**CTA 4: Infix to Postfix**

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Pseudocode

Class PostfixConverter

Function convertToPostfix(infix: String) -> String:

Define Function precedence(operator: Char) -> Integer:

Switch operator:

Case '^': Return 3

Case '\*', '/': Return 2

Case '+', '-': Return 1

Default: Return -1

End Function

operatorStack <- Empty Stack

postfixString <- Empty String

For index from 0 to length of infix:

nextCharacter <- character at index from infix

If nextCharacter is whitespace:

Continue to next iteration

Switch nextCharacter:

Case '+', '-', '\*', '/', '^':

While operatorStack is not empty AND precedence of nextCharacter <= precedence of top item in operatorStack:

Append top of operatorStack to postfixString

Pop operatorStack

Push nextCharacter to operatorStack

Case '(':

Push nextCharacter to operatorStack

Case ')':

topOperator <- Pop operatorStack

While topOperator is not '(':

Append topOperator to postfixString

topOperator <- Pop operatorStack

Default:

If nextCharacter is a letter:

Append nextCharacter to postfixString

While operatorStack is not empty:

Append top of operatorStack to postfixString

Pop operatorStack

Return postfixString

End Function

End Class

Class PostfixConverterTest

Function main():

// Test 1

infixExpression1 <- "a/b\*(c+(d-e))"

Display "Infix Expression: " + infixExpression1

postfixResult1 <- Call convertToPostfix(infixExpression1)

Display "Postfix Result: " + postfixResult1

// Test 2

infixExpression2 <- "f+g\*h-(i/j^k-l\*m+n)"

Display "Infix Expression 2: " + infixExpression2

postfixResult2 <- Call convertToPostfix(infixExpression2)

Display "Postfix Result 2: " + postfixResult2

// Test 3

infixExpression3 <- "p\*(q+r/s-(t\*u^v\*w+x-(y\*z)^a))"

Display "Infix Expression 3: " + infixExpression3

postfixResult3 <- Call convertToPostfix(infixExpression3)

Display "Postfix Result 3: " + postfixResult3

// Test 4

infixExpression4 <- "a\*(b+c\*(d-e/f+(g-h)\*(i^j))-k)"

Display "Infix Expression 4: " + infixExpression4

postfixResult4 <- Call convertToPostfix(infixExpression4)

Display "Postfix Result 4: " + postfixResult4

End Function

End Class

**Figure 1.**

Display input infix and the output postfix

A screen shot of a computer screen

Description automatically generated