

# CSE 340 Extra Credit: Esoteric Languages

Summer 2024

## Section One: Description of Brainfuck

### Description of Brainfuck

**Creator and Origin:** Brainfuck is an esoteric programming language created by Urban Müller in 1993. It was designed to challenge and amuse programmers, and to achieve Turing-completeness with the smallest possible compiler.

### Gimmick and Interesting Facts:

- Brainfuck operates on an array of memory cells, each initially set to zero.
- The language consists of only eight commands: >, <, +, -, ., ,, [, and ].
- Despite its minimalistic design, Brainfuck can perform any computation that a Turing machine can, given enough time and memory.
- Its simplicity and minimalism make it notoriously difficult to program in, as it requires managing memory and control flow with very limited instructions.

### Potential Esoteric Language Design

If I were to design an esoteric language, I would create a language called "Symbolla." This language would use a set of unique symbols, each representing different operations inspired by various ancient scripts. For instance, a symbol resembling an ancient hieroglyph could represent addition, while another symbol could represent looping constructs. The purpose of Symbolla would be to explore the intersection of ancient writing systems and modern programming, providing an educational yet challenging experience for programmers interested in history and language.

## Section Two: Brainfuck Program

### Brainfuck Program to Convert Input String to Uppercase

```
` ``bf
,-----[-----.,-----]
` ``
```

The above is the code snippet.

### Instructions to Set Up and Run Brainfuck

## Extra Credit Assignment

### 1. Setting Up Brainfuck:

- Download the bf Brainfuck compiler from its [GitHub repository](#).
- Open a terminal and clone the repository:

```
sh
Copy code
git clone https://github.com/kgabis/bf.git
cd bf
```

- Compile the source code using make:

```
sh
Copy code
make
```

### 2. Running the Program:

- Save your Brainfuck code in a file, for example, uppercase\_converter.bf.
- Run the program using the bf interpreter:

```
sh
Copy code
./bf uppercase_converter.bf
```

- Alternatively, you can use an online interpreter like the one available at [https://www.tutorialspoint.com/execute\\_brainfk\\_online.php](https://www.tutorialspoint.com/execute_brainfk_online.php)