CHAPTER 7

Special Features: Sounds and Camera

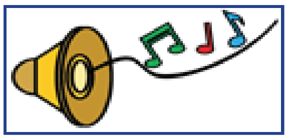
Introduction

In this section, we will show you some of Alice's special capabilities. Although this section is not essential in learning fundamental programming concepts, it is important to read because it presents fun ways to build great animations with special effects. Some of these techniques will be used in examples.

Learning Objectives

- To learn how to add audio files to your world by importing or recording sound
- To understand the different ways to use and control the camera during scene setup and while running an animation
- To add 3D text to your world
- To make objects invisible and visible
- To use other world properties

7-1 Sound



In animations, we sometimes need to communicate information or attract the viewer's attention, and for this purpose we use sound and text. Sound effects can be used as backgrounds for the scenes and audio files can be used in a dialogue between objects.

Two Ways to Add Sounds:

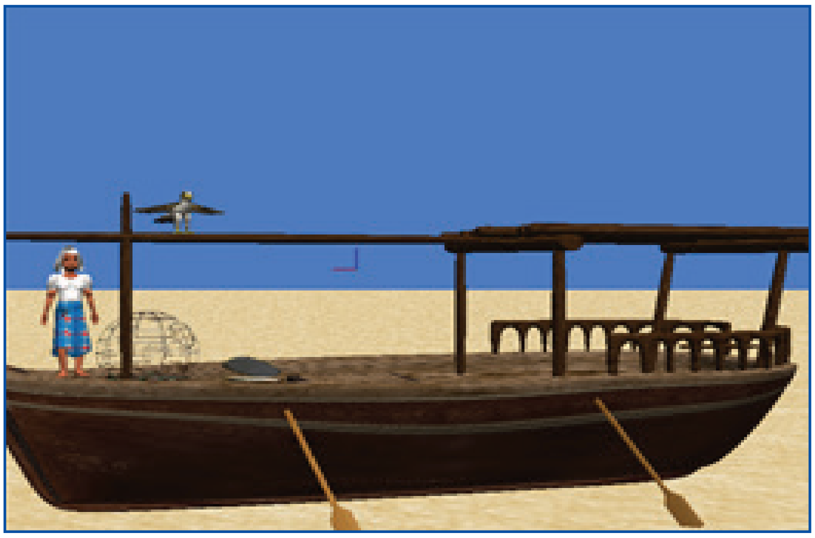
1. **Import Sound**
2. **Record Sound**

Working in Alice: "Parts of a Heritage Ship" Animation

The diver is doing a demonstration of the parts of an old ship. During the presentation, the diver moves on the ship and when passing by one of the parts, he states its name and use.

Identify Objects and Actions

The diver is doing a demonstration of the parts of an old ship. During the presentation, the diver moves on the ship and when passing by one of the parts, he states its name and use.



Create a world as in the previous figure. You will find all objects (Diver, Dhow, Gargoor, Oyster, Paddle, Falcon Lanner) in the Middle East folder.

The diver will move to a specific part of the ship and mention its name (spoken and written). The diver must perform the following instructions for each of the target parts.

Algorithm

```
Do in Order
    Diver moves to or points to the part
    Do Together
        Diver says part's name
        Play sound
```

The six target parts of the ship:

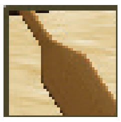
1. Beak or forepeak : is a vertical slab located at the rear of the ship.

2. Deck.

3. Masts or Poles: the wooden poles that carry the ship sails.

4. Rails.

5. Paddle : a wooden piece used to propel the ship.

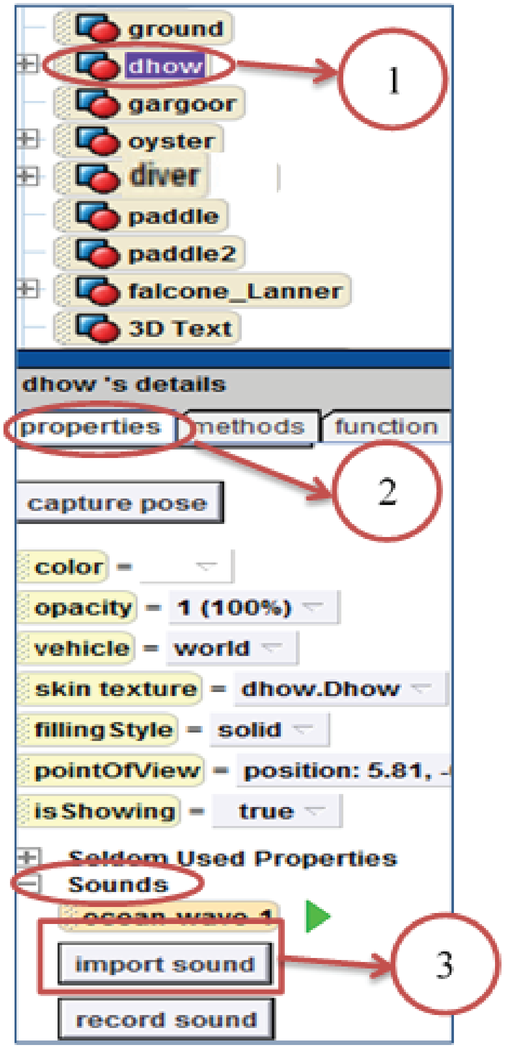


6. Hull.

Way 1: Import Sound

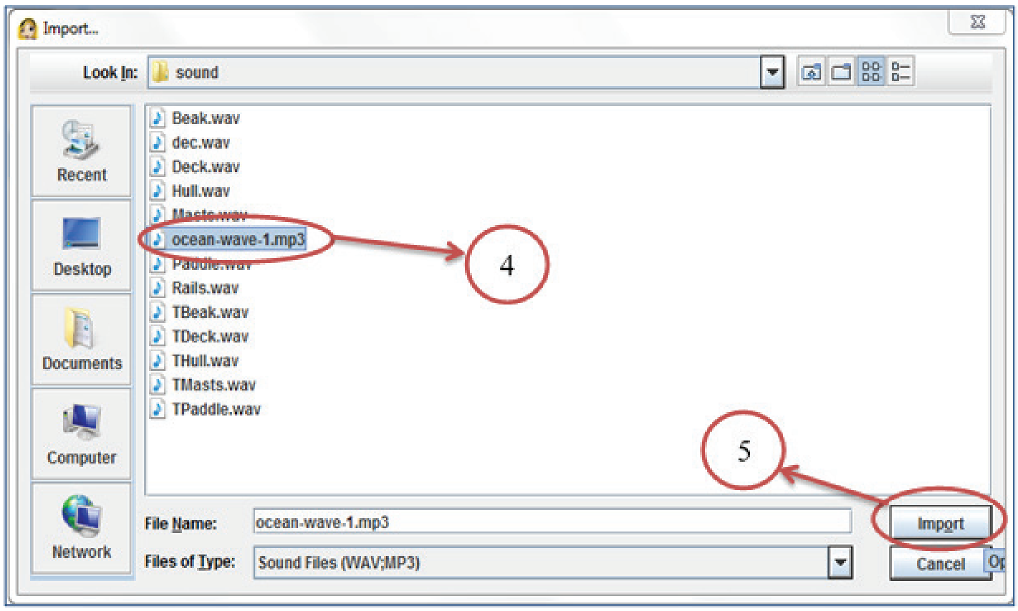
To add the sound of ocean waves:

1. Select the dhow from object tree.
2. Select the properties tab.
3. Select sounds and click on “import sound” button.

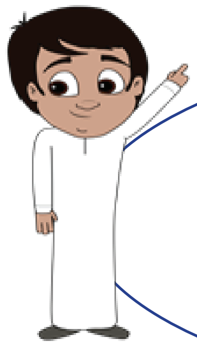


color =
opacity = 1 (100%)
vehicle = world
skin texture = dhow.Dhow
filling Style = solid
pointOfView = position: 5.81, -
isShowing = true

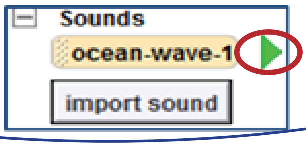
4. Choose the sound file to be used from the popup window.
5. Click on "import" button.



Look In: sound
File Name: ocean-wave-1.mp3
Files of Type: Sound Files (WAV;MP3)



The audio file will automatically appear in the properties list of the ship. You can click the green play arrow to test your file.



To add the audio file to your program:

1. Drag the command “play sound” from methods tab into the code editor.
2. Select the wave sound audio file from the dropdown menu.

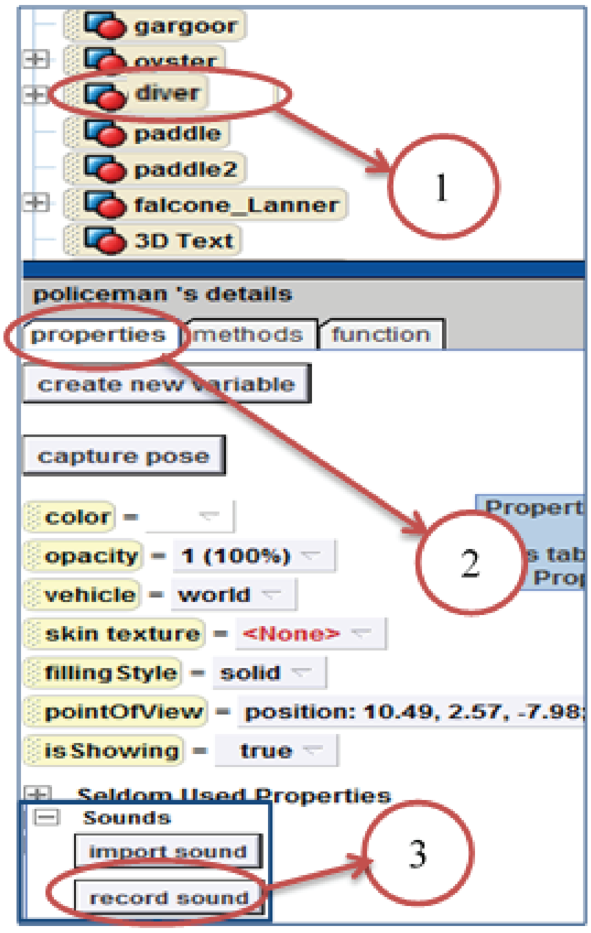
Alice supports the following audio file formats: “WAV” and “MP3”.

Way 2: Record Sound

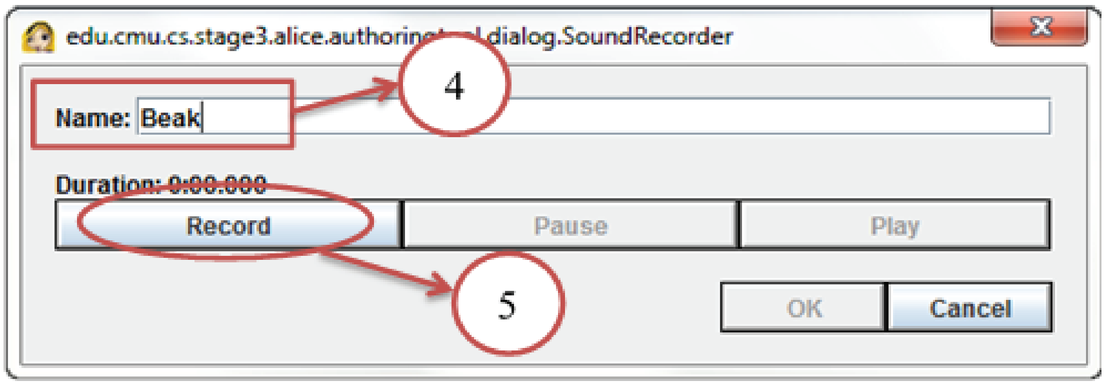
To make the diver mention ships parts orally and textually:

1. Select the diver from the object tree.
2. Select the properties tab.
3. Select sounds, then click on the “record sound” button (make sure the microphone works).

Note: in case the recording function of your computer setup doesn’t work in Alice, Alice can import sounds recorded in other applications, as long as they are MP3 and WAV files.



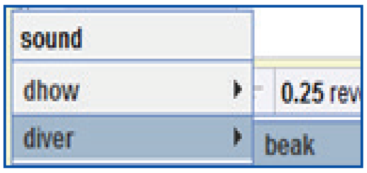
4. Type the audio file “Beak.”
5. Click on “record” button and say: “Beak.”



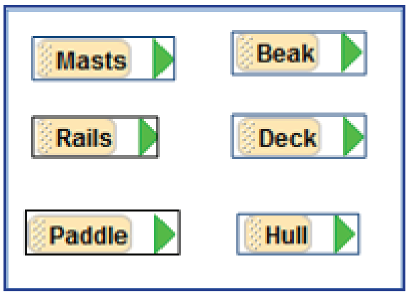
6. When you have finished recording, click the stop button.

To add the audio file to your program:

1. Drag the command “play sound” into the code editor.
2. Select the audio file “Beak” from the menu.



Repeat the previous steps (1 through 6) to record the other words. When you are finished, you will have the following audio files list in the properties tab of the diver.

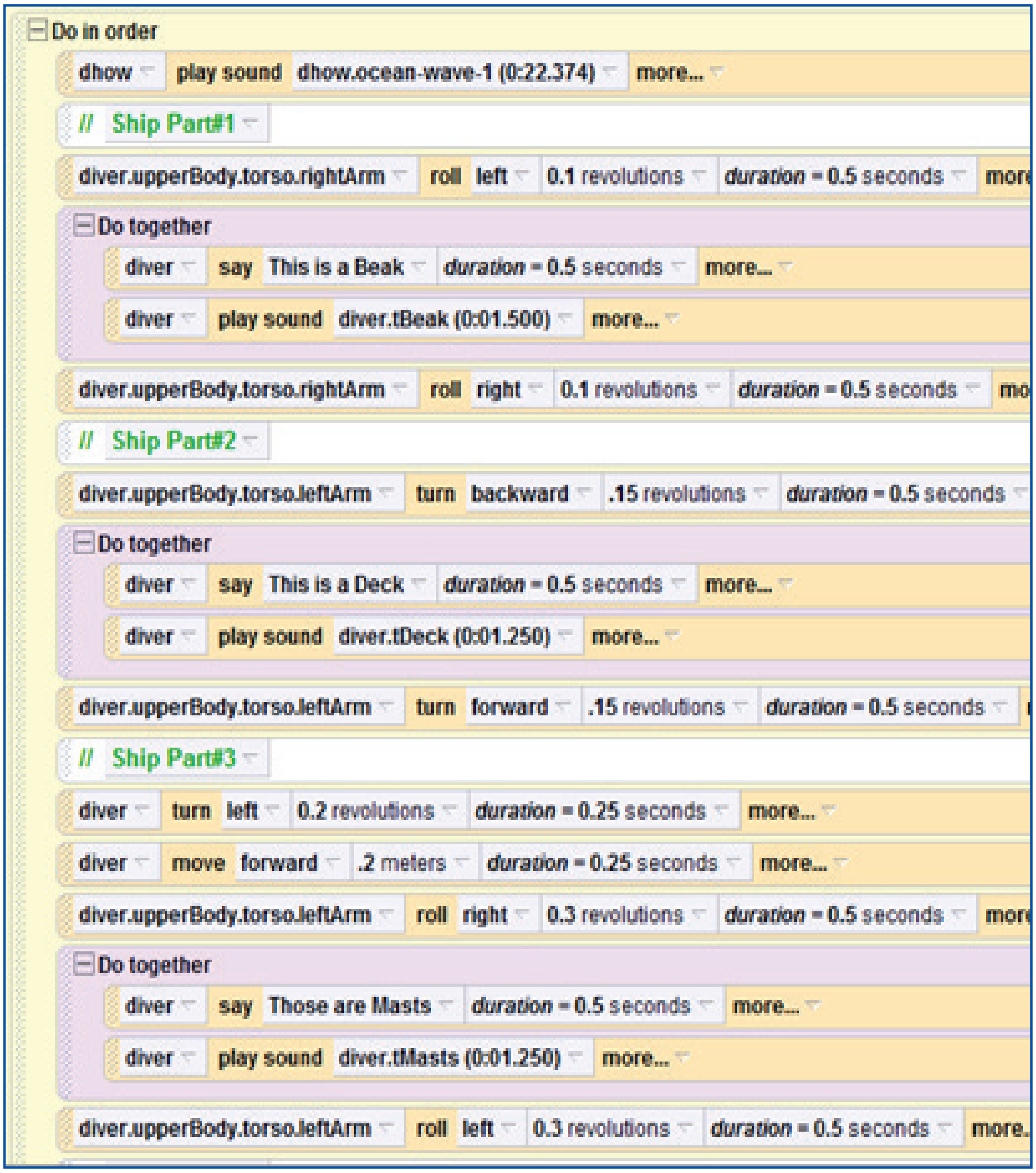


The algorithm of “Parts of a heritage ship” animation

Algorithm

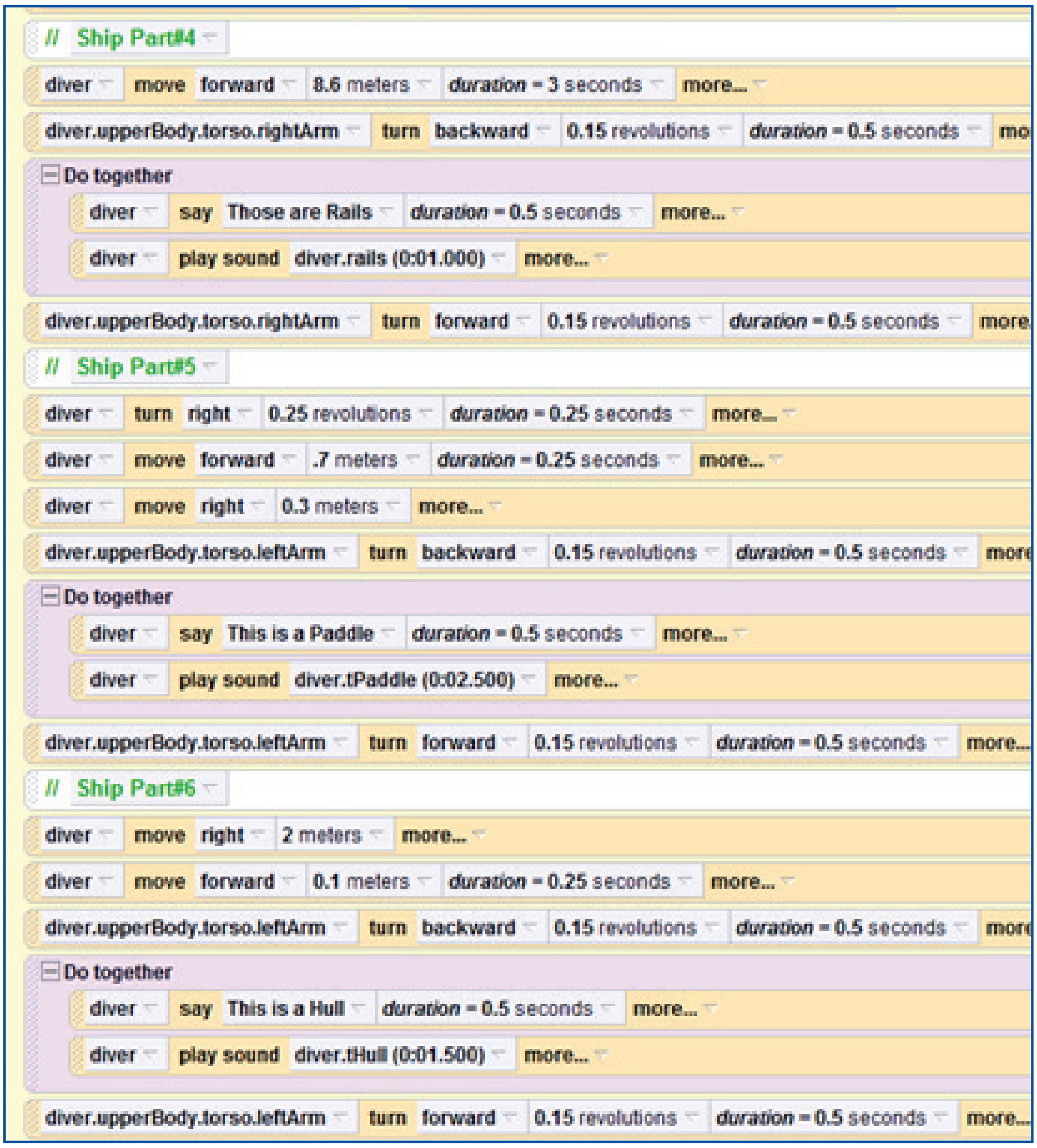
```
Do in Order
    Ship plays sound
    Diver points to Beak
    Do Together
        Diver says “Beak” or “This is a Beak”
        Diver plays sound named “Beak”
    Diver points to Deck
    Do Together
        Diver says “Deck” or “This is a Deck”
        Diver plays sound “Deck”
    Diver moves to Masts
    Do Together
        Diver says “Masts” or “Those are Masts”
        Diver plays sound “Masts”
    Diver moves to Rails
    Do Together
        Diver says “Rails” or “Those are Rails”
        Diver plays sound “Rails”
    Diver moves to Paddle
    Do Together
        Diver says “Paddle” or “This is a Paddle”
        Diver plays sound “Paddle”
    Diver moves to Hull
    Do Together
        Diver says “Hull” or “This is a Hull”
        Diver plays sound “Hull”
```

“Parts of a heritage ship” implemented program – 1



```
Do in order
    dhow   play sound   dhow.ocean-wave-1 (0:22.374)   more...
    // Ship Part#1
    diver.upperBody.torso.rightArm   roll   left   0.1 revolutions   duration = 0.5 seconds   more
    Do together
        diver   say   This is a Beak   duration = 0.5 seconds   more...
        diver   play sound   diver.tBeak (0:01.500)   more...
    diver.upperBody.torso.rightArm   roll   right   0.1 revolutions   duration = 0.5 seconds   mo
    // Ship Part#2
    diver.upperBody.torso.leftArm   turn   backward   .15 revolutions   duration = 0.5 seconds
    Do together
        diver   say   This is a Deck   duration = 0.5 seconds   more...
        diver   play sound   diver.tDeck (0:01.250)   more...
    diver.upperBody.torso.leftArm   turn   forward   .15 revolutions   duration = 0.5 seconds
    // Ship Part#3
    diver   turn   left   0.2 revolutions   duration = 0.25 seconds   more...
    diver   move   forward   .2 meters   duration = 0.25 seconds   more...
    diver.upperBody.torso.leftArm   roll   right   0.3 revolutions   duration = 0.5 seconds   more
    Do together
        diver   say   Those are Masts   duration = 0.5 seconds   more...
        diver   play sound   diver.tMasts (0:01.250)   more...
    diver.upperBody.torso.leftArm   roll   left   0.3 revolutions   duration = 0.5 seconds   more.
```

“Parts of a heritage ship” implemented program – 2



```
// Ship Part#4
diver  move  forward  8.6 meters  duration = 3 seconds  more...
diver.upperBody.torso.rightArm  turn  backward  0.15 revolutions  duration = 0.5 seconds  mo
Do together
    diver  say  Those are Rails  duration = 0.5 seconds  more...
    diver  play sound  diver.rails (0:01.000)  more...
diver.upperBody.torso.rightArm  turn  forward  0.15 revolutions  duration = 0.5 seconds  more
// Ship Part#5
diver  turn  right  0.25 revolutions  duration = 0.25 seconds  more...
diver  move  forward  .7 meters  duration = 0.25 seconds  more...
diver  move  right  0.3 meters  more...
diver.upperBody.torso.leftArm  turn  backward  0.15 revolutions  duration = 0.5 seconds  more
Do together
    diver  say  This is a Paddle  duration = 0.5 seconds  more...
    diver  play sound  diver.tPaddle (0:02.500)  more...
diver.upperBody.torso.leftArm  turn  forward  0.15 revolutions  duration = 0.5 seconds  more...
// Ship Part#6
diver  move  right  2 meters  more...
diver  move  forward  0.1 meters  duration = 0.25 seconds  more...
diver.upperBody.torso.leftArm  turn  backward  0.15 revolutions  duration = 0.5 seconds  more
Do together
    diver  say  This is a Hull  duration = 0.5 seconds  more...
    diver  play sound  diver.tHull (0:01.500)  more...
diver.upperBody.torso.leftArm  turn  forward  0.15 revolutions  duration = 0.5 seconds  more...
```

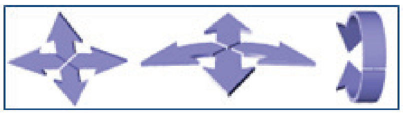
7-2 Camera

The camera adds excitement and fun to fantasy worlds, thus controlling the camera is essential for successful movies and games. Positioning the camera and controlling its motion are needed both at scene setup and while the animation is running.

Using the Camera When Creating the Initial Scene

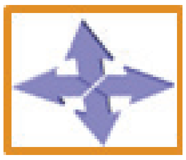
Alice provides two ways to control the camera when setting up the initial scene.

Way 1: Camera control buttons

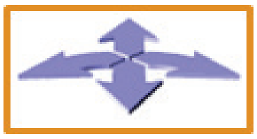


The camera controls in the Alice scene editor allow us to move the camera while creating the initial scene and to adjust objects in appropriate locations. However, this technique is not available during running time and therefore Alice provides other methods to control the movement of the camera.

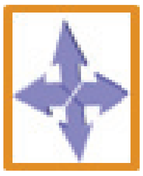
Techniques and Tools



Move the camera up, down, left and right.



Turn the camera backward, forward, left and right.



Turn the camera backward and forward.

Way 2: Using dummy objects for setting the camera view point

One of the ways to move the camera around the scene is to create one or more dummy objects to mark locations where the camera will be used at runtime.

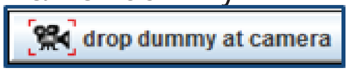
Dummy Objects

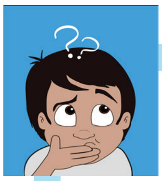
Invisibile objects that are used as targets to which the camera will move during the animation.

After creating the dummy objects and positioning them, we will write instructions to set the camera's point of view to the dummy object's point of view. At runtime, this instruction will move the camera to the object and make its viewpoint from that location.

Creating two dummy objects to view the scene from the front and the back

1. To drop a dummy object at the current location of the camera, do the following:
    a. Click the "more controls" button, you'll find it below the mouse controls
    b. From the expanded control panel, click the "*drop dummy at camera*" button. A dummy object will be created (at the current location of the camera) and added to the object tree with the name "dummy"





Think

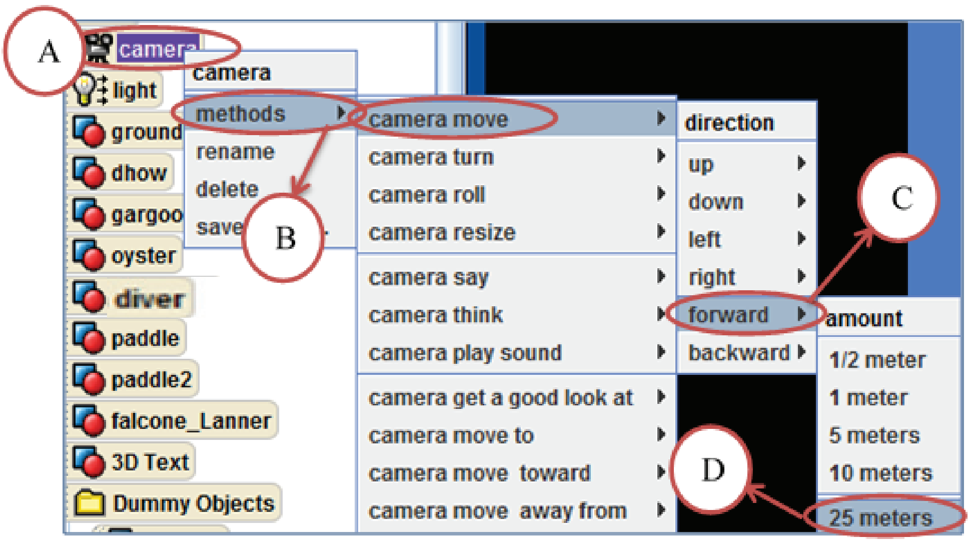
How can we show the scene from the rear?

Imagine you're standing somewhere and want to move to stand in the opposite direction (as if there's someone standing in front of you directly and you want to stand in his place), what will you do then?

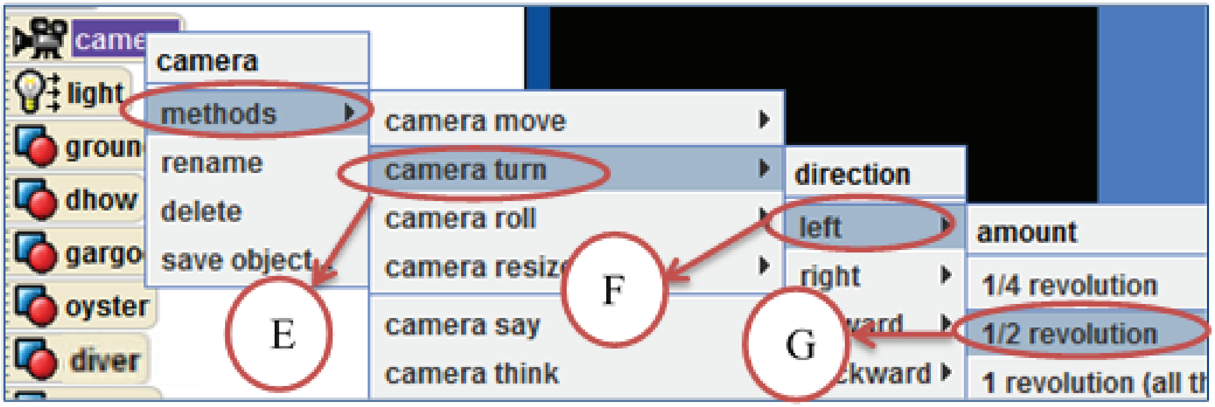
You can move forward in a straight line (to the desired point) and then turn right (or left) half revolution (180°).
The camera will move in the same way to display the scene from the opposite direction.

2. Reposition the camera to view the scene from the back
    a. Select the camera from object tree.

c. Select “forward” from menu.
b. Right click the mouse and select “camera move” method.
d. Select “25 or 30 meters” from menu as shown in figure.



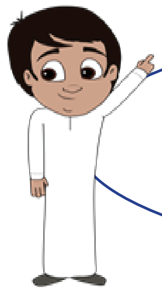
e. Right click the mouse and choose “camera turn” method.
f. Select “left” from the menu.
g. Select “1/2 revolution” from the dropdown menu as shown in figure.



The camera now is facing in the opposite direction and you should be able to see the scene from the back.

h. Click on the button “drop dummy at camera” again.

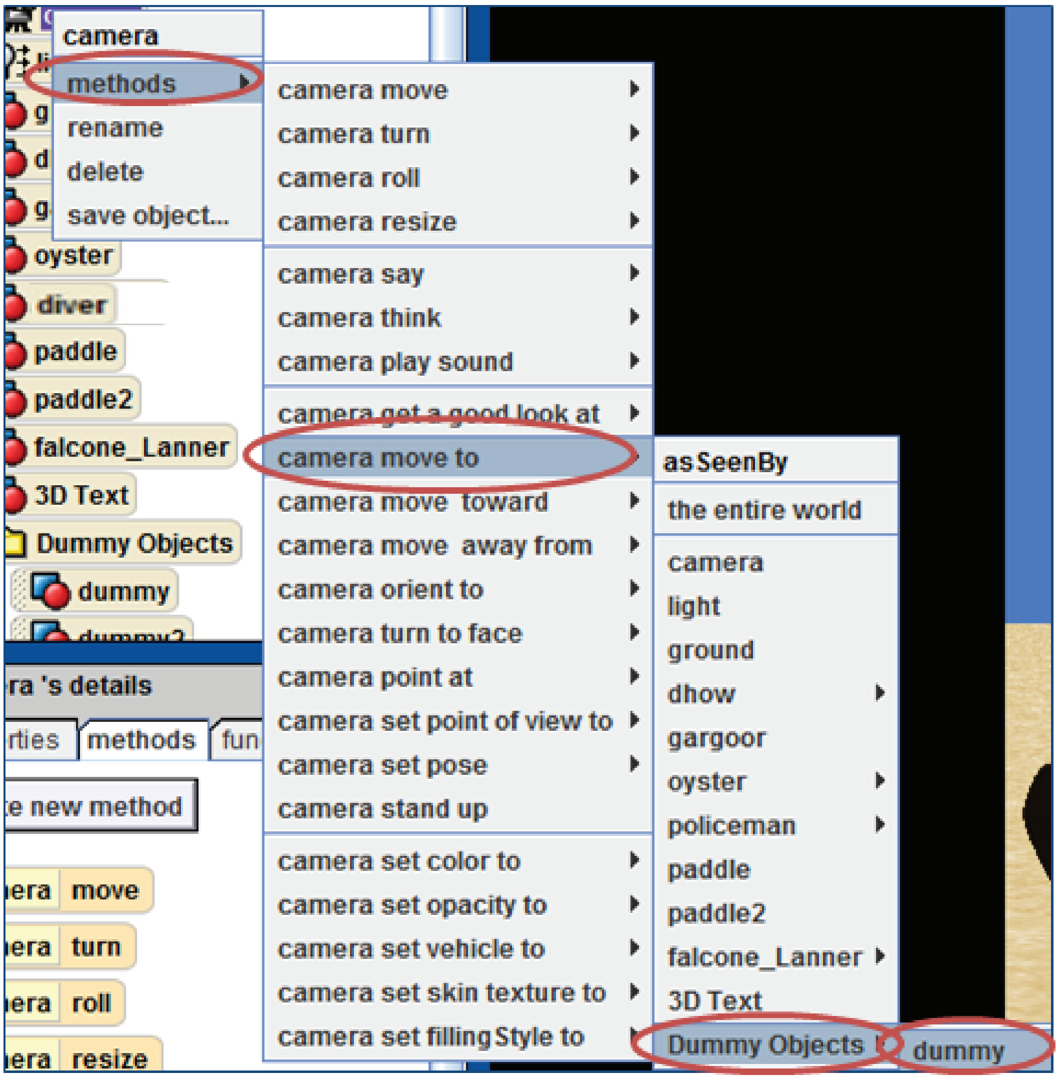
Another dummy object will be added to the object tree with the name “dummy 2” and a red marker will appear on the screen to indicate its location.



Two dummy objects were created to view the scene from front and back. Similarly, you can create other objects to display the scene from left and right.

What is the extra step required to achieve this?

3. To return the camera to the front view, select “Dummy” from the dropdown menu of the command “camera move to”.



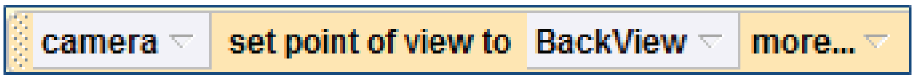
Using Camera at Runtime

We can write instructions to move the camera at runtime by applying one of these ways:

Way 1: Changing the view point

To make the camera's viewpoint the same as a dummy object's viewpoint.

1. Select the camera from object tree.
2. Drag the command "set point of view" into code editor.
3. Select the dummy object for the point of view.



```
camera ▿ set point of view to BackView ▿ more... ▿
```

We renamed the dummy objects as *"frontView"* and *"backView"* to make it easy to remember.

At runtime, you will notice the movement
of the camera to the back of the scene and its point of view
will be of that location.

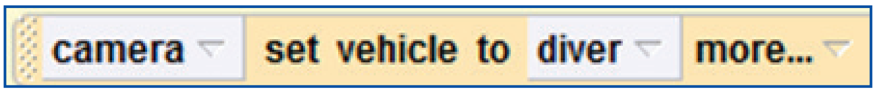
Way 2: Following a particular object

It is possible to make the camera track the movement of a particular object at runtime by changing the *"vehicle"* feature of the camera.

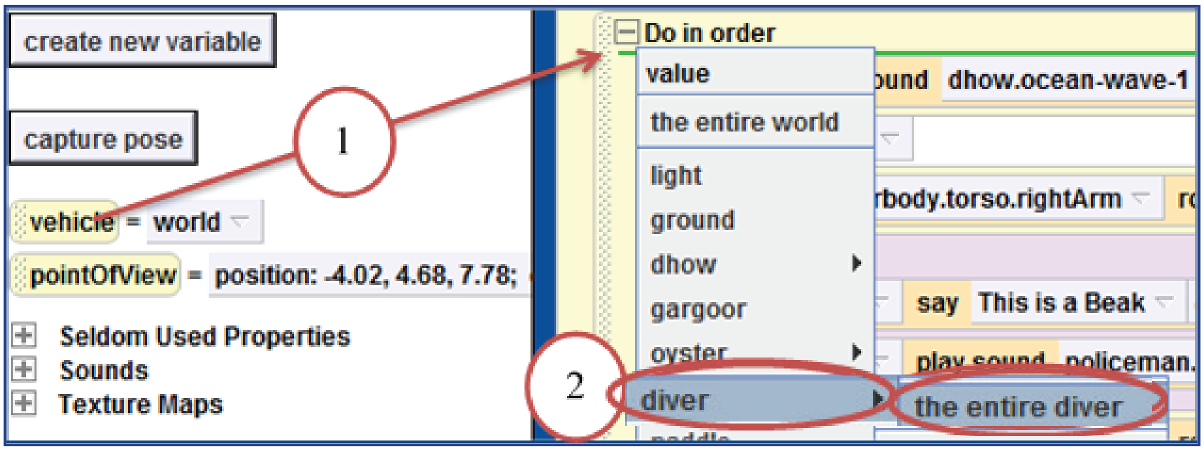
To make the camera track the diver:

1. After selecting the camera, drag the command "vehicle" into the code editor.
2. Select the diver from the dropdown menu.

The instruction will be as follows:



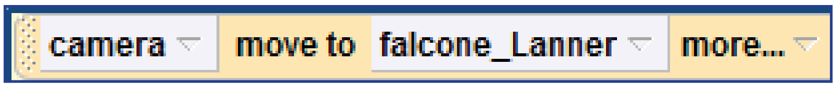
```
camera ▿ set vehicle to diver ▿ more... ▿
```



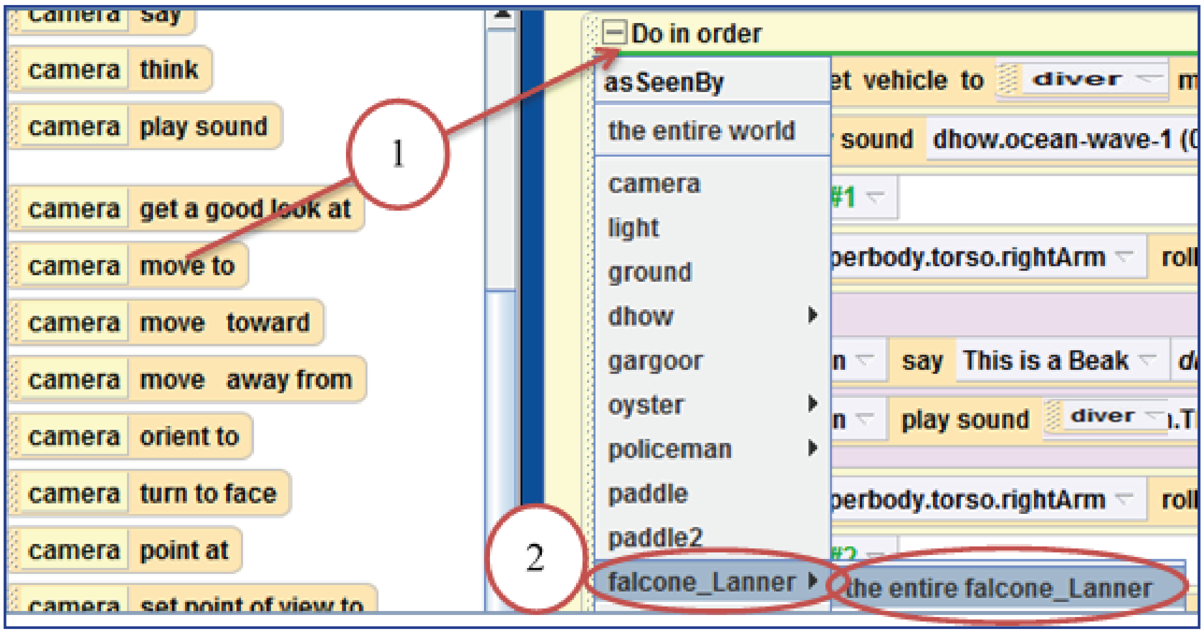
Way 3: Moving camera to a certain point

To make the camera move to a target point (the falcon):

1. After selecting the camera from the object tree, drag the command “move to” into the code editor.
2. Select the falcon from dropdown menu.



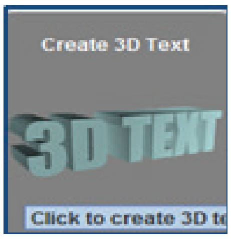
camera move to falcone_Lanner more...



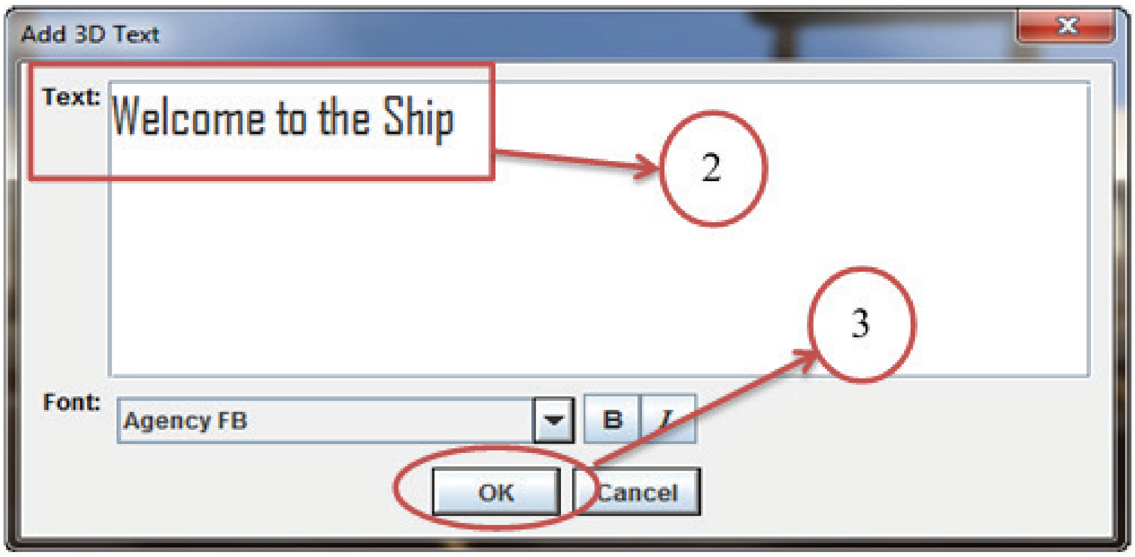
7-3 Adding 3D Text

Text is meant to deliver information to animation viewers and game players. For example, the phrase “You Win” is used to denote the player wins.

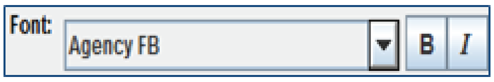
To add a 3D text object:

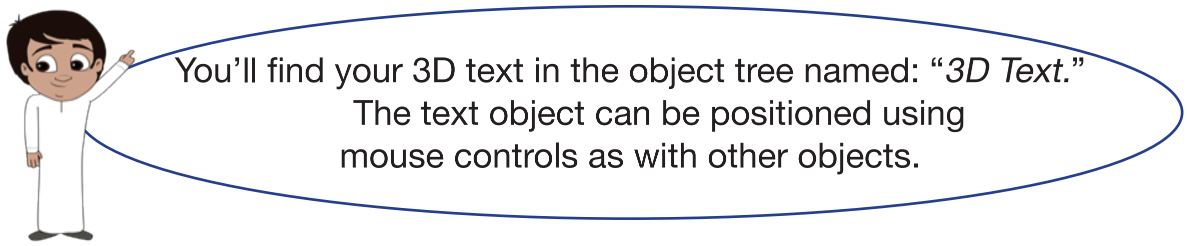


1. Click on *“Create 3D text”* in the local gallery.
2. Type your text (e.g. “Welcome to The Ship”) in the popup text dialog box.
3. Click Ok.



The dialog box allows font, bold and italic selections.



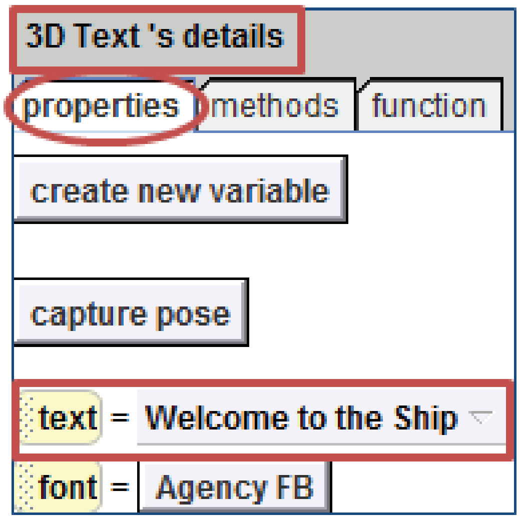


You’ll find your 3D text in the object tree named: “*3D Text.*” The text object can be positioned using mouse controls as with other objects.

Welcome to the Ship

To modify the text in the object string:

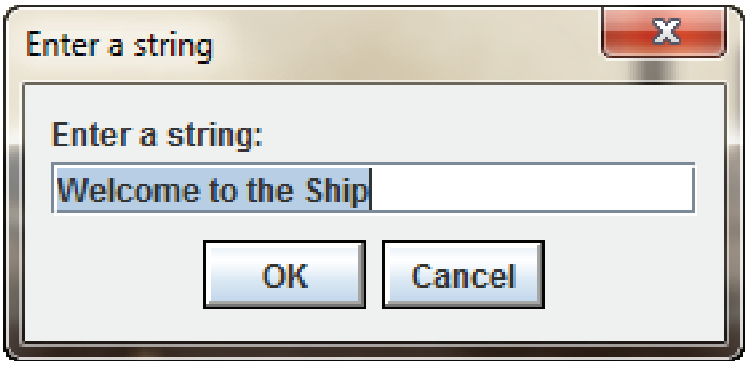
1. Click on the text in the properties list



text = Welcome to the Ship

font = Agency FB

2. Enter a new string of text in the popup box



Enter a string:

Welcome to the Ship

7-4 Visibility Properties

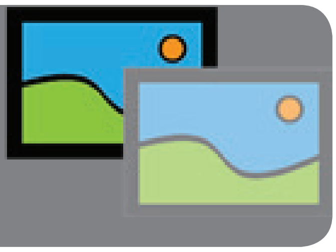
Visible and Invisible Objects

Special properties such as making an object visible or invisible are used in games and animations to make it more fun and dazzling or to achieve certain purpose. In this section, we will present the techniques Alice provides to change the visibility of objects.

Way 1: Opacity property

Opacity

The amount/percentage of opaqueness of an object; how hard it is to see through.

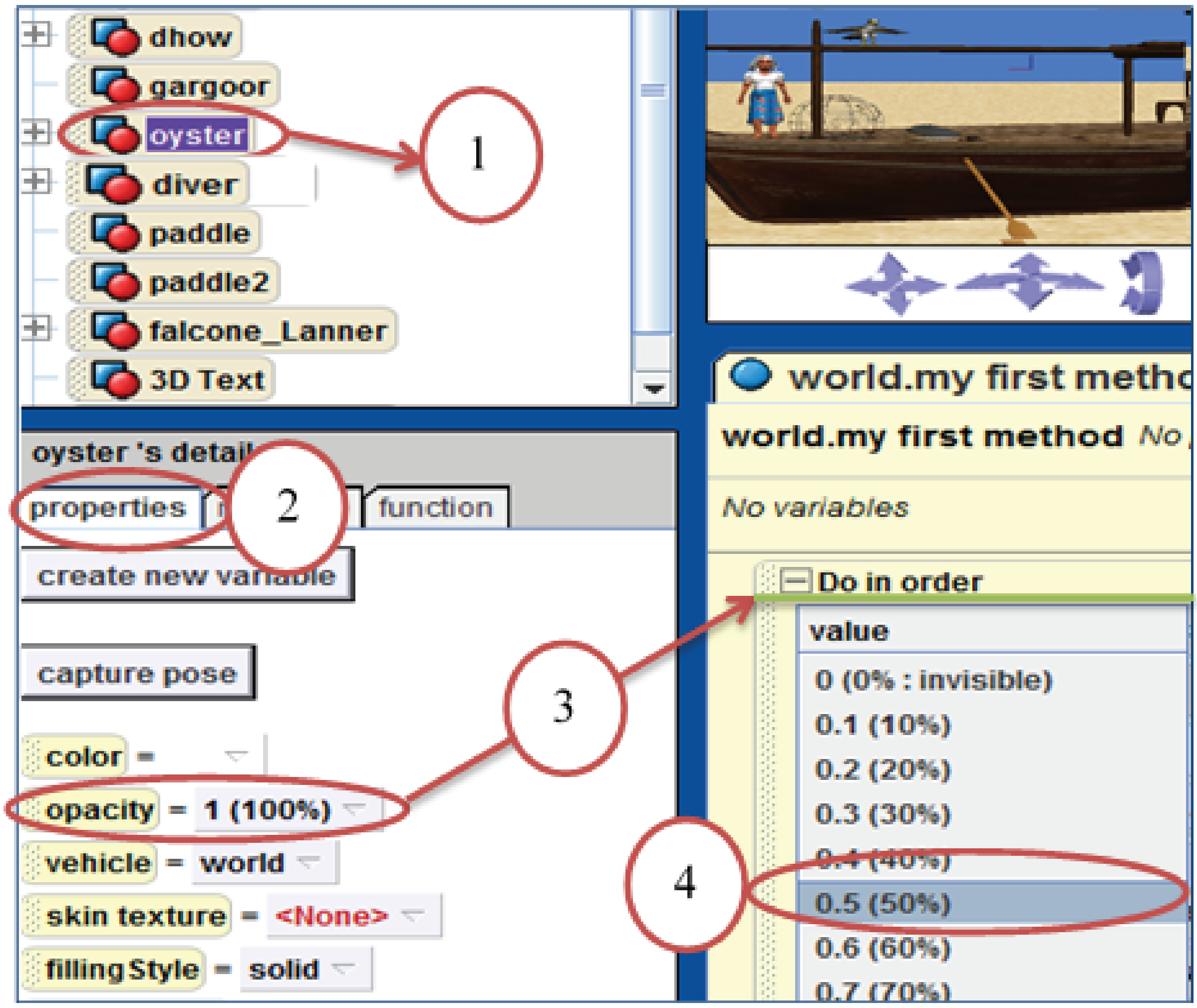


We can make objects less visible in Alice by changing their opacity property. As opacity decreases, an object becomes less clear and difficult to see. At 0% opacity, the object totally disappears.

Note that when an object disappears, it does not mean that it has been deleted. It still exists in the world but is not visible on screen.

To change the opacity of the Oyster in the “myShip” world:

1. Select the oyster from the object tree.
2. Select the properties tab.
3. Drag the opacity tile into the editor.
4. From the dropdown menu, select the opacity percentage (e.g. 0.5 or 50%). When the world runs, you will notice that the oyster becomes less clear.



color =

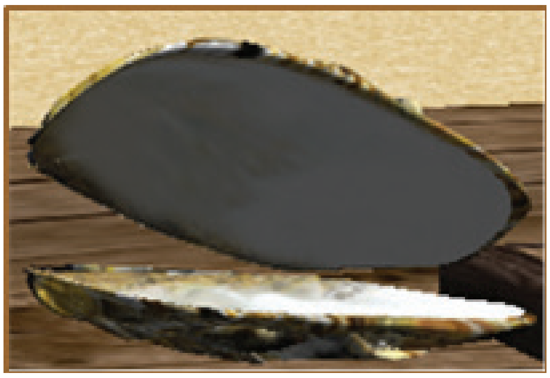
opacity = 1 (100%)

vehicle = world

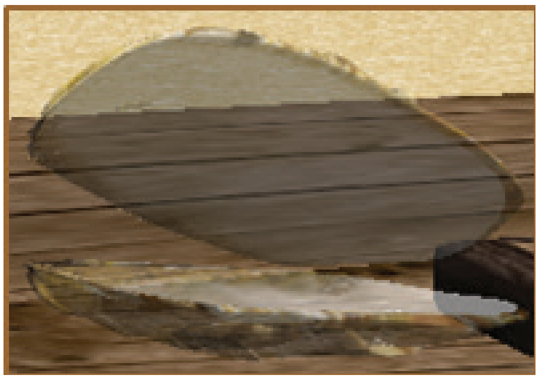
skin texture = <None>

filling Style = solid

Note the effect of the oyster's visibility at 100% and 50% opacity.



100% Opacity



50% Opacity

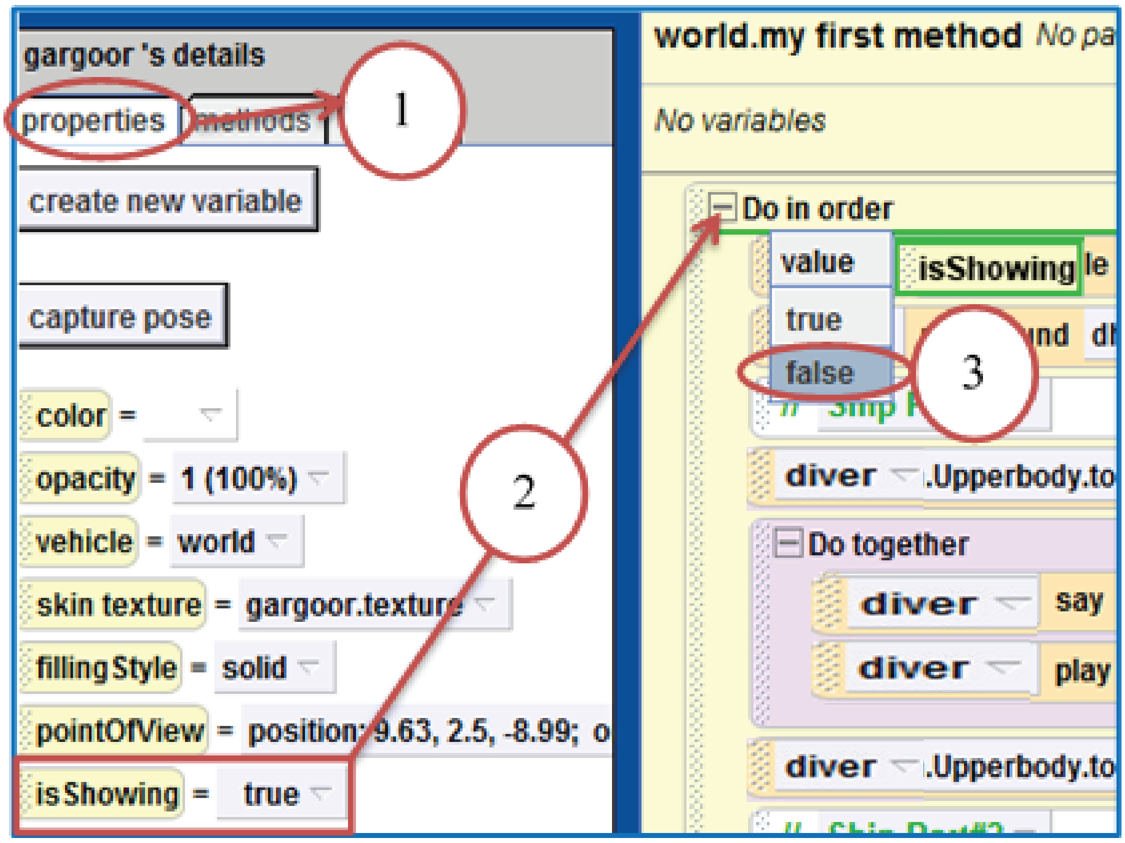
Way 2: "is Showing" property

Each object in Alice has a property called *"is Showing"* that has one of two Boolean values: *True* (the object is 100% visible) or *False* (the object is 0% visible or invisible). When an object is first added to the world, its "is Showing" property is set to True by default. This feature is extremely useful in game-like programs where we want to signal the end of the game by presenting "You win" or "Game over" phrases (achieved by changing the "is Showing" value from false to true).

As in the opacity property, when the "is Showing" property of an object is false, it simply means the object is not displayed on the screen but it still exists.

To change the "is Showing" property of the gargoor:

1. Select the properties tab of the gargoor.
2. Drag the "is Showing" tile into code editor.
3. Select "false" from the popup menu.

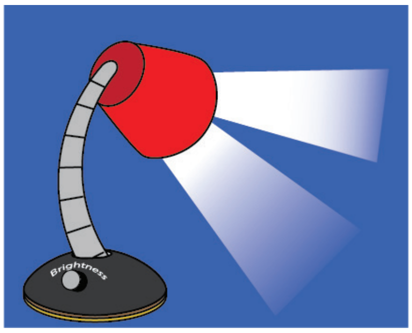


color =
opacity = 1 (100%)
vehicle = world
skin texture = gargoor.texture
filling Style = solid
pointOfView = position: 9.63, 2.5, -8.99; o
isShowing = true

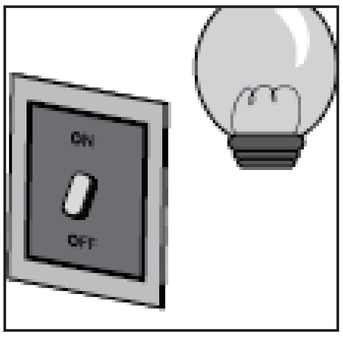
isShowing
diver .Upperbody.to
diver say
diver play
diver .Upperbody.to

The relationship of opacity and “is Showing” properties

Although they are related and similar effects, opacity and “is Showing” work differently. The “is Showing” property is strictly true or false like a light switch. The opacity property is a sliding scale, like a dimmer switch that can adjust the amount of illumination.



Opacity



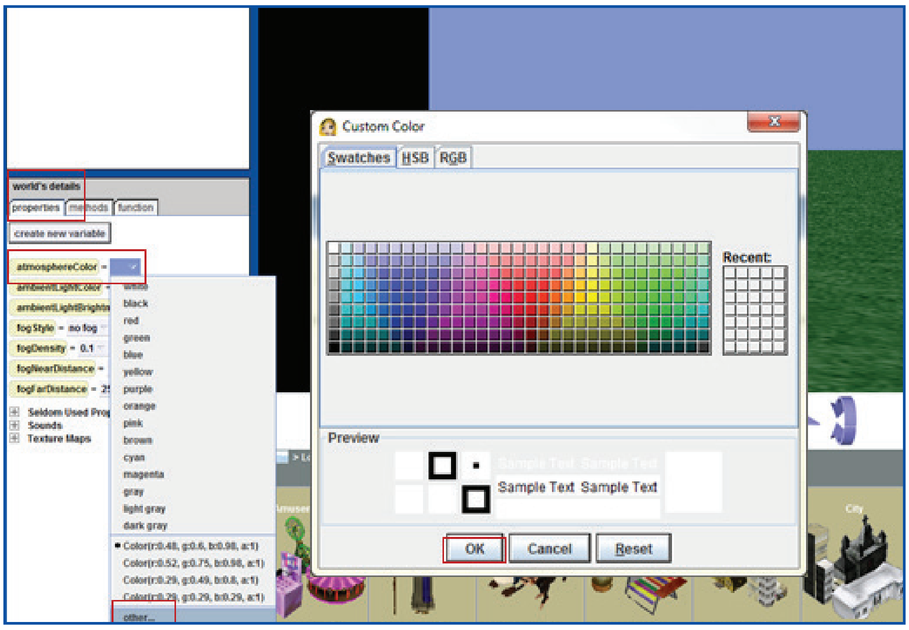
is Showing

7-5 World Properties

There are world properties that help change the mood and add special effects to your scenes.

1. Atmosphere Color:

- Select the properties tab of the world.
- Click on the image to the right of atmosphereColor.
- Select a color from the menu. If you don’t see the color you want, click «other» and a panel of colors will come up.
- Select the color and press OK.

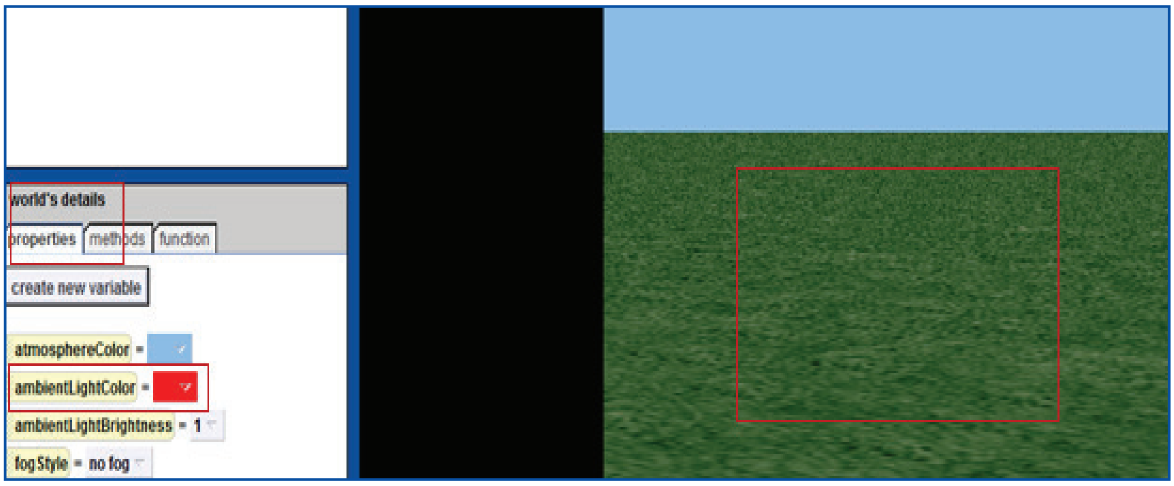


fog Style = no fog

fogDensity = 0.1

2. Ambient Light Color: to set a shade over the whole world.

- Select the properties tab of the world.
- Click on the image to the right of ambientLightColor.
- Select a color of your preference from the menu.



world's details

atmosphereColor =

ambientLightColor =

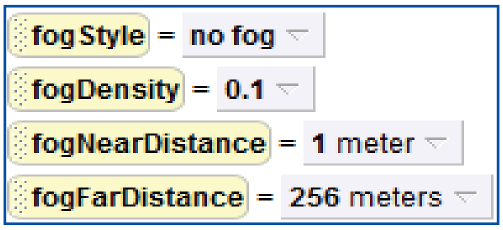
ambientLightBrightness = 1

fogStyle = no fog

3. Fog: Alice gives you the option to create foggy scenes, like the fog in the mornings in Qatar.

There are four properties to consider:

- fogStyle
- fogDensity
- fogNearDistance
- fogFarDistance



fogStyle = no fog

fogDensity = 0.1

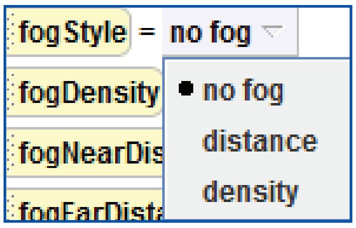
fogNearDistance = 1 meter

fogFarDistance = 256 meters

The fog density refers to the thickness of the fog in the scene, and it has values that range between 0.0 and 1.0. You can set the value to a larger number, but it has no effect (it is similar to opacity in that sense).

The fog style has three values:

- no fog
- distance
- density



fogStyle = no fog

Rules if fogStyle is set to:

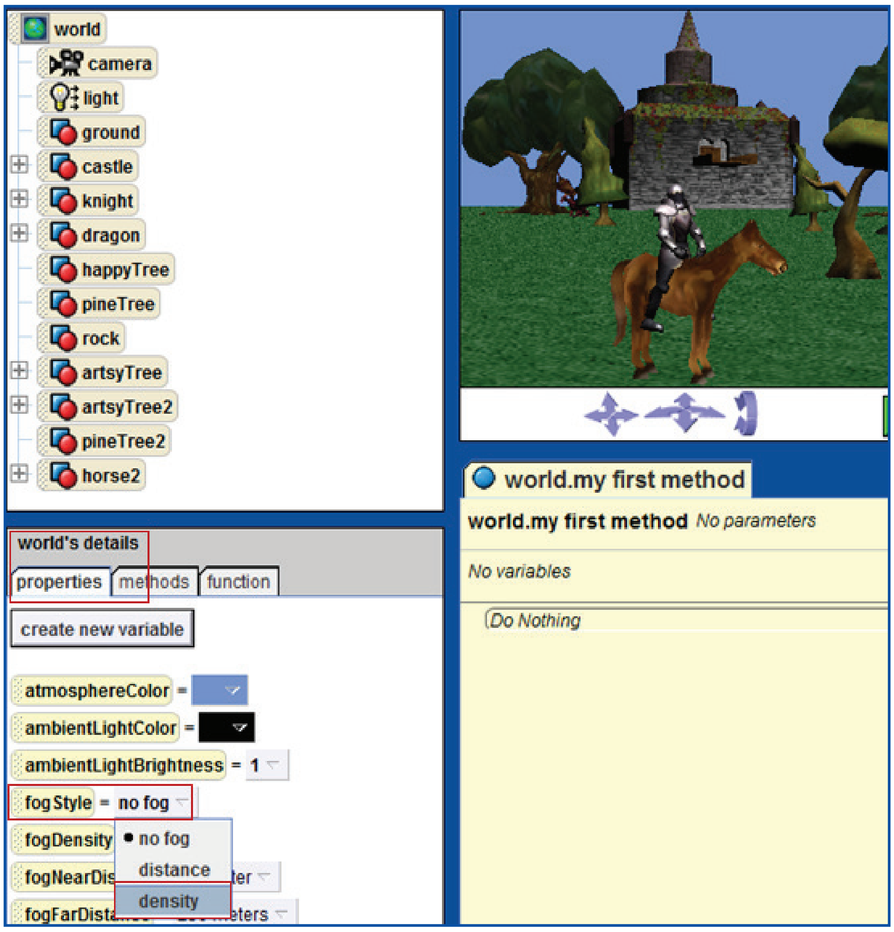
- *"no fog,"* no matter what the values for the other three properties, there will be no fog.
- *"density,"* Alice uses the fogDensity value and essentially ignores the distance properties, so distance values will have no real effect on the scene.
- *"distance,"* Alice ignores the density value under the "distance" setting, which means that the fog starts at the nearDistance (from the camera) measurement and objects will completely disappear when they reach the farDistance (from the camera).

Let's try it out

Consider a world with a knight searching for a dragon in a forest. We would like to give the impression that the dragon is hiding from the knight, so we'll increase the fog density.

To add fog using density value:

- Select properties tab of the world.
- Click on the image to the right of fogStyle, and select "density."



world.my first method No parameters

No variables

Do Nothing

atmosphereColor =

ambientLightColor =

ambientLightBrightness = 1

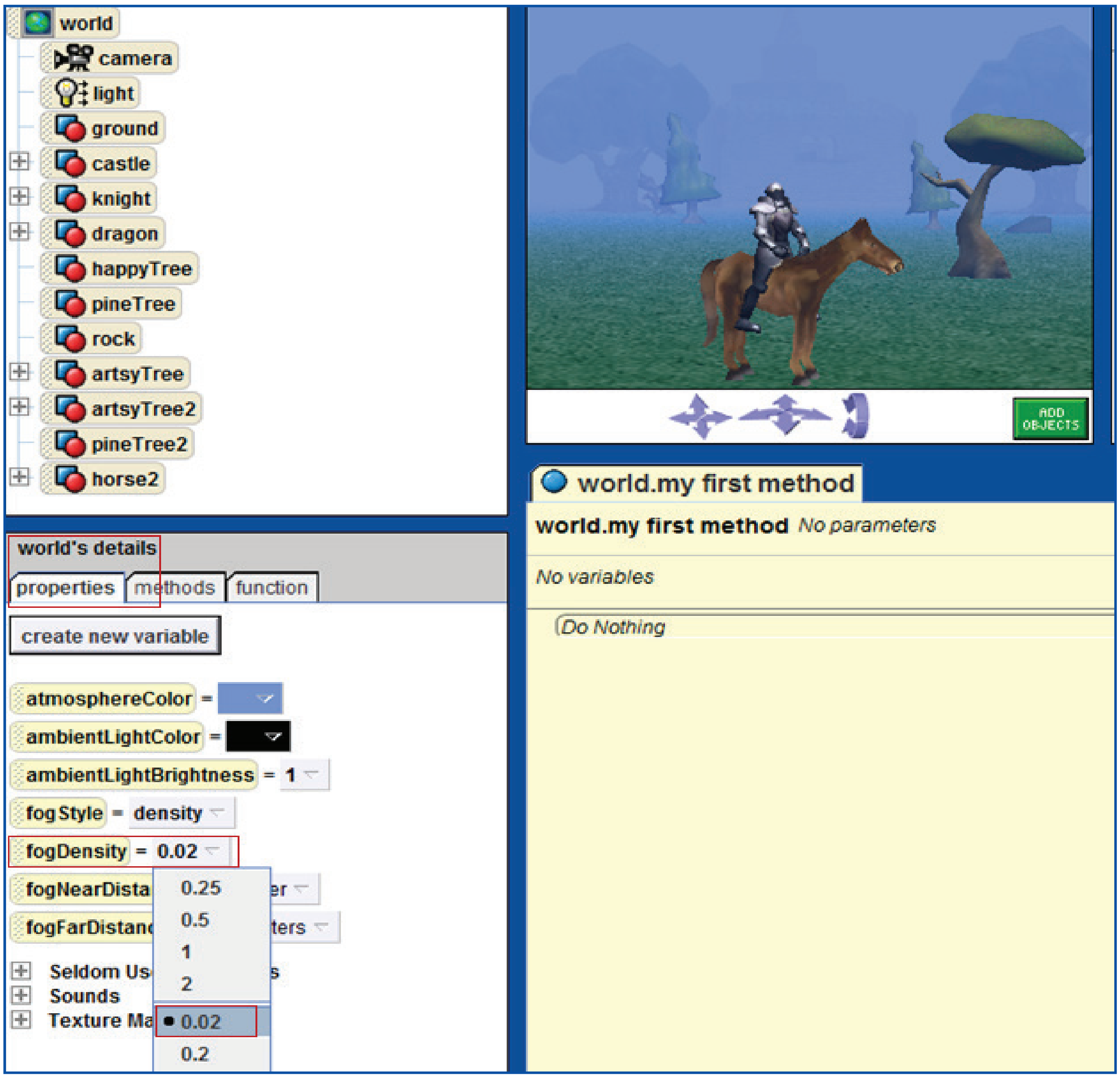
fogStyle = no fog

fogDensity

fogNearDis… ter

fogFarDista… eters

To adjust the fog density, click the fogDensity tile and adjust the value to achieve the desired effect.



atmosphereColor =
ambientLightColor =
ambientLightBrightness = 1
fogStyle = density
fogDensity = 0.02
fogNearDista… …er
fogFarDistan… …ters

world.my first method

world.my first method *No parameters*

No variables

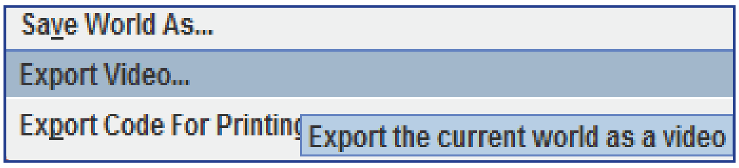
Do Nothing

Your turn! Add fog using the distance properties.

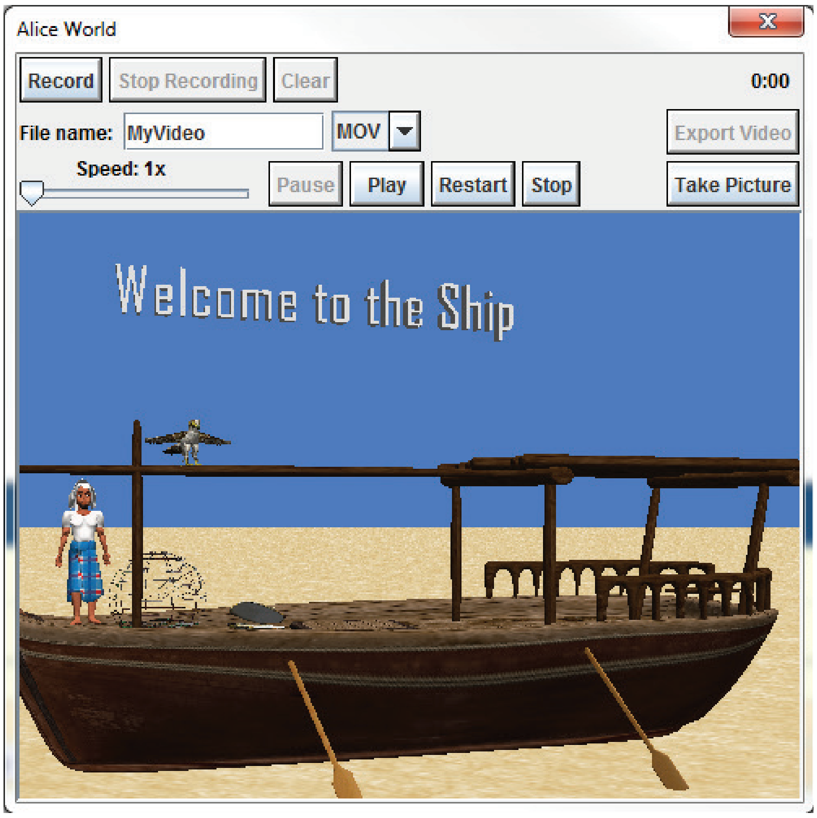
Techniques and Tools

Save your world as a video

1. Select “file” then “export vdeo” from the main menu.



You will see this window

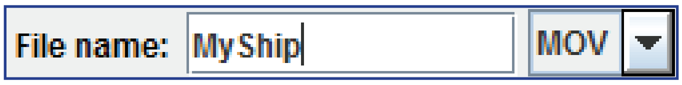


File name: MyVideo MOV

Speed: 1x

Techniques and Tools

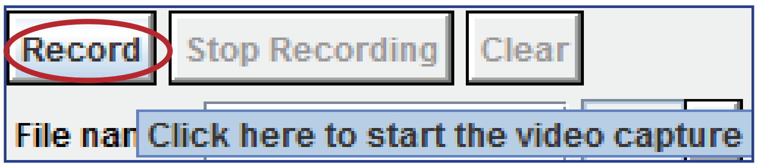
You can change the file name and file type.



File name: MyShip

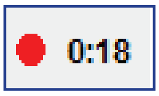
MOV

2. Click the “record” button in the popup window.



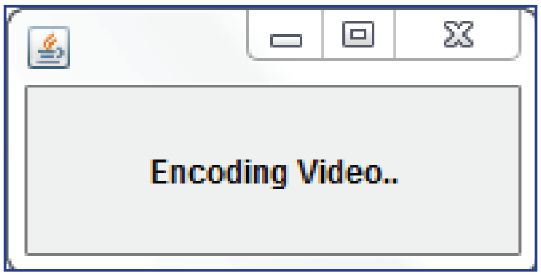
Click here to start the video capture

You will notice the appearance of the recording red mark on the right side of the screen.



3. Click the “stop recording” button at the end of the film.
4. Click “export video” button to export your world as a video file.

This screen will appear after clicking the export button.



Encoding Video..

Finally, you will find your video saved in the same folder as your world “MyShip.”

Note: Alice provides the video export feature to support the creation of short videos/movies which are less than 2 minutes with short sound files. In case you need to create a more expansive video, try other movie maker applications such as Camtasia (for PC) or videoCapture (for Mac).

Working in Alice

First: Al-Zubarah Fort

Find information from the Internet about the historic Zubarah Fort in Qatar and its history and structure. Create a world in Alice containing the fort, the sheikh and other objects of your selection, and make the sheikh walk in and around the fort to talk about it orally and textually.

You must use camera and add sounds to your world. In addition, use one of the visibility features or add 3D text. Finally, save your world as a video.

Second: Create a video about Qatar hosting of the World Cup in 2022.

Third: Add sound, movement of camera and any other properties to your choice of worlds that you created earlier.