AgentCubes Troubleshooting Session Guide: You can follow along as the examples are demonstrated and use the margins to annotate your solutions. For each problem please try to answer: What happens, why, and what is a solution? Except where noted, these examples have companion demonstration AgentCubes projects with the same name as the problem number. There is a final section with questions unrelated to specific example projects, also without a companion project.

Problem 01: Reload world issues: (Note: There is no example project for this problem.)

The student starts playing the game:

![Game screenshot]

The student moves the frog to the goal and receives the congratulatory message:

![Congratulatory message]

The student then taps ‘OK’ and sees this:
What happened and why?

**Problem 02: Frog movement**
After completing all the rules for moving the frog and ending the game, the student finds that the frog only moves in one direction; that is, the frog does not respond to the other arrow keys. Why?

**Problem 03: Trucks stuck on top of right tunnel:**

A) **Problem 03A:** You see the following after running the simulation for a short time. Why?
B) **Problem 03B:** You see the following after running the simulation for a short time. Why?

![Simulation Image](image)

**Problem 04: Sound in Loop, Message In Loop:**

Run the simulation and move the frog in front of a truck. Then try moving the frog onto the water. Finally move the frog onto the flag. What happens and why? How is the third problem above different from the other two? What are the implications in schools for with PCs with the Task Manager locked down?

![Simulation Image](image)
Problem 05AB: Looped sound and reloading world and/or additional frogs

A) In this example, shortly after the simulation starts, the behavior of the frog colliding with the truck occurs (honk sound and world reloading) repeatedly until the stop simulation button is tapped. All you see is the starting screen:

B) Alternatively, after starting the simulation and pressing an arrow key one or more additional frogs appear in the world.

What is happening and why?
Problem 05C: Too many trucks!

You start the game and huge numbers of trucks start appearing on the road. Why?

Problem 06: Once Every and % chance combinations:

We want the island and bridge agents to generate new log and turtle agents, respectively, 50% of the time once every 0.6 seconds, which means an average of about every 1.2 seconds, but with some randomness. When we run the simulation, we see that log generation seems to be working properly; that is, there is random spacing between logs. However, turtles seem to be generated much more regularly and with little spacing. Why?
Problem 07: Clock problems:

**Part A:** Will this agent’s color change back and forth between red and green? If not, why not, and can you fix it?

**Part B:** Which way will the Mover agent move every second? What do you think the intent of this behavior is? Will it work? If not, can you fix it?
Problem 08: Changing Shapes

Suppose we have two frog agents a “Frog” and “Superfrog”, and a pellet agent, as seen in the project agent list at the left. The pellet allows the frog to become a superfrog.

When the frog eats (sees to its right) a pellet we want the frog to become a superfrog. So, we write the rule in the frog behavior.

The Superfrog can swim in water and can’t be killed by trucks etc. (See Superfrog behavior below.)

When the simulation runs, the frog seems to change into a superfrog, but when the frog moves in front of a truck or jumps on the water, it dies? The superfrog behavior rules are 100% correct. You can test this if you use the pencil tool to place a superfrog in front of a truck or on the water, it does not die. What is happening and why? How can this be corrected?

Superfrog behavior:
Problem 09: Method not found:

Examine the behavior snapshot below.

When the simulation runs, AgentCubes reports the message below. What specifically is this message describing? Why? What other similar problems can occur with other behavior conditions and actions?
**Problem 09B: Simulation doesn’t end**

Examine the behavior snapshot below. Run the simulation. Why doesn’t it stop?
Problem 10, Part A: Backwards operation: (Note: all problems in this section used the same sample project, Problem 10.)

Open the project and run the simulation in each of these three worlds. Use the arrow keys to move the frog toward the river.

new world_1:

New world_2:
What do you observe? What is happening? Why? How did it get that way?

**Problem 10, Part B: Key queuing (Windows systems)**

Re-open the project from the previous example and, for ease of viewing, select “standard world” for this experiment:

Run the simulation and move the frog into the river. After the frog disappears, continue to press one of the arrow keys at least 10 times or until the following window appears:
Problem 10, Part C: Opening a project with AgentCubes running (Windows), Exporting a project

First open AgentCubes and then open any project in the Chooser window. Next locate any project on your computer, such as one on the desktop or in your Documents folder. If you do not have any project folders other than those in the Chooser’s “container,” export any project by selecting the tools (gear icon at the bottom of the Chooser window. Navigate to a convenient folder in which file storage is permitted. When you select ‘Export Project’ you will see a successful completion message:

Close the message window and find the newly exported project folder. Open the folder and then try to open the project by double-clicking the index.project file. You will see the following message:

The AgentCubes application will close. Note that this does not occur on Macintosh systems. How does this affect teaching students how to open an AgentCubes project?
General Questions and Other Topics

Agent Attributes and Simulation Properties

- What is the difference between an Agent Attribute and a Simulation Property and how would you explain it to a student?

- How do you define an Agent Attribute?

- How do you define a Simulation Property?

- How do you set the value of an Agent Attribute?

- How do you set the value of a Simulation Property?

- Under what conditions must you use a Simulation Property? An Agent Attribute?

- Under what conditions does it not matter?