

# COS333 Practical 1

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# 1 Research Questions

1. A computer programming language designed to experiment with weird ideas. They may be difficult to program in and are often created with a specific goal in mind (As a joke, to explore concepts, to be 'artistic', etc.)
2. Useful contributions of esoteric programming languages:
  - Test the boundaries and possibilities of a programming concept
  - Acts as a challenge for programmers
  - Can teach programming concepts minimally (like Turing completeness)
  - Exploring language design and minimalism
3. Chosen Esoteric Languages (a.Whitespace, b.Intercal)
  - (a) Whitespace is an imperative, stack-based language (similar to Forth), created by Edwin Brady and Chris Morris in 2002. Whitespace defines a command as a sequence of whitespace characters (Tab, Space, Linefeed). Whitespace was created as a joke about code readability and the absolute minimal visible footprint.
  - (b) Intercal ("Compiler Language With No Pronounceable Acronym") is deliberately unconventional and parodic, aiming to diverge from all major programming languages of the era (FORTRAN, COBOL, ALGOL). Intercal was designed by Donald R. Woods and James M. Lyon in 1972. Programs consist of statements optionally labelled in parentheses and each statement must begin with 'politeness qualifiers' such as "DO", "PLEASE", "PLEASE NOTE" (Over or underuse of "PLEASE" can lead to compiler rejection for being too polite or impolite). The semantics emphasize absurdity and (minimal) similarity to conventional languages.

Hello world in Whitespace (The following source code is for a Whitespace "Hello, world!" program. For clarity, it is annotated with S, T and L before each space, tab, and linefeed.)

```
S S S T S S T S S S L:Push_+1001000=72='H'_onto_the_stack
T L
S S :Output_ 'H'; _S S S T T S S T S T L:Push_+1100101=101='e'_onto_the_stack
T L
S S :Output_ 'e'; _S S S T T S T T S S L:+1101100=108='l'
T L
S S S S S T T S T T S S L:+1101100=108='l'
T L
S S S S S T T S T T T T L:+1101111=111='o'
T L
S S S S S T S T T S S L:+101100=44=','
T L
S S S S S T S S S S S L:+100000=32=Space
T L
S S S S S T T T S T T T L:+1110111=119='w'
T L
S S S S S T T S T T T T L:+1101111=111='o'
T L
S S S S S T T T S S T S L:+1110010=114='r'
T L
S S S S S T T S T T S S L:+1101100=108='l'
T L
S S S S S T T S S S T S S L:+1100100=100='d'
T L
S S S S S T S S S S T L:+100001=33='!'
T L
S S :Output_ '!' ; _L
L
L:End_the_program
```

The following is a "Hello, world!" program in INTERCAL.

```
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
```

## 2 Implementation Questions

### References

- [1] Jeremy Singer and Steve Draper. Let's Take Esoteric Programming Languages Seriously. In *Proceedings of Onward! '25*, 2025. <https://dl.acm.org/doi/10.1145/3759429.3762632>
- [2] Daniel Temkin. *Forty-Four Esolangs: The Art of Esoteric Code*. MIT Press, 2025. <https://mitpress.mit.edu/9780262553087/forty-four-esolangs/>
- [3] Daniel Temkin. Esoteric Programming Languages: A Unique Challenge. IEEE Spectrum, September 2025. <https://spectrum.ieee.org/esoteric-programming-languages-daniel-temkin>
- [4] Wikipedia contributors. Whitespace (programming language). *Wikipedia, The Free Encyclopedia*. [Online]. Available: [https://en.wikipedia.org/wiki/Whitespace\\_\(programming\\_language\)](https://en.wikipedia.org/wiki/Whitespace_(programming_language)) [Accessed: February 2026].
- [5] Whitespace examples. University of Durham CompSoc. [Online]. Available: <https://web.archive.org/web/20150717115008/http://compsoc.dur.ac.uk/whitespace/examples.php> [Archived Jul. 17, 2015].
- [6] Wikipedia contributors. INTERCAL. *Wikipedia, The Free Encyclopedia*. [Online]. Available: <https://en.wikipedia.org/wiki/INTERCAL> [Accessed: February 2026].