3D-Frogger (Continued)

Student Handout 1B provides step-by-step instructions on making agents. (Found on page 4 in the student packet)

Instructions are provided to the student allowing them to edit their frog or create their own frog. Note that students can update their frog later in the game development.

Once the Frog is made, students should continue on to make a road, a left tunnel, a right tunnel, ground, a truck and a Grotto (flag or star).

**Student Handout 1A: Create a game**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Create Game</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Go to** [https://www.agentcubesonline.com/](https://www.agentcubesonline.com/)
If you have an account, click on the Login link. If not, click on the Sign up link.

After you login, click on the blue “New project” link below your login name.

<table>
<thead>
<tr>
<th>Step 2</th>
<th>Name the Game</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name it Frogger and click OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
<th>Create Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Click on +Agent button in the lower left corner</td>
</tr>
</tbody>
</table>

Press this button to create an agent.
3D-Frogger

Student Handout 1B: Create agents

Step 4

Make sure to give your agent a name.

Click OK to save your agent. It will appear on the left of your screen.

You can double-click on the agent picture to edit how it looks.

This only works for inflatable icons,
Step 5
Use the pencil tool to add details to the frog.
Or use the clear button to erase the frog.

Step 6
Click on color well to choose a color.
Use the + button to inflate your drawing and make it 3D.
Click Save

Step 7
Create Truck, Left and Right Tunnels, street, ground, and a Grotto or Goal.
These are found in the vehicle and landscape categories of "inflatable icon"
You are ready to move on when you have the following agents created:

- Frog
- Truck
- Left tunnel
- Right tunnel
- Grotto/Goal
- Street
- Ground
# 3D-Frogger

## Student Handout 2: Part 2 – Create a World

The world is the game space –

it is where the agents will perform their actions.

<table>
<thead>
<tr>
<th>Step 8</th>
<th>Create a world</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Click the + next to World in the top bar of the AgentCubes Online window</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 9</th>
<th>Name Your New World “Level 1”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do not change the numbers for your first world</td>
</tr>
<tr>
<td></td>
<td>Click OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 10</th>
<th>Try out the World tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select tool for moving agents</td>
</tr>
<tr>
<td></td>
<td>Pencil tool for drawing agents on World</td>
</tr>
<tr>
<td></td>
<td>Tile tool for drawing groups of agents</td>
</tr>
<tr>
<td></td>
<td>Eraser tool</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 11</th>
<th>Use these tools to place the agents on the World and make the street scene.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It is important that you do not draw over the Frog with the Street agent.</td>
</tr>
</tbody>
</table>

This means you should start with the agents that go on the bottom like the ground and river, if you accidentally placed an upper agent first, you can just delete it and re-place it.
### 3D-Frogger (Continued)

| Step 12 | Try out the 3D movement tools  
|         | Rotate  
|         | Pan: Move the world up and down.  
|         | Zoom  
|         | Move your World so that you can see the 3D shapes. |

| Step 13 | Use the Save button next Level 1 to save your World when you like the way it looks! |

Only save your World when it is set up to start a game.

Then you can use the Reset button to return to the saved starting point for your game.

Your World might look like this:

![3D Frogger World Image]
Student Handout 3: Understanding Conditions and Actions

Explain each condition or action below

Conditions:

A________________ B________________ C_____

D________________ E________________

Actions:

A________________ B________________ C_____

D________________ E________________
3D-Frogger (Continued)

Student Handout 3: ANSWER KEY
Understanding Conditions and Actions

Explain each condition or action below

Conditions:

A IF the agent sees a car to the right
B IF the agent is on top of the car
C IF there is nothing to the right

D IF the player presses the A key
E Every 5 seconds

F IF age is less than 21
G IF the agent is next to less than or equal to two cars

Actions:

A Move to the right
B Erase the agent
C Reload the saved World

D Change the agent to this image
E Say “I am 100 years old!”

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**Student Handout 4: Creating Agent Behaviors**

*Click on the agent to add behaviors to that agent*

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Open the Frog's behavior by clicking on the Frog in the list of agents or in the World.</th>
</tr>
</thead>
</table>
| Step 2: | **Cursor Control for Frog**  
  ![Behavior: Frog](image1)  
  This rule makes the Frog move UP when you type the UP arrow. Use the +Rule button at the bottom of the window to add 3 more rules so that the Frog moves in all 4 directions. |
| Step 3: | **Click on the Truck agent.**  
  **Add a move right rule.**  
  Use the *once every* condition to slow the car down.  
  ![Behavior: Truck](image2)  
  Change the values to make the game harder or easier! |
| Step 4: | **Add a rule to the left tunnel behavior to generate cars.**  
  Use the *once every* and *% chance* conditions to control how often they appear.  
  ![Behavior: Truck](image3) |
| Step 5: | **Add a rule to the truck so it erases itself when it sees a right tunnel.**  
  The tunnel absorbs a car.  
  ![Behavior: Truck](image4)  
  IF I see the tunnel to my right.....THEN...erase me |
### 3D-Frogger (Continued)

| Step 6: | Create a ‘squished frog’
|        | Click on the Frog Agent. Then click on the +Shape button below the list of Agents.
|        | Give the new shape a name. Double-click on the image next to the name.
|        | Use the drawing tools to make your Frog look squashed. |

| Step 7: | Play a sound and erase the frog when it collides with the truck. |

Note: the SHOW MESSAGE command has two lines of text — use the small arrow to see both lines!

---

You are ready to move on once the following items work correctly...

- Does the frog move all directions?
- Do the trucks get generated (created) and absorbed (erased)?
- Does the Frog-Truck collision work correctly?
Student Handout 5: The River

You are tasked with creating the river scene of Frogger. Here are the rules:

Agent: River
- The Frog must drown if it falls in the river.

Agent: Log
- Float On Water. We'll have the logs float from left to right
- Logs must TRANSPORT frogs
- Logs Must Disappear when it reaches the end of the river

Agent: Log_Maker (Island)
- GENERATES Logs if there is water to the right (Logs Float from Left to Right)

Agent: Turtle
- Float On Water. Unlike the Logs, we'll have the Turtles float from right to left.
- Frog Must Be Able to hop on top of the Turtle
- Turtles Must Disappear when it reaches the end of the river

Agent: Turtle_Maker (Lily pad)
- Creates Turtles if there is water to the left (because we want our Turtles to go from right to left).

Agent: Frog: We must update the Frog Agent
- Jump on top of and move with the Logs and the Turtles
- The player loses if the frog falls in the water (the Frog Drowns)

Agent: Grotto/Goal
- If the Frog gets to the grotto, the player wins!

Step 1: Create missing agents (river, log, island, turtle, lily pad, grotto/goal) and add them to the worksheet.

Step 2: Program the island to generate logs. Program logs to disappear when they reach the end of the water.

Step 3: Program the log to float down the river, from left to right. See the log rules below. Notice that we used TRANSPORT, not MOVE. This is so that the log can carry a frog!
3D-Frogger (Continued)

Step 4: Test the program. You are ready to move on when you can answer YES to these questions:

- Do Logs get created?
- Do the Logs Move across the river and disappear when they reach the Log Maker Agent?
- Does the Frog Get Transported when it jumps on the log?

Step 5: Program the lily pad to generate turtles. Program turtles to disappear when they reach the end of the water. Make sure the turtles float from RIGHT to LEFT.

Step 6: Test your program. You are ready to move on when you can answer YES to these questions:

- Do Turtles get created?
- Do the Turtles Move and disappear when they reach the Turtle Maker Agent?
- Now, control the frog and try to jump on a turtle. What happens? Does the Frog Move with the Turtle?

Step 7: Program the game so that you win when the frog reaches the goal. Give the frog this behavior:

```
if [frog position immediately above goal]
then
    play sound Hallelujah.mp3
    show message "You win!
    click reset to play again"
    reload world
```

Step 8: Test your program. You are ready to move on when you can answer YES to these questions:

- Does a message get played or appear when the frog reaches the Grotto?
- Does everything else work like you expect it to?
3D-Frogger

Student Handout:

*(Found on page 16 in the student packet)*

**Challenge 1.0: Alligators**

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

**Design Challenge:**
Frogs should be able to jump on the alligators back and travel on them just like they are logs. BUT...frogs should die if they are in FRONT of the alligator.

**Gamelet Design Activity:**
Circle nouns to identify the agents and underline the verbs to identify actions associated with each agent. Mark adjectives to identify new shapes for an agent.

**Tip:**
Make sure the alligators move faster than the logs and that the alligators can climb up onto the logs.

Create new agent: alligator

Create agent behaviors:
- The frog can ride on the alligators back
- The frog dies if it runs into the mouth of the alligator
3D-Frogger

Student Handout:

*(Found on page 17 in the student packet)*

**Challenge 2.0: Prevent Cheating**

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

**Design Challenge:**
Create controls so that there is no cheating to win the game...

The frog should die if it rides all the way to the end of the water
The frog should not be able to walk on tunnels or islands or lily pads

**Gamelet Design Activity:**
Circle nouns to identify the agents and underline the verbs to identify actions associated with each agent. Mark adjectives to identify new shapes for an agent.

**Create agent behaviors:**

- The frog should die if it rides all the way to the end of the water
  - How can it do this? Which agents need new behaviors?
  - Will you use a new depiction for the frog?

- The frog should not be able to walk on tunnels or islands
  - How will you stop it from doing this?
3D-Frogger

Student Handout:

(Found on page 18 in the student packet)

Challenge 3.0: Dodge Cars and Trucks

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

Design Challenge:
Create controls so the frog must not only avoid the trucks, but also the cars going the other direction...

New Agents:
Create a car agent

Update Worksheet
- Create one (or two!) two lane street(s). Trucks should move to the right, cars move to the left.
- Save the new worksheet

Update behaviors
- Cars are generated and absorbed (will you need new tunnels?)
- Cars move to the left
- Frogs are squished if hit by the cars
- Squished frog means the end of the game
Student Handout:

(Found on page 19 in the student packet)

Challenge 4.0: Inquiry Element

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

Design Challenge:
Make up a new fun element to your game, assign new behaviors, create new agents, and/or make new depictions. The only requirements are that it is new and that it is fun.
Student Handout:

(Found on page 20 in the student packet)

Challenge 5.0: Re-design the road

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

Design Challenge: There's something funny looking about your roads. Figure out what it is and fix it.

New Agents:
Create a new road shape for a top and bottom of a two (or more) lane highway. Potentially create new tunnels and cars to go in both directions (if you didn’t already do challenge 3.0)

Update Worksheet
- Put new roads down so cars and trucks are only in one lane
- Save the worksheet
3D-Frogger (Continued)

Student Handout:
(Found on page 21 in the student packet)

Challenge 6.0: Diving Turtles

Before your start this challenge:

You must have a complete basic Frogger game with a street and river. The Frog should die if it is hit by a truck or if it falls in the river.

Design Challenge: Turtles don’t always swim at the surface. Sometimes they dive. This would cause the frog riding on them to fall in the water.

New Agents:
Underwater turtle shape

Update behaviors
• Make the turtle sometimes dive, changing it to an underwater turtle
• Make underwater turtles re-surface
• Make the frog drown if it is on an underwater turtle