UVSim SRS Document

Purpose

UVSim is an easy-to-use program to help computer science students learn the basics of machine language and computer architecture.

Description

The desired outcome for UVSim is that it will be a lightweight machine language interpreter for the language MLBasic capable of running programs written in that language.

Definitions

- Word: A 4-digit signed (+ or -) number that represents either an instruction, a value, or an empty space.
    - Operator: A two-digit instruction for the program to act on a location in memory. The operator is the first half of an instructional word, optionally preceded by a sign.
    - Operand: The two-digit location in memory of information to be acted upon by the operator. The operand is the second half of an instructional word.
- Accumulator: A memory register that temporarily holds a word for use in mathematical operations or for writing to the screen

Requirements

Functional

- The system shall possess an accumulator, a register for manipulating a value
- The system shall possess an internal memory capable of storage of up to 100 words from location 0 to location 99
- The system shall be capable of identifying when a word is an instruction
- The system shall be capable of identifying when a word is a value
- The system shall be capable of identifying when a word is empty
- The system shall be capable of adding numbers together
- The system shall be capable of subtracting one number from another
- The system shall be capable of multiplying numbers together
- The system shall be capable of dividing a number by another number

- The system shall be capable of interpreting the language MLBasic
- The system shall be capable of loading a program file
- The system shall be able to write to the screen
- The system shall be capable of reading input from the keyboard to its memory
- The system shall be capable of reading memory to its register
- The system shall be capable of writing from the register to its memory

Non-Functional

- The system shall display the loaded program after it has loaded it
- The system shall display output from the program adjacent to the loaded program during and after runtime
- The system shall have one button for locating and loading a program
- The system shall have one button for running the program