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Department of Computer Science
COS333 - Programming Languages

Research Questions Report

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Date: August 14, 2022

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1 Esoteric programming language Question 1

1.1 Explanation

An esoteric programming language (or esolang) is a computer programming language that is not designed to offer an efficient or elegant solution to computational problems but to explore the basic ideas behind computation theory or have fun and create a completely unique programming language. [9]

2 Categories Question 2

2.1 Funges

2.1.1 Advantages

They are efficient and require less time to write a program if the language is known well enough.

2.1.2 Disadvantages

They are not very readable and are also not very writeable. [1]

2.2 Stateful encoding lamguages

2.2.1 Advantages

This method of encoding can be more efficient than the other encoding methods.

2.2.2 Disadvantages

Slow and any kind of corruption will cause the entire program to stop working. [2]

3 Chosen languages Question 3

3.1 Chef

3.1.1 Description

Chef is a stack-based language where programs look like cooking recipes.

Designer

David Morgan-Mar came up with the idea and fully implemented the language on his own.

Year of initial design

Chef was designed by David Morgan-Mar in 2002.

Syntax and semantics characteristics

Chef contains ingredients and the method of cooking. The ingredients hold data values which are numerical. The cooking outputs the results of the method which manipulates the data values accordingly. [5]

3.1.2 Code Snippet

```
Ingredients.
72 g haricot beans
101 eggs
108 g lard
111 cups oil
32 zucchinis
77 ml water
100 g red salmon
105 g dijon mustard
117 potatoes
109 ml milk

Method.
Put milk into the mixing bowl. Put potatoes into the mixing bowl.
Put dijon mustard into the mixing bowl. Put red salmon into the
mixing bowl. Put eggs 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.
```

[3]

3.2 Whitespace

3.2.1 Description

Whitespace is a programming language which is fighting an injustice on tabs and spaces for being invisible.

Designers

The interpreter was written by Edwin Brady, meanwhile the language was designed by Edwin Brady and Chris Morris. Andrew Stribblehill has also contributed to the language.

Year of initial design

Released April 1st, 2003 is when the language was released.

Syntax and semantics characteristics

Whitespace only contains the following characters: Space (ASCII 32), Tab (ASCII 9) and Line Feed (ASCII 10). The language itself is an imperative, stack based language. Each command consists of tokens, which begin with Instruction Modification Parameters (IMP):

IMP	Meaning
[Space]	Stack Manipulation
[Tab][Space]	Arithmetic
[Tab][Tab]	Heap Access
[LF]	Flow Control
[Tab][LF]	I/O

Numbers can be any number of bits wide, and are simply represented as a series of [Space] and [Tab], terminated by a [LF]. [Space] represents the binary digit 0, [Tab] represents 1. [7]

3.2.2 Code Snippet

Code written in tabs and spaces which have changed visually respectfully:

[3]

4 Design by Contract Question 4

4.1 Explanation

Design by contract is a technique to software design that focuses on specifiying contracts that define the interactions between the various components of a system. It is a tool for helping software developers feel that their code is correct. ALong with other things such as: type systems, executable test cases, static code analysis and mutation testing. [6]

4.2 Language Support

- Racket [8]
- Effiel [4]

References

[1] Wikimedia Foundation/Academic. Esoteric programming language.

[2] Wikimedia Foundation/Academic. Esoteric programming language.

[3] Jakub Górowski. 4 esoteric programming languages that will blow your mind.

[4] James McGovern. Design by contract.

[5] David Morgan-Mar. Chef.

[6] Dave Nicolette. Design by contract: Part one.

[7] Durham University Computing Society. Whitespace.

[8] the Racket Team. Contracts.

[9] Unknown. Esoteric programming language.