**IMPORTANT INFORMATION:** The Homework is to be submitted via Eagle. It is to be individual work. You may talk to other students in the course about your design and for ideas, but you are to write the complete Alice programs by yourself. You may receive help from the Professor, CS Tutors, UTF’s or TA. In your comments, identify (by name) all those who helped you. Failure to do so is considered cheating.

**In Class**

No inclass assignment this week because of the exam.

**Homework (15 points) Due Friday, midnight**

This is problem 10 on page 339 at the end of chapter 10. Notice, you are grabbing the objects from the World Gallery (so you will need the internet when you grab them.) If you can't get everything done, turn in as much as you completed. Late assignments are docked 10% a day (see syllabus for policy). Use good identifier names and comments. Rename objects and methods. Every program needs to include your name as author in the comments.

1. (5 points) Use classes from the Web Gallery’s Kitchen collection with a kitchen, table, four wooden chairs, and a broom. Initially, set up the world with the broom off to the side and the chairs around the table. If you cannot find the kitchen floor, you can use WebGallery/HighSchool/Cafeteria or some other object for the floor.

2. (5 points) When the world plays, the four chairs should simultaneously reposition themselves with the chairs upside down sitting on the table (like you would do to clean the floor). After the broom finishes sweeping, the chairs should simultaneously move to their original positions. For full credit, the chairs cannot go through the table (or through the floor). They must behave as though they were real, not computer images.

3. (5 points) The broom should sweep all the way around the table using a sweeping (back and forth) motion. The

4. Optional: The broom can tilt and sweep under the table. The broom can "play" an mp3 as it is working using "play sound". Be aware that the playing of a sound must be complete before the next task will be done, so you may want it done in parallel (do together). Also, speeding up the runtime (using the speed slider bar in the runtime) will not affect the sound.

**Hints:**

Designing before beginning coding is one thing we always ask students to do – and the thing that most students don't do. Try spending just a few minutes designing the program. You are trying to see the major parts and recognize repeated or similar steps. For example, the code to put the chairs on the table is similar to the code to take them off. If you realize that, you will plan on reusing the same piece of code.

a. You will need to play around with the "duration" of an action to get the action you desire. You can type any duration of your choice by selecting "other". When an object is both moving forward and back and forth (to get sweeping
motion), you will need a combination of "do in order" and "do together". Things in a "do together" block must be timed to end together or one motion will finish before the others do. It the code example shown at the bottom, notice how the time for the rotation is set to be the total time for the gorilla to move up and down five times.
b. Get one part to work. Group it in a "do together" or "do in order". Then you can copy the whole section by copying the group. The copies can be modified slightly by changing parameters.
c. Remember, each object has its own sense of direction. When a chair is upside down, going "down" is towards the ceiling.
d. The loop instruction is helpful to repeat a series of repeated steps.
e. As the broom moves, you likely will need the camera to move. "Camera get a good look at" and "camera move away from" are helpful.
f. Getting the broom to move in a particular direction can be accomplished by a variety of techniques:
   • Orient the broom to the same direction as the table. Then it can move "forward" along one side of the table for a set distance.
   • Use "invisible" objects in the scene and have the broom move to the invisible objects. An invisible object is any object which has its properties/isShowing to false.
   • Have the broom turn 1 revolution "asSeenBy" the table.
g. Disabling one part of the code makes debugging easier. Do this by right clicking on the block and selecting "disable". Clicking on the +/- next to the blocks allows you to hide some of the detail. This does not affect execution.
i. You can rename the default method "my first method" by right clicking on the tile "my first method" in the "world's details" methods tab and selecting "Rename".