Symbolic Calculator Proposal

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Vision and Scope

**Project Statement:**

Building a symbolic calculator that accepts variables with assigned values, and algebraic equations. I.e. a^2 + log (b)

**Stakeholders:**

Development team, and Professor.

**Users:**

Students, Professors, Accountants, etc.

**Risks:**

i. Delay in project completion due to time mismanagement.

ii. Stagnation of project status due to steep learning curve.

**Assumptions:**

Users have trouble running the programming application. Will it be “user friendly” (Think about the users’ ability). Time assigned to each tasks, goal and experience.

**Vision Statement:**

The program application should be user friendly and easily understanding. The users should be able to use the application without any confusion.

**List of Features:**

Computing basic calculations

Recognize variable assignments

Computation of algebraic equations

**Sample Use Cases:**

(x + y; x=1, y=1) = 2

(x \* y; x=3, y=4) = 12

Requirements

**Functional**

1. Perform simple arithmetic equations e.g. +, -, \*, / (division), %(remainder)
2. Ability to create variables, and assign them values i.e. x=2
3. Order of operations: Which operations have priority over others

**Non-Functional**

1. Ease of Use: It’s easy to use and does not require knowledge of complex arithmetic
2. Cross-functionality & portability: To be coded in Java which enables software to be run across multiple devices such as desktops, mobile phones, and embedded systems.

Design

**Modules:**

1. Parser

Utilize an existing library that can enable parsing in the programming language that we use.

1. Calculation Engine:
2. Build the basic structure of a calculation engine using Java
3. Enables the user to enter their formulas or expressions

**Error Management:**

Handles arithmetic errors by throwing arithmetic exceptions and handling them appropriately.

**UI:**

Default UI will feature basic arithmetic functions

An alternate button will enable access to more scientific functions