Brainfuck Interpreter

- The program prints the full lyrics of Never Gonna Give You Up

Esoteric Languages

a. The language I chose is called Malbolge. It was invented by Ben Olmstead in 1998 to be a very difficult-to-program-in language. A programmer did not write the first program in Malbolge; the inventor never wrote any code in the language. It was generated by a Lisp program performing a beam search algorithm. The generated program was “Hello, World!”.

b. The program feeds the instruction to a virtual machine’s memory starting at index 0. It works with trits instead of bits and performs trit-wise operations. It had 7 different OP codes with different purposes on memory. However, the program doesn’t run on those 7 codes. They have to be encrypted in a different format so that the virtual machine can understand them. It is very confusing so I couldn’t even understand the Hello World program.

c. Malbolge is named after the eighth circle of hell in Dante’s Inferno which already means that no one can code in the language. I found it very interesting because the maker of the language himself did not code in the language. Also, it took almost 2 years for the first working program to be written in this language which was not even written by a human being. This language has a thing called Crazy Operation which encrypts and decrypts the language for execution.

d. If I randomly slid my fingers across the keyboard, I would get the Malbolge code. This is Hello, World! in Malbolge:

   ('&%:9]!~}|z2Vxwv-,POqponl$Hjig%eB@@>}=<M:9wv6WsU2T|nm-,jcL(I&%$#"`CB]V?Tx<uVtT`Rpo3NlF.Jh++FdbCBA@?]!~|4XzyTT43Qsqq(Lnmkj"Fhg${z@>

   This program echo whatever is given as terminal input:
   (=BA#9"=<;:3y7x54-21q/p-,+*)"!h%B0/.~P<<:(8&66#"!~}|{zyxwvugJ%

e. The interesting part of this language is that it is not written as it is fed into the computer as far as I understood. All the symbols and letters are converted into something else before feeding into the interpreter. From esolang:

   After each instruction is executed, if the memory position pointed to by C is in the range 33–126 then it is enciphered using the following translation table:

   ORIGINAL:
   !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
   TRANSLATED:
   5z]&gqtyfr$(we4{WP)H-Zn,[%\3dL+Q;>U!pJS72FhOA1CB6v^=I_0/8|jsb9m<.TVac`uY*MK'X~xDl}REokN:#?G"i@

f. This language is a 8 or 9 because people have written codes in it but it is very very difficult to understand. Almost impossible to understand. There is also reference to Malbolge’s original documentation: http://www.lscheffer.com/malbolge.shtml This article also provides some insights on Malbolge’s Turing Completeness.