

# Intro to programming I

## Week 5 - Karel's world and built-in commands

- Karel is a robot that lives in a grid. Each cell of this grid might be empty, or it might contain any number of object. Some objects, like walls, are obstacles; other objects, like a green square or a house, indicate Karel's destination; others Karel can push, like boxes, or pick up, like strawberries or tokens; Karel can store any number of small objects in a bag that he carries with him at all times
- Karel will follow our orders, but he will turn itself off if we ask him...
  - to walk into a wall
  - to pick up an object while standing on an empty cell
  - to put an object down when his bag is empty
- A *comment* is text that is not part of the program; it has information for us, not for the computer, i.e., it is like a margin note on a page. In Python, any text that follows a hashmark # is a comment:

```
# this is a comment; Python ignores it.
```

- The following functions help us set up Karel's world:

```
sound(True/False)    # Turns sound effects on and off
think(n):            # sets a delay of n ms between commands
                    # delays <= 250 ms turn off the sound effects
say(string):         # prints string in pop-up box
pause():             # stops program until we press play or step btn
from library import * # use the functions in the library
```

- A built-in command is one that Karel knows from the start; we do not need to teach it to him; he already knows it. Karel's actuation built-in commands are:

```
move()      # take one step forward
turn_left() # turn 90 degrees counter-clock wise
take()      # take an object from the floor
put()       # put an object on the floor
```

- Use *repeat(command, n)* to repeat a command n times, e.g.,

```
repeat(move, 4) # take 4 steps
```