

COS 116
The Computational Universe
Laboratory 4: Controlling the Robot II

In this lab you'll write more pseudocode to control the robot. Today's challenges are more open-ended than last time's. There are many ways to solve them, so try to start brainstorming early.

You should email your reports until Sunday, March 4th 11:59 pm.

Include the programs you wrote (use "File -> Save As..." in the Scribbler Control Panel to save a program, and "File -> Print" to print it). Explain what your program from Part 2 does. Briefly analyze how well each program worked, and write about any problems you needed to overcome.

Submission: Email the report as one pdf file per group to pu.cos116@gmail.com

- ⤴ There are many easy ways to create a pdf file, including "Save As" in MS Word.
- ⤴ Subject of the email: Lab Report 4
- ⤴ Filename format: netId_Lab4_Report.pdf (put your Princeton netId in the filename, e.g. "berkiten_Lab4_Report.pdf")

NOTE: Include the full names of all group members in your reports. DON'T submit .doc or any other type of files different from pdf.

Part 1: Navigating a Maze

Teach the robot to escape from a simple maze. (Refer to page 2 for a diagram of the maze.) We will test your solution by placing Scribbler at a random location within a designated starting zone. This means the robot must use its sensors to navigate. Demonstrate your program for your TA. We'll give full credit for one successful escape.

Part 2: Scribbler Art

Now it's time to get creative. Write pseudocode to show off the Scribbler's artistic side. Here are a few suggestions for inspiration, but the possibilities are nearly endless. If your art isn't something that you can submit with your lab report (see examples below), make sure you demonstrate your program for your TA.

- *Music:* Program a song with the sound commands. This web site lists the frequencies for musical notes: <http://www.phy.mtu.edu/~suits/notefreqs.html>. You might have several robots play different parts to achieve harmony.
- *Dance:* Use motion commands and loops to teach Scribbler a simple step. And have another robot serve as a dance partner or provide a beat.

- *Drawing:* Give Scribbler a pen and let it run wild. Give the robot a fixed drawing path with motion commands, or combine motion with coin tosses for something more abstract. If you want, bring several different color pens and other kinds of paper.

We'll give 50% of the points for entering anything that works. The remaining 50% will be awarded for creativity (but we'll be generous). The best entry or entries will be shown in lecture.

