Introductory Activities with Karel the Robot

Lecture 2: Functions, conditionals and loops

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Activity 0: Meet Karel (again)

Objective: Introduction to functions, conditionals and loops

First, a quickl review:

- Navigate to **Karel The Robot**
- Review Chapter 1 and Chapter 2
- At this point you should be getting a general idea of how to use the Commands: `move()`, `turn_left()`, `pick_beeper()`, `put_beeper()`
- Do you have any questions? Ask me.

Activity 1: Intro to functions

- Read Chapter 3 on the **Karel Website**
- observe what a function does.
- Copy the code within the code block in chapter 3 (named: BeeperPickingKarel.py) into the code block in chapter 11. Then run the code and make any modifications that you can think of. i.e. just play with the code
- Read Chapter 4
- Do you have any questions? Ask me.

Activity 2: Intro to For and While loops

- Read Chapters 5 and 6 on the Karel Website
- observe what a function does.
- Copy the code within the code block in chapter 3 (named: BeeperPickingKarel.py) into the code block in chapter 11. Then run the code and make any modifications that you can think of. i.e. just play with the code
- Do you have any questions? Ask me.

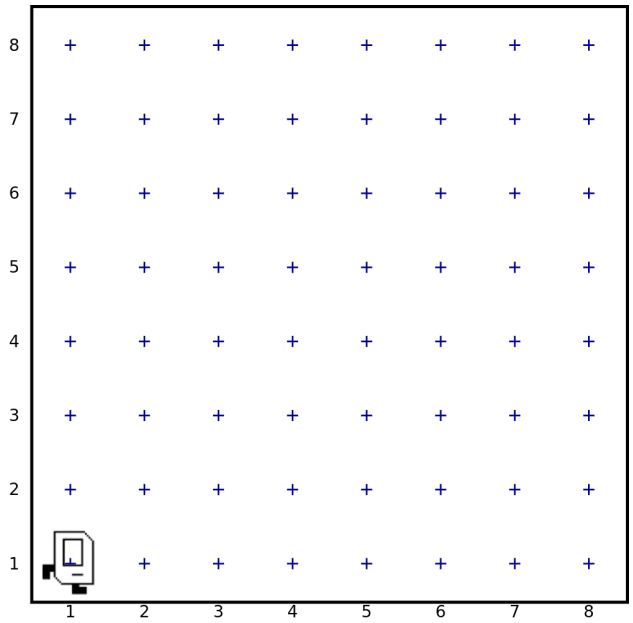
Activity 3: Writing Your First function

Objective: Practice program structure with a function.

- Navigate to Chapter 11: Code
- You will see an editable code block with some choices for the "world" of karel. For now, keep the default 8x8 world.
- Write code that makes Karel zig-zag from the lower left corner to upper right corner while placing beepers.
- You should use the function turn_right() in your code
- See next page for your initial and final world should look like

Activity 3: Writing Code with a function

Objective: Write code to go from the initial picture to the final picture shown below:



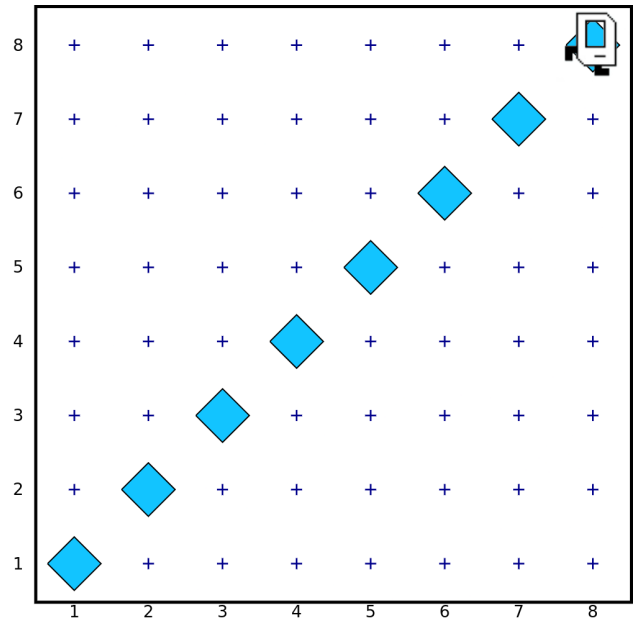


Figure: Initial (left) and final (right) positions

Activity 3: Writing Code with a function

Solution: See next page. But please first attempt to write the code by yourself.

Activity 3: Writing Code with a function

Objective: Practice program

```
from karel.stanfordkarel import *
# Excercise 1

def main():
    for i in range(8):
        put_beeper()
        move()
        turn_left()
        move()
        turn_right()

def turn_right():
    turn_left()
    turn_left()
    turn_left()
```

Activity 4: Discovering a problem

Copy the code in the previous page and paset it in the code block in chapter 11 of the Karel Web page. When you run the code, you will find that an error is displayed when Karel reaches the top right wall!
How do we avoid Karel attempting to run into the wall?