Using SuperBot on Some Previous Problems

Now that you have a robot who can move an unspecified amount of blocks, pick up or put down an unspecified number of beepers, it's time to revisit some of your previous labs.

Part 1 – HarvesterBot:
Now the field can be any number of rows high and columns wide, but it is surrounded by a fence that has single opening in its southwest corner. Each street/avenue intersection within the fence can have any number of beepers (0 or more). Extend your SuperBot so that it can harvest a field such as the one shown here. You can assume that the robot will be constructed at the doorway, facing east.

THINK about methods that might be useful for the HarvesterBot, but that are too specific to be put in SuperBot. If you read part 2 before designing your solution, it will be trivial to solve part 2 using polymorphism.

Part 2 – ReplanterBot
As in part 1, this robot goes through a field of any size that is surrounded by a fence and has any number of beepers at each intersection. However, this robot leaves the field with exactly one beeper at each intersection.

Test ReplanterBot on the same worlds as HarvesterBot.
Part 3 – StairSweeper:
Now you can have any number of stairs, each of which can have any number of beepers (0 or more) on them. Extend your Superbot so that it can sweep a staircase of any size. How will your robot know it’s at the top of the stairs?

Part 4 – HurdleRacer:
Extend your Superbot so it can run a hurdle race in which hurdles can be any height, and the race can be any length, as in the example shown here. There will be a beeper marking the finish line so that the robot knows when to stop.