

Using just a few commands can you create a program for a robot to find and dispose of the toxic waste in a contaminated room?

What you need:

- Program cards.
`TURN LEFT`, `TURN RIGHT`, `FORWARD 1`, `BACKWARD 1`, `PICK UP OBJECT`,
`PUT DOWN OBJECT`, `FORWARD 10`, `BACKWARD 10`
- Simulation room - this is an area with a grid laid out with the "toxic waste" and "containment vessel" located in different grids.

What to do:

- You can not step onto the grid in the simulation area; however, you can take a look at where the toxic waste and containment vessel are located.
- Discuss the steps needed to contain the waste (move the toxic waste into the containment vessel) with your group.
- Have each group perform a task. You can have programmers, debuggers (people that check the programs) and someone to pretend to be the robot in the simulation area
- Give program to robot to try in the simulation area. HINT: Have another group member read the instruction set to the robot. This helps find problems in the program.
- Fix program if needed.
- Write out working program to share with other groups.

- Remove a set of command cards (for example remove all the `TURN RIGHT` cards and/or all the `FORWARD 1` cards). Can you still contain the waste?

Challenge:

- What additional command cards can you stop using and still be able to contain the waste?
- Position the toxic waste and containment vessel in the simulation area for another group. Challenge
- Try to write a program for a simulation area where you do not know exactly where the waste is located. What additional commands might you need?