Computer Architecture
Research 1

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1 What?

My project will focus on re-implementing my own vector C++ functions using MASM assembly and then linking the assembly implementations with my existing C++ vector math library. The math library was built for use within my in-development 3d graphics engine. The functions to be implemented in assembly are a getMagnitude() and cross(). The functions will be implemented with a focus on effective translation and efficiency.

2 Why?

One goal is to become more proficient at translating high level code to assembly and back. Through that process I hope to gain a better understanding of low level code functionality. The other goal will be to attempt to make the Vector class functions run more efficiently both in isolation and within its use as a supplemental library. Lastly, it is my hope that undertaking this project will give me an increased understanding of vector math.

3 How?

This project will be achieved with the use of a number of development tools. Visual Studio will be the IDE of choice for the project. Version control will be managed with Git. A Visual Studio project currently exists for the vector math library. All MASM assembly code will be written within that project space, for ease of reference, benchmarking, and implementation.

4 Potential Challenges?

Looking ahead, I envision the obstacles that occur in this project will come mainly from the process of translating from C++ to assembly. A further challenge will come as a result of attempting to write the given C++ functions more efficiently in MASM. Setting up the test environment will take significant care as well. It will be important to make sure the efficiency tests are set up to accurately showcases the comparison between assembly and C++ implementations.