LibreLogo

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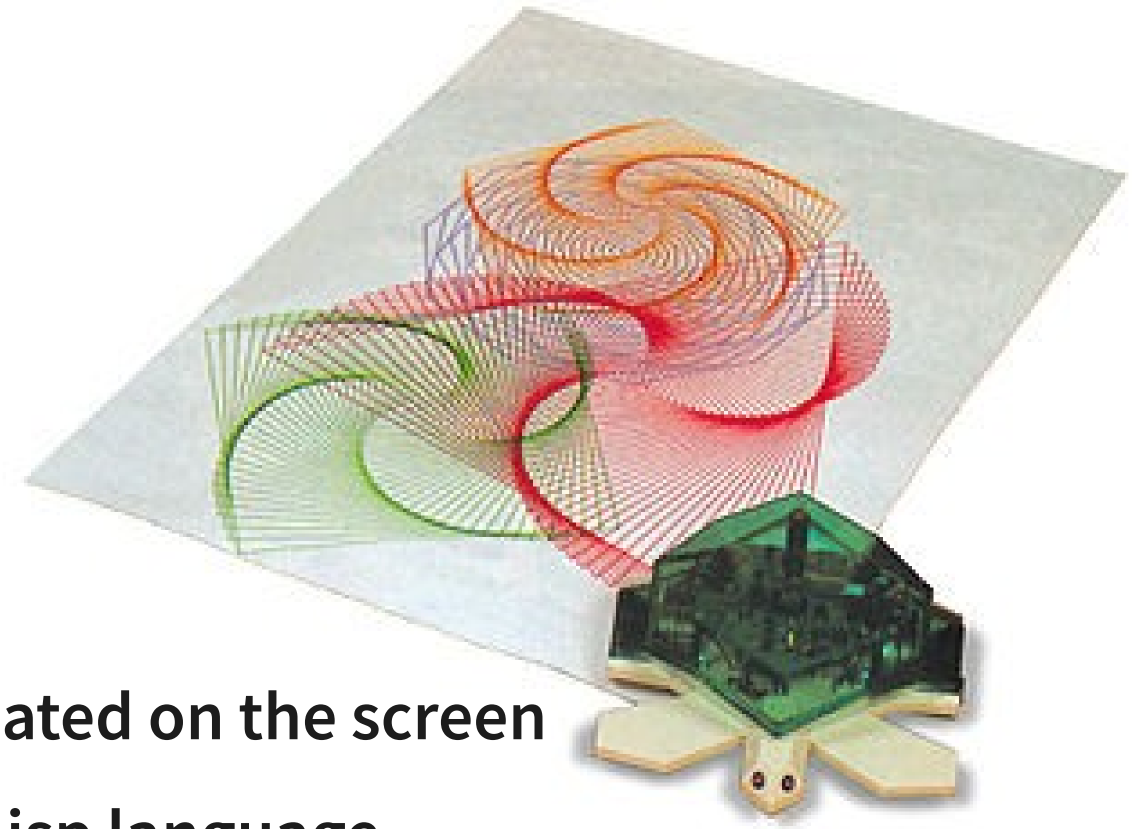
Logo: born to teach



The Logo language
- born in ‘67
- initially without turtle,
  added by Papert in ‘70

as a physical robot, later simulated on the screen

Easy to write, inspired by the Lisp language,
created for numerical AND textual manipulation

Has inspired the Smalltalk language and the eToys system
(and now Scratch) and the Kojo system (in a future lesson)

Papert (one of the fathers of Constructivism) posed that by teaching how to solve a problem to a computer, kids will learn how to think

Logo implementations

LibreLogo: a Logo in your text-editor (today)

NetLogo and NetLogo 3D (later)

FMSLogo: fmslogo.sourceforge.net

Browser-based:

- Papert: logo.twentygototen.org
- Malt2: etl.ppp.uoa.gr/malt2
- www.logointerpreter.com
- www.calormen.com/jslogo

QLogo: qlogo.org (QT-based)

...

Logo Language features

Global and local variables

Full recursive functions

Data types: word, list, array, number (but no static typing)

Conditions: if <test> [<then>][<else>]

Loops: while/until/repeat (REPCOUNT is the index)

...

LibreLogo: a small Logo in your word-processor

Adds: (it's converted to Python and runs in pyUNO) (HELP)

- interface to Python (code, sets, dicts, lists, tuples, sorted ...)

Removes:

- list-based functional programming with anonymous functions

Programming style

Imperative/procedural single-threaded

(but other implementations of Logo have concurrent agents)

Functional application of anonymous functions to lists (full Logo)

map/filter/accumulate/reduce/…

Very readable syntax (you don't need parentheses if unambiguous)

- the parser looks for function calls FROM RIGHT TO LEFT

E.g. a b c d e = a(b(c(d(e))))

The functional style allows for very readable code (see also Scala)

Demo 1
Create a Limerick generator

A limerick is a humorous poem consisting of five lines

A	7-10 syllabes, same verbal rhythm A, same rhyme A
A	7-10 syllabes, same verbal rhythm A, same rhyme A
B	5- 7 syllabes, same verbal rhythm B, same rhyme B
B	5- 7 syllabes, same verbal rhythm B, same rhyme B
A	7-10 syllabes, same verbal rhythm A, same rhyme A

There was a small boy of Quebec,	A (8)	
Who was buried in snow to his neck;	A (9)	
When they said. “Are you friz?”	B (6)	
He replied, “Yes, I is—	B (6)	
But we don’t call this cold in Quebec”	A (9)	(by R. Kipling)

A limerick often: (DEMO)

Speaks about somebody	(person)
With some strange characteristics	(adjective)
From a place/city	(origin)
Who at a certain time	(when)
Wanted to do something	(desire)
But something else happens	(event)
Then a different outcome arise	(outcome)
“For that (person) from (origin)”	

IDEA: randomly choose the needed parts from lists for each verse
BUT: we should handle agreement of person and origin
between verses (and rhyme structure) (DEMO 2)

Demo 2
choosing the correct article for an italian word

Type:	definite/indefinite	(determinativo/indeterminativo)
Gender:	male/female	
Number:	singular/plural	

1) deduce the word gender from final char

2) select proper gender/number from final char

3) handle normality and exceptions (here for ind. male sing. only)

- starts with vowel	→ ”un”
- starts with consonant	→ “un”
- starts with 2 special vowels (‘ia’, ‘ie’, ‘io’, ‘iu’)	→ “uno”
- starts with 1 or 2 special consonants (“x”, “y”, “z”, “gn”, “pt”, “ps”, “pn”, “sc”, “sf”, “sq”, “st”)	→ “uno”

Demo

DEMO