

Personal Assistant: Smart Housekeeping

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The Assignment:

The dog! That darn dog! For the third time this week, the housekeeping staff at the Mini mansion has quit because their adorable 200-pound St. Bernard has trashed the place... again. Mr. Mini is losing hair and sleep over the problem. He can't bear to part with the dog, but he's having more and more trouble finding people who are willing to keep the place clean for any amount of money!

Mrs. Mini, however, has heard about your Personal Assistant robot through a friend, and wants to know if the robot could perhaps be adapted to serve as a robotic housekeeper for the Minis and their dog. The robot would have to do a few basic chores, like taking out the trash... but mostly, it just needs to be able to keep up with the dog!

The Details:

Your robot must be able to perform the following tasks on a game board modeled after the Mini mansion:

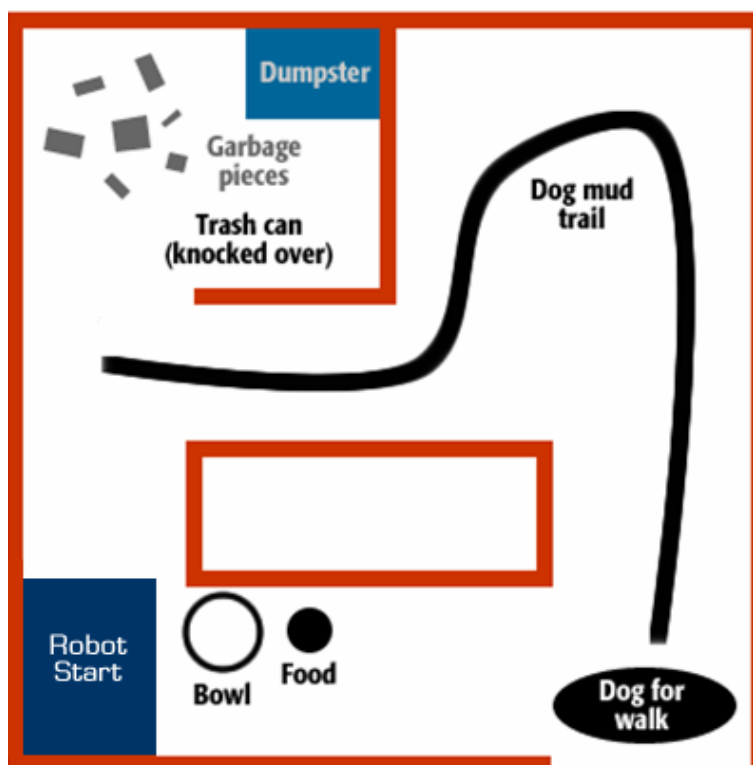
- Stay in low-power mode until the barking dog indicates that the robot will be needed... again. Sigh.
- Move through the house cleaning up after everything the dog has done this time.
 - The dog has probably knocked over the trash... so the robot must push all the trash over into the dumpster area.
 - The dog has also tracked mud through the house... the robot must follow the trail as far as it goes, cleaning it up along the way (fortunately, the bottom of the robot automatically cleans any spot the robot passes over).
 - After all the mischief, the dog is waiting at the door to be walked... the robot needs to let the dog out and walk it one full lap around the yard.
 - The dog also ate all its food... the robot should fill the food bowl with the food that is right next to it.
- After this, the robot must then return to its waiting spot, and wait for the next time it's needed.

Some additional notes and requirements:

- The robot must have a manual shutoff button so that someone could easily turn the robot off at any time. The dark grey button on the NXT does not count.
- The robot has to be able to do everything to take care of the house and the dog, but not necessarily all in one run, or using only one program. Each task or few tasks can be done with a different program, just so long as everything gets done!

This is a team assignment. You should collaborate with your team members to do any and all of the work for this assignment, and you should distribute the work in a fair and effective way. All work done, however, must be your own group's. If you have any questions about whether something is allowable, ask your teacher *in advance*.

Gameboard Layout



Ask your teacher for instructions to set up the game board.

Tips:

- Your robot will be expected to complete all of the four different tasks on competition day.
- Concentrate on developing a solution step by step. Don't try to get it all at once or things will get out of hand very quickly.
- Try using Move blocks to control the robot. It will make your programs much shorter and smaller than using Motor blocks.
- Teamwork is crucial. The challenge is too much for one person to get done alone in time. Try dividing up tasks for different team members.
- Test and refine your design as many times as possible. The robot must be ready for whatever comes its way.

Deadlines:

Progress check 1:

Progress check 2:

Final competition: