#### **Programming Kara**

What you need to know to program Kara for the exercises on this Sheet:

#### **Actions**

You program Kara, you write a list of actions that will be processed in order. The available actions are:

move(); move one step in the current direction

turnLeft(); change direction 90° to the left turnRight(); change direction 90° to the right putLeaf(); put a leaf on the current position removeLeaf(); remove leaf from the current position

To use them, you just put them one after another into your program.

#### Sensors and the If-Statement (Conditional)

Kara can react to its environment using sensors.

The available sensors are:

onLeaf() returns true if the current tile contains a leaf

treeFront() returns true if the next tile in the current direction

contains a tree

treeLeft() returns true if tile to the left – again relative to current

direction contains a tree.

treeRight() Same for treeRight, only to the right.

mushroomFront() true if the next tile in the current direction contains a mushroom.

#### **If-Statement:**

To use the sensors, you need a conditional statement, the Java if-statement (the else part can be omitted)

#### **Example:**

```
if (onLeaf()) {
      // put the commands that should be executed if onLeaf() is true here
} else {
      // put the commands that should be executed otherwise here
}
```

```
Example without else-case:
if (onLeaf()){
    removeLeaf();
}
```

### **Defining own actions for Kara (Methods)**

(you won't need this before exercise 6)

If you need to do the same set of actions repeatedly, you can define an own action for Kara by defining a Java method:

This is especially useful in Exercise 6, where you need to walk around a tree several times. So you would define a method named "walkAroundTree" in Java like so:

```
public void walkAroundTree(){
     //put instructions to walk around tree here
}
```

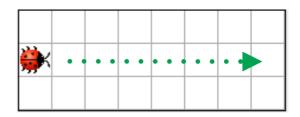
You can then use the method as any other action listed above:

```
walkAroundTree();
move();
walkAroundTree();
move();
move();
```

This worksheet is adapted and condensed from CodeMakery's Greenfoot Kara tutorial which can be found here: https://code.makery.ch/de/library/greenfoot-kara/chapter1/

### Exercise 1: Walk across the lawn

Make Kara walk across the lawn. Scenario for Greenfoot: 01-01-walk



## Test Area

Exercise 2: Walk across the lawn and drop a leaf on every second tile.

Scenario for Greenfoot: 01-02-walk-drop

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## Test Area

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Exercise	<b>3</b> :	waik in	a sc	juare.

Scenario for Greenfoot: 01-03-square

# Test Area

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# IMI-B, Info 1: Worksheet 1: First Steps with Kara

Exercise 4: Walk in a Square, and drop a leaf in every corner.

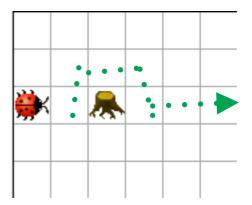
Scenario for Greenfoot: 01-04-square-drop

## Test Area

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Exercise 5: Walk around a Tree. Greenfoot Scenario: 01-05-aroundTree

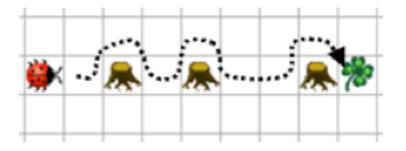


## Test Area

Exercise 6: Walk through the forest and pick up a leaf.

Greenfoot Scenario: 01-06-

forrest



Test Area – you can use green or brown meeples for the trees.

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Exercise 7: Same as Exercise 6, but define a method to walk around the tree.

Greenfoot Scenario: 01-07-method

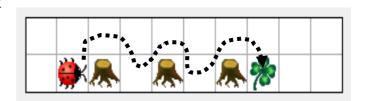
Test Area:

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Program	Method to walk around a tree

Exercise 8: What happens if the forrest changes?

Greenfoot Scenario: 01-08-changing-forrest



## Test Area

Program (You can reuse your method from Excercise 7.)