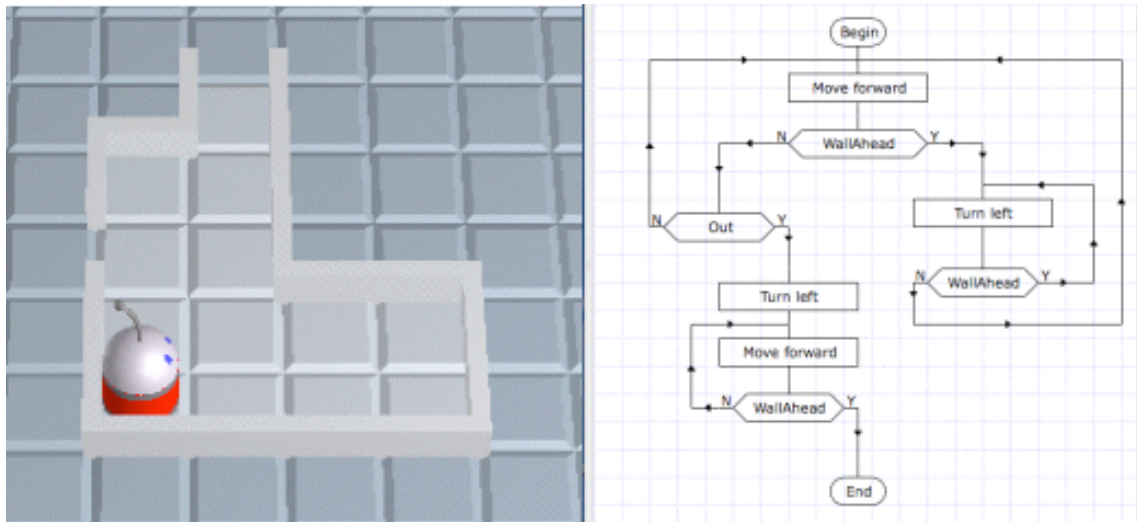*Exercise 7*

PROGRAM A ROBOT'S ESCAPE

Left: *Robbie the Robot is in a prison, defined by the light-gray walls, which has 2 exits.*
Right: *A possible program to let him escape. (Images: www.physicsbox.com)*

Phase 1

1   Form teams of 3

2   For 2 minutes, on a sheet of A3 paper, draw the plan of Robbie's prison (left image) as a 4x5 grid. Make each grid square the size of a square Post-It

3   Draw an arrow on a Post-It to represent Robbie and his direction

4   For 5 minutes, start with your Robbie Post-It in the corner (as left image) and follow his movements according to the program flowchart (right image). Does he escape?

5   Start him in some different places, or facing in different directions. Does he still escape?

Phase 2

6   For 15 minutes, make a flowchart of a better program. (Use a Post-It for each flowchart 'box'. This makes changing the flowchart easier).

Robbie understands these 9 commands:

'Terminals' (oval flowchart boxes):	Begin (the program) End (the program)
Actions (rectangular boxes):	Turn left Turn right Move forward (to next square)
Questions (rhomboid boxes):	Wall ahead? Wall on left? Wall on right? Out? (Have I escaped?)

7   Follow Robbie's movements through your flowchart. Does he escape? If not, change the flowchart. If he escapes, start him in a different place, or facing in a different direction. Does he still escape?

8   For 5 minutes, re-draw your flowchart on another A3 sheet as a display (not using Post-Its)

9   Write your full names *(nomi e cognomi)* on the display

10   Give it to GCS.