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**Loops, Conditions, and Functions**

Karel the Robot introduced 3 major new topics:

**Loops**: let you repeat blocks of code.

**Conditions**: let you execute or run code depending on differing situations or environments.

**Functions**: are new commands which you create for yourself to use and reuse.

What exactly is a **block of code**?

It’s simply a group of code, a few lines of code, that have the same indentation level and are adjacent.

Example 1 of a **block of code**: Example 2 of a **block of code**:

repeat 4 if wall

go right

get right

**Loops**

Loops make life easier by letting us repeat useful code and keep are programs short. In the Karel Assignment you came across two types of loops: repeat and while

Repeat is used when you know how many times you want to repeat a loop.

In Python, repeat is called **for** and is used as follows:

for i in range(10):

print(i)

While is used when you don’t know how many times you want to repeat a loop.

In Python, while is called **while** and is used as follows:

user\_said = “”

while user\_said != “quit”:

user\_said = input(“Do you quit?”)

**Conditions**

Conditions are powerful because they enable our programs to respond intelligently to different situations.

In Python as in Karel’s world, conditions are usually written using **if**

if x==7:

print(“my favorite number!”

**Functions**

Although Karel did not use the word, when you used the **def** keyword you were creating a new **function**.

Functions are commands that the programmer creates for themselves.

Functions allow the programmer to expand their own capabilities.

Python also uses **def** for example:

def greeting(name):

print(“Hello, ”+name+“. pleased to meet you.”)

**Summary**

**Loops**: convenience and short code

**Conditions**: intelligence and response

**Functions**: create new abilities and ignore details