Intro to programming I
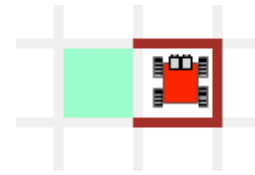
Week 8 - booleans and conditionals

- A *boolean* is a value that can be either True or False.
  Karel has 5 built-in sensing boolean commands that
  he uses to inspect the world:


```
    front_is_clear()
    facing_north()
    token_here()
    has_token()
    at_goal()
```

```
front_is_clear() → False
facing_north() → True
token_here() → False
has_token() → False
at_goal() → false
```

- The three main boolean operators are *not*, *and* and *or*.

> **not**: toggles the value:
> ```
> not at_goal() -> True
> ```

> **and**: True only if two conditions are True
> ```
> facing_north() and carries_objects() -> True
> ```

> **or**: True if at least one condition is True:
> ```
> facing_north() or at_goal() -> True
> ```

- A *conditional* chooses an action based on a boolean, i.e., it executes either the body
  of the *if*, or the body of the *else*, but not both. For example,

```
if front_is_clear():    # if there is no wall in front
    move()              # move
else:                   # otherwise...
    turn_left()         # turn left
    move()              # and then move
```

- The syntax of a conditional is:

```
if <condition> :        # the semicolon at the end indicates a coming body
    command a1          # body of the if
    ...
    command an
else:                   # the semicolon at the end indicates a coming body
    command b1          # body of the else
    ...
    command bm
```