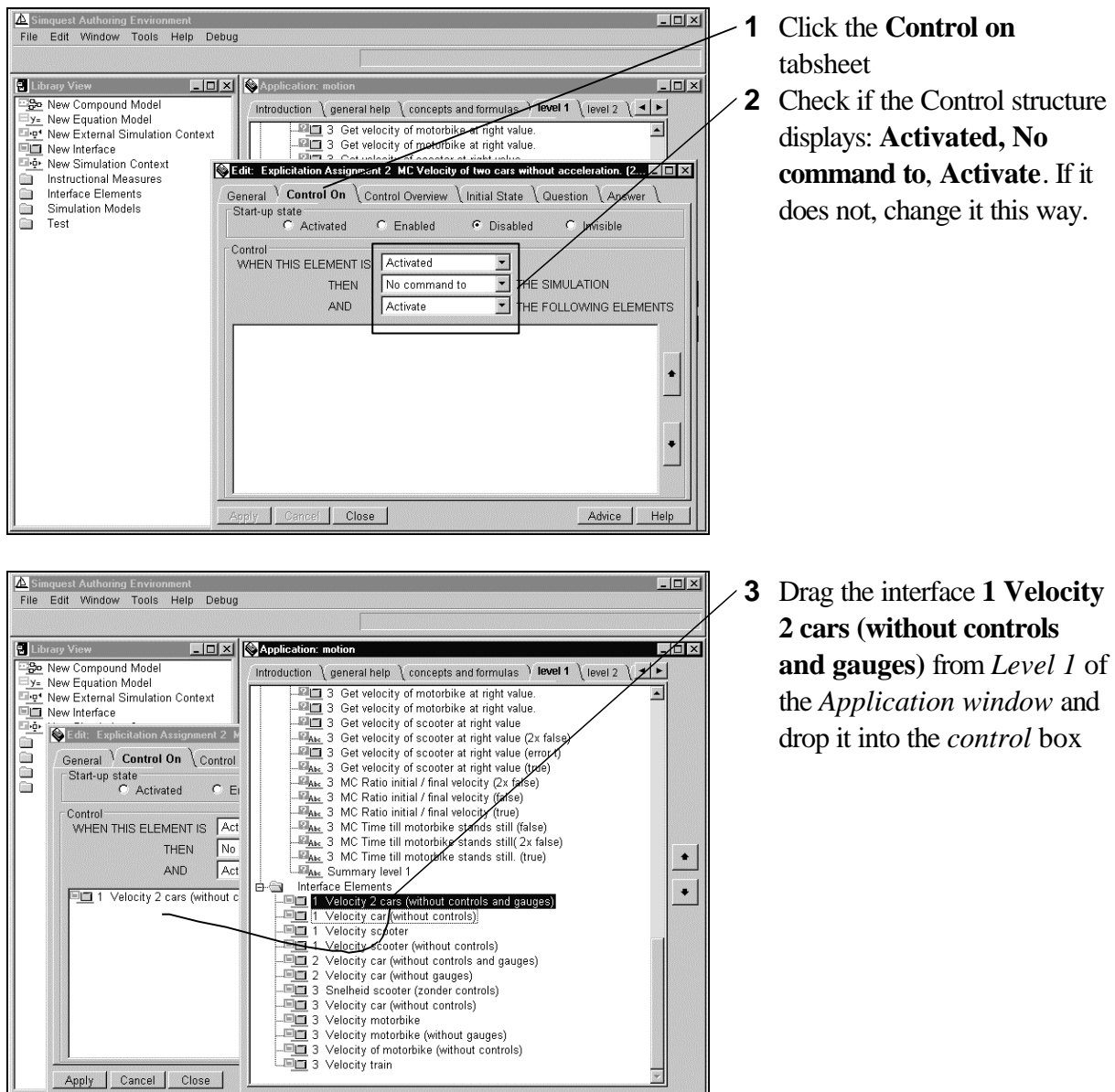
- 1 If you want, you can layout words or phrases of this text. Select a word or phrase
- 2 Click your right mouse button, and choose a lay-out.
- 3 Click **Apply**

Specifying the assignment's control structure

So far, you specified text (question, answers, and learner description) and initial states. You also will always need an interface to make it possible for your learners to work with the assignment. So, an interface must be opened when the assignment is executed. You can specify which interface this must be in the Control on tabsheet.

Please note!

When you copy an existing assignment, everything is copied, except the control structure. This is done to avoid getting a complex and incomprehensible control structure.

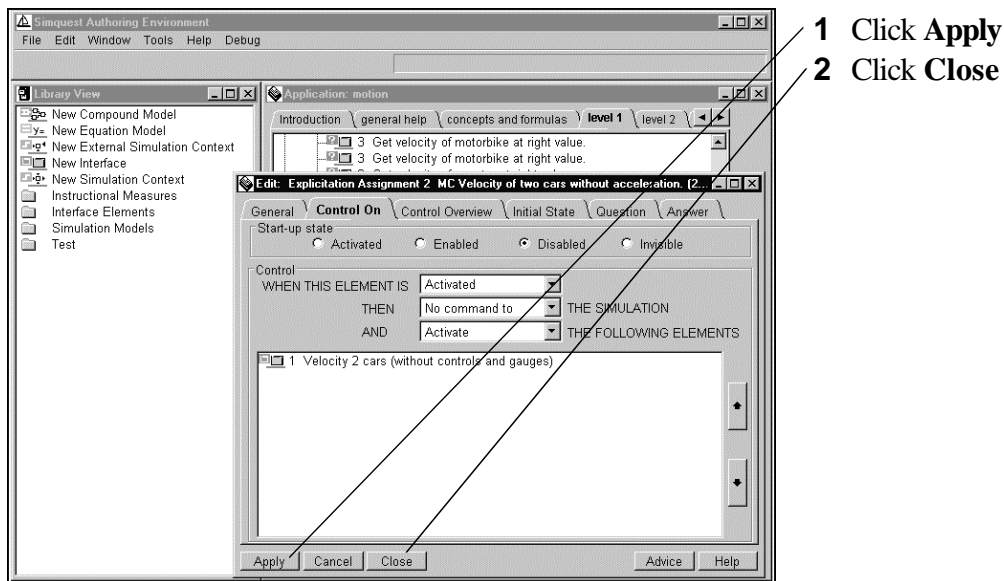


Saving and checking your work

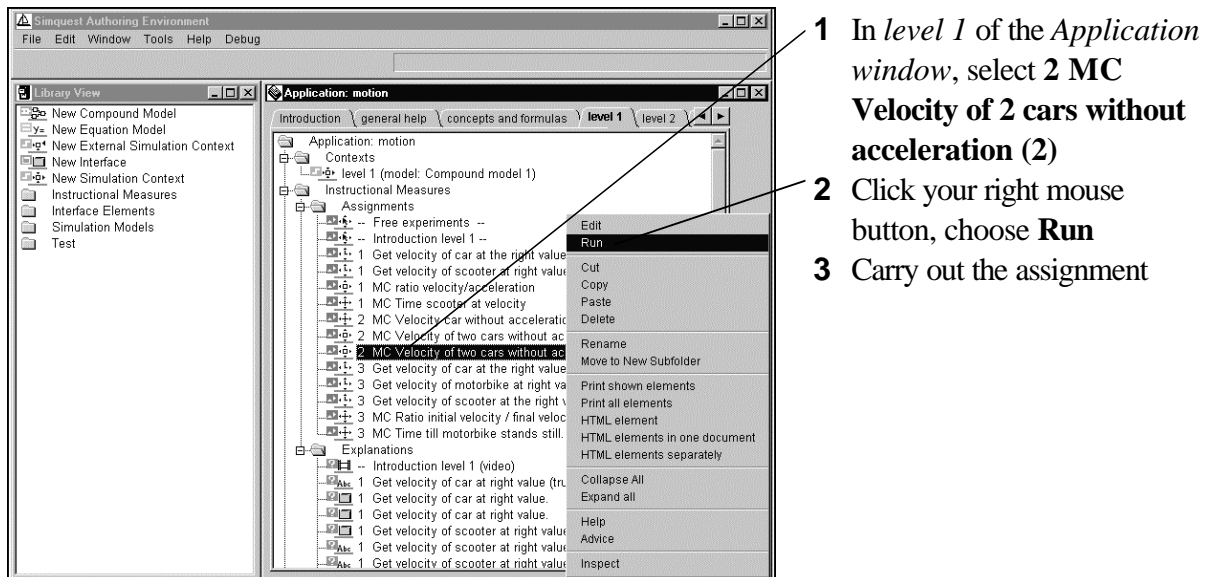
When you specified the question, answers, learner description and control structure, you are finished creating the assignment. You can save your work and check if your assignment works as you planned.

Saving an assignment and closing the editor

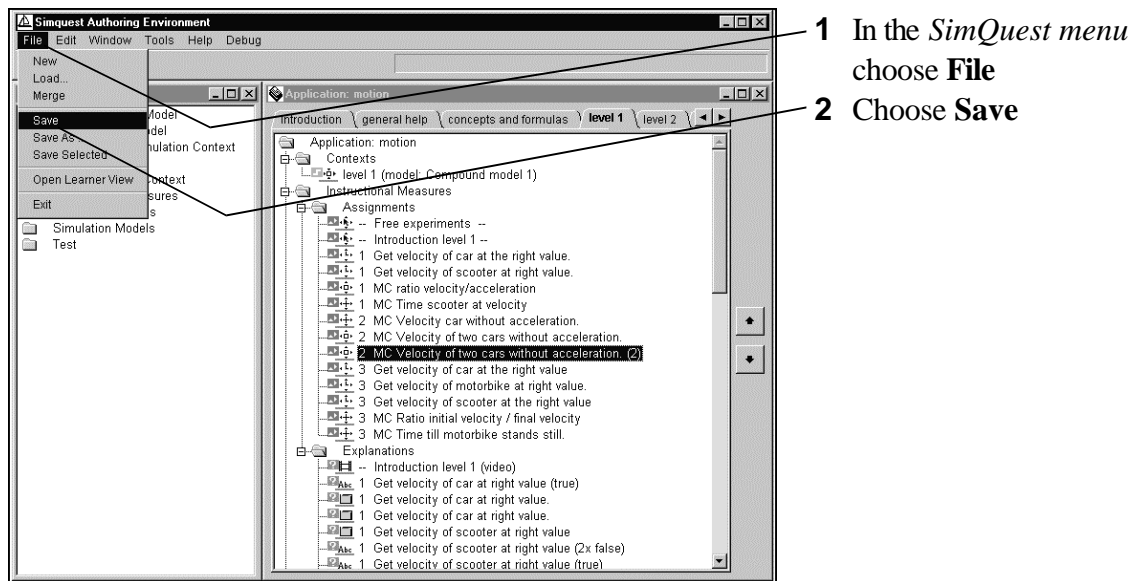
You can save your assignment and close the assignment editor. When necessary data is missing, a window will appear showing you what is missing.



Checking your work You now check if your changes have led to the desired results.



Saving your application Finally, you should save your application.



Try it yourself

You can try to add more sets of initial states so your learners get more options to explore the simulation. For this, you can use the online help.

Do not forget to modify the question and answers also!

Creating assignments

Assignments are meant to let your learners act with the simulation. This way you support them in exploring the domain.

To create an assignment, you:

- choose an assignment,
- edit the assignment, and
- save and check you work.

Choosing, adding, and naming an assignment

Before you can create the assignment, you have to:

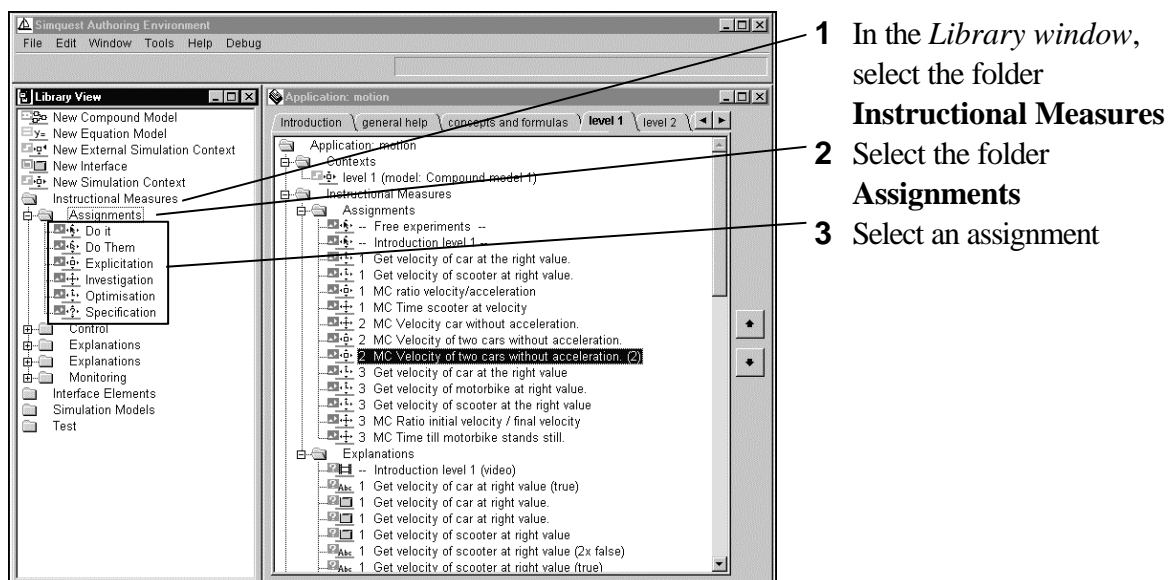
- select one from the library,
- add it to your application, and
- give it a meaningful name.

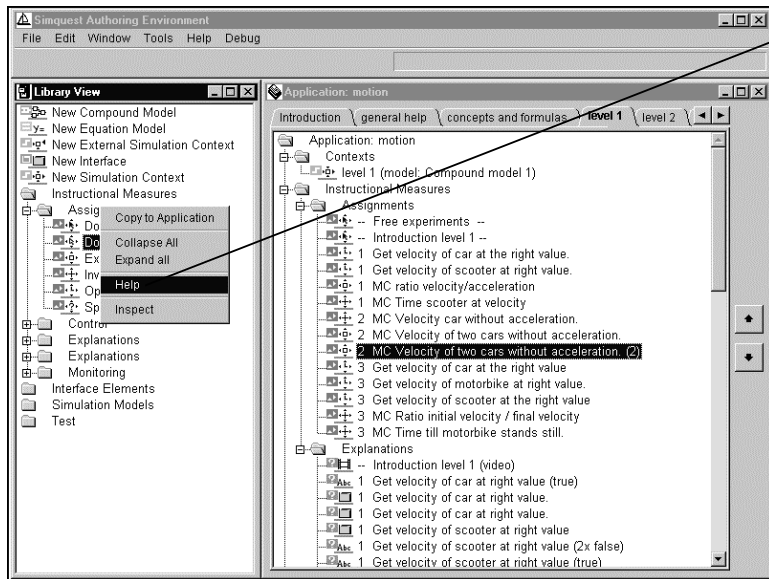
Looking at the online help to examine assignment-types

There are six types of assignments:

- do it assignment
- do them assignments
- explication assignment
- investigation assignment
- optimisation assignment
- specification assignment

In this case you are going to create an assignment that lets the learner reach a specific simulation state. You can find information about these assignments using the online help.

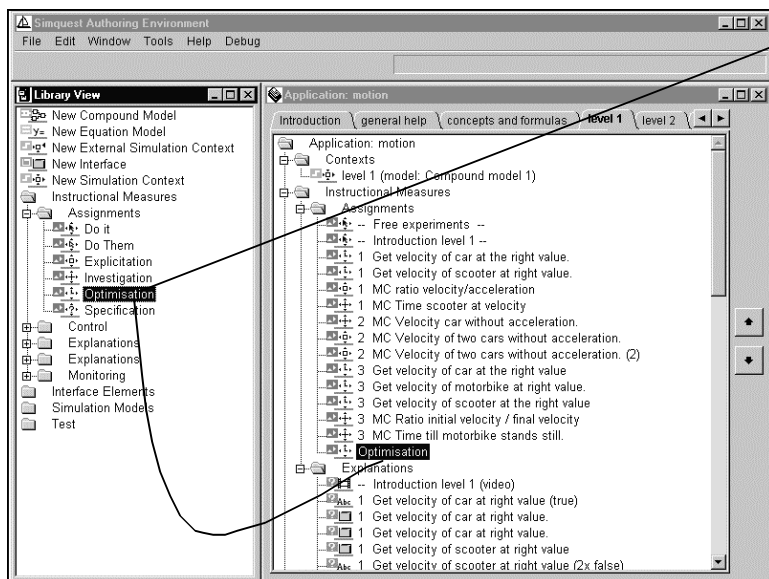




- 4 Click your right mouse button and choose **Help**
- 5 Read the help texts and determine which type of assignment lets your learner reach a specific simulation state

Adding an assignment to your application

You now know which assignment you want to use. The next step is to add the assignment to your application. If you want to add an assignment to your application, you select it in the library and drag and drop it in your application.



- 1 In the *Library* window, select **Optimisation**
- 2 Drag **Optimisation** from the *Library window* and drop it into the folder *Assignments* of *level 1* of the *Application window*

Naming the assignment

The assignment you are going to create asks the learner to let a scooter reach its topspeed by setting the appropriate acceleration in the formula:

$$v(t) = v(0) + F_drive * time$$

where: *is meant:*

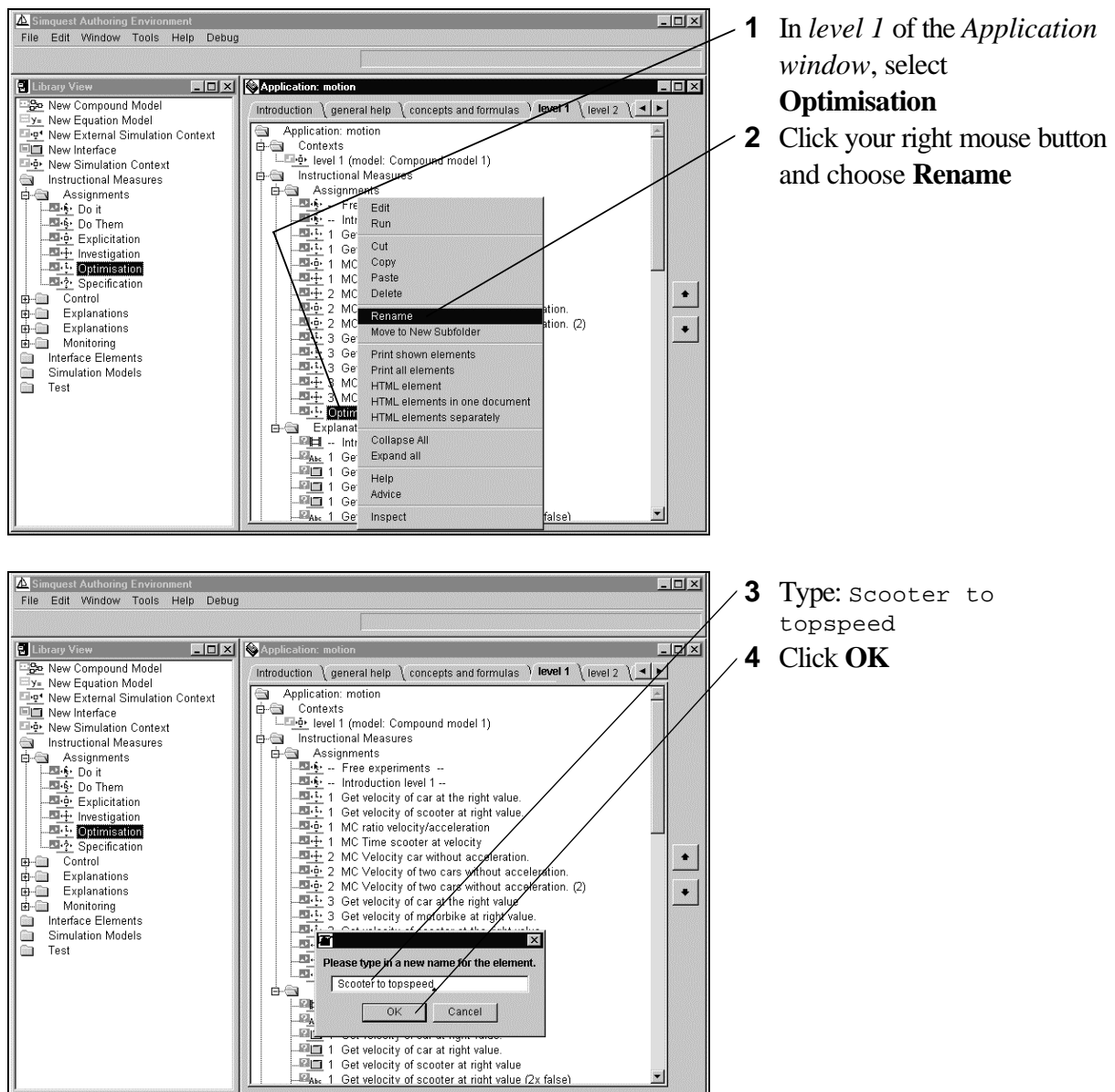
$v(t)$ speed at point in time t

$v(0)$ speed at starting time (point in time 0)

F_drive acceleration

time time

For clearness you can rename the assignment accordingly.



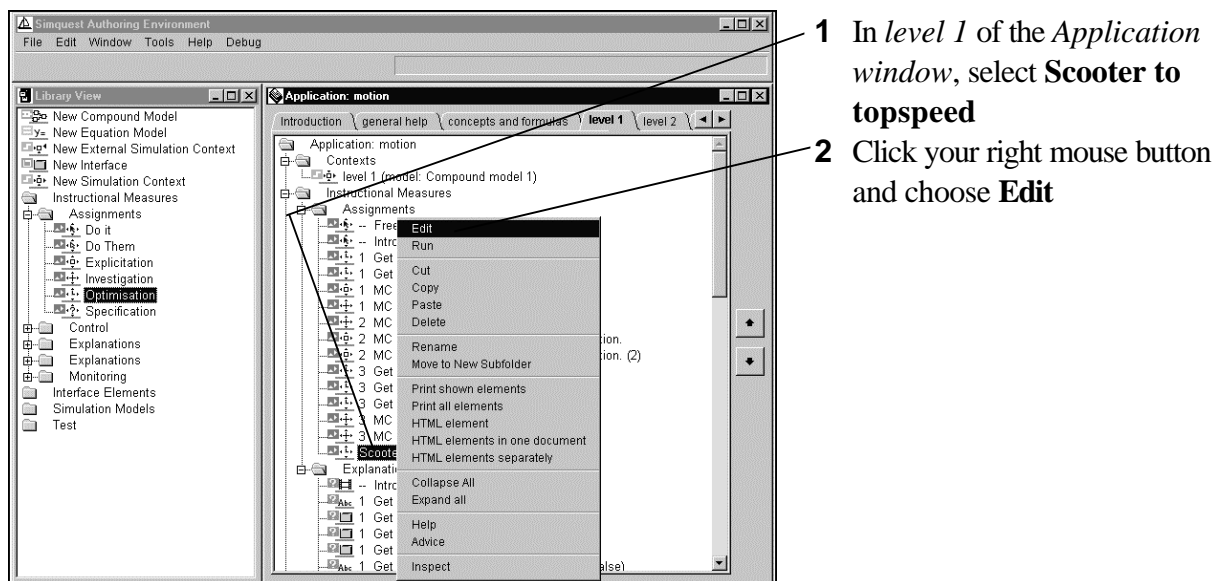
Editing an assignment

You have now added an empty optimisation assignment to your application and you renamed it. To further create your application you must:

- open the assignment editor,
- formulate the question,
- specify the answer,
- specify the number of times your learners may try,
- formulate the learner description, and
- determine the control structure.

Opening the assignment editor

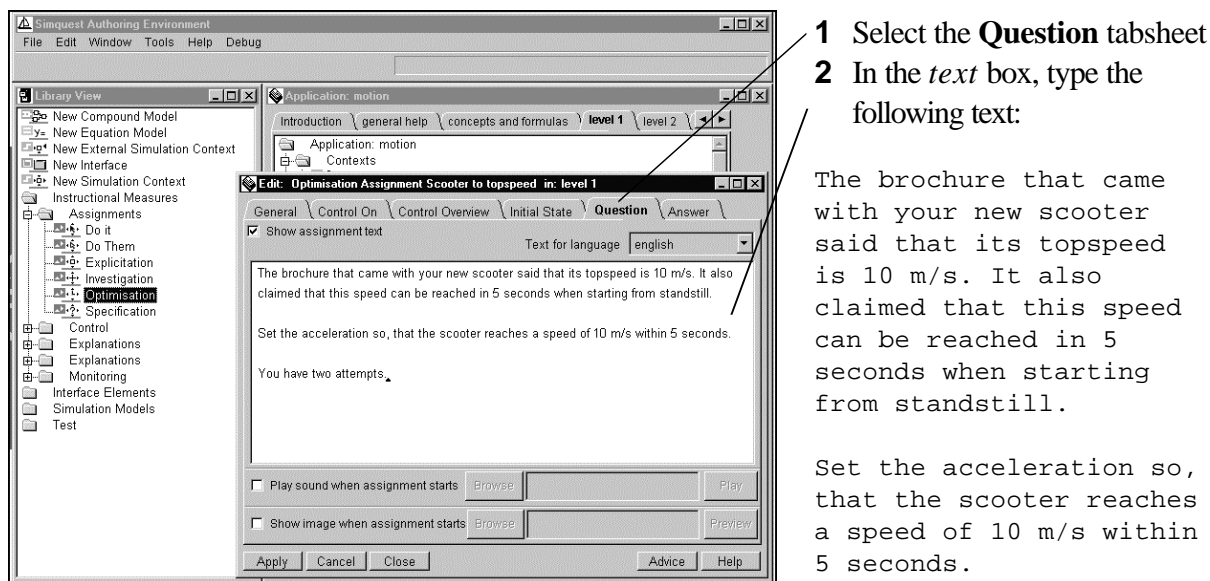
You open the assignment editor with your right mouse button.



Check if editor appears on the screen.

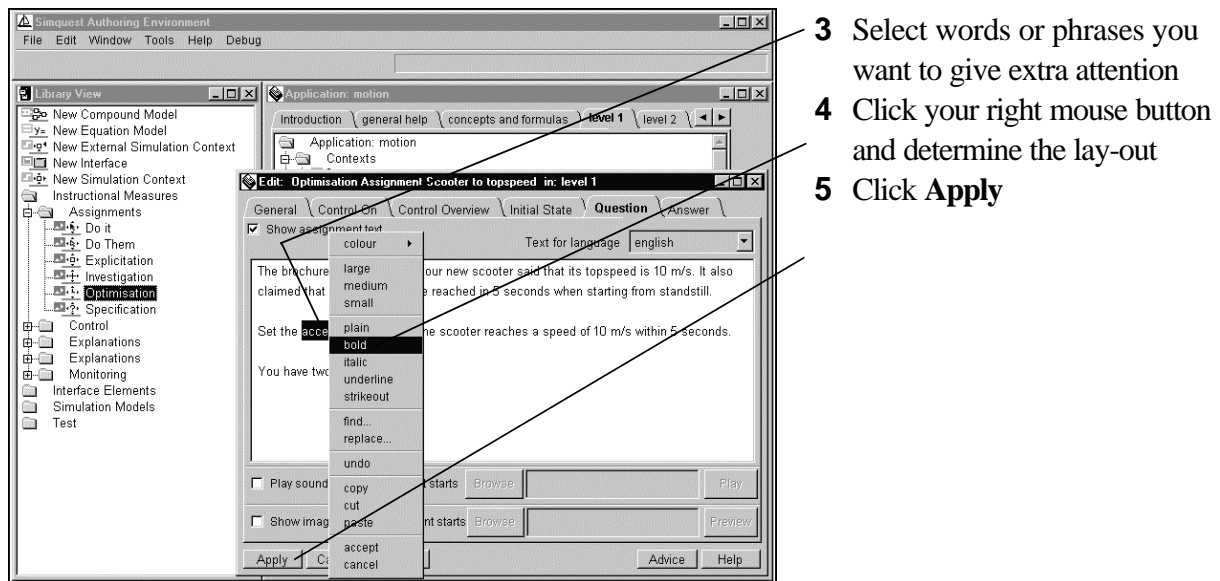
Specifying the assignment question and determining the layout

The first thing to do is specifying the question you want to ask to your learners. You can type this question in the Question tabsheet.



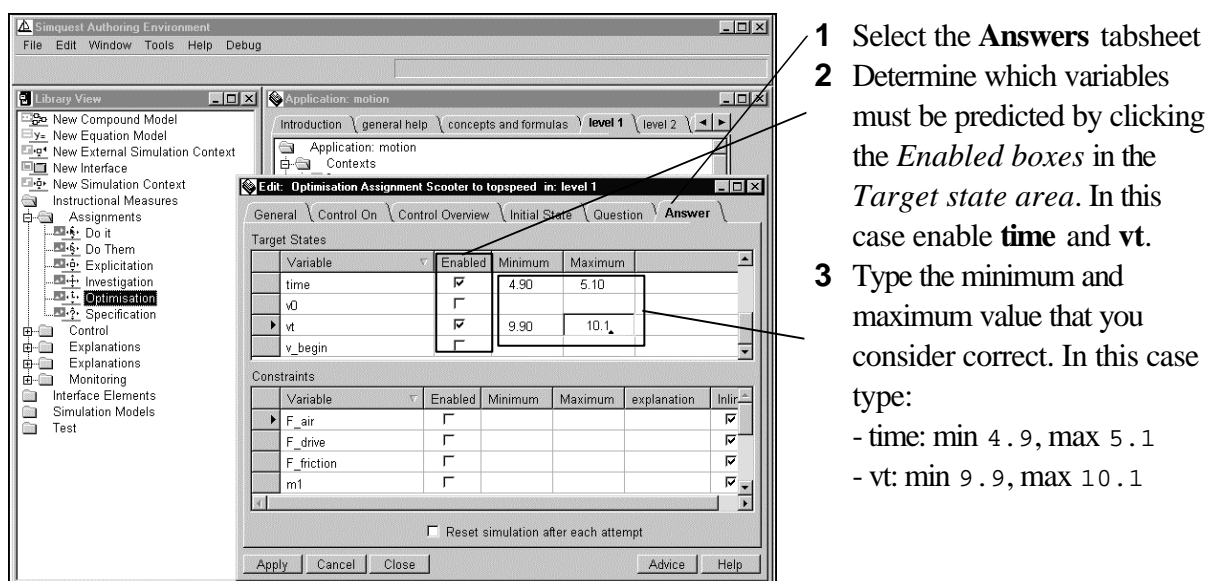
Set the acceleration so, that the scooter reaches a speed of 10 m/s within 5 seconds.

You have two attempts.



Specifying the answers of an assignment

The learner goal for this assignment is reaching a specific simulation state, in this case a speed of 10 m/s within 5 seconds. You can specify the variable and the value of this variable your learners must predict in the Answer tabsheet.



You can put restrictions on the right answer. These restrictions are called constraints. Usually, these constraints are used to make the simulation more 'real'.

For, example:

If you simulate the landing of a plane, your target state for prediction can be: time = 0. The constraint in this case can be that the altitude of the plane should never be below 0, otherwise the plane would crash.

In this case you set a time constraint. The variable time may have a maximum value of 12.

4 In the *Constraints* area, enable **time**

5 In the *maximum* box, type 12

6 Click **Apply**

Variable	Enabled	Minimum	Maximum
time	<input checked="" type="checkbox"/>	4.90	5.10
v0	<input type="checkbox"/>		
vt	<input checked="" type="checkbox"/>	9.90	10.10
v_begin	<input type="checkbox"/>		

Variable	Enabled	Minimum	Maximum	Explanation	Inlr
m3	<input type="checkbox"/>				<input checked="" type="checkbox"/>
st	<input type="checkbox"/>				<input checked="" type="checkbox"/>
time	<input checked="" type="checkbox"/>		12		<input checked="" type="checkbox"/>
v0	<input type="checkbox"/>				<input checked="" type="checkbox"/>

Specifying the times your learners may try

It is imaginable that your student does not find the right answer at once. You may want to limit the times your learners can try, though. Therefore, you can specify the number of attempts.

1 Select the **Initial State** tabsheet

2 Determine the **Number of attempts**

3 Click **Apply**

Number of attempts: 5

Variable	Set here ?	Range	Value
F_air	<input type="checkbox"/>	Number	0
F_drive	<input type="checkbox"/>	Number	0
F_friction	<input type="checkbox"/>	Number	0
m1	<input type="checkbox"/>	Number	1
m2	<input type="checkbox"/>	Number	0
m3	<input type="checkbox"/>	Number	0
time	<input type="checkbox"/>	Number	0
v_begin	<input type="checkbox"/>	Number	0

The *initial state* determines with which values the simulation starts. In this case, you do not need to set the initial state.

Specifying the learner description of an assignment

When your learners have to choose the assignment from a list of assignment, they probably won't know what the assignment is about according to its title alone. You can specify a summary of the content of the assignment, which will be presented to your learners when they choose the assignment, but not execute it yet. This summary is called the learner description.

1 Select the **General** tabsheet

2 In the *Description* box, type the following description:

In this assignment you are asked to get a scooter at a specific speed in a given amount of time by setting its acceleration.

3 Click **Apply**

Specifying the assignment's control structure

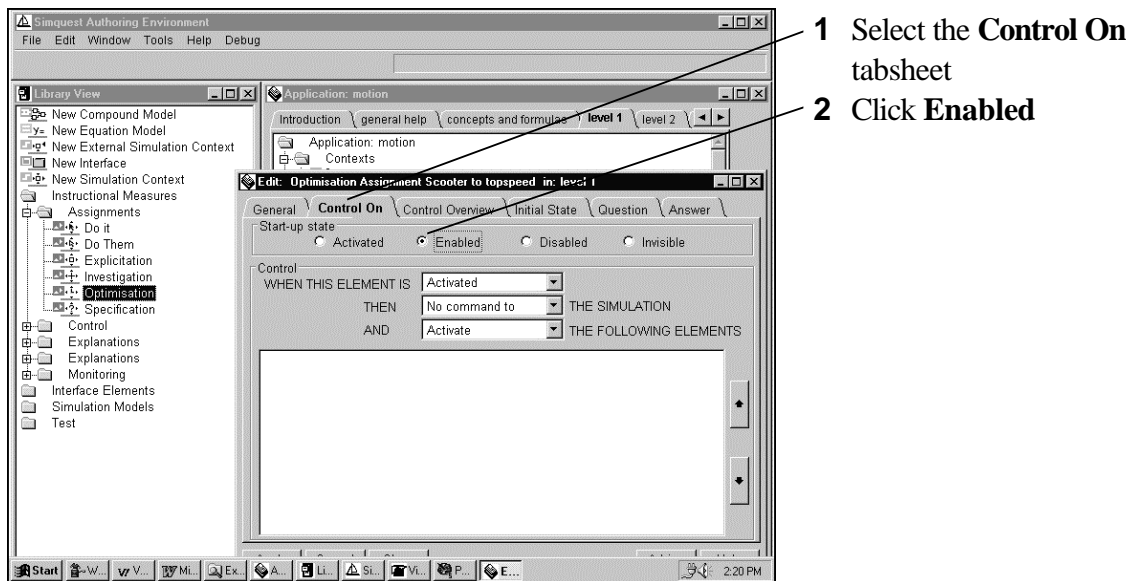
You will always need an interface to make it possible for your learners to execute the assignment. Also, you may want to present some feedback to your learners in case they give a right or wrong answer. You can make these specifications in the Control On tabsheet.

The tabsheet Control On consists of two parts: Start-up state and Control.

With the *Start-up state* you determine what must happen with the assignment when the application is started. The four options are:

Activated	when the application is started, the assignment is automatically opened
Enabled	the learner is able to activate the assignment himself
Disabled	the learner can see the explanation, but not (yet) activate it
Invisible	the learner cannot see and activate this assignment

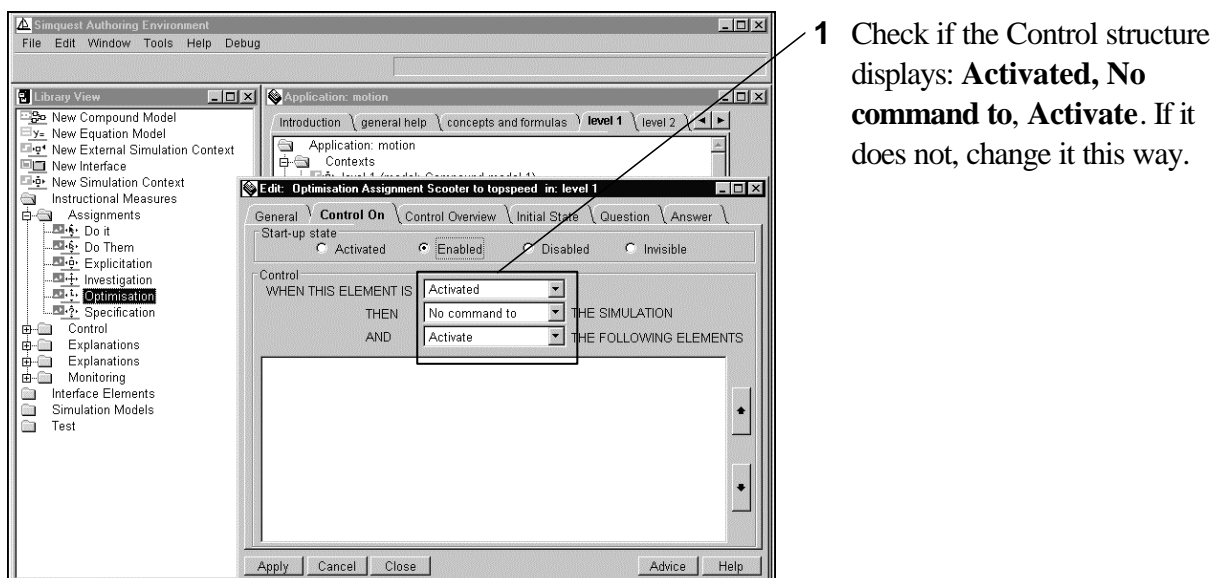
In this case, you want the learner to be able to start the assignment.

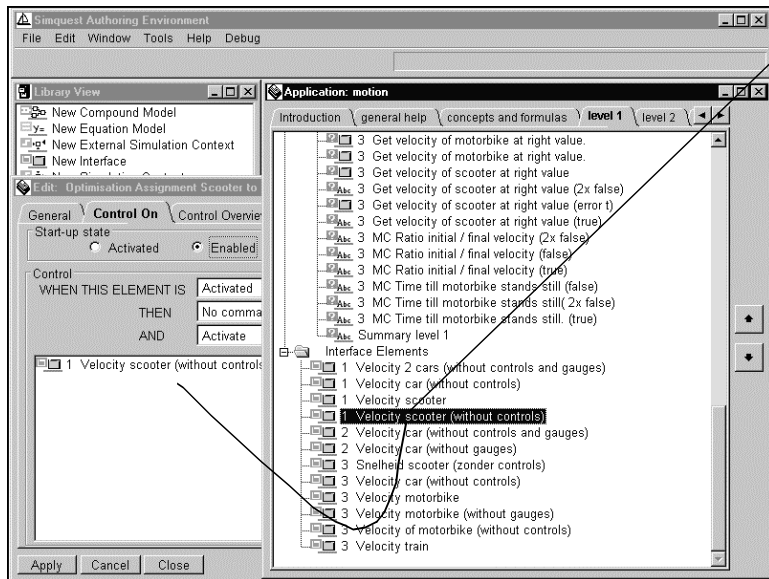


In the *Control*-area you first determine **WHEN** something should happen and second **WHAT** should happen. Third, you select the elements you want to use for this.

In this case, you can specify the following controls:

- a) When the assignment is activated, you also want an interface to be presented to your learners.



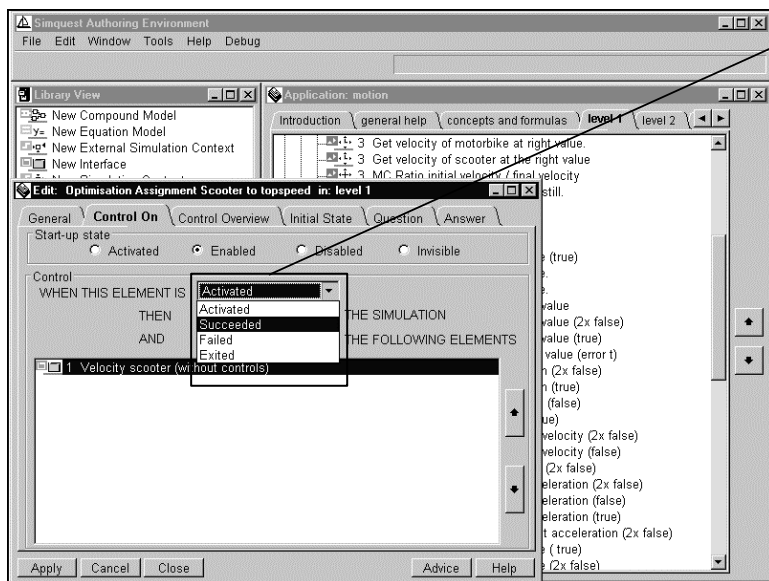


2 Drag the interface **1 Velocity scooter (without controls)** from *level 1* of the *Application window* and drop it into the *control box*

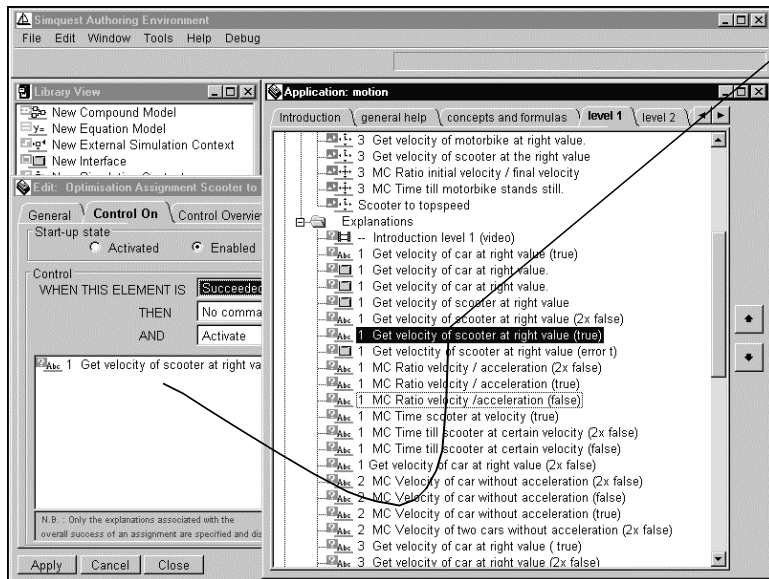
problem: **You dragged a wrong element into the control-area.**

solution: 1 Select the element
2 Click your right mouse button
3 Choose **Remove**

When the learner gives the right answer to the question, you want an explanation to appear that gives appropriate feedback.

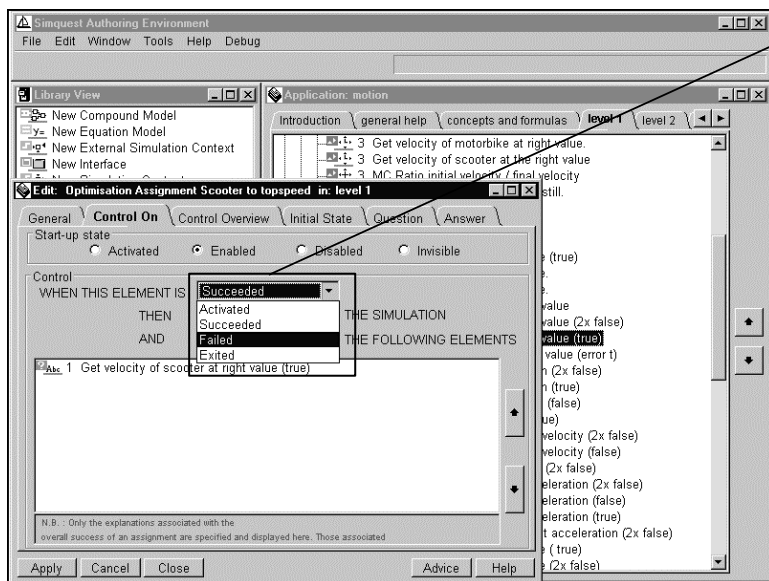


1 Change the control structure into: **Succeeded, No command to, Activate**

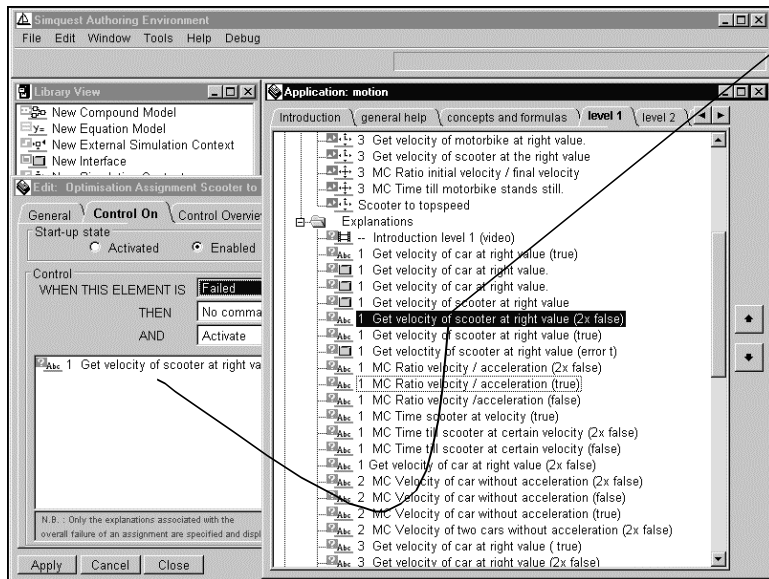


2 Drag the explanation **1 Get velocity of scooter at right value (true)** from *level 1* of the *Application window* and drop it into the *Control-area* of the *assignment editor*

c) When the learner gives the wrong answer to the question, you also want an explanation to appear that gives some feedback.

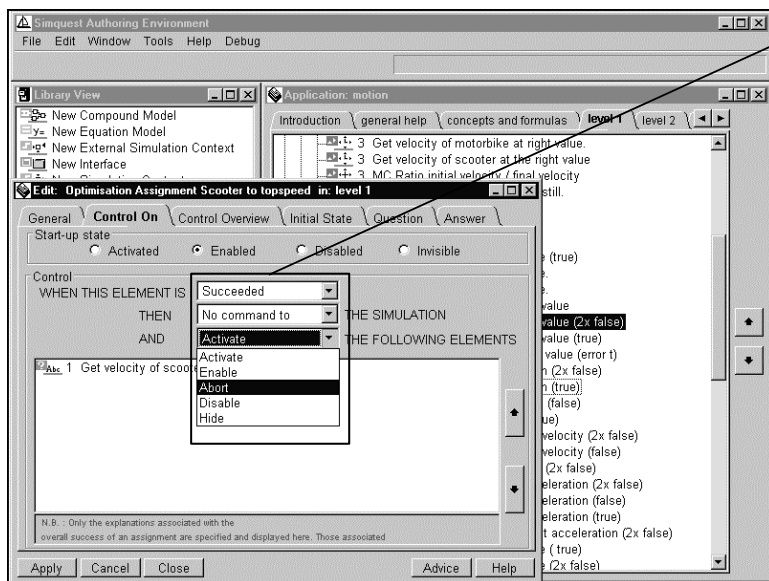


1 Change the control structure into: **Failed, No command to, Activate**

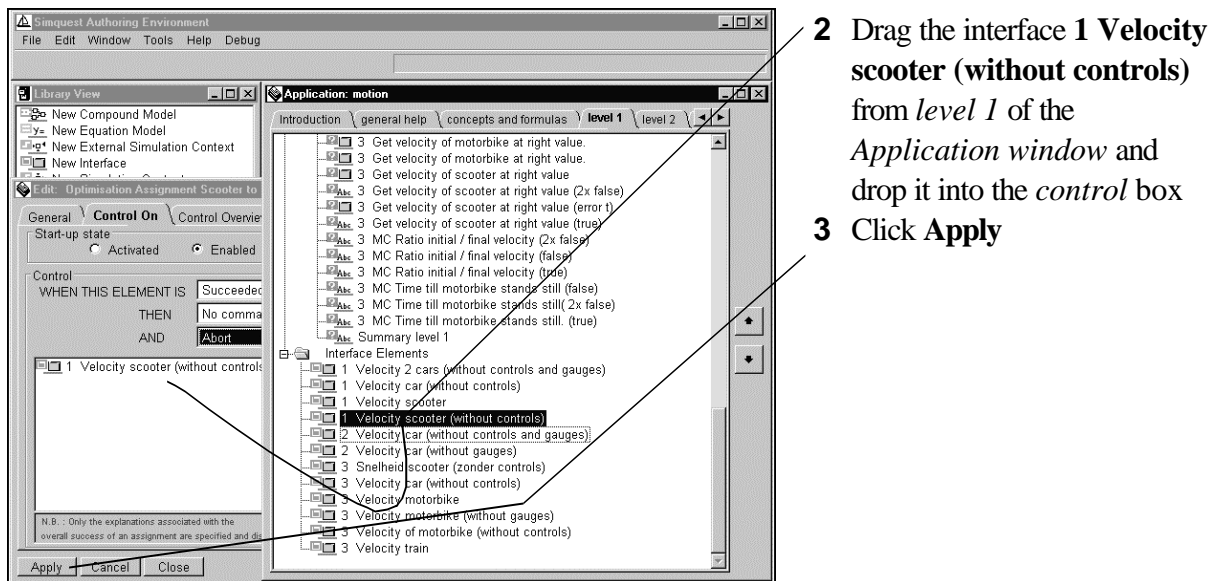


2 Drag the explanation 1 Get velocity of scooter at right value (2x false) from level 1 of the Application window and drop it into the Control-area of the assignment editor

d) When the learner gives the right answer to the question, you want the interface to close automatically.

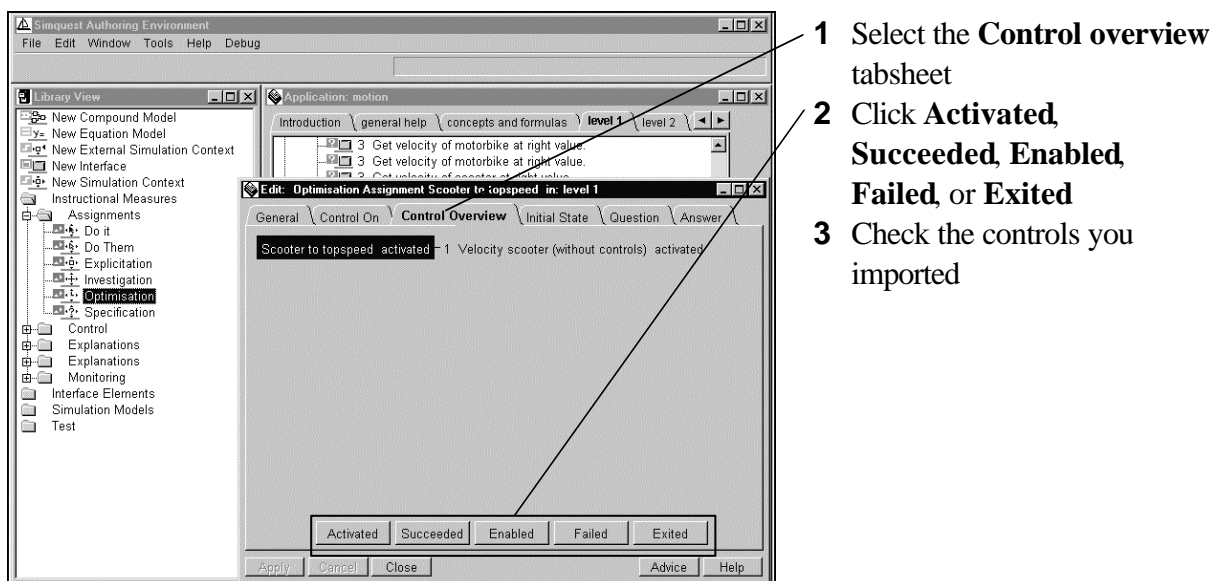


1 Change the control structure into: Succeeded, No command to, Abort



Checking your assignment's control structure

When you specified a lot of controls, it may get hard to keep an overview of your control structure. You can use the tabsheet **Control overview** to check the controls you specified. You can quickly see what will happen when the assignment is activated, succeeded, enabled, failed, or exited.

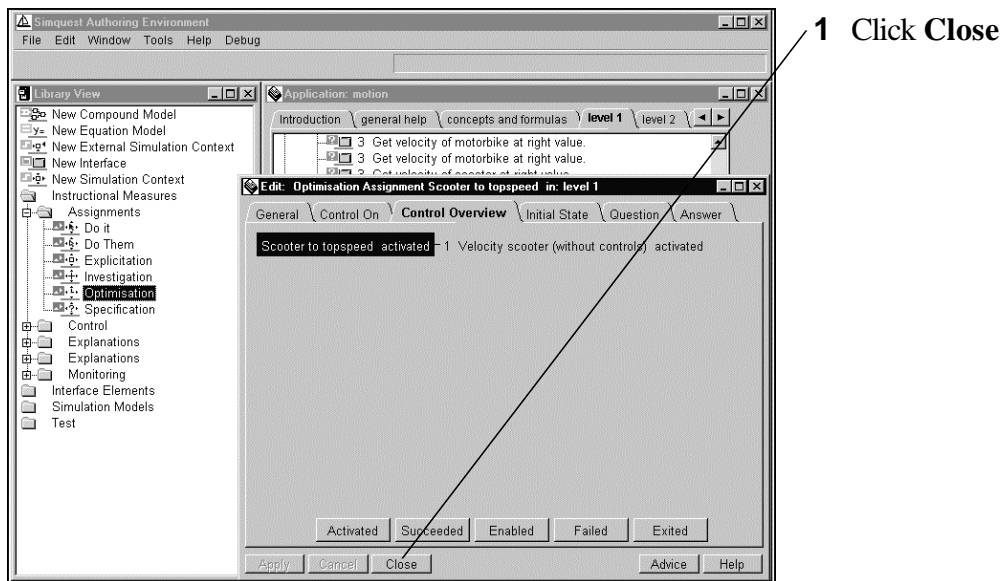


Saving and checking your work

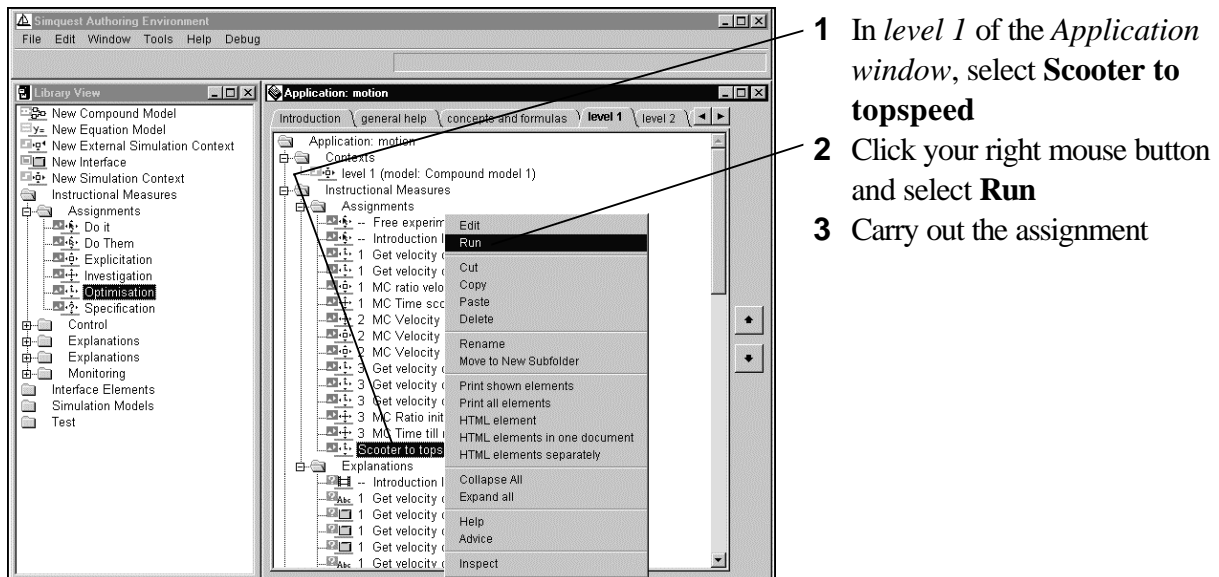
When you have specified the question, answer, learner description, number of attempt allowed, and the control structure, you are finished creating the assignment. You can check your work and save your application.

Saving an assignment and closing the editor

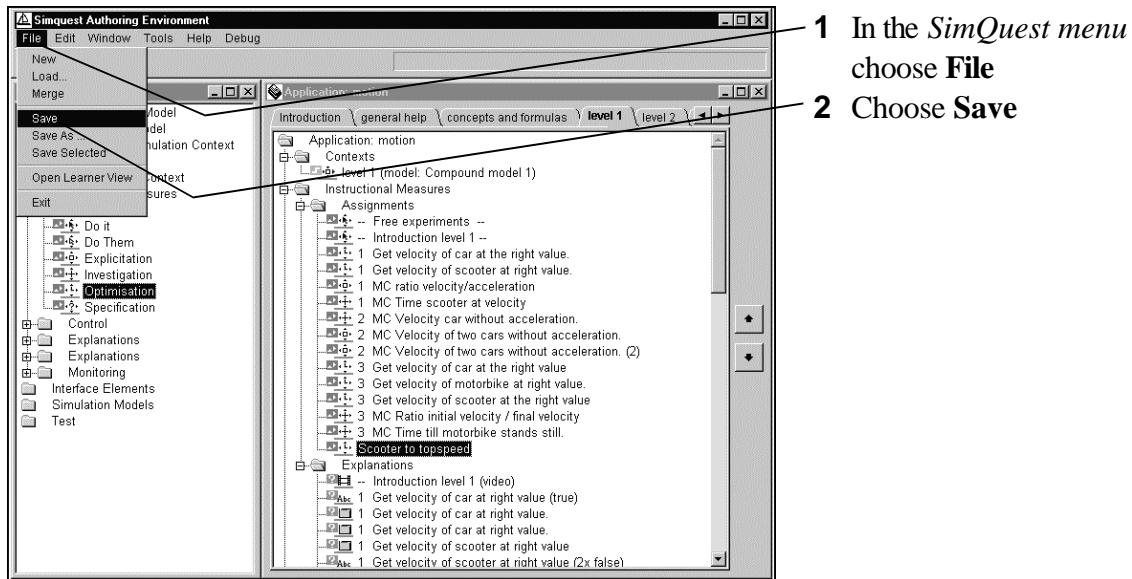
You can save your specifications and close the assignment editor. When necessary data is missing, a window will appear showing you what is missing.



Checking your work You can now open the assignment and check your work.



Saving your application Finally, you should save your application.

***Try it yourself***

When you run the assignment you see that it may be convenient for your learner if you would specify more controls. Try, for example, to let the interface also disappear when the assignment is failed.

The *explanations* you specified in case of failing or succeeding the assignment are not correct. The wrong values for speed and time are presented. Try to create new explanations that show the right values. If you do, also change the control structure of the assignment according to the names of the explanations you made.

5 Assignments

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