Criterion E: Evaluation

Meeting the Criteria for Success:

1. Application readily calculates the simple alkanes, alkenes, alcohols, and other simple 3 element compounds, this is met.
2. Application readily calculate empirical formulas of compounds with up to 5 elements, this is met.
3. Application readily returns the steps for demonstrating how the empirical formula was calculated, this is met.

Improvements in Future:

I found this application useful for the calculations of simple empirical formulas, the kind that are seen when learning how to calculate formulas. However, this calculator, due to rounding, cannot accurately calculate more fine and large compounds with accuracy. For example, the calculator generalizes 89% O and 11% H as the same compound as 88% O and 12% H, when they could be completely different compounds. Fine errors like this do not affect the current purpose of assisting in the learning of Empirical Formulas nor in the solving of them in classrooms, but it does affect the result if this is used in a laboratory or research setting. For the future, this should be improved to reduce the rounding errors and increase the accuracy for larger numbers.

Another fault with this is it doesn't calculate the empirical formulas up to 10 elements or beyond. This was a result of testing where the compounds with more than 7 elements are rare and when they do occur, cannot be easily calculated with the calculator nor by hand. As a result, I chose to reduce the number to 5 in order to meet the needs for the empirical formula requirement 2 but at the same time, not have inaccurate calculations by the calculator, potentially harming the user in their calculations.

This program was useful not only for developing my skills in GUI creation and logic, but also with my knowledge of Empirical Formulas in chemistry. With future work and development, I believe that this program can become a useful tool for teachers and students, not only for calculating the results of element percent values, but also demonstrating the steps needed to get to the final result.