Reeborg’s Sensory Equipment

- **Reeborg has three video cameras, a microphone, a compass, and tactile sensors to help him stay out of trouble. He can request information from his sensory equipment:**

```
front_is_clear(), facing_north(),
  on_beeper(), etc.
```

- **Each request will result in a** `True` **or** `False` **answer. We call such *boolean expressions* that are either True or False** *predicates*.

Decision statements

- **Reeborg can check predicates by using what is called an** IF **control structure. These constructs can be used wherever instructions are used in a program. In the** Python **language, there are two variations of the IF statement:**
  - The simple **if** statement
  - The compound **if-else** statement

simple **if** statement

```
if predicate:
  <then-suite statement(s)>
```

- **If the predicate (*aka* boolean expression) is True, the statements in the *then* suite are executed and then whatever follows the *then* suite.**
- **If the predicate is False, then the statements in the *then* suite are not executed and we jump to whatever follows the *then* suite (that is, we ignore the *then* suite statement(s) and jump to the instruction immediately following the *if* statement.**

compound **if** statement

```
if predicate:
  <then-suite statement(s)>
else:
  <else-suite statement(s)>
```

- **If the predicate is True, the instructions in the *then* suite are executed and then the instruction immediately after the *if* statement.**
- **If the predicate is False, the instructions in the *else* suite are executed and then the instruction immediately after the *if* statement.**
- Note that execution of the *then* and *else* suites is mutually exclusive—only one or the other is executed.

Reeborg’s Predicates

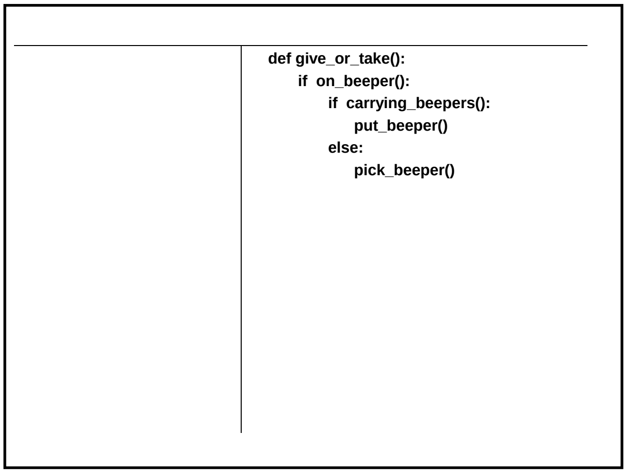
- **front_is_clear()**
  left_is_clear()
  right_is_clear()
- **facing_north()**
  facing_west()
  facing_south()
  facing_east()
- **carrying_beepers()**
- **on_beeper()**

Examples

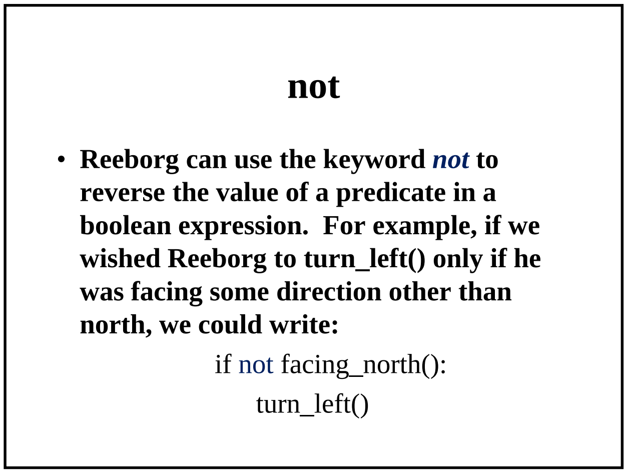
```
if on_beeper():
    pick_beeper()
```

```
if front_is_clear():
   move()
else:
   turn_left()
```

```
def face_south_if_facing_north():
      if facing_north():
          turn_left()
          turn_left()
```



```
def give_or_take():
    if  on_beeper():
        if  carrying_beepers():
            put_beeper()
        else:
            pick_beeper()
```



not

- **Reeborg can use the keyword *not* to reverse the value of a predicate in a boolean expression. For example, if we wished Reeborg to turn_left() only if he was facing some direction other than north, we could write:**

```
if not facing_north():
    turn_left()
```