KAREL-THE-ROBOT programming

Basic structure of a program for Karel:

BEGINNING-OF PROGRAM
<definition of new instructions>
BEGINNING-OF-EXECUTION
<executable instructions>
END-OF-EXECUTION
END-OF-PROGRAM

Basic executable instructions:

    turnleft
    move
    pickbeeper
    putbeeper
    turnoff

Control instructions

1. Repetition

    ITERATE <n> TIMES <instruction>

    WHILE <condition> DO <instruction>

2. Selection

    IF <condition> THEN <instruction>

    IF <condition> THEN
    <instruction>
    ELSE
    <instruction>

Conditions that the robot can sense:

    front-is-clear          front-is-blocked
    left-is-clear           left-is-blocked
    right-is-clear          right-is-blocked
    back-is-clear           back-is-blocked
    next-to-a-beeper        not-next-to-a-beeper
    facing-east             not-facing-east
    facing-west             not-facing-west
    facing-north            not-facing-north
    facing-south            not-facing-south
    any-beepers-in-beeper-bag no-beepers-in-beeper-bag
Instructions can be grouped in blocks:

```
BEGIN
  <instruction>;
  etc.
  <instruction>
END
```

New Instructions can be defined:

```
DEFINE-NEW-INSTRUCTION <name> AS
BEGIN
  <instructions>
END;
```

Error conditions in robot execution:

- Move forward into wall
- Put beeper from empty beeper-bag
- Pick beeper from empty corner
- Program terminates without `turnoff` instruction