

## CM20214 LISP Program Format

This program is based on clisp

Input format:

The program only read symbol and number, the sign of the number must be stated, the coefficient with 1 should be stated. Need space between every "+", "-" signs and different numbers.

To represent exponent:  $X^2 \Rightarrow XX$ ,  $X^2Y^3 \Rightarrow XXYYY$

To represent negative number:  $-X = + - 1X$ ,  $-1 = + - 1$

Input should be in its simplest form.

Valid input example:  $2X^2 + 4XY + -4 \Rightarrow + 2 XX + 4XY + - 4$

In (poly-), p2 should not start with "+" sign as it is always be "negative"

Valid input example for (poly-) : p1:  $+ 1X + 4Y$  p2:  $4X + 5$

## Algorithm of (poly + and poly-)

Using append to combine p1 and p2 to form a complete list with + sign in the middle.

Extract integer, as we will calculate them separately.

Then locate the element with the same radix and return that list.

So we can do the addition or subtraction based on the sign.

By the same way, as we traverse through the whole list, we combine the result (list) with the current list can calculate the current list until be reach the end.

Finally, combine the computed list with the integer list.

## Algorithm of (poly\*)

This time, we need do multiply p1 and p2 instead of combine them first.

The process of doing multiplication is let the first element of p1 multiply the p2 list element, then plus the send element of p1 multiply by the p2 list element until the p1 list has been consumed. And we got the whole list after the multiplication and no need to worry about the exponent. Then follow the same process as poly+ and poly- do.





