-------------------------------------Definition--------------------------------------------------------------------------

char == [CHAR] (CHAR is defined as all characters)

blank == [space, line break, tab]

TEXT == seq char

(seq is a predefined function, meaning a sequence of elements from its set-type argument)

SEPARATOR == seq1 blank

WORD == seq1 (char \ blank)

# Initial Feature: Unique word count

-------------------------------------Function words(Word Split)----------------------------------------------------

words: TEXT -> seq WORD

\forall s: SPACE; w: WORD; l,r: TEXT

words <> = <> &

words s = <> &

words w = < w > &

words (sr) = words r &

words (ls) = words l &

words (lsr) = words l + words r

------------------------------------Function wc(Unique word Count)--------------------------------

wc: TEXT -> N

\forall file: TEXT

TEXT -> seq WORD

unique WORD = <>

for each WORD in seq WORD

if WORD not in unique WORD

unique WORD.add(WORD)

wc file = # (unique WORD)

# Feature 2: Line count

---------------------------------- Function lines(Line Split)--------------------------------

LINE == seq1(char\tab)

\forall t: tap; n: LINE; left,r: TEXT

lines: TEXT -> seq LINE

lines <> = <> &

lines t = <> &

lines n = < line > &

lines (tr) = lines r &

lines (lt) = lines l &

lines (ltr) = lines l + lines r

--------------------------------- Function lc(Line Count)--------------------------------

lc: TEXT -> N

\forall file: TEXT

lc file = # (lines file)

# Feature 3: Char count

-------------------------------------------------- Function cs(Char Split)--------------------------------

\forall b: BLANK; c: CHAR; l,r: TEXT

cs: TEXT -> seq CHAR

cs <> = <> &

cs b = <> &

cs c = < c> &

cs (br) = cs r &

cs (lb) = cs l &

cs (lbr) = cs l + cs r

--------------------------------------------------- Function cc(Char Count)--------------------------------

cc: TEXT -> N

\forall file: TEXT

lc file = # (lines file)

# Feature 4: Replacement

-------------------------------------Function words(Word Split)----------------------------------------------------

words: TEXT -> seq WORD

\forall s: SPACE; w: WORD; l,r: TEXT

words <> = <> &

words s = <> &

words w = < w > &

words (sr) = words r &

words (ls) = words l &

words (lsr) = words l + words r

------------------------------------Function rl(Replacement)--------------------------------

rl: TEXT -> newTEXT

input: orgWORD, newWORD

seq WORD = words(TEXT)

for each WORD in seq WORD:

if WORD == orgWORD:

WORD = newWORD

newTEXT.append(WORD)