

## Requirements Fundamentals

### 1 General description of Application

ETERNITY:FUNCTIONS is an extension of a typical scientific calculator, each individual needs to complete one of the function that provided by project description. For this part, the **standard deviation function** needs to be implements, which is calculated by the following Mathematical formula:

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^n (x_i - \bar{x})^2}$$

The detail requirements are presented in the following subsections.

### 2 Stakeholders

The stakeholders of this ETERNITY:FUNCTIONS product is all people who will use this application calculate discreteness of sample data, developer and maintainer.

### 3 Requirements attributes of F10: $\sigma$

**Re.1**      **priority: 1**      Available Functions display

When the ETERNITY:FUNCTIONS calculator starts, the console should be able to display the available functions from F1: $\arccos(x)$  to F10: $\sigma$ .

**Re.2**      **priority: 1**      Functions selection

According to the available functions, user can select the function they want, then enter the parameter input interface.

**Re.3**      **priority: 1**      Parameter input

The user can enter the parameter according the interface guidelines, the guidelines depends on the specific function that user selected since the needed parameters are different.

**Re.4**      **priority: 3**      Get the result

After the parameters input, the console can show the result of selected function.

**Re.5**      **priority: 2**      Whether start another calculate

After get the needed result, the console can provide choices either exit the application or launch another round calculation.

**Re.6**      **priority: 2**      Input parameter validation check

In the data input process, the application should be able to check the validation of input parameter and give the corresponding reminder.

**Re.7**      **priority: 2**      Decimal digits number selection

After input all the sample values, the user can input the number of decimal that they want.

**4 ETERNITY:FUNCTIONS constraints**

1. The implements of this scientific calculator cannot use the java internal library such as Math and so on.
2. The result of ETERNITY:FUNCTIONS should be same as the real scientific calculator.