Coursework I

Task I.1

图示

描述已自动生成After the first 1, 2, and 3 elements have been printed, which will go through (map (\*3) [1..]) (map (\*5) [1..])) and (map (\*2) [1..]). And the elements in map(\*3) and map(\*5) will be merged into a list, which will be merged with the map(\*2) list. As the following figure:

Task I.2

As discussed, this evaluator has a weakness. Because if this is a spreadsheet written by a user who might make a mistake and write the definition that can not be evaluated. From my perspective, the results of the calculation should be packaged in Maybe.

Task I.3

Explain how your implementation works:

Firstly, I define the drop function. In this function, I can drop n in the list. If (n >= w) drop (n-w) wts else (dropTree n w t) ++ wts. The dropTree contains I. drop 0 for lead; II. drop 0 for the node; remove left and drop right; drop left and keep right. Then I created the testDrop function to do some tests with the Bool. And I can check whether the drop function works well.

Explain why it has the desired time complexity:

Because the drop function discards half of the content that needs to be discarded each time, so its complexity is O(logn).

Test your solution: provide some evidence of testing with your answer:

A picture containing graphical user interface

Description automatically generated

Task I.4

Provide the required instances, along with a brief explanation:

t1 = 1 +/- 0.5 == (Ivl 0.5 1.5)

t2 = Ivl 0 0 + Ivl 1 2 == Ivl 1 2

t3 = Ivl 2 3 - Ivl (-1) 4 == Ivl (-2.0) 4

1 +/- 0.5 means 1-0.5 and 1+0.5 equals 0.5,1.5

0+1 and 0+2 equals lvl 1 2

2-4 and 3-(-1) equals -2.0 4

Test your solution: provide some evidence of testing with your answer:

A picture containing shape

Description automatically generated

Task I.5

The function of ‘circumference’ is used to calculate the circumference of a rectangle and a circle. And ‘addAccumStats” is used to add the features of two objects which includes asCount, asSumArea, asSumCircumference, asMaxArea, asMaxCircumference(cnt, a, c, ma, mc).

Graphical user interface, application

Description automatically generated

Graphical user interface, text

Description automatically generated The new statistics’: