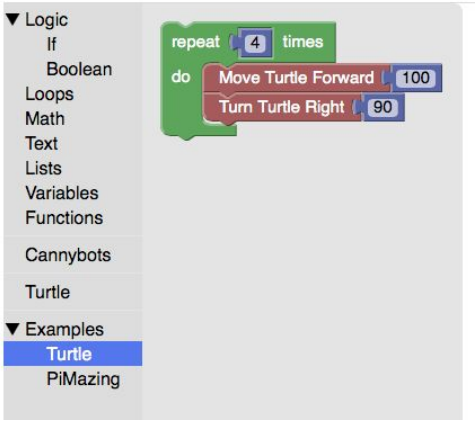
Cannyblocks

Introduction

Cannyblocks is a graphical drag and drop programming environment similar to Scratch but based on Google Blockly.

Here's is a simple example of some code that controls the Cannybot Turtle



Cannybots (Blockly) supports the standard programming concepts in addition to some custom functionality. The key features are:

1. Conditional & boolean Logic
2. Loopings
3. Lists
4. Functions
5. Math
6. Text
7. Python and JavaScript code generation
8. Cannybots Extenstions

Cannyblocks extends Blockly with custom blocks to support interacting with a Cannybot over the air using Bluetooth LE. The custom functions support:

- general purpose sending and receiving of message and
- Logo Turtle library.

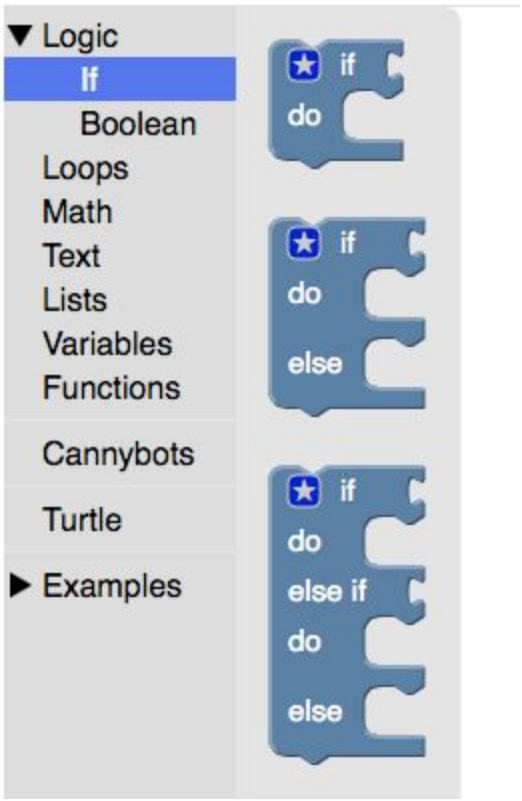
The Cannyblocks webapp runs within a webserver hosted on RaspberryPi, iOS or Android tablets; smartphone screens are too small to use interactively directly, but the server will still run, which has it’s uses described below.

On all the platforms you can either directly interact with the Cannyblocks app on the local device, or, you can browse to the device from another machine on the same network.

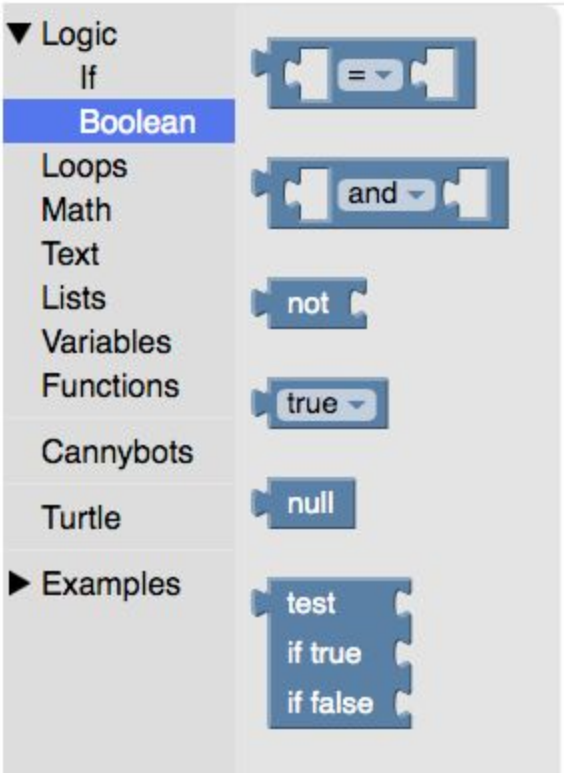
For example, you could pair the iOS or Android app with a Cannybot over Bluetooth LE as normal and then access the Cannyblocks web app (served up by an embedded webserver on the device) from multiple RaspberryPi or PC/Mac browsers.
The reverse is also possible and the combinations are too many to list here.

Programming Constructs

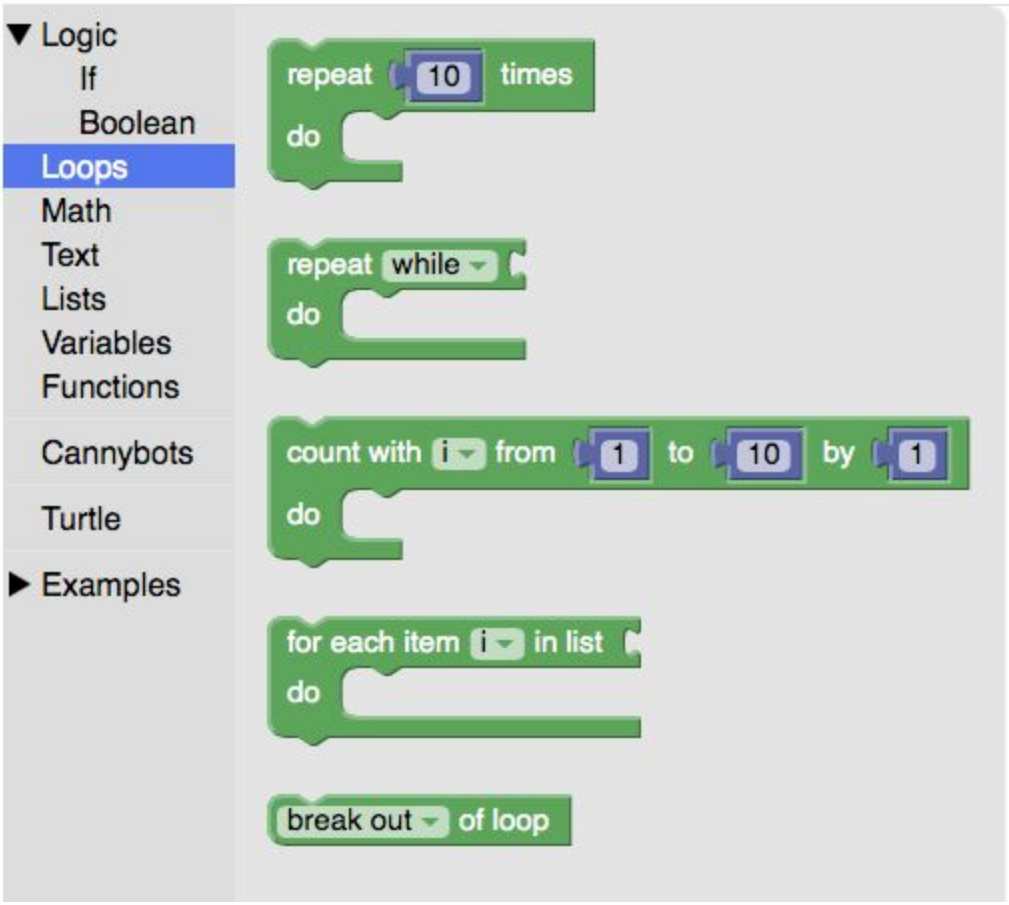
Logic - If



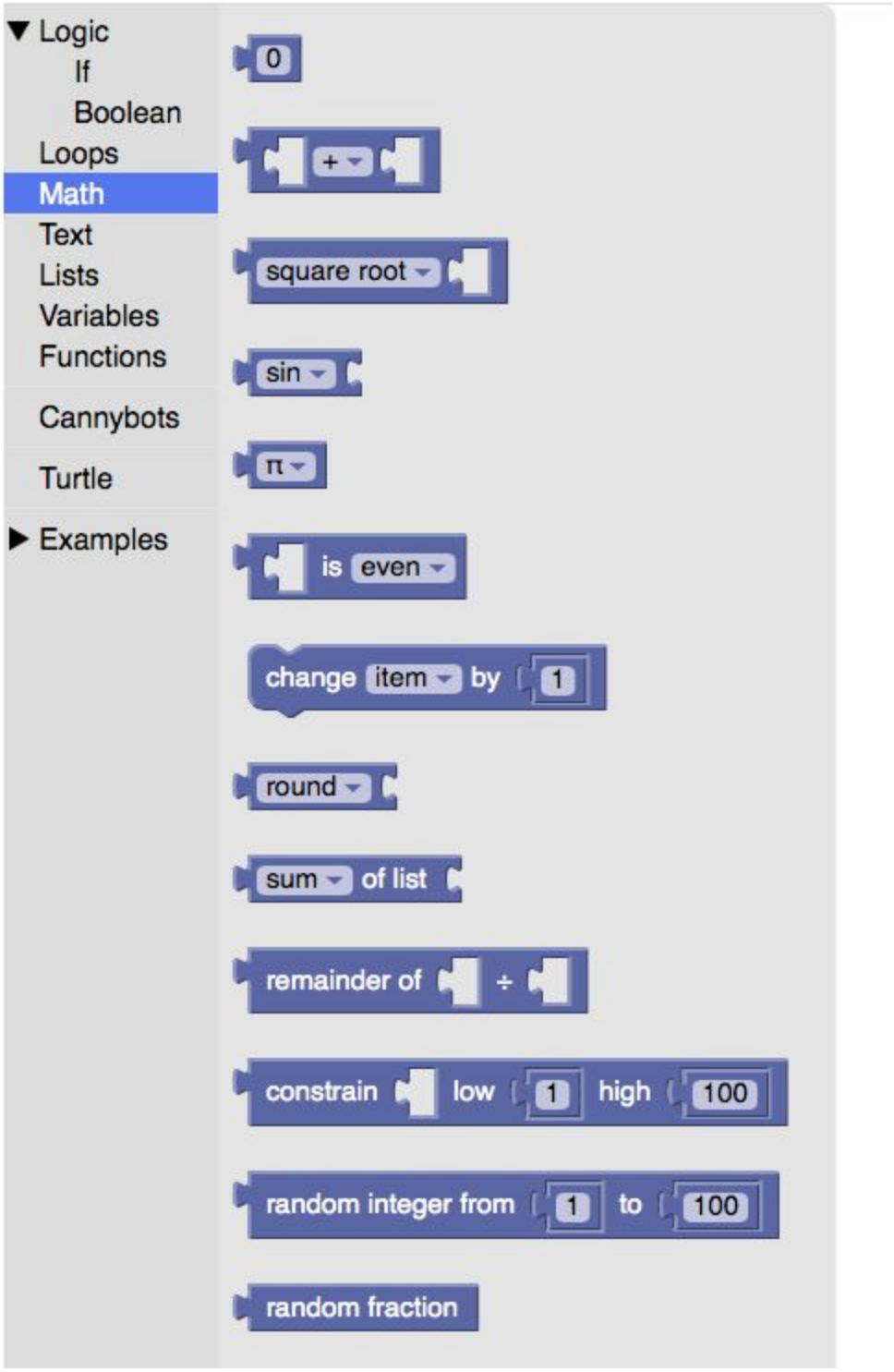
Logic - Boolean



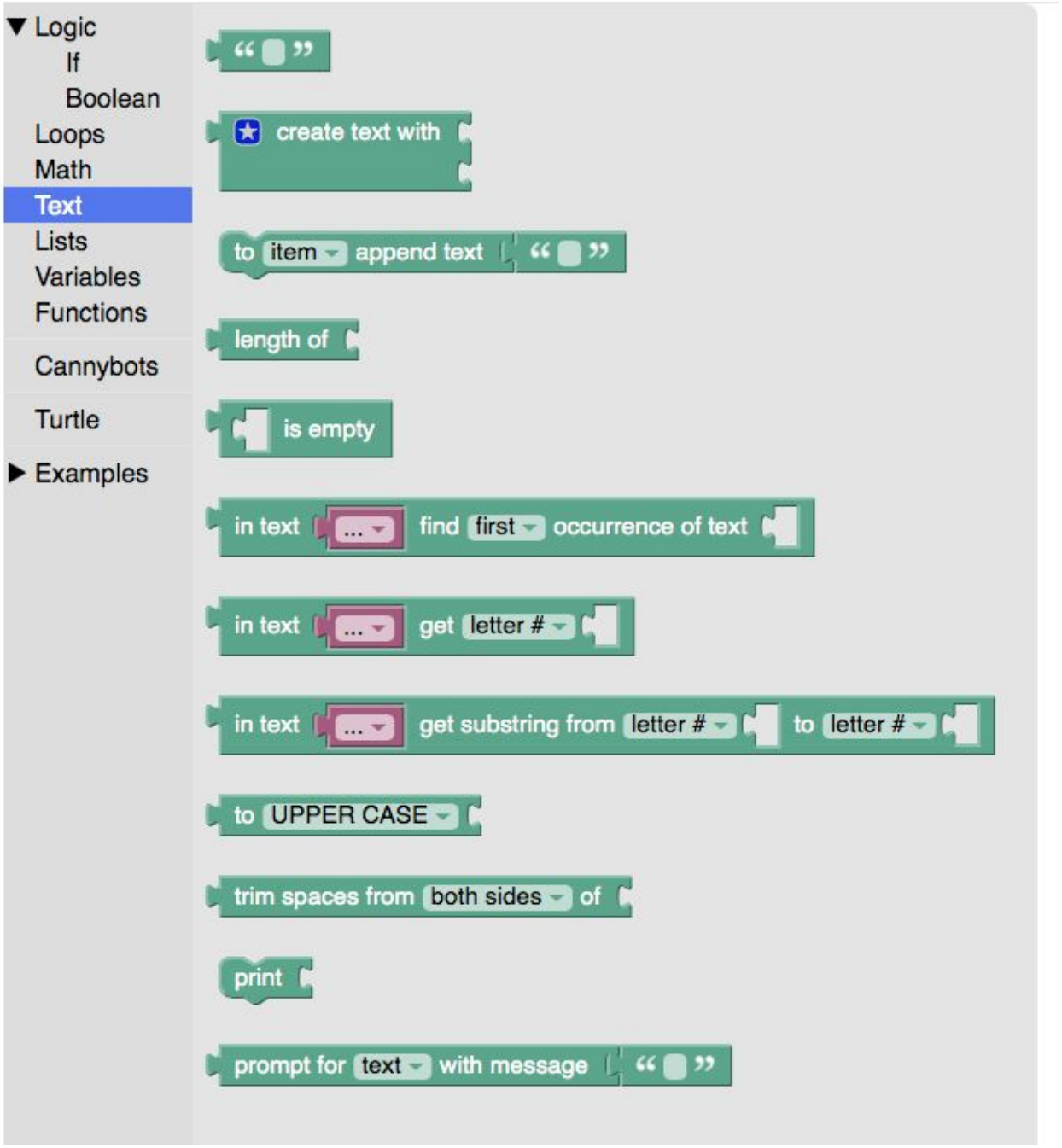
Loops


▼ Logic
If
Boolean
Loops
Math
Text
Lists
Variables
Functions
Cannybots
Turtle
▶ Examples
repeat 10 times
do
repeat while
do
count with i from 1 to 10 by 1
do
for each item i in list
do
break out of loop

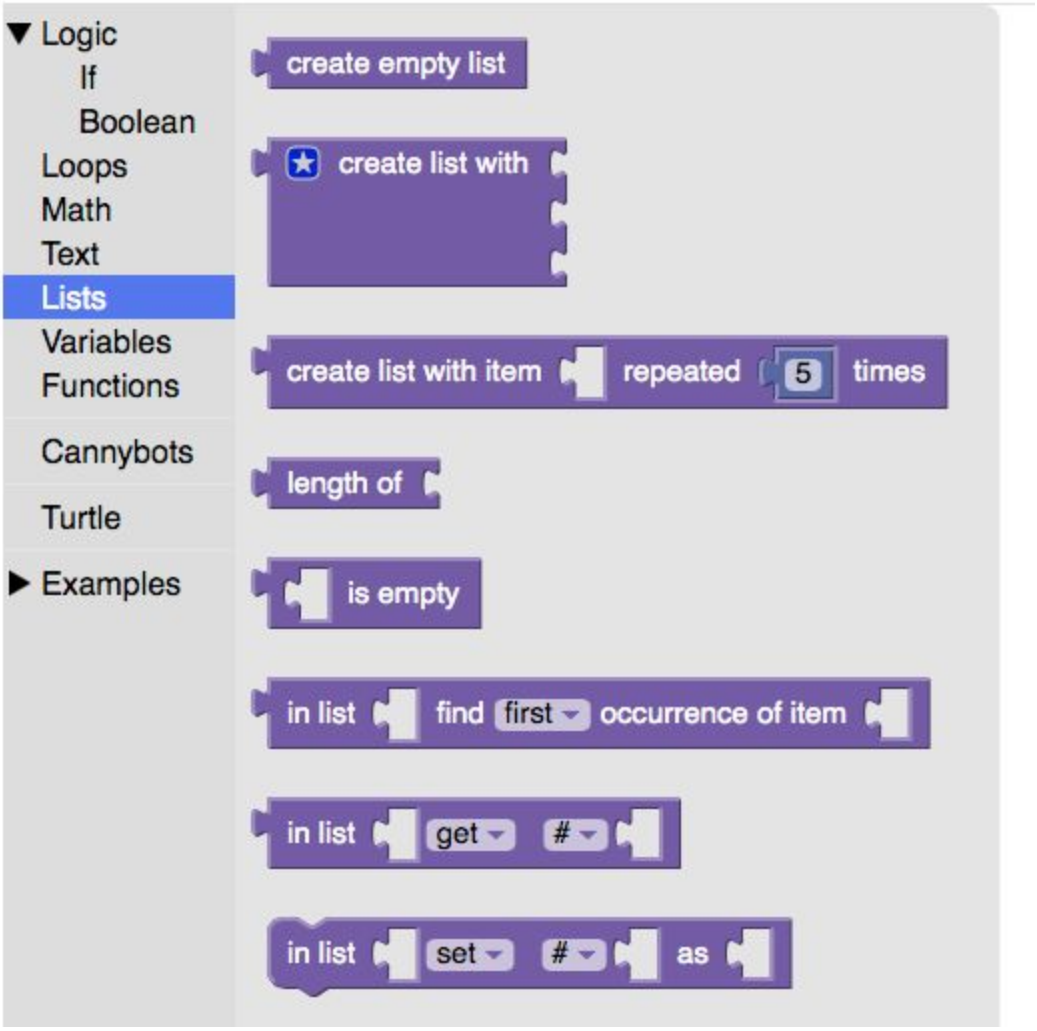
Math


▼ Logic
If
Boolean
Loops
Math
Text
Lists
Variables
Functions
Cannybots
Turtle
▶ Examples
0
+
square root
sin
π
is even
change item by 1
round
sum of list
remainder of ÷
constrain low 1 high 100
random integer from 1 to 100
random fraction

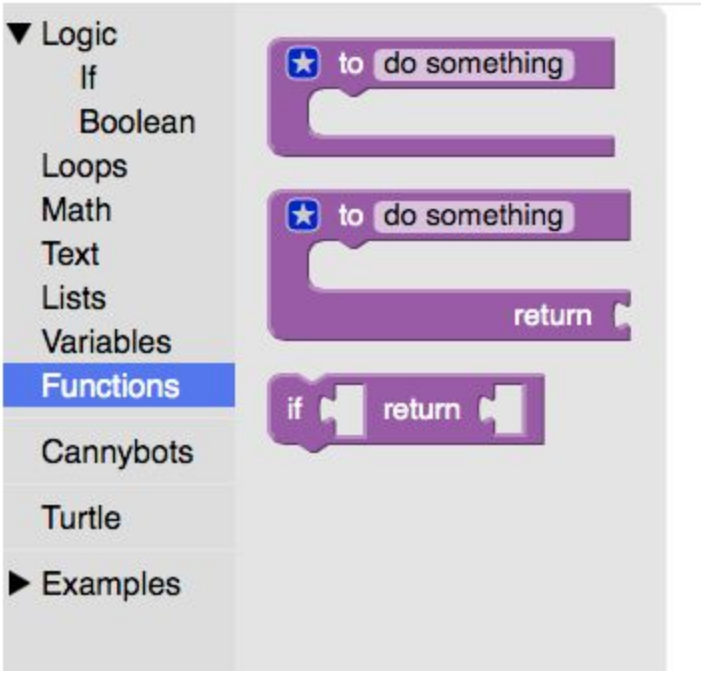
Text


▼ Logic
If
Boolean
Loops
Math
Text
Lists
Variables
Functions
Cannybots
Turtle
▶ Examples
“ ”
create text with
to item append text “ ”
length of
is empty
in text ... find first occurrence of text
in text ... get letter #
in text ... get substring from letter # to letter #
to UPPER CASE
trim spaces from both sides of
print
prompt for text with message “ ”

Lists


▼ Logic
If
Boolean
Loops
Math
Text
Lists
Variables
Functions
Cannybots
Turtle
▶ Examples
create empty list
create list with
create list with item repeated 5 times
length of
is empty
in list find first occurrence of item
in list get #
in list set # as

Variables

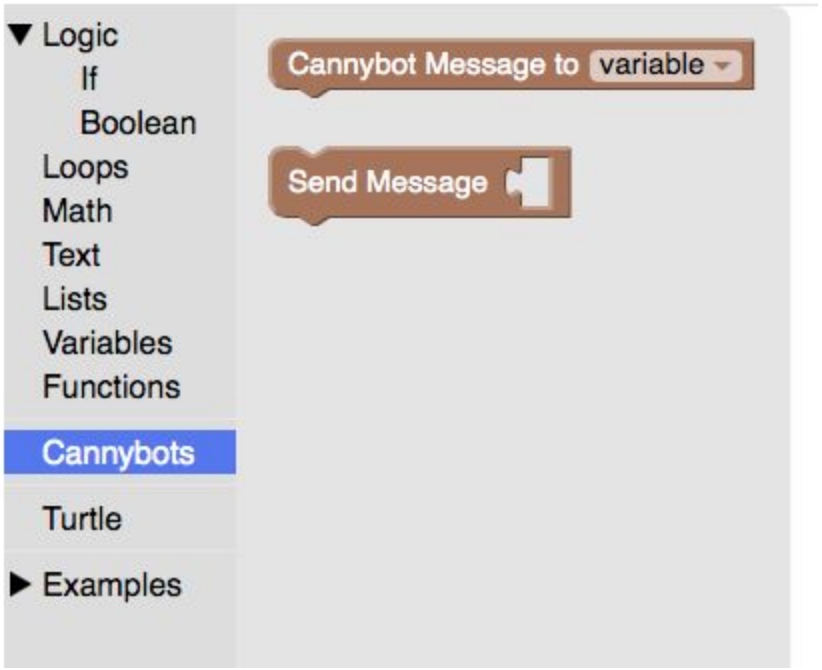

Logic
If
Boolean
Loops
Math
Text
Lists
Variables
Functions
Cannybots
Turtle
Examples
to do something
to do something
return
if return

Library Functions

Cannybots

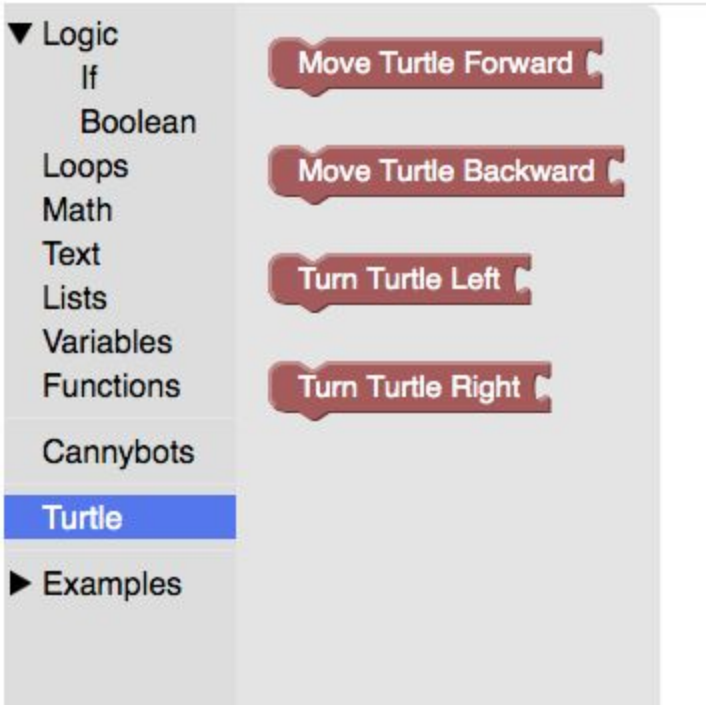
The “Cannybot Message to [variable]” will place the message received from a Cannybot into the named [variable].

The “Send Message [string]” will send a user define “[string]” or variable value to a Cannybot.



Turtle

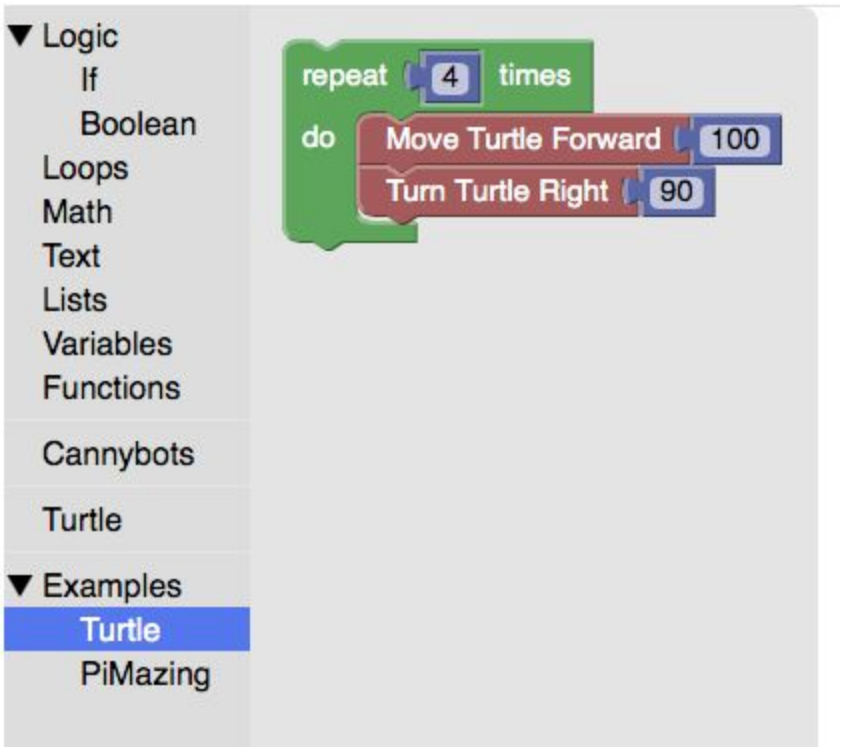
The Cannybots Turtle library provides basic Turtle commands for moving specified distances and angles.



Example Code

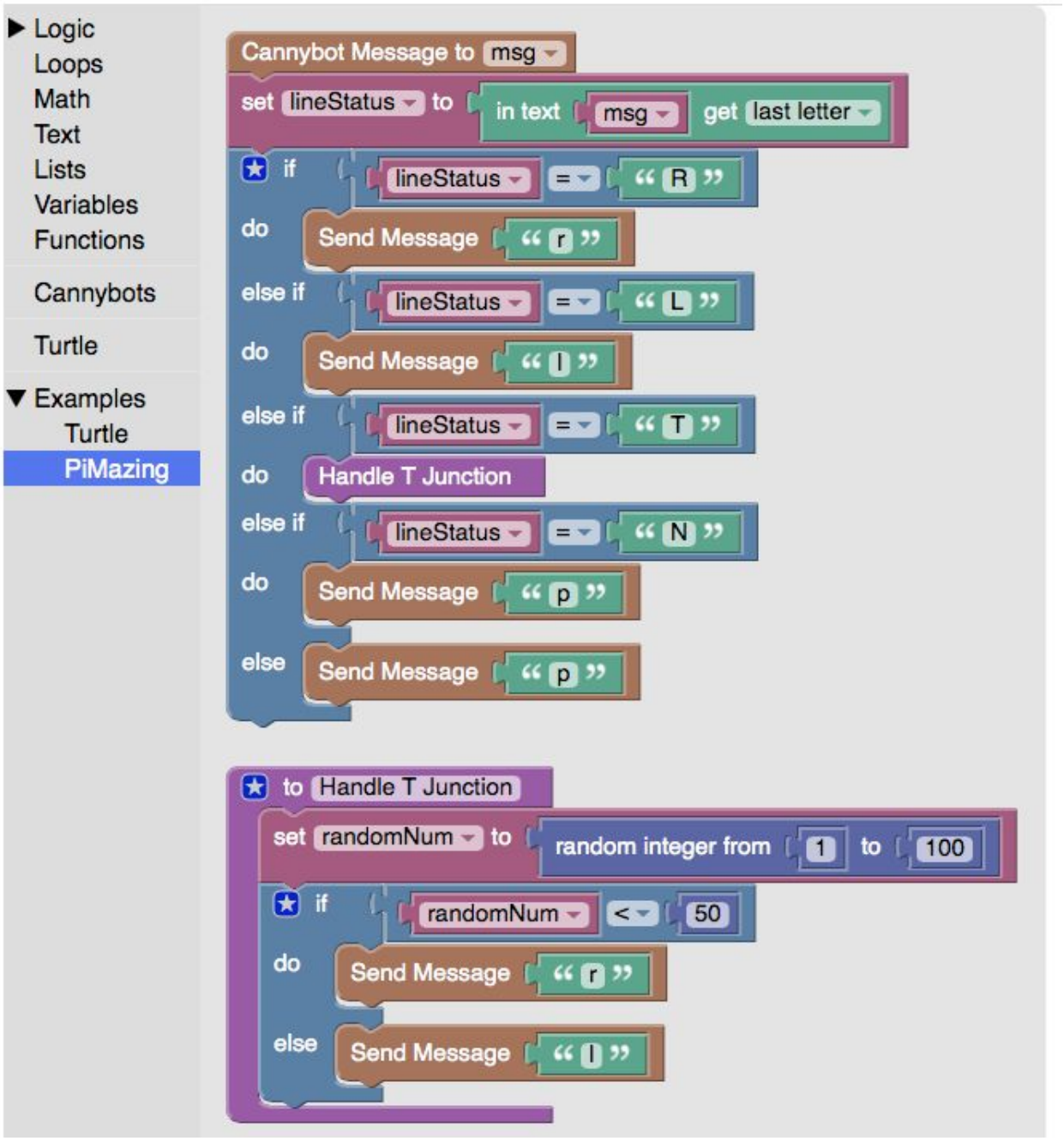
Turtle

The code below will cause the Cannybots Turtle to trace out a square.



PiMazing

The following



Further Examples

More examples and apps can be found on the Google Blockley Site here and here

Code Generation

Cannyblocks (Blockly) can generate underlying code for JavaScript and Python that represents the Blcoks. Tthe code generated is one-way (i.e. you can't create Blocks from Python code) and is standalone in the sense that it's intended to be used outside the Cannyblocks app. (More on that in another document)

JavaScript

Add screenshots

Python

Add screenshots