Design Document

Description:

The UVSim is a simple virtual machine that executes programs written in BasicML machine language.

User Stories:

(User Story 1)

As a UVSim developer

I want to load and execute BasicML programs on the UVSim

So that I can learn how machine language works and become more familiar with computer architecture.

(User Story 2)

As a client

I want a UVSim for my students to learn machine language

So that they can gain a deeper understanding of low-level programming concepts.

Use Cases:

#1 Load Program

Description: This use case describes the process of loading a BasicML program into the UVSim memory starting at location 00

Actors: Student

System: UVSim

Goal: Load a BasicML program in the UVSim memory starting at location 00

Steps:

1. Student inputs the BasicML program into UVSim
2. The UVSim reads the input (a signed four-digit number)
3. The UVSim stores each instruction into consecutive memory slots
4. The UVSim validates that the program fits in the memory and that the instructions are valid instructions.
5. The UVSim confirms to the user that the program loaded successfully