The Roger Frank Lessons
Introduction to Computer Science: GvR Unit

Guido van Robot Programming Summary

The Five Primitive Guido van Robot Instructions:

1. move
2. turnleft
3. pickbeeper
4. putbeeper
5. turnoff

Block Structuring

Each Guido van Robot instruction must be on a separate line. A sequence of Guido van Robot instructions can be treated as a single instruction by indenting the same number of spaces. <instruction> refers to any of the five primitive instructions above, the conditional branching or iteration instructions below, or a user defined instruction.

```
<instruction>

<instruction>

    ...

<instruction>
```

Conditionals

GvR has eighteen built-in tests that are divided into three groups: the first six are wall tests,
the next four are beeper tests,
and the last eight are compass tests:

1. front_is_clear
2. front_is_blocked
3. left_is_clear
4. left_is_blocked
5. right_is_clear
6. right_is_blocked
7. next_to_a_beeper
8. not_next_to_a_beeper
9. any_beepers_in_beeper_bag
10. no_beepers_in_beeper_bag
11. facing_north
12. not_facing_north
13. facing_south
14. not_facing_south
15. facing_east
16. not_facing_east
17. facing_west
18. not_facing_west

Conditional Branching

Conditional branching refers to the ability of a program to alter it's flow of execution based on the result of the evaluation of a conditional.
The three types of conditional branching instructions in Guido van Robot are **if** and **if/else** and **if/elif/else**. **<test>** refers to one of the eighteen conditionals above.

```
if :




if :


else:




if :


elif :


...
elif :


else:
```

Iteration

Iteration refers to the ability of a program to repeat an instruction (or block of instructions) over and over until some condition is met. The two types of iteration instructions are the do and while instructions. <positive_number> must be an integer greater than 0.

```
do :




while :
```

Defining a New Instruction:

New instructions can be created for Guido van Robot using the define statement. <new_name> can be any sequence of letters or digits as long as it begins with a letter and is not already used as an instruction. Letters for Guido van Robot are A..Z, a..z, and the underscore (_) character. Guido van Robot is case sensitive, so TurnRight, turnright, and turnRight are all different names.

```
define :
```