**Project Proposal**

**Project 1 Team 3**

**OVERVEIW**

As shown in the diagram of our GUI mockup, the user will have access to solving equations of a single variable or a system of equations. Upon selection, the user will be brought to a new setup menu offering several numerical methods within the domain selected by the user on the initial main menu.

The numerical methods to be analyzed in the single variable equation selection are Newton’s Method, Fixed-Point Iteration, and Bisection Method.

The numerical methods offered under the submenu system of equations are Gaussian Elimination, LU Decomposition, Iterative Methods-Jacobi, SOR, Multivariable Newton’s Method, and Broyden’s Method.

Ease of use of our software, robustness, and graphical output relevant to error analysis and performance will be provided to the user.

**PROCESS**

**Input**

The GUI mockup shows what the user will interface with to enter test problems into the machine. The user will be provided with an initial guess, a tolerance, and an expected root. The software will be robust enough to input only the proper input needed per method. The user will also be able to enter a matrix by row and will be dynamically created in the software and provided to the user in a spreadsheet.

**Output**

The software will provide the user the output from the function. The output will be displayed in tables and graphs that the user will be able to formulate an analysis. There will be relative error and absolute error provided to the user when relevant as well the iteration counts, flops, flops per digit of accuracy, and execution times.