Design Optimizer - Project Requirements

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Project Description

1. **Problem:** When you have a design problem where a certain criteria needs to be achieved (lowest mass, lowest drag coefficient, etc.), and there are many equations that relate certain properties of objects to each other, it can become difficult to calculate the values of the properties by hand.
2. **Solution:** A program that can be used to find solutions to the problem by allowing users to define the relevant properties, variables, and constants for each object, as well as information about how to derive the solution.

Key Features

1. A simple text-based language that allows users to easily define properties of objects in the problem.
2. Unit checking so that users don't accidentally input equations that do not have the same units as the property they are defining. This will also serve as a mechanism to convert units between their equivalents (e.g. m/s to km/h).
3. A variety of optimization methods will be included to allow for minimization of a parameter, maximization of a parameter, or finding when a particular parameter equals a specific value.

Requirements

1. The user is able to specify the needed objects and properties.
2. The program and language is relatively easy to use for the end user.
3. The program can solve simple and complex problems without the user needing to utilize more complicated features of the input language.
4. The program code is easily expandable for future additions to functionality.