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Assignment 3 Report

For our design, we decided to create an object hierarchy using a base class named Variable. From this, we derive the Math, String, and Char classes. The Math class is also the parent of the two more derived classes named Numeric and Real. Our class diagram shows the use of inheritance and shared variable types amongst the derived classes. The reason for this design is to allow for polymorphism and casting of objects to be stored together. This eliminates the need for type detection for most of our functions since we are passing most parameters as a vector of variable names and a corresponding map of objects. There were some instances where we were required to type check for the correct type of object. Both Numeric and Real share the same functions since they are both a derived class from Math. This enables the usage of these functions regardless of the number-based object being used. An additional two classes Jump and MIS are used as well. Jump serves the purpose of handling all label storage and checking of conditions (eg if the value being compared in JMPZ is equal to 0). Mis handles and stores the objects and connects the functions calls to the corresponding member functions of each object. Since C++ isn't able to use switch statements with strings, we chose to use an if-else chain. This was more efficient than trying to store all of the member functions as function pointers. Unfortunately this made our code somewhat difficult to read since there are so many nested if statements.

Assign is not functional as of this the most recent build even though the internals of the function are correct. Within the main directory are the files for the diagrams.