



Hello World!



The Weird World of Esolangs

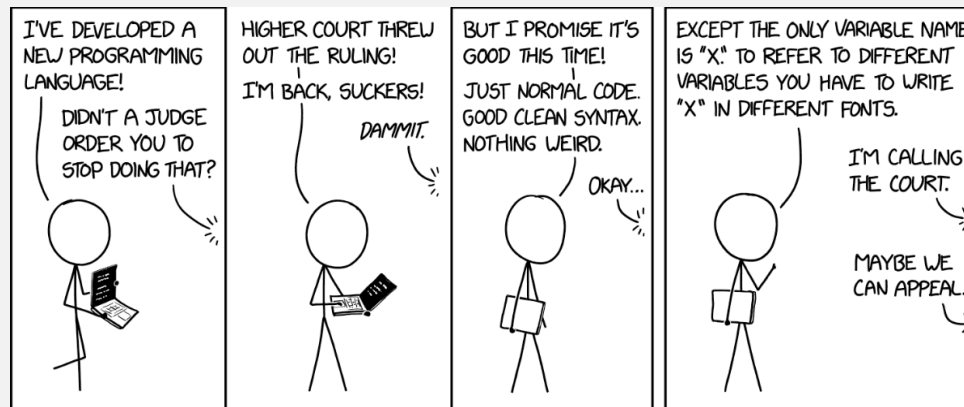
EC Code Club

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What is a programming language?

- A set of instructions/rules
- More specifically: Syntax, Semantics, Translation
- Layers of abstraction
- Doesn't have to be Turing complete



What is an esolang?

- AKA esoteric programming language, or weird language
- Hobbyist experiments
- [Proof of concepts](#)
- Software art
- Jokes/parodies
- Some are Turing-complete, but more often Turing-tarpits

```
HAI 1.3  
VISIBLE "Hai world!"  
KTHXBYE
```

INTERCAL: The first esolang

- INTERCAL (Compiler Language With No Pronounceable Acronym)
- Designed in 1972 by Don Woods and James M. Lyon
- Parodies the programming languages they used
 - FORTRAN, BASIC, COBOL, ALGOL, SNOBOL, SPITBOL, FOCAL, SOLVE, TEACH, APL, LISP, PL/I
- Example statements include:
 - READ OUT
 - IGNORE
 - FORGET
 - PLEASE

“With INTERCAL, you no longer need Windows or OS/2 to slow your 486 PC to a crawl!”

<http://catb.org/~esr/intercal/stross.html>

```

DO ,1 <- #13
PLEASE DO ,1 SUB #1 <- #238
DO ,1 SUB #2 <- #108
DO ,1 SUB #3 <- #112
DO ,1 SUB #4 <- #0
DO ,1 SUB #5 <- #64
DO ,1 SUB #6 <- #194
DO ,1 SUB #7 <- #48
PLEASE DO ,1 SUB #8 <- #22
DO ,1 SUB #9 <- #248
DO ,1 SUB #10 <- #168
DO ,1 SUB #11 <- #24
DO ,1 SUB #12 <- #16
DO ,1 SUB #13 <- #162
PLEASE READ OUT ,1
PLEASE GIVE UP

```

```

program hello
    print *, "Hello World!"
end program

```

```

#include <stdio.h>

int main() {

    printf("Hello
World");

    return 0;
}

```

- Sieve of Eratosthenes benchmark
 - Compute prime numbers less than 65536
- Tested on Sun SPARCstation 1 in 1992
 - LSI Logic SPARC at 20 MHz (1) or 25 MHz (1+)
 - 1–64 MB
- C: < ½ second
- INTERCAL: 17 hours

Some examples...

- Chef
 - Code looks like cooking recipes
 - Variables -> Ingredients
 - Operations -> Mixing/Baking
- Design principles:
 - Program recipes should not only generate valid output, but be easy to prepare and delicious
 - Recipes may appeal to cooks with different budgets
 - Recipes will be metric, but may use traditional cooking measures such as cups and tablespoons

Hello World Souffle.

This recipe prints the immortal words "Hello world!", in a basically brute force way. It also makes a lot of food for one person.

Ingredients.

72 g haricot beans
101 eggs
108 g lard
111 cups oil
32 zucchinis
119 ml water
114 g red salmon
100 g dijon mustard
33 potatoes

Method.

Put potatoes into the mixing bowl. Put dijon mustard into the mixing bowl. Put lard into the mixing bowl. Put red salmon into the mixing bowl. Put oil into the mixing bowl. Put water into the mixing bowl. Put zucchinis into the mixing bowl. Put oil into the mixing bowl. Put lard into the mixing bowl. Put lard into the mixing bowl. Put eggs into the mixing bowl. Put haricot beans into the mixing bowl. Liquefy contents of the mixing bowl. Pour contents of the mixing bowl into the baking dish.

Serves 1.

Some examples...

- [Shakespeare](#)
 - Code in the style of Shakespeare
 - Variables -> Characters
 - Instructions -> Lines of dialogue
- Characters edit each other's values using dialogue
 - “You are/thou art”, followed by a positive/negative noun and adjectives
- “Speak your mind/open your heart”, outputs ASCII/numeric value

```
The Infamous Hello World Program.

Romeo, a young man with a remarkable patience.
Juliet, a likewise young woman of remarkable grace.
Ophelia, a remarkable woman much in dispute with Hamlet.
Hamlet, the flatterer of Andersen Insulting A/S.


Act I: Hamlet's insults and flattery.

Scene I: The insulting of Romeo.

[Enter Hamlet and Romeo]

Hamlet:
You lying stupid fatherless big smelly half-witted coward!
You are as stupid as the difference between a handsome rich brave
hero and thyself! Speak your mind!

You are as brave as the sum of your fat little stuffed misused dusty
old rotten codpiece and a beautiful fair warm peaceful sunny summer's
day. You are as healthy as the difference between the sum of the
sweetest reddest rose and my father and yourself! Speak your mind!

You are as cowardly as the sum of yourself and the difference
between a big mighty proud kingdom and a horse. Speak your mind.

Speak your mind!

[Exit Romeo]

Scene II: The praising of Juliet.

[Enter Juliet]

Hamlet:
Thou art as sweet as the sum of the sum of Romeo and his horse and his
black cat! Speak thy mind!

[Exit Juliet]

Scene III: The praising of Ophelia.

[Enter Ophelia]

Hamlet:

Thou art as beautiful as the difference between Romeo and the square
of a huge green peaceful tree. Speak thy mind!

Thou art as lovely as the product of a large rural town and my amazing
bottomless embroidered purse. Speak thy mind!

Thou art as loving as the product of the bluest clearest sweetest sky
and the sum of a squirrel and a white horse. Thou art as beautiful as
the difference between Juliet and thyself. Speak thy mind!

[Exeunt Ophelia and Hamlet]


Act II: Behind Hamlet's back.

Scene I: Romeo and Juliet's conversation.

[Enter Romeo and Juliet]

Romeo:
Speak your mind. You are as worried as the sum of yourself and the
difference between my small smooth hamster and my nose. Speak your
mind!

Juliet:
Speak YOUR mind! You are as bad as Hamlet! You are as small as the
difference between the square of the difference between my little pony
and your big hairy hound and the cube of your sorry little
codpiece. Speak your mind!

[Exit Romeo]

Scene II: Juliet and Ophelia's conversation.

[Enter Ophelia]

Juliet:
Thou art as good as the quotient between Romeo and the sum of a small
furry animal and a leech. Speak your mind!

Ophelia:
Thou art as disgusting as the quotient between Romeo and twice the
difference between a mistletoe and an oozing infected blister! Speak
your mind!

[Exeunt]
```

Some examples...

- Piet
 - Named after Piet Mondrian
 - Code is written as abstract digital art instead of text
 - Uses 20 colors
 - Interpreter parses image
 - Commands are executed based on changes in hue/lightness between pixels (“codels”)



Some examples...

- Whitespace
 - Uses whitespace characters as syntax
 - Space
 - Tab
 - Linefeed
 - Different combinations of these characters correspond to different operations

```
Hello,[Space]world![Space][Space][Tab][Space][Space][Tab][Space][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Space][Tab][Space][Tab][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Tab][Tab][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Tab][Tab][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Tab][Tab][Tab][Tab][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Space][Tab][Tab][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Space][Space][Space][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Tab][Space][Tab][Tab][Tab][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Tab][Tab][Tab][Tab][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Tab][Space][Space][Tab][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Tab][Tab][Space][Space][LF]
[Tab][LF][Space][Space]
[Space][Space][Space][Tab][Tab][Space][Space][Tab][Space][Space][LF]
[Tab][LF][Space][Space]
[LF][LF][LF]
```

Some examples...

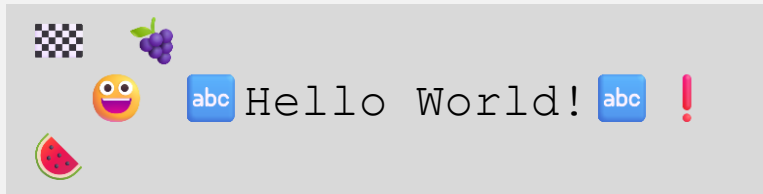
- Brainf***
 - AKA brainfsck, branflakes, brainfrick, bf...
 - Urban Müller aimed to write the smallest possible compiler for the Amiga OS v2.0
 - 240-byte compiler
 - Operates on an array of memory cells, each set to zero
 - <https://ttulka.github.io/brainfuck/>
 - Variants include COW and Ook!

```
1 +++++ +++           Set Cell #0 to 8
2  [
3      >++++           Add 4 to Cell #1; this will always set Cell #1 to 4
4      [               as the cell will be cleared by the loop
5          >++         Add 4*2 to Cell #2
6          >+++        Add 4*3 to Cell #3
7          >+++        Add 4*3 to Cell #4
8          >+          Add 4 to Cell #5
9          <<<<-       Decrement the loop counter in Cell #1
10     ]              Loop till Cell #1 is zero
11     >+             Add 1 to Cell #2
12     >+             Add 1 to Cell #3
13     >-             Subtract 1 from Cell #4
14     >>+           Add 1 to Cell #6
15     [<]           Move back to the first zero cell you find; this will
16                   be Cell #1 which was cleared by the previous loop
17     <-             Decrement the loop Counter in Cell #0
18 ]                Loop till Cell #0 is zero
19
20 The result of this is:
21 Cell No :   0   1   2   3   4   5   6
22 Contents:   0   0  72 104  88  32   8
23 Pointer :   ^
24
25 >>.              Cell #2 has value 72 which is 'H'
26 >---.            Subtract 3 from Cell #3 to get 101 which is 'e'
27 +++++ ++..+++.   Likewise for 'llo' from Cell #3
28 >>.              Cell #5 is 32 for the space
29 <-.              Subtract 1 from Cell #4 for 87 to give a 'W'
30 <.              Cell #3 was set to 'o' from the end of 'Hello'
31 ++.----- -.----- -.   Cell #3 for 'rl' and 'd'
32 >>+.            Add 1 to Cell #5 gives us an exclamation point
33 >++.            And finally a newline from Cell #6
```

Some examples...

- Emojicode

- Open source, high-level, object-oriented programming language



- Emoticon

- Smileys are program instructions
- Surrounding characters are considered data

```
hello world :-Q S:-P :-Q
```

hello	The data item 'hello' is placed on the right of the current list ':'
world	The data item 'world' is placed on the right of the current list ':'
:-Q	The left of the list ':' ('hello') is printed out and then removed
S:-P	The left of the list 'S:' (' ') is printed out
:-Q	The left of the list ':' ('world') is printed out and then removed

Plus many more...

https://esolangs.org/wiki/Language_list

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We are currently working on new rules for what content should and shouldn't be allowed on this website, and are looking for feedback! See [Esolang:2026 topicality proposal](#) to view and give feedback on the current draft.

Language list

This is a list which is maintained by hand, as opposed to [Category:Languages](#) which is automatically generated.

Note that languages that are merely jokes even compared to other esoteric languages are located in the [joke language list](#).

Please link only to existing article pages on this wiki. A stub is enough to start with, as long as it has a link to further information. **Languages with no link to a description are likely to be deleted.**

Contents

Non-alpha

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Top of page — See also — External resources

Non-alphabetic

Due to the large number of various symbols, spacing and punctuation are not ignored in this particular section, although case still is.

- Itera
- C flavored BrainF^{*ck}
- 🏠👤😬
- /Endzirae
- Ɑ
- |: (written in Lua🔗)
- ;x
- 💎🌐 (U+0001 and U+10FFFE)
- \$ḅṛīṣṯikāḍaḥ
- ○
- ا
- 🇧🇩
- (U+200C)
- 🇪🇺🇦🇺
- ^English
- ?

What can we learn from esolangs?

- Syntax is arbitrary
 - Esolangs emphasise concepts/structures underpinning code
- They help us think like computers
 - Obfuscated esolangs require intense problem-solving/debugging
 - They can introduce you to memory management concepts
 - e.g. stacks, pointers, memory cells





MoO moO MoO mOo MOO
OOM MMM moO moO
MMM mOo mOo moO
MMM mOo MMM moO moO
MOO MOo mOo MoO
moO moo mOo mOo moo

Thank you for listening!