Composite Actions in Simmetry 3d

This tutorial demonstrates how to create actions within a composite object which allow animations to be dynamically triggered in the simulation mode.

Concepts

In this tutorial you will learn about:

- Creating Composite Objects
- Editing Composite Objects
- Hierarchies of Composite Objects
- Animations in Composite Objects

Prerequisites

- Objects Tutorial
- Animations Tutorial
- Composites Tutorial

What are Composite Actions?

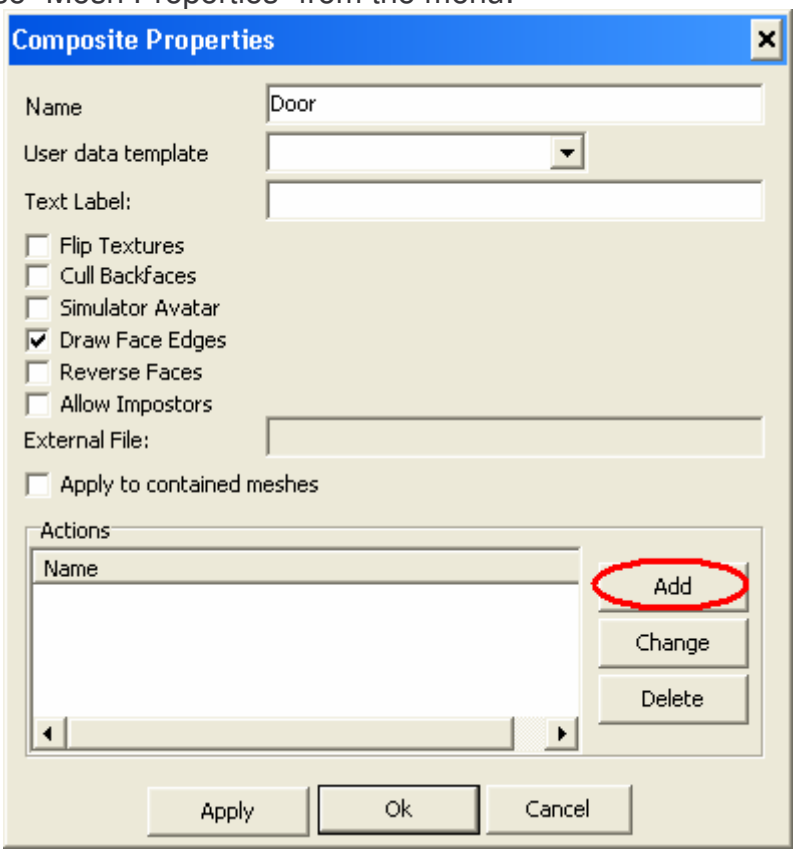
These are the mechanism by which animations within a composite can be triggered with in the simulation mode of Simmetry3d. A door object can have an open and a close animation associated with it, but how should it open when you walk up to it in the simulator? This is what actions can facilitate. Within an action you can set up the criteria required to trigger a composite's animations. In the case of a door you may want it to open when you get close to it; with other objects you may want to allow the user to click on the object and choose from a list of possible actions. The actions are part of a composite object and will be kept with the composite when it is placed in the mesh library.

EXERCISE 1

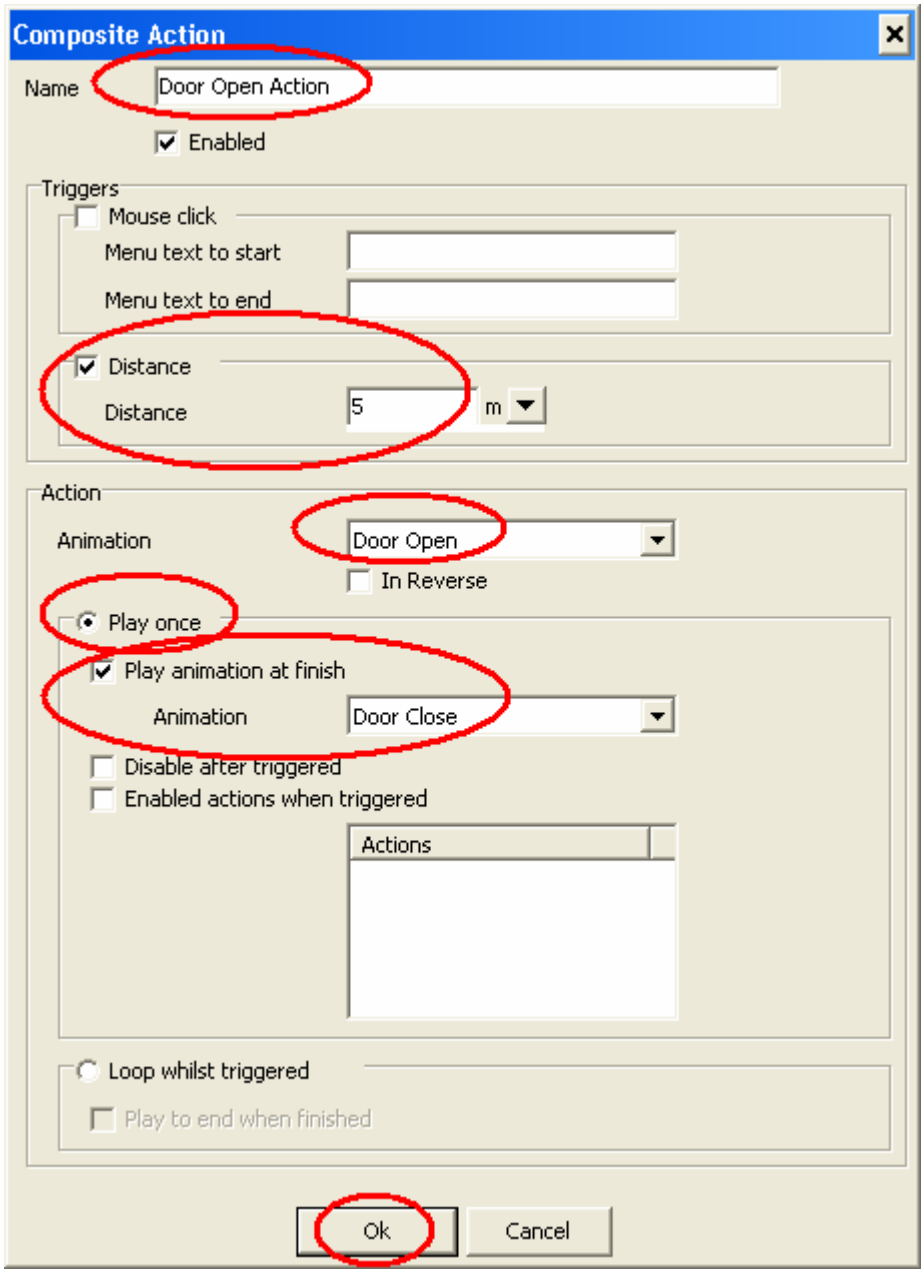
Creating a simple composite object.

- Open "Composites\ActionEx1.s3d"
- Notice that a single door mesh object ("Door") has been placed on the terrain. It has two animations in it – Open and Close. (These were created automatically by right clicking the door insert node in the project tree and choosing "Create Door Animations".
- Find the door's node in the project tree and right click on it; then choose properties:

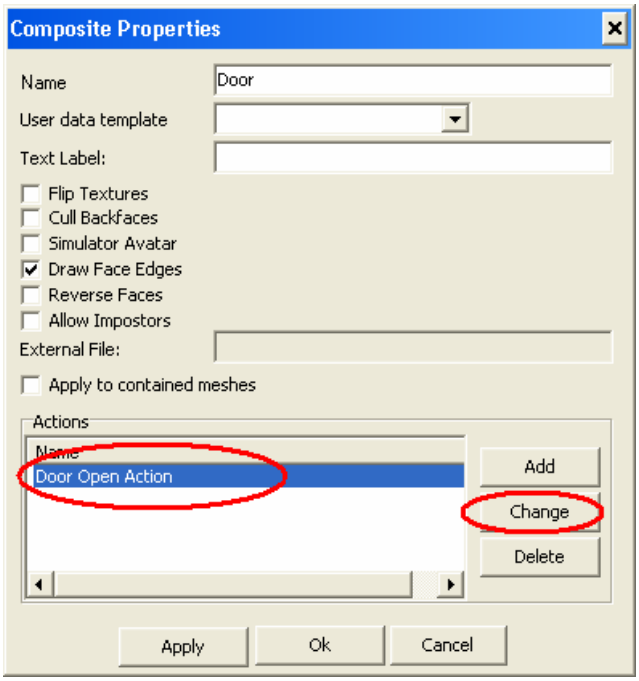
- Choose “Mesh Properties” from the menu:

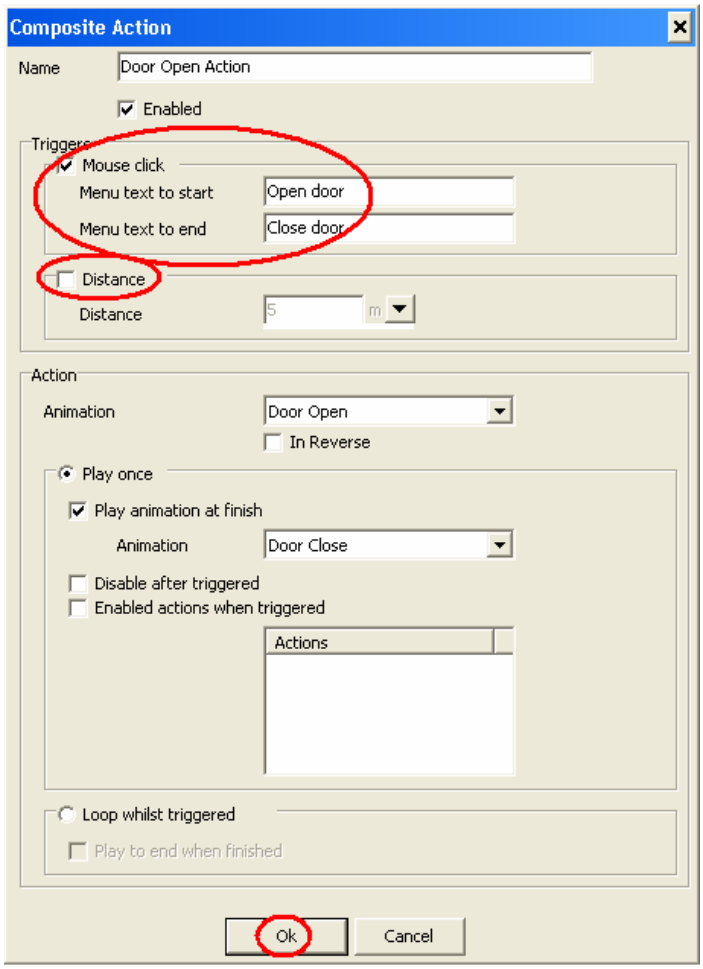


- This will show the properties for the composite mesh. We want to add a new action – so press the “Add” button.



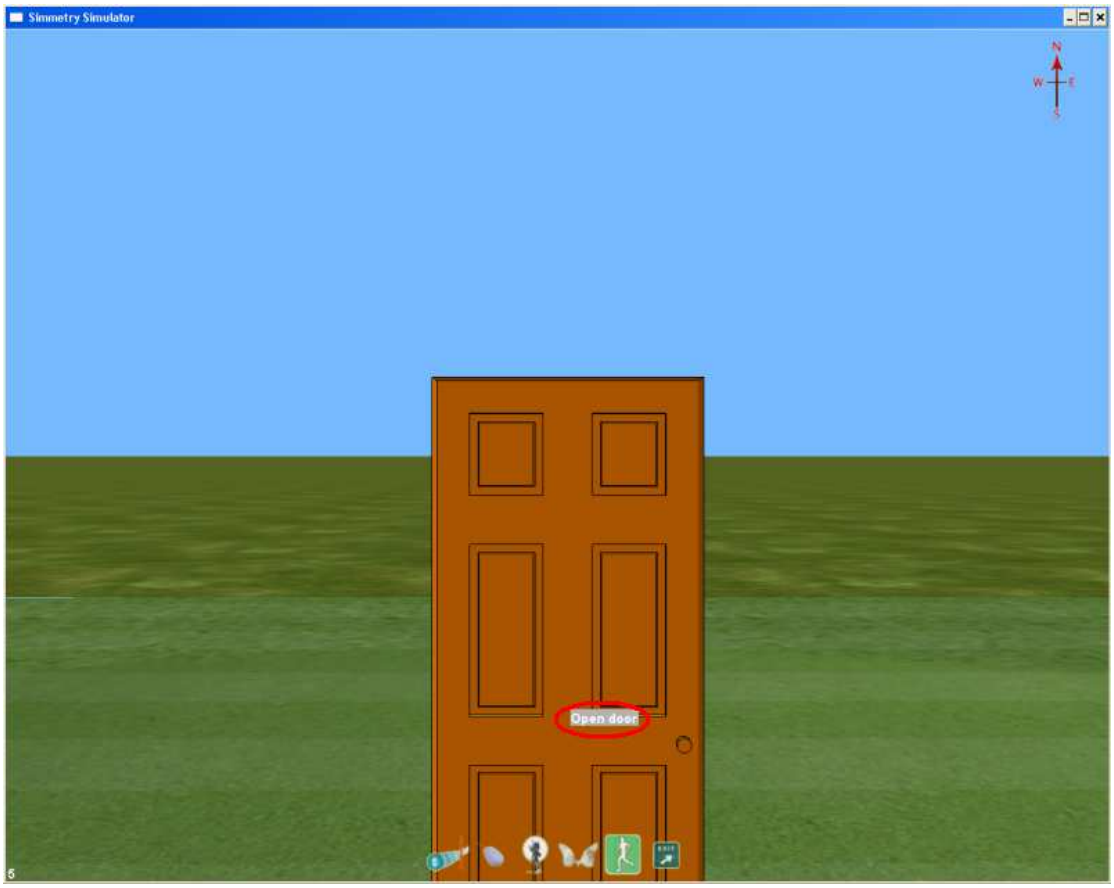
- These settings will automatically open the door when you approach it (get within 5 metres of it) and will close it when you move away. Ok the actions dialog box and then Ok the Properties dialog box.
- Test this by going into the simulator and walk towards the door – it will open for you!
- An alternative to this is to allow the user to click on the door to open it. Choose the Mesh Properties again by right clicking the Door composite node in the Project tree. This time click on the “Door Open Action” in the actions list and then click the “Change” button:





- Test these settings by going into simulation mode. This time the door will not open when you approach it. Instead point at the door with the

mouse cursor – the cursor will change to a pointing finger and click on the door. A menu will appear :



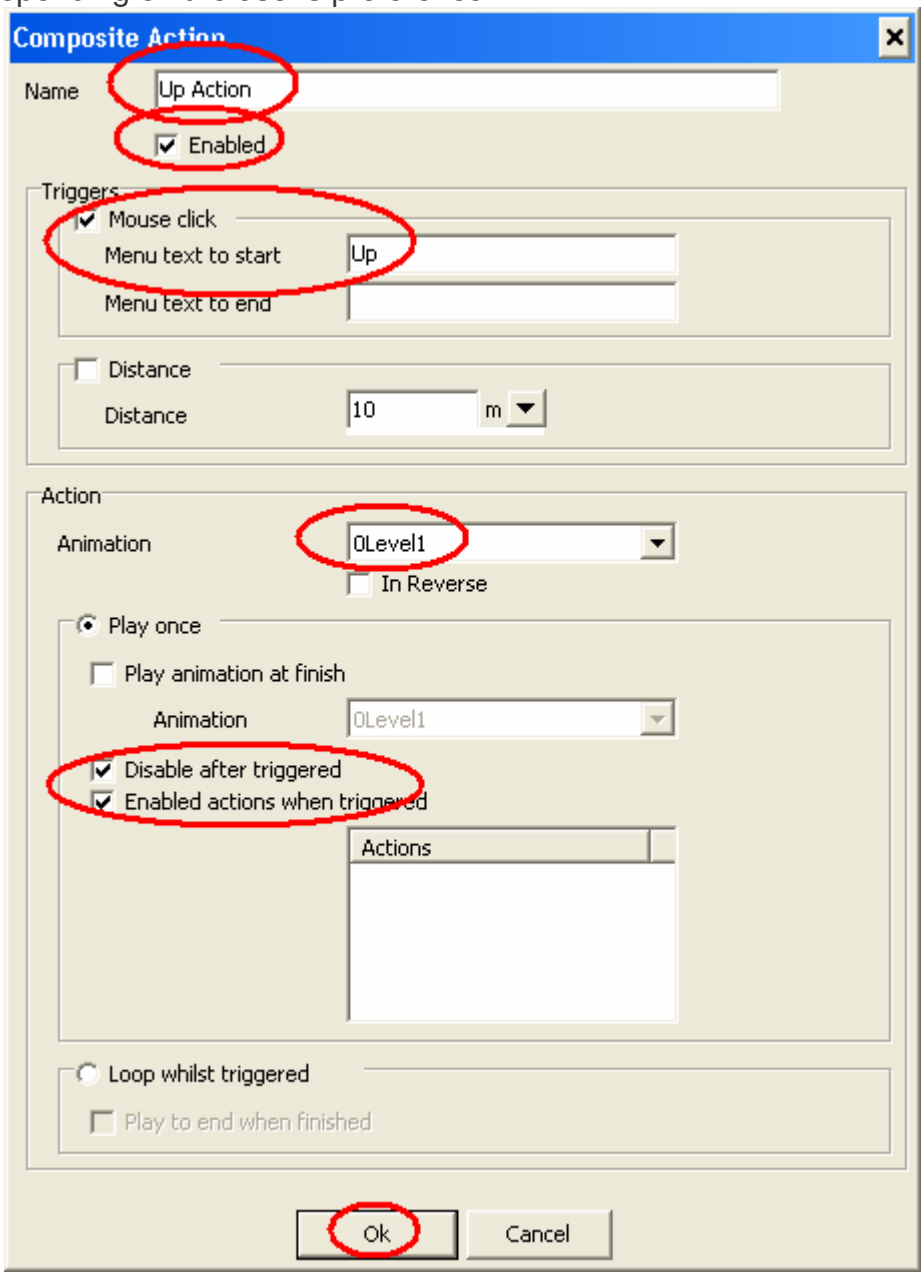
- Click on the “Open door” text and the door will open. It will remain open. If you now click on the door a menu will appear this time with “Close door” showing. If you click on this, then the door will close.
- Now that the door composite actions has been set up we can insert the door many times and each one will be “openable” in the simulator. Try this by dragging another door onto the terrain and then going into the simulator mode.

EXERCISE 2

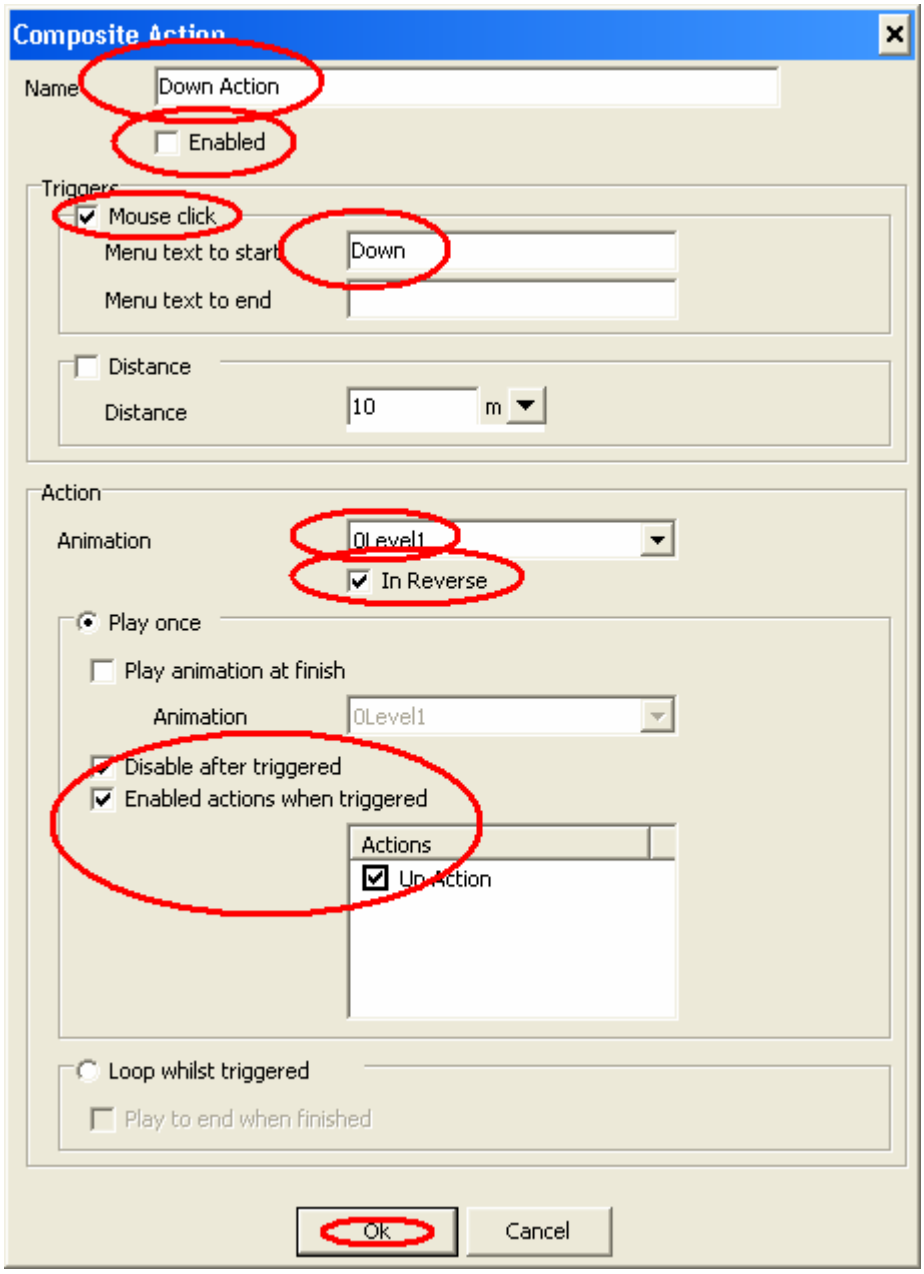
Creating an animated lift.
This is a good example of a more complicated object. A lift travels between different floors of a building, with its doors opening for a short period before it moves on to the next floor. A file is provided which contains a simple lift object with sliding doors and an animation sequence which moves it between 3 stories. This exercise will add actions to the lift object which will allow the user to control the lift in “up” and “down” directions.

- Open file “Ex2Actions”. This contains a lift object with an animation taking the lift from the ground floor to the top floor, stopping at intermediate floors and opening its doors.
- Right click on the “Lift” node in the project tree and choose “Mesh Properties…”

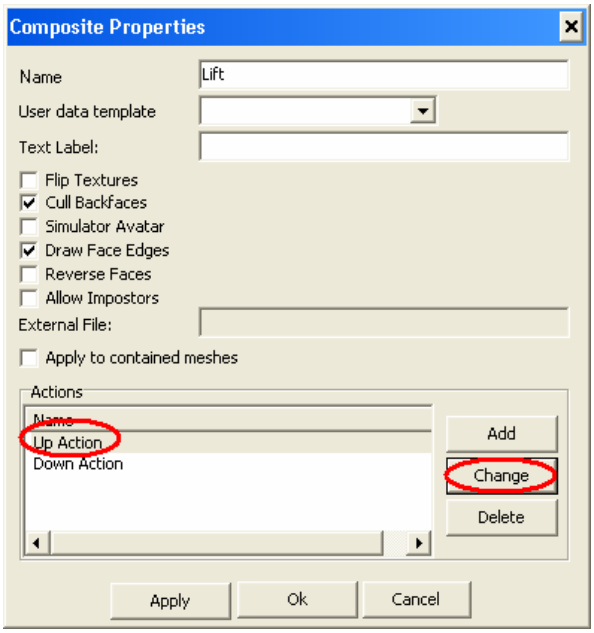
- Add a new action; we are going to add two new actions one for the lift travelling up and the other for the lift travelling down. They will use the same animation sequence, but one will use it in the reverse direction. The user will be able to click on the lift and choose “Up” or “Down” depending on the user’s preference.



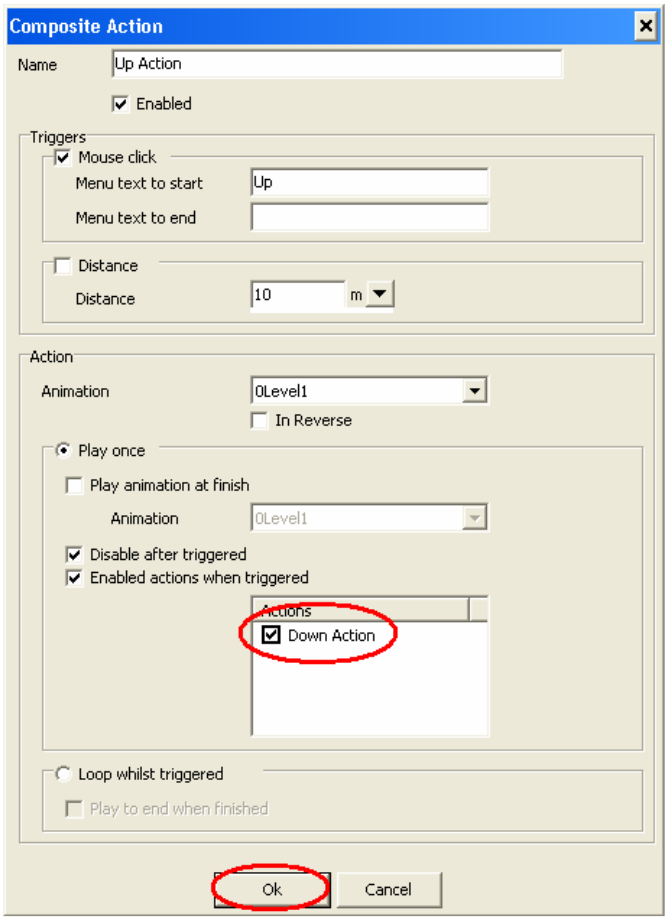
- This sets up the first action, although we will have to alter it slightly in a moment. We want to have this action enable the “Down action” when it has been triggered, but we have not yet setup the “Down action”.
- Next we will add the “Down Action”. Click “Add” on the Properties form and the “Composite Action” form will appear:



- Notice that this time the “Up Action” is already set up so we can elect to enable that action when this “Down Action” is triggered. We will return to the “Up Action” now to set up this enabling sequence. Click on the “Up Action” and then the “Change” button:



- The Down Action is now defined and is listed in the Action list :



- "Ok" the properties dialog and the lift is ready to test in the simulator. Run the simulator. Now when you move the mouse over the lift object the cursor should change to a pointing finger – click on the lift and a menu with "Up" in it should appear. Pressing "Up" will start the animation.

- If you click on the lift whilst it is going up it will show a menu with “Down” in it. Pressing this will reverse the direction of the lift.
- Obviously if you get into the lift whilst the doors are open you will move up to the first floor and then the second.