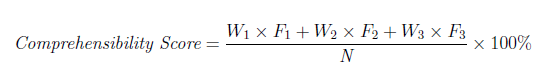
**Comprehensibility Score Measurement Process:**

In this study, we introduce the **comprehensibility** metric and show a way to measure it. For this, we manually check whether a class is comprehensible, and how much it is comprehensible. A class is regarded as comprehensible, if the entities used in this program is readable (or understandable). We refer these entities as a **bag of entities** of the class. The bag of entities consists of package name, *class name, method name*, and *variable name* of the class. **The keywords used in Java programming language (or other keyword list for other language) are excluded in this process.** The general loop variables such as *i, j* are also excluded here. The entities in the bag of a class are then categorized into following three levels:

1. **Well Readable:** If an entity is completely meaningful and helps to understand the program. For example, *calculateSalary()* is a method name which is completely understandable and well readable. The entities of this category carry 100\% weight.
2. **Moderate Readable:** If an entity is not fully meaningful but helps to understand the program, that is, the entity is partially understandable. For example, *calSalary()* is partially understandable and moderate readable. The entities of this category carry 50\% weight. [It can be dynamyc]
3. **Non Readable:** If an entity is neither meaningful nor understandable. For example, *cs()* is not understandable and non readable. The entities of this category carry no (0\%) weight.

After the categorization, we quantify the comprehensibility metric for a class using the following equation.



Here, **W1, W2** and **W3** represent the weights for the entities of **Well Readable, Moderate Readable** and **Non Readable** level respectively. We weights these **1, 0.5** and **0** respectively based on the definition as discussed earlier. **F1, F2** and **F3** represent the frequency of the entities of the corresponding level of the class respectively. **N = F1 + F2 + F3** represents the total number of entities of the class.

For example, if a class contains 10 entities: 5 of these are well readable, 3 moderate readable, and 2 non readable. So, **Comprehensibility Score** = (5 x 1 + 3 x 0.5 + 2 x 0) x 100/ 10 = 0.65 = 65%, which means that the class is 65\% comprehensible.