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Java Fundamentals

2-2

Add and Position Objects

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Objectives

- This lesson covers the following objectives:
  - Open a saved version of a project
  - Add multiple objects to a scene
  - Describe the difference between precise positioning and drag-and-drop (or imprecise) positioning
  - Use a one-shot procedure to precisely position an object in a scene
  - Edit properties of an object in the Scene editor
  - Describe three-dimensional positioning axes
  - Position the sub-parts of an object in the Scene editor

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Open an Existing Project

- Saved Alice 3 project files can be opened and edited
- There are two ways to open an existing Alice 3 project file after launching Alice 3:
  - Select the project from the My Projects tab
  - Browse for the project using the File System tab

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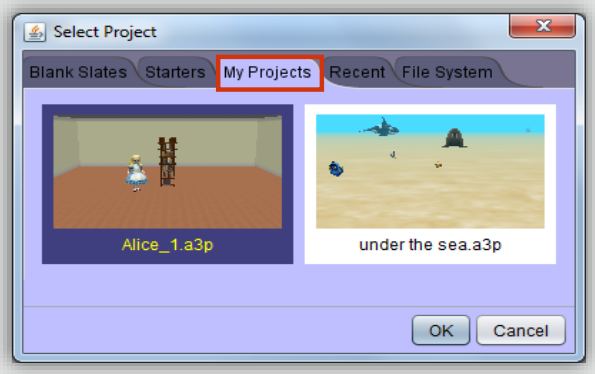
You must open an Alice 3 file from within the Alice 3 environment. You cannot double click an Alice file in your operating system to open it!

Steps to Open an Existing Project Using the My Projects Tab

- Open Alice 3
- From the Select Project dialog box, select the My Projects tab
- Scroll to the name or thumbnail of the project to open
- Select the name or thumbnail of the project and click OK



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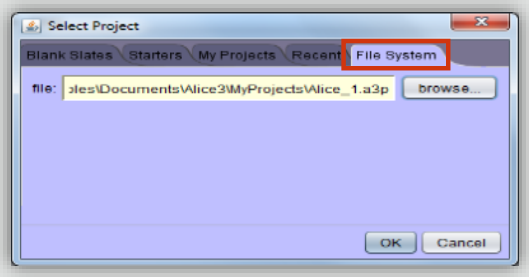
Steps to Open an Existing Project Using the File System Tab



- Open Alice 3
- From the Select Project dialog box, select the File System tab
- Select the Browse button
- Use the navigation window to navigate to the directory structure on your computer where the Alice 3 file is located
  - Note: Alice 3 cannot open animations created with previous versions of Alice
- Click OK after the Alice 3 file has been selected

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Positioning Objects Within Initial Scene

- Positioning objects within your initial scene includes choosing the:
  - Direction the object should face
  - Orientation of objects relative to other objects in the scene
  - Position of objects in the scene
  - Position of the object's sub-parts (arms, legs, etc.)

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Remember positioning objects should be done in the scene editor. You can manipulate the objects from the code editor but you do not have as much control.

Positioning Features of Objects

- All Alice 3 objects share the same positioning features:
- 3D coordinates on x, y, and z axes
- A center point, where its own axes intersect (usually at the center of mass)
- Sub-parts that can move

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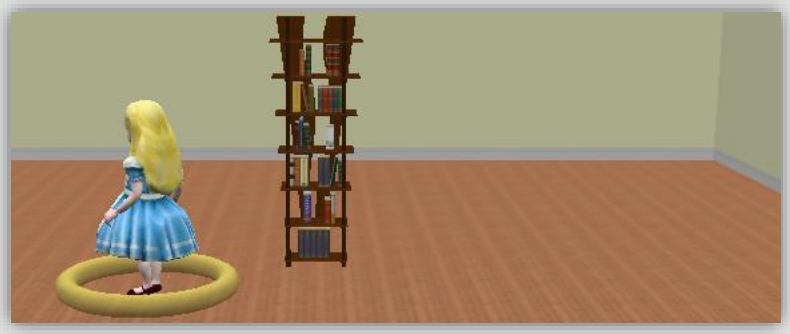
Think of the X, Y and Z values as being left to right, up and down and forward or back respectively. All objects have a standard set of sub-parts (joints) that can be manipulated individually.

Orientation of Objects

- Objects and their sub-parts move relative to their own orientation, or sense of direction
- An object that is facing toward the back of the scene, programmed to move forward 2 meters, moves 2 meters further toward the back of the scene



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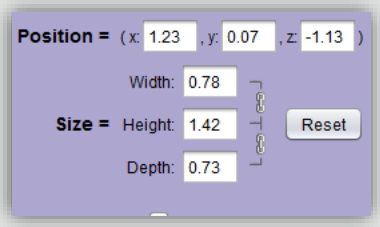
Within Alice an object moves relative to its own positioning not the users perspective. If you are coding an object that is facing the camera then think of it as looking at a reflection in a mirror.

Ways to Position an Object

- There are two ways to position an object:
  - Precise positioning using one of two methods:
    - Use a one-shot procedure
    - Enter values for the x, y, and z coordinates and press the Enter key
  - Imprecise positioning using the drag-and-drop method with your cursor



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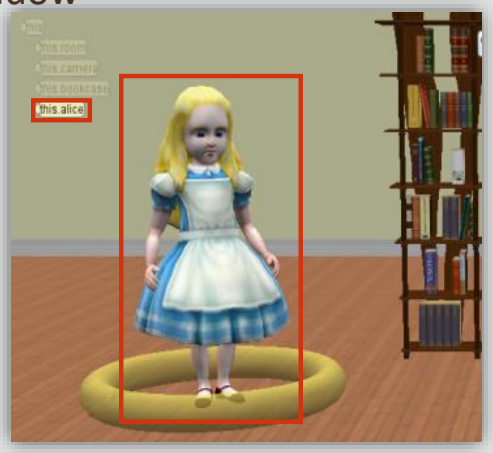
Which method of positioning that you use comes down to personal choice and experience. You may use all of the available methods within a single animation.

Select Instance to Position

- There are two ways to select the instance that you want to position
  - Click the name of the instance from the object list in the upper left corner of the scene window
  - Click the instance in the scene window
- Rings or arrows surround the object once it is selected



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One-Shot Procedures – Precise Positioning

- One-shot procedures:
  - Are used to make scene adjustments and position objects
  - Are not executed when the Run button is selected to play the animation

A procedure is a set of instructions, or programmed code, for how the object should perform a task. One-shot procedures are available in the Scene editor. They are the same as the procedures in the Code editor; however, they only execute one time to re-position the object, unlike in the Code editor where they will execute every time the Run button is clicked to play the animation.

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There are many options available for coding one-shot procedures. Again it is very useful to experiment with these as the skills learned here can be transferred to coding with procedures in the code editor.

Positioning Objects in the Scene – Precise Positioning

- After adding multiple objects to the center of a scene, use one-shot procedures to precisely place them in different locations in the scene so that all objects are visible

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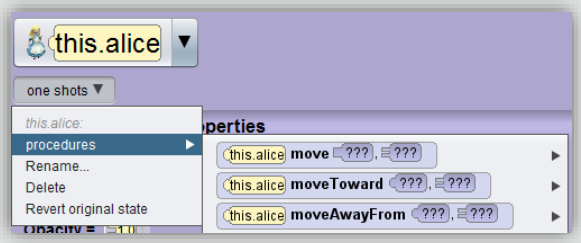
Some objects in your scene may require precise positioning whereas others may not. It can make coding easier later on if you have the objects positioned exactly where you want them to be.

Steps to Open the One-Shot Procedures Menu – Precise Positioning

- Right-click on an object in the Scene editor

- Select procedures
  OR
- Select the one shots procedure menu in the Properties panel

- Select procedures



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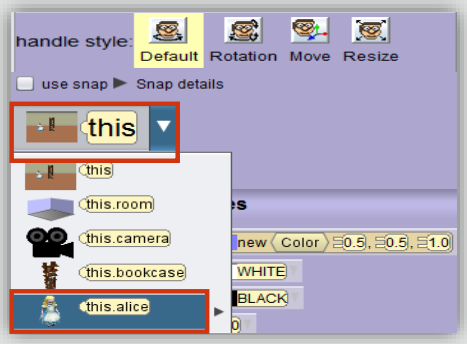
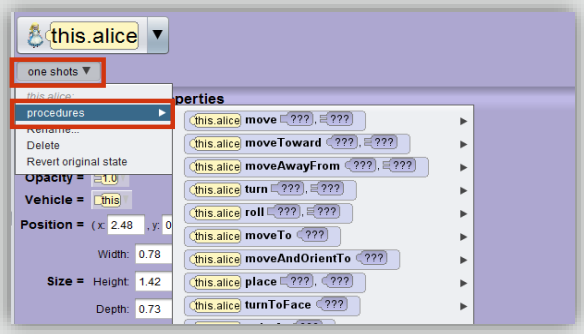
Both of these methods achieve the same results so it doesn't matter which one you use to access the one-shot procedure menu.

Steps to Use One-Shot Procedures – Precise Positioning

- From the one-shots procedures menu, select the desired procedure
- Specify the argument values (direction and distance)
- The object will automatically re-position based on the procedure selected and the arguments specified





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Use each one of the one-shot procedures in turn and then undo the action so that you become familiar with the result of each procedure.

Positioning Example – Precise Positioning

- Sometimes it is convenient to have many instances positioned in the center of the scene
- For example:
  - If you want to add three playing card characters to the scene you can add them to the center of the scene first
  - Move them with one-shot procedures as opposed to trying to drag-and-drop them into the correct location in the room

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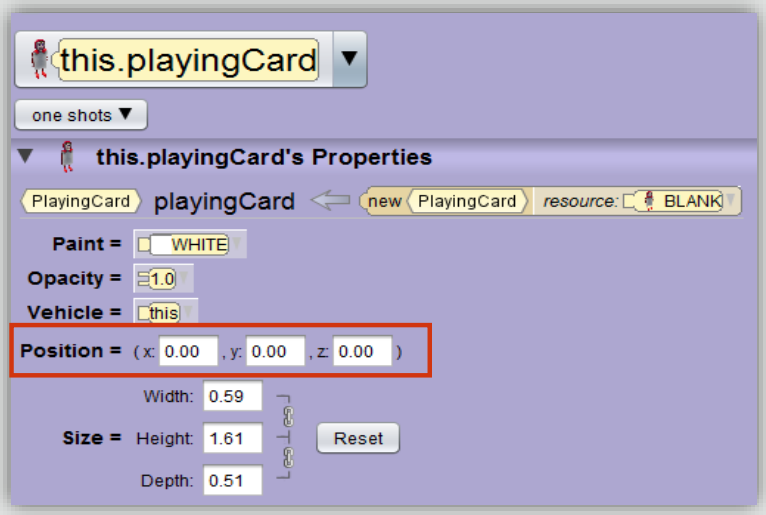
To add an object to the center of the scene just click on it in the gallery. The center is the default location for objects added this way. Remember you can add objects to other positions by manually placing them in the scene.

Position Property – Precise Positioning

- The Position property tells you where the object is positioned in the scene on the x, y, and z axes



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X – left to right
Y – up and down
Z – forward and backward

Steps to Position an Object Using Coordinates – Precise Positioning

- In the Properties panel, locate the Position property
- Enter a value in the x axes and press enter
- Enter a value in the y axes and press enter
- Enter a value in the z axes and press enter
- The object will automatically re-position to the coordinates entered in the x, y, and z axes fields
- You must press the enter key after entering each value

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Remember the object won't move to the specified position until you press the Enter key.

Steps to Use the Drag and Drop Method – Imprecise Positioning

- Select the object, or the sub-part of the object, using the cursor
- Select a handle style
- Each handle style presents rings or arrows to assist you with your positioning

- For example, the Move handle style will present three arrows to use in positioning the object along the x, y, and z axes
- Position the object with your cursor by selecting and dragging the rings that surround the object

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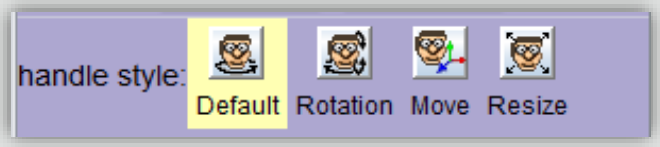
For scenery objects or non-important objects in your animation, imprecise positioning is normally acceptable.

Types of Handle Styles – Imprecise Positioning

Handle Style	Description
Default	Simple rotation and movement
Rotation	Rotate about the x, y, and z axes
Move	Move along the x, y, and z axes
Resize	Change the size of the object and stretch it along the x, y, and z axes **Note**: If you select a very large object in the scene, and then select the Resize handle, the positioning arrow that helps you resize the object may appear off of the screen If this happens, select the Resize handle and then use the scrolling button on your mouse to resize the object



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Each handle performs a specific action on the chosen object. Experiment with each until you are comfortable with the role of the handle.

Selected Object Properties Menu

- The Selected Object Properties menu in the Scene editor provides you with the ability to change the properties of the instance that is currently selected in the scene

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Modifying Properties

- Properties can be modified during scene setup and during animation execution
- For example:
  - Change the Opacity property of an instance to 0 during scene setup to make it disappear
  - Create a programming statement to set the Opacity property of the instance to 1 so the instance reappears in the scene during execution of the animation

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Every property that you set in the scene editor can be coded in the code editor.

Steps to Change an Instance's Properties in the Scene Editor

- Select the instance in the Scene editor
- Change properties such as its paint (color), opacity, or size using the menus in the properties panel
- The triangle in front of the Selected Object Properties button can hide or display the properties of an instance
- If the property fields for an instance are not displaying, click the triangle to display them

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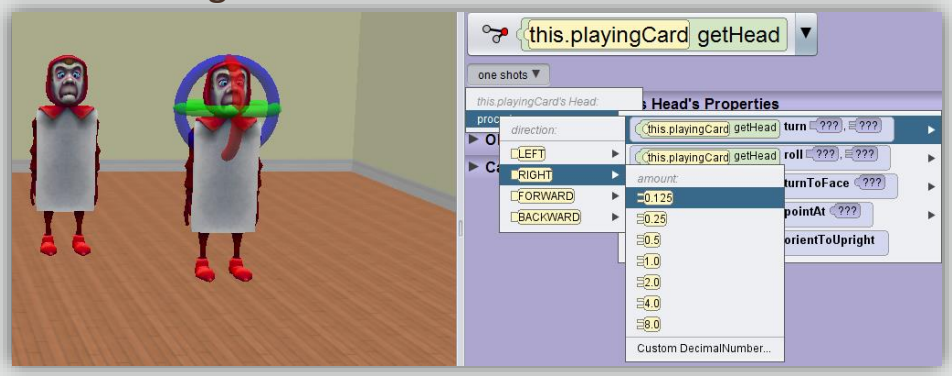
Positioning an Object's Sub-Parts

- Use handle styles to position an object's sub-parts during scene setup
- For example:
  - You may want an object's head looking to the right when the animation begins



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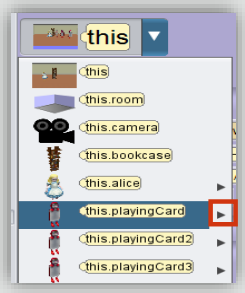
Moving the objects sub parts can make for a much more realistic look to your object at the beginning of the animation. Sub-part manipulation can take a long time to perfect, but is worth it as it produces a more natural animation.

Steps to Position Object Sub-Parts

- Select the instance from the object properties menu
- The right-pointing triangle next to the instance name indicates that there are additional menus for the instance's sub-parts
- Select the sub-part that you want to position



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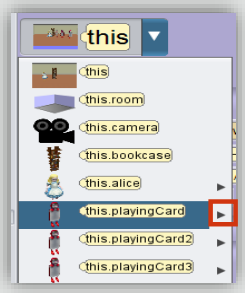
Steps to Position Object Sub-Parts

- Use the rings around the sub-part to position it
- Repeat these steps to position additional sub-parts
- Use the Undo feature when necessary



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Terminology

- Key terms used in this lesson included:
  - Orientation
  - One-shot procedure
  - Procedure
  - Properties

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Summary

- In this lesson, you should have learned how to:
  - Open a saved version of a project
  - Add multiple objects to a scene
  - Describe the difference between precise positioning and drag-and-drop (or imprecise) positioning
  - Use a one-shot procedure to precisely position an object in a scene
  - Edit properties of an object in the Scene editor
  - Describe three-dimensional positioning axes
  - Position the sub-parts of an object in the Scene editor

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