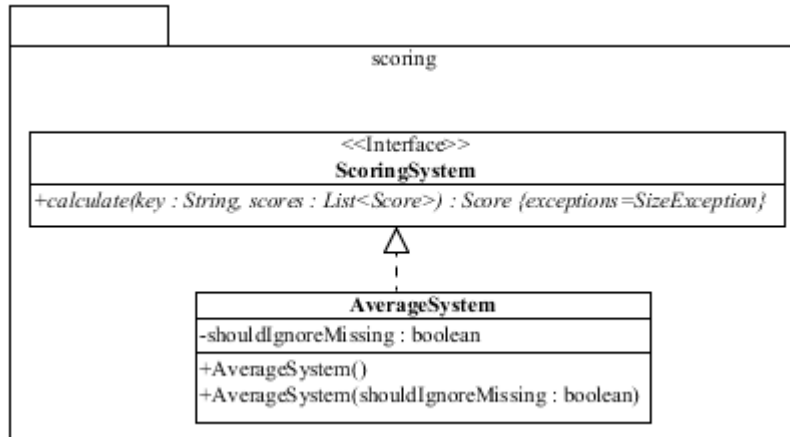# Specifications: `AverageSystem`

In addition to the obvious specifications illustrated in the following UML class diagram:



the `AverageSystem` class must satisfy the following specifications.

1. The `calculate()` method must not have any side effects. That is, it must not change the `List` that it is passed or any of the values in the `List`.
2. The `calculate()` method must calculate the average of the `List` of `Score` objects it is passed.

   2.1. You may assume that the `calculate()` method is passed a `List` that does not contain any `null` elements. Note: This does not mean that the `List` does not contain **missing** scores.

   2.2. It must account for missing values in one of two ways, depending on the value of the `shouldIgnoreMissing` attribute.

       2.2.1. If `shouldIgnoreMissing` is `true` then missing values must be ignored. In other words, if there are 10 elements and 2 are missing, the calculation must be performed as if there are only the 8 non-missing elements.

       2.2.2. If `shouldIgnoreMissing` is `false` then missing values must be treated as 0.0.

   2.3. If the `List` is `null` then the average must be 0.0.

   2.4. If the `List` is empty then the `calculate()` method must throw a `SizeException`.

   2.5. If there are no non-missing `Score` objects and the `AverageSystem` is ignoring missing values then the `calculate()` method must throw a `SizeException`.

2.6. If the `List` is not `null` and not empty then the average must be calculated as described in the Glossary.

3. The default constructor must construct an `AverageSystem` object that does not ignore missing values.